

OBSTETRIC PROBLEMS

A MANUAL

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A MINISTRY OF HEALTH
APPROVED PUBLICATION

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ACKNOWLEDGEMENTS

Although this is a book by one author, it is not the work of just one person. It is based on a style of practising obstetrics which was established in Malaŵi by others, well before I arrived in the country. I had a lot to learn from colleagues and midwives and this learning process continued throughout my stay. As the ideas for this manual developed and its writing progressed, all the gynaecologists in Malaŵi gave active support to this project, with their encouragement, ideas, draft chapters and helpful criticisms. Particularly, without the work put in by Dr. J. D. Chipangwi and Dr. M. E. Keller this book would have been much less a reflection of obstetric practices in Malaŵi, and much more prone to error and omission. But I should also like to give special thanks to Dr. E. Ndovi for the extra clinical burden he shouldered while I scribbled.

Other important help I received from Dr. A. C. Borgstein, Dr. Y. E. Ratsma, Dr. M. Cheesebrough and Miss M. van Leeuwen. Mrs. A. M. Rijcken drew the illustrations for Chapters 1, 42 and 46. Jo, my wife, not only encouraged me, but also typed and retyped the manuscript, tidied up the English and chopped excessive Dutch-uncleisms.

Finally, the printing of this manual has been made possible thanks to a generous grant from the Netherlands Government.

Blantyre. April, 1985.

INTRODUCTION

WHAT IS THIS BOOK AND WHO IS IT FOR?

This book is a manual of obstetrics, that is, it tells you what to do in difficult obstetric situations and how to do it. Because it is a manual, it gives you only minimal background information. Therefore, if you want to know more about, say, the causes or pathophysiology of a condition, you must refer to the books listed under "Further Reading".

This manual has been written for those in Malaŵi who deal with obstetric problems at the hospital level: state registered nurse-midwives, clinical officers and doctors. It assumes that you have had basic training in obstetrics and some practical experience of obstetric problems as well. It is definitely not a book for beginners.

HOW TO USE THIS BOOK

This book is intended for use on the job, there is no point in keeping it at home. Hopefully, your hospital will have more than one copy, so try to keep one in the places where you are likely to meet obstetric problems: the antenatal clinic, the labour ward and the theatre.

The book is intended to help you when you are facing difficult obstetric situations – it is typically a book to look things up in. However, before you can look things up in it, you need to know what it contains. Begin by having a look at the Table of Contents: this gives you some idea not only of what is in the book but also about how the material has been organised. The next step is to look at some of the chapters to see what they contain and how they have been arranged.

A difficulty you are bound to meet soon is that different aspects of a problem are dealt with in different chapters. For example, breech presentation in pregnancy is discussed in Chapter 3, the indications for caesarean section during labour in breech presentation in Chapter 24 and the technique of caesarean section for a breech in Chapter 44. There are ways round this problem – the text contains many cross references to other chapters but if they do not help, you can use the index.

A second difficulty you will meet is that the manual generally indicates only one plan of management for each problem. This plan of management may differ from what you were taught or believe to be right. Of course, when writing this manual, I was aware that certain problems can be solved in more than one way. However, in

most cases I did not state the alternatives because this might easily lead to confusion. Generally when a choice had to be made, I chose a plan of management which had already become "routine" in the Queen Elizabeth Central Hospital or the Kamuzu Central Hospital. This should mean that these "routines" have already proved their value and that many members of staff are already familiar with them.

A third, closely related, difficulty is that a plan of management may not suit every single patient with a particular problem. It is quite impossible in a manual of this size – if ever – to cover every single situation that might arise. This does mean that you should use the manual intelligently and not follow it blindly: it is a guide, not a gospel!

WHO IS RESPONSIBLE FOR WHAT?

When there is a patient with a difficult obstetric problem, more than one member of staff is often involved. The manual indicates, in many situations, who is responsible for what. However, on this point there is a difficulty that different members of staff with the same rank have often had very different training and experience in obstetrics.

This problem is smallest with state registered nurse midwives. They have, at least, had the same basic training. However, after their basic training considerable differences in interest and experience can develop which results in one SRN being a much better "obstetrician" than another.

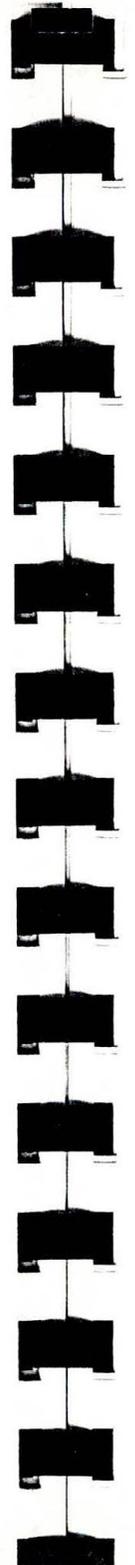
The problem is more complicated with clinical officers and doctors. Some clinical officers, particularly those who started as medical assistants, did not receive any basic training in obstetrics. Some of them were taught a little obstetrics at a later stage and often they were taught how to do a caesarean section. The fact that they can do this operation is, of course, a tremendous help. However, they are usually less good than the SRN at assessing obstetric problems and may have to take her advice about when a caesarean section is necessary.

Clinical officers trained at the School for Health Sciences (or, as it was previously called, the Medical Auxilliary Training School) received basic training in obstetrics but less than an SRN. Without further training they can do no more than she. A few clinical officers received both basic and advanced training in obstetrics. The advanced training was sometimes in a more or less formal programme at one of the central hospitals, others were trained by

doctors at district or mission hospitals. They should be able to assess an obstetric problem and do the necessary operations. However, they may wish to listen carefully to what the SRN has to say about a problem as she has often had longer experience.

Doctors receive obstetric training during their basic medical course but the amount and quality of their training varies and is sometimes less than that of an SRN. Moreover, most doctors were trained in the temperate zones of the world where some of Malaŵi's problems do not occur. Doctors who go to work in the district or mission hospitals need further training in obstetrics first in order to be able to assess patients with obstetric problems as they occur here and to be able to do the necessary operations.

Therefore, the indications in the manual as to who is responsible for what, are guidelines only which may have to be modified, depending on the skill and experience present in your local obstetric team.



Part I

Abnormal Pregnancy

PELVIC ASSESSMENT

INTRODUCTION

Clinical pelvic assessment can be done in late pregnancy or during labour. It is uncomfortable for the patient and should only be done when necessary. It is a *must* for patients with one of the following conditions:

- breech presentation after 36 weeks
- one previous caesarean section
- prolonged labour

In other patients weigh the advantage of information gained against the disadvantage of patient discomfort.

TECHNIQUE

Do a vaginal examination and check the following:

1. PELVIC BRIM

Starting from behind the symphysis pubis feel how far you can follow the pelvic brim:

- **Normal:** one-half to two-thirds of the brim can be felt
- **Abnormal:** more than two-thirds can be felt

2. DIAGONAL AND TRUE CONJUGATES

In the midline try to tip the sacral promontory with your fingers in a nearly horizontal direction. The common mistake is to feel too low down in the pelvis for the promontory.

If you can reach the promontory, measure the diagonal conjugate [see Figures 1 - 3]. With experience you will know how long the diagonal conjugate is when your fingers can only just tip the promontory and, of course, when you cannot reach the promontory, the diagonal conjugate is even longer!

From the diagonal conjugate you can estimate the true conjugate: this is the pelvic diameter the fetal head must pass. It is 1.5 - 2 cm shorter than the diagonal conjugate.

Normal: diagonal conjugate = 12 cm or more (most people cannot reach the promontory in a normal pelvis!)
true conjugate = 10.5 cm or more

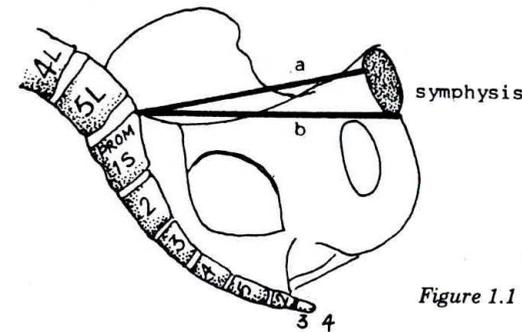


Figure 1.1 Sagittal section through the pelvis
a : true conjugate
b : diagonal conjugate

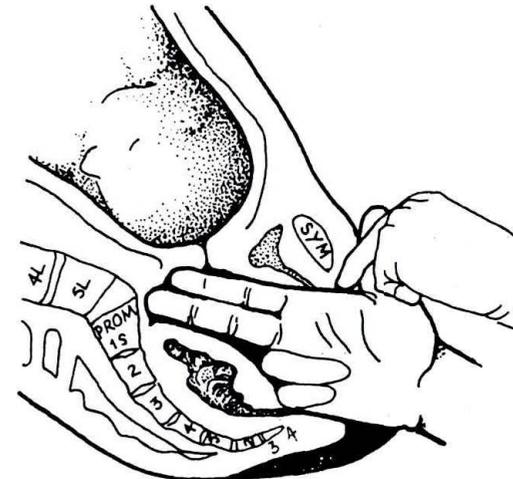


Figure 1.2 Measuring the diagonal conjugate: step I

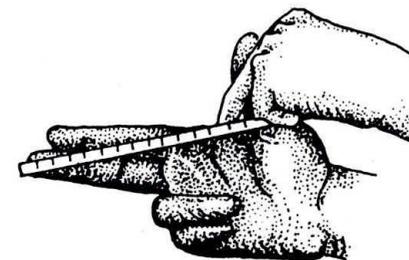


Figure 1.3 Measuring the diagonal conjugate: step II

3. SACRUM

Feel the shape of the sacrum:

- **Normal:** smoothly hollow
- **Abnormal:** straight or with a sharp hook

4. ISCHIAL SPINES

Feel for the ischial spines:

- **Normal:** The spines stick out only slightly into the pelvic cavity.

5. PELVIC OUTLET

Feel how many fingers fit comfortably under the subpubic arch.

See how many knuckles you can put between the ischial tuberosities:

- **Normal:** a little more than two fingers fit the subpubic arch and four knuckles fit between the ischial tuberosities.

DIFFICULTIES

Even with experience it is easy to miss the following abnormalities:

a) THE ASYMMETRICAL PELVIS

With this abnormality the right and left sides of the pelvis are not equal. Differences between the sides are easily missed because a right-handed person can examine the right side of the pelvis much better than the left.

b) THE PELVIS WHICH IS CONTRACTED IN THE TRANSVERSE DIAMETERS

Clinical examination of the transverse diameters of the pelvis is difficult and abnormalities are therefore easily missed.

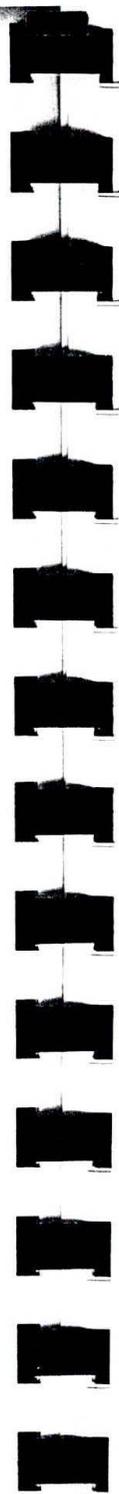
c) THE SHORT DIAGONAL CONJUGATE

This can be missed if the patient cannot relax and the muscles of the perineum remain tight.

Even the best pelvimetry does not measure the mobility in the pelvic joints. If there is a lot of stretch in the pelvic joints, a large baby can still pass a small pelvis. This factor is unpredictable.

X-RAY PELVIMETRY

A good lateral pelvimetry provides a precise measurement of the true conjugate and a good view of the shape of the sacrum. In order to provide correct information the film must be a true lateral view (heads of femur projected on top of each other!)



An X-ray pelvimetry should not be done instead of a clinical assessment : it is expensive (\pm K10.00) and it does not provide any information about the transverse diameters.

Always do a clinical pelvic assessment first: if this is clearly abnormal, you have all the information you need. However, if you think that the pelvis is normal on clinical examination or if you are uncertain of your findings, an x-ray pelvimetry can be helpful. You may then find that the true conjugate is shorter or that the sacrum is less well curved than you thought on clinical examination.

CLASSIFICATION AND SIGNIFICANCE OF PELVIC ABNORMALITIES

A very rough classification of the findings on pelvic assessment is as follows:

1. The severely contracted pelvis

This means that the vaginal delivery of a normal size baby will probably be impossible.

This kind of pelvis is not often seen.

The more common examples of the severely contracted pelvis are:

- a pelvis with a true conjugate of less than 8.5 cm
- a pelvis with severe asymmetry.

2. The borderline pelvis

This means that the pelvis is not normal in all respects but that vaginal delivery of a normal size baby may still be possible. This includes pelvises with one or more of the following features:

- true conjugate between 8.5 and 10.5 cm.
- pelvic brim which can be followed for more than two-thirds of its length.
- a sacrum which is either straight or markedly hooked
- ischial spines which stick out markedly into the pelvic cavity.
- a too narrow pelvic outlet.

Breech delivery of a term baby or a trial of scar should not be attempted with a borderline pelvis.

3. The apparently normal pelvis

On clinical examination and possibly x-ray pelvimetry the pelvis appears normal in all respects. Vaginal delivery of a normal size baby is expected to be successful.

SCREENING FOR CEPHALOPELVIC DISPROPORTION

INTRODUCTION

It is impossible to recognise all patients with cephalopelvic disproportion before labour but some patients are at a much higher risk for this condition than others. High risk patients should be recognised during pregnancy in the antenatal clinic.

HIGH RISK PATIENTS

Nulliparae with:

- a height of less than 150 cm.
- a deformity of spine or leg.
- a large baby (estimated weight more than 3500 gm).

Multiparae with a history of:

- caesarean section
- symphysiotomy
- vacuum extraction
- prolonged or difficult labour
- repeated fresh stillbirths or neonatal death at term
- a large baby in this pregnancy (estimated weight more than 3500 gm).

MANAGEMENT

- Book for hospital delivery; if necessary admit between 36 and 38 weeks.
- Do a pelvic assessment at 36 weeks : if the pelvis is severely contracted, consider the possibility of an elective caesarean section or a section in early labour.

LOW RISK PATIENTS

Low risk patients come into two groups:

1. Those who will deliver in hospital anyway: for them no further screening is required.
2. Those who will deliver in a health centre or even smaller unit: for them pelvic assessment by an *experienced* person can be considered. Patients with a borderline or worse pelvis would then have to be referred to hospital.

BREECH PRESENTATION IN PREGNANCY

VARIETIES OF BREECH PRESENTATION

- Complete or flexed breech: both knees flexed, hips flexed
- Incomplete breech : one knee flexed, the other extended, hips flexed
- Frank or extended breech: both knees extended, hips flexed
- Footling breech : knees flexed and hips partly de-flexed

CAUSES

1. **Increased mobility of the fetus**
 - prematurity
 - polyhydramnios
2. **Reduced mobility of the fetus**
 - multiple pregnancy
 - oligohydramnios
3. **Contracted pelvis**
4. **Abnormal shape of the uterine cavity**
 - placenta praevia
 - congenital abnormalities (bicornuate uterus etc.)
 - fibroids
5. **Abnormal shape of the fetus**
 - extended legs
 - hydrocephalus
 - anencephalus

DIAGNOSIS

The head (hard, round, ballotable) is not felt above the pelvic brim but in the fundus.

Misdiagnosis

1. Breech diagnosed as a cephalic presentation because of:
 - a tight abdominal wall
 - extended legs
 - a head hidden under the lower ribs
 - oligo- or polyhydramnios

2. Cephalic presentation diagnosed as breech because of:
- a head deeply engaged in the pelvis
 - small parts lying along the side of the head

MANAGEMENT

Before 32 weeks

- Await spontaneous version to cephalic presentation (the baby is still so mobile that external version is pointless)

After 32 weeks

- Attempt external cephalic version* unless there is a contra-indication.

The contraindications are:

- a uterine scar (caesarean section, myomectomy)
- multiple pregnancy
- antepartum haemorrhage
- hypertension or preeclampsia
- If the external version succeeds, check after one or two weeks whether the presentation is still cephalic.
- If the external version fails, try again after one or two weeks. It is usually best to give up after two failed attempts.

After 36 weeks

- Attempt external cephalic version unless there is a contraindication [see above]. It is less likely to succeed than earlier in the pregnancy but may still be possible.

If, after 36 weeks the breech presentation persists:

- Arrange for clinical officer, doctor or gynaecologist to see the patient.
- Arrange for the patient to deliver in hospital; admit her between 36 and 38 weeks if she lives far away.
- Assess the pelvis and the size of the baby.
- Decide on the route of delivery:
 - Caesarean section for:
 - a scar of a previous caesarean section
 - a large baby.
 - a borderline or worse pelvis
 - Vaginal delivery only if:
 - baby normal size (estimated weight less than 3500 gm).
 - pelvis normal

A decision to allow vaginal delivery is always provisional.

Change your mind if:

- the baby grows a lot bigger in the last weeks of pregnancy.
- labour does not progress satisfactorily [see Chapter 24].

* For technique of external cephalic version see Chapter 37

Chapter 4

TRANSVERSE LIE IN PREGNANCY

CAUSES

Increased mobility of the fetus

- prematurity
- lax abdominal wall
- polyhydramnios

Poor "fit" of head in the pelvis

- placenta praevia
- cephalopelvic disproportion
- pelvic tumour (fibroid, ovarian tumour)

Reduced mobility of the fetus

- multiple pregnancy
- congenital uterine abnormality (arcuate uterus, etc)
- abdominal pregnancy

RISKS

- Premature rupture of membranes
- Labour with a transverse lie
- the risks attached to the condition which caused the transverse lie

DIAGNOSIS

The signs are:

- the "transverse" shape of the uterus
- the head in one flank, the breech in the other
- the pelvic brim is empty

MANAGEMENT

After 32 weeks

- Attempt a *gentle* external cephalic version unless there is a contraindication. The contraindications are:

- uterine scar (caesarean section, myomectomy)
- antepartum haemorrhage
- multiple pregnancy
- hypertension
- premature rupture of membranes

- If the version succeeds, check after one to two weeks that the presentation is still cephalic.
- If the version fails, try again one or two weeks later

After 36 weeks

Midwives should refer the patient to the clinical officer or doctor.

- Consider first the possibility of prematurity: estimate the gestational age as accurately as possible [see chapter 6].
If the gestational age is less than 36 weeks, review the patient in one or two weeks.
- Consider the possibility of twins: carefully re-examine the abdomen and if necessary ask for an abdominal x-ray. If twins are found, manage as such [see chapter 8].
- Consider the possibility of an abdominal pregnancy. The clues are:
 - the baby's position is unusual: too high in the abdomen or too far into the flank.
 - no Braxton Hicks contractions can be felt over the gestational sac.
 - on bimanual (vaginal-abdominal) palpation the empty uterus is felt as separate from the gestational sac.

If an abdominal pregnancy is found or strongly suspected, refer the patient to a gynaecologist.

If the above conditions have been ruled out, observation in hospital becomes necessary.

- Admit the patient into the antenatal ward.
- Gently attempt external cephalic version unless this is contraindicated and repeat this if necessary on the following days.

After a few days you will realise that you are dealing with one of two situations:

- a "fixed" transverse lie, that is, you always find the baby in the same position and external version is not possible.
- an "unstable" lie, that is, the baby's position keeps changing and external version has no permanent success.

A "fixed" transverse lie can be caused by:

- placenta praevia.
- severe cephalopelvic disproportion.

- a pelvic tumour.
- a congenital abnormality of the uterus.

Whatever the cause, vaginal delivery is impossible: arrange for a caesarean section in early labour or an elective operation at 38 weeks.

An "unstable" lie can be caused by:

- unrecognised prematurity.
- lax abdominal wall.
- polyhydramnios or at least an excessive amount of liquor.
- placenta praevia.
- cephalopelvic disproportion.
- a pelvic tumour.

Consider the possibility of placenta praevia. Other clues pointing to this diagnosis are:

- any degree of antepartum haemorrhage.
- a high head after external version which cannot be brought into contact with the symphysis pubis.

If placenta praevia seems possible, do an examination under anaesthesia at \pm 38 weeks [see chapter 40]

- If placenta praevia seems unlikely, consider the possibilities of a pelvic tumour or severe cephalopelvic disproportion and do a gentle vaginal examination and pelvic assessment.
If either diagnosis is made, arrange for caesarean section in early labour or electively at 38 weeks.

In the remaining cases (and these are the majority!) a lax abdominal wall, an excessive amount of liquor or unrecognised prematurity are likely causes and they are often present in combination.

Vaginal delivery may be possible but:

- palpate the abdomen daily and do external version whenever necessary.
- instruct the patient to report at the first sign of labour.
Further management depends on the findings at the onset of labour [also see chapter 28].

PREGNANCY FOLLOWING CAESAREAN SECTION(S)

RISKS

- Rupture of the uterus:
 - usually during labour.
 - sometimes before labour (with a classical scar, inverted T incision).
- Repeat cephalopelvic disproportion and obstructed labour.

MANAGEMENT

IN EARLY AND MID PREGNANCY

- Encourage the patient to start antenatal clinic at \pm four months.
- Check the haemoglobin and correct anaemia.
- Assess and record the fundal height accurately : this may help later to establish when the pregnancy is term.
- Arrange for review by gynaecologist, doctor or clinical officer at about 36 weeks.

AT 36 WEEKS

Patients with **two or more previous caesarean sections:**

- Estimate the gestational age.
- Admit into hospital unless the patient lives nearby and has transport easily available, in which case admission can be postponed until 37 – 38 weeks.
- Arrange for caesarean section to be done either electively or in very early labour [see below]

Patients with **only one previous caesarean section:**

- Make an **assessment:**
 - find out why the caesarean section was done
 - estimate the gestational age
 - check the presentation and size of the baby
 - assess the pelvis clinically and by x-ray if necessary [see Chapter 1]

- Make a **decision:**

Trial of scar is only allowed with:*

- a cephalic presentation
- a normal size baby
- an apparently normal pelvis
- a normal lower segment scar

* For the conduct of a trial of scar see chapter 31.

Caesarean section is indicated for:

- breech presentation or transverse lie (if persisting to term)
- borderline pelvis
- a large baby (estimated weight 3,500 gm or more)
- a classical scar or inverted T incision

THE PLACE OF ELECTIVE CAESAREAN SECTION

(Elective caesarean section is the operation before the onset of labour)

Elective caesarean section is a *must* if the patient is known to have a classical scar or an inverted T incision. It is best done between 36 and 38 weeks.

Elective caesarean section is *desirable* in all patients in whom a repeat operation is indicated, provided the gestational age is reasonably certain. It is then best done around 38 weeks.

However, if you have reason to believe that the patient does not want the operation, it may be better not to book her for an elective caesarean section. Such patients often give themselves a "trial of scar" at home and only come to hospital when labour has become obstructed!

It is better, although not ideal, to admit such a patient at 36 weeks, say that she will be allowed a short trial of scar and then do a caesarean section in early labour. Careful observation in the ward will still be necessary because these patients tend to retire to a quiet spot as soon as labour starts to make sure that they do not miss their "trial".

THE PLACE OF TUBAL LIGATION

Some patients will want to be sterilised at the time of a repeat caesarean section. Discuss this during the antenatal visits.

Tubal ligation can be done provided:

- both she and her husband agree to the operation and give written permission.
- they both understand that ligated tubes cannot be reopened
- they are both aware of the existence of other forms of contraception

The chance that tubal ligation will be necessary on medical grounds (extensive adhesions, weak scar) increases with the number of previous operations.

Tubal ligation is usually done with the fourth operation.

ESTIMATION OF THE GESTATIONAL AGE

INTRODUCTION

The gestational age, that is the length of time a patient has been pregnant, can be estimated from:

- *the history:*
 - the date of the last menstrual period (LMP)
 - the number of months counted by the patient
- *the size of the uterus* past and present

THE DATE OF THE LAST MENSTRUAL PERIOD

Counting the number of weeks from the LMP often produces an accurate estimate of the gestational age. There are, however, a number of *possible sources of error:*

- the date of the LMP is correct but ovulation was delayed. Normally a woman ovulates about 14 days after the onset of the LMP but ovulation can take place much later; weeks or even months. Ovulation can be delayed in any woman at any time but it happens more often if:
 - she has irregular menstrual cycles
 - she used "the pill" up to her last period
 - she was still breastfeeding when she became pregnant

If ovulation was delayed, the gestational age is, of course, shorter than one would think from the date of the LMP.

- the date of the LMP is incorrect.

Common mistakes are:

- the patient tells you the date of the first period she missed instead of the last one she had
- she mistook a small bleed in early pregnancy for a period.

In either case her gestational age is longer than the (wrong) date that the LMP suggests.

- sometimes a woman does not know the date of her LMP but tries to hide her ignorance by making one up.

THE NUMBER OF MONTHS COUNTED BY THE PATIENTS

Many patients count the months accurately. Ask them whether they counted "moon" months (*miyezi ya kumwamba*) or calender months (*miyezi ya chizungu*). A "moon" month lasts 28 days or four weeks. So at 40 weeks, pregnancy has lasted ten "moon" months.

THE SIZE OF THE UTERUS

With certain precautions the size of the uterus provides a reasonable estimate of the gestational age.

Best estimates are obtained by:

- bimanual (vaginal-abdominal) palpation before 16 weeks
- abdominal palpation between 20 - 28 weeks)

Possible sources of error are:

- Before 20 weeks

Abdominal palpation *alone* can lead to bad misjudgements of the size of the uterus because, due to differences in pelvic shape and size some uteri sit much higher in the abdomen than others.

- Between 20 and 28 weeks

- the size of the uterus can be misjudged because of an umbilicus placed too low or too high on the abdomen
- the size of the uterus does not correspond with the gestational age in the case of:
 - twins
 - polyhydramnios
 - fibroids

- After 28 weeks

In the last weeks of pregnancy the size of the uterus is very dependent on the size of the fetus. Some fetus grow much faster than others at this stage and therefore there are, at each gestational age, large differences in the size of the fetus and the uterus. This makes the size of the uterus after 28 weeks a less good indicator of the gestational age than earlier in pregnancy.

If, therefore, you have to estimate the gestational age in late pregnancy, do not just look at the uterine size of the day, but look also at the fundal heights recorded on the antenatal card earlier in the pregnancy.

LARGE FOR DATES

DEFINITION

The uterus is large for dates if the fundal height is three or more weeks larger than appropriate for the gestational age.

DIFFERENTIAL DIAGNOSIS

1. *Wrong dates* [See Chapter 6]
2. *Overestimation of fundal height*
This mistake is easily made if the umbilicus is below the middle of the abdomen.
3. *Twins*
The diagnosis should be suspected if three or four large poles are felt.
The diagnosis becomes certain if:
 - two heads are palpated
 - x-ray confirms
4. *Polyhydramnios*
This is diagnosed on the following grounds:
 - the uterus is tense
 - a fluid thrill can be demonstrated
 - one or more fetus are present but are very difficult to feel
 - the fetal heart is difficult or impossible to hear with the fetoscope
5. *Large singleton fetus*
Only two large poles are present but the shoulders may impress as a third pole. Confirmation by x-ray is necessary.
6. *Hydatidiform mole*
A pregnancy with a hydatidiform mole does not go beyond 24 weeks gestation.
It should be suspected if:
 - the gestation is less than 24 weeks
 - fetal parts are not palpable after 20 weeks
 - fetal heart sounds are not heard by ultrasound (doptone or sonicaid) after 14 weeks
 - no fetus is seen on a, good quality, x-rayThe diagnosis becomes certain when molar vesicles are passed per vaginam.

TWIN PREGNANCY

RISKS

In pregnancy

- anaemia
- preeclampsia
- polyhydramnios
- antepartum haemorrhage
- premature labour

In labour

- premature rupture of the membranes
- poor uterine action
- malpresentations or cord prolapse
- postpartum haemorrhage

DIAGNOSIS

Suspect twin pregnancy when:

- the uterus is large for dates
- three poles can be palpated inside the uterus
- the head seems small for the size of the uterus, particularly if there are many parts as well

Confirm the diagnosis:

- by x-ray
- by definitely feeling two heads

Differential diagnosis

Confusion can be caused by:

- large singleton fetus
- wrong dates
- polyhydramnios
- fibroids

MANAGEMENT

PRINCIPLES

- Prevent or treat the complications occurring during pregnancy
- Do everything possible to ensure delivery in hospital

IN PRACTICE

- Explain to the patient that she is carrying twins
- Discuss with her in detail the need to deliver in hospital:
 - explain that twins are often born prematurely
 - explain that twin deliveries are often difficult
 - check where she lives and find out whether she needs to be admitted at about 34 weeks in order to await delivery in hospital
- See her frequently in the antenatal clinic
- Check the haemoglobin and correct anaemia
- Other reasons for hospital admission are:
 - the development of complications [see under Risks]
 - for rest if she can no longer cope at home
 - for the prevention of premature labour.The value of rest in hospital for this reason is debatable. However it should be considered in:
 - a nullipara with a tense or irritable uterus
 - a multipara with a history of premature labour

Chapter 9

SMALL FOR DATES

DEFINITION

The size of the uterus is three weeks or more smaller than appropriate for the gestational age.

DIFFERENTIAL DIAGNOSIS

A gestation shorter than estimated, due to wrong dates or delayed ovulation, should be suspected if:

- the uterus was already small for dates in early pregnancy.
- the uterus grows regularly from antenatal visit to antenatal visit.
- the amount of liquor round the baby is normal.

Intrauterine growth retardation should be suspected if:

- the size of the uterus was normal in early pregnancy but stopped growing after 26 - 28 weeks.
- the amount of liquor round the baby is reduced.

INTRAUTERINE GROWTH RETARDATION

DEFINITION

The growth of the fetus is reduced and results in the birth of a small for gestational age baby.

CAUSES

- Hypertension/preeclampsia
- Smoking
- Placental insufficiency of unknown origin.
- Intrauterine infections, for example rubella
- Congenital abnormalities
- Gross maternal malnutrition
- Unknown

DIAGNOSIS

Intrauterine growth retardation must be carefully looked for in:

- patients with a history of stillbirths, premature deliveries or small babies
- patients with hypertension or preeclampsia
- heavy smokers

The typical findings are:

- the uterus grows normally up to 26 - 28 weeks
- after 26 - 28 weeks its growth slows down or stops
- the amount of liquor is reduced

The diagnosis is often difficult.

Intrauterine growth retardation can be *incorrectly* suspected if:

- the estimate of the gestation is wrong [see also: Chapter 9]
- the size of the uterus was overestimated in early pregnancy, thereby producing the false impression that the uterus is not growing on later occasions.

Intrauterine growth retardation is often *missed* because:

- the patient does not know her dates
- the patient started antenatal clinic late in pregnancy
- the doctor or midwife did not think of it
- the diagnosis is difficult and is often missed by even the best people under the best circumstances.

MANAGEMENT

When uterine growth retardation is *suspected*:

- admit the patient into hospital for rest and observation
- check for a possible cause
- check fundal height, fetal size and amount of liquor round the baby at weekly intervals
- ask the mother about the fetal movements regularly
- check the fetal heart rate frequently

If the diagnosis of intrauterine growth retardation seems *certain*, that is, there is little or no growth in the course of two to four weeks, consider amniocentesis for the assessment of fetal maturity and induction of labour. Caesarean section may be necessary.

This is a difficult decision to make. Get help from a gynaecologist if at all possible.

POSTMATURITY

DEFINITION

A pregnancy is considered to be postmature when it has lasted 42 weeks or more.

CAUSE

Unknown

RISKS

- Intrauterine death
- Fetal distress
- Cephalopelvic disproportion (due to larger, harder and less mouldable head)

DIAGNOSIS

Begin by checking that the expected date of delivery was calculated correctly.

There are three criteria for the diagnosis of true postmaturity:

- the date of the last menstrual period must be certain
- there is no history of conditions known to be associated with delayed ovulation:
 - irregular menstrual cycles
 - use of the "pill" up to the last menstrual period
 - breastfeeding
- the patient attended antenatal clinic before 28 weeks and the fundal height was always appropriate for dates

MANAGEMENT

Doubtful postmaturity (uncertain dates, etc.)

- Reassure the patient
- Await spontaneous labour

True postmaturity :
no other risk factors

The management is debatable. Some induce labour with pitocin (but without artificial rupture of membranes). Repeated attempts at induction may have to be made. Others advise the patient to rest, if necessary in hospital, but await spontaneous labour.

other risk factor present

If any of the following risk factors is present:

- nullipara over 30 years
- multipara over 40 years
- bad obstetric history
- hypertension or preeclampsia
- reduced amount of liquor round the fetus
- markedly reduced fetal movements
- ask the clinical officer or doctor to see the patient
- admit the patient into hospital
- induce labour by artificial rupture of membranes and pitocin
- if induction is impossible or fails, do a caesarean section

PREMATURE RUPTURE OF MEMBRANES

DEFINITION

The rupture of membranes is said to be premature if it occurs before the onset of uterine contractions.

CAUSES

- Usually unknown
- Cervicitis?
- Cervical incompetence?

RISKS

At any gestation, chorioamnionitis resulting in:
- maternal sepsis and death
- fetal or neonatal sepsis and death

Before 37 weeks, premature labour and its complications

DIAGNOSIS

- **History** : Loss of fluid from the vagina
- **Inspection** : Loss of liquor from the vagina after coughing
- **Differentiate from:** - spontaneous loss of urine
- vaginal discharge
- **When in doubt** : • repeat inspection later
• do a fern test [see note(*)]

MANAGEMENT

I. DIAGNOSIS CERTAIN

After 37 weeks

- observe in labour ward for signs of labour
- check temperature four hourly
- do a vaginal examination to rule out cord prolapse
- provide a *clean* perineal pad or cloth
- induce labour with pitocin if labour does not begin spontaneously within 12 to 24 hours

Fern test

Put a drop of fluid from the vagina on a clean microscope slide and let it dry. Examine under the microscope.

If the fluid is liquor, a rather spectacular pattern of "ferns" is seen.

If you have not done this test before, try it out with some liquor collected during delivery.

- in patients with one previous caesarean section who were due for a trial of scar, wait for spontaneous labour for 24 hours, if this does not happen, do a caesarean section
- in all other patients with previous caesarean section(s) do a caesarean section as soon as possible

Before 37 weeks

- admit into antenatal ward or any other area where prolonged careful observation is possible
- ask the clinical officer or doctor to see the patient
- check the temperature four hourly
- inspect the liquor daily
- check that the patient keeps the vulva and perineum clean
- induce labour with pitocin at 37 weeks
- if signs of chorioamnionitis develop (temperature 37.5°C or more, purulent or offensive liquor), inform the most senior person available [also see chapter 13]

II. SUSPECTED PREMATURE RUPTURE OF MEMBRANES

- admit into antenatal ward
- ask the Clinical Officer or doctor to see the patient
check temperature four hourly
- inspect the vulva daily for liquor. Do not rely only on what the patient tells you
- if diagnosis is not confirmed, discharge home after two or three days

III. AREAS OF DEBATE

The use of Antibiotics

The discussion centres on the following questions:

- are antibiotics effective in preventing infection?
- if they are used, which antibiotic, at which gestation and for how long?

The Use of Corticosteroids

The purpose is to accelerate the ripening of the fetal lungs.

The questions concern:

- are corticosteroids necessary?
(lung ripening is probably faster in the presence of ruptured membranes)
- do corticosteroids increase the risk of infection?
- are there potentially harmful effects on the baby?

If you use them, give:

- dexamethasone 4 mg 8 hourly for 2 days or
- bethamethasone 12 mg i.m. daily for 2 days

CHORIOAMNIONITIS

DEFINITION

Chorioamnionitis is infection of the membranes, amniotic fluid and fetus.

CAUSES

It occurs as a complication of:

- premature rupture of membranes
- prolonged labour

Frequent and/or unsterile vaginal examinations can be an added factor

RISKS

- Maternal**
- septicaemia/septic shock
 - clotting defect (disseminated intravascular coagulation)
 - death
- Fetal**
- septicaemia
 - death

DIAGNOSIS

The diagnosis should be strongly suspected if, in the presence of ruptured membranes:

- the patient develops fever (37.5 C° or more)
- the liquor becomes purulent or offensive
- the uterus becomes tender on palpation
- the fetal heart rises above 160 beats per minute
- the fetal heart beat disappears

MANAGEMENT

- Inform the most senior person available: this is an emergency
- Start treatment whenever the diagnosis is suspected
- Give chloroquin, if you like, but do not wait to see if this brings down the temperature
- Give high doses of broad spectrum antibiotics by injection, e.g.:
 - chloramphenicol 1 gm i.v. stat., followed by 0.5 gm i.v. 6 hourly
 - x-penicillin 5 mega i.v. stat., followed by 2 mega i.v. 6 hourly
- Reasonable alternatives are:
 - ampicillin i.v.
 - x-penicillin + streptomycin
or + kanamycin
or + gentamycin
- Deliver. Induce or accelerate labour with pitocin; do a caesarean section if necessary.

PREGNANCY FOLLOWING HABITUAL ABORTIONS

DEFINITIONS

- Abortion** : the expulsion of pregnancy before 28 weeks
- Early abortions** : before 14 weeks
- Late abortions** : after 14 weeks
- Habitual abortions** : three early, or two late abortions in succession

CAUSES

EARLY ABORTIONS

- Usually no detectable cause

LATE ABORTIONS

General Maternal Illness:

- syphilis
- hypertension
- diabetes
- other

Uterine causes:

- cervical incompetence
- congenital abnormalities of the corpus uteri (bicornuate uterus etc)
- fibroids

Unexplained

ASSESSMENT

HISTORY

- Check that the history is indeed that of habitual abortions:
 - Did each of the last three pregnancies (two with late abortions) end in an abortion? (Abortions are not habitual if there were normal pregnancies in between)
 - If the patient had very early abortions, was there any proof that she was pregnant? (With a very irregular menstrual cycle a patient may think that she is pregnant when, in fact, she is not)
- For each abortion ask: which was the first symptom: bleeding, loss of liquor or contractions?
- Ask about possible causes [see above]

EXAMINATION

- Check the blood pressure
- Look for signs of general illness
- Do a vaginal examination:
 - Compare the size of the uterus with her dates
 - Is the cervix closed?
 - Is there any other abnormality?

LABORATORY

Always : haemoglobin, urine for albumen and sugar
When possible : VDRL, bloodgroup, rhesus factor, blood urea, blood sugar, glucose tolerance test

Do a pregnancy test if the diagnosis of pregnancy is in doubt or if fetal death is suspected.

MANAGEMENT

Midwives should refer the patient to the clinical or medical officer as early in pregnancy as possible.

The management depends on the suspected cause of the abortions.

SYPHILIS

If the VDRL test is positive, treat the patient and her husband with procain penicillin 3 ml daily for 10 days.

If the VDRL test is not available, consider giving a course of treatment anyway.

HYPERTENSION

If the blood pressure is very high (diastolic pressure 110 mm Hg or more), start blood pressure lowering drugs [see Chapter 18]

If the blood pressure is not so high, anti-hypertensive drugs can be considered but it is better to get an opinion from a gynaecologist first.

DIABETES

Refer to gynaecologist and medical specialist immediately.

CERVICAL INCOMPETENCE

Suspect this if:

- the previous abortions were late abortions and started with loss of liquor before the patient felt contractions
- in the present pregnancy the cervix effaces and dilates without contractions.
- Refer the patient to a gynaecologist for the insertion of a cervical stitch:

- between 14 and 16 weeks in "cold" cases
- immediately if the cervix is already dilating

Before referring the patient

- check the fetal heart with a sonicaid if possible
- rule out other causes of habitual abortion

The final decision to put in the stitch is made by the gynaecologist. He/she will do the operation and is responsible for the immediate aftercare. The patient usually goes home after three or four days. However, you may well have to look after the patient during the remaining part of her pregnancy.

After the insertion of the stitch:

- make sure the patient knows that she has a stitch
- explain to her that if signs of abortion or labour develop, the stitch must be removed immediately
- discourage sexual intercourse, discuss this with the husband if necessary
- review her in the antenatal clinic every two weeks and do a vaginal examination to check that the stitch is still in situ
- remove the stitch in hospital at 38 weeks

Problems and complications

- failure to prevent abortion
- lower abdominal pain and discomfort
- vaginal discharge
- cervical lacerations if the stitch is removed too late
- cervical dystocia during labour due to scarring

HABITUAL ABORTIONS OF UNKNOWN CAUSE

This is the largest group of patients.

- Reassure the patient : the prognosis is reasonably good (about 70% go to term)
- Review her in the antenatal clinic every two to four weeks
- Do a vaginal examination at each visit to check the state of the cervix up to ± 24 weeks
- If all is well at 28 weeks, refer her back to the general antenatal clinic

PROBLEM PATIENTS

These are patients in whom management along the lines indicated above, has failed in one or more pregnancies.

If the patient has aborted recently, refer her to a gynaecologist about six weeks after the abortion and before she is again pregnant.

If she is pregnant now, refer her to a gynaecologist straight away.

INTRAUTERINE DEATH

DEFINITION

Death of the fetus in utero occurring after 20 weeks gestation

CAUSES

- syphilis
- high fever or other acute maternal illness
- severe anaemia
- hypertension and preeclampsia
- placental insufficiency of unknown origin
- diabetes
- rhesus incompatibility
- postmaturity
- abruptio placentae
- fetal abnormalities
- unknown causes (50% of all cases)

RISK

Clotting defect due to diffuse intravascular coagulation if the patient remains undelivered after four weeks

ASSESSMENT

Your assessment should answer the following questions:

- is the patient pregnant?
- is the fetus dead and if so, for how long?
- what is the cause of fetal death?
- is the pregnancy inside the uterus?
- is there a clotting defect?

HISTORY

The patient presents with the complaint that the fetal movements stopped or did not begin when she expected them. Alternatively the midwife in the antenatal clinic may have noted the absence of fetal heart sounds and the stationary or decreasing fundal height.

Check:

- when did the fetal movements stop?
- what is the gestation?
- what was the outcome of earlier pregnancies?
- has the patient been ill recently?

EXAMINATION

- Check the blood pressure
- Check for anaemia, fever or other maternal illness
- Check the fundal height and fetal size and compare these with the gestation and antenatal record
- Check the fetal heart sounds with a sonicaid if possible
- Ask someone else to confirm that they are negative or re-examine the patient on a later occasion (it is possible to miss a positive fetal heart at the first attempt)
- Do a vaginal and bimanual examination:
 - check the state of the cervix
 - is the fetus inside the uterus?

LABORATORY

Always : haemoglobin, urine for protein and sugar

When possible : VDRL, blood group and rhesus factor, blood urea and glucose.

Contrary to common belief : a pregnancy test is not usually helpful:

- when positive, it proves that the patient is pregnant but not that the fetus is alive.
- when negative, it does not rule out pregnancy nor does it prove that the fetus is dead.

Three or four weeks after fetal death: clotting time. This is done by collecting a few ml of blood in a dry, clean glass tube. Normally the blood will clot within five minutes. If it takes longer or if the clot dissolves again, a clotting defect is present.

X-RAY

Unnecessary as a routine.

A good quality film may be useful if the presence of a fetus is in doubt. It may then also confirm the diagnosis of fetal death (Spalding's sign, etc.)

DIFFERENTIAL DIAGNOSIS

The patient is pregnant but the diagnosis is:

- intact uterine pregnancy, possibly of shorter duration
- hydatidiform mole
- polyhydramnios
- multiple gestation with small fetus
- abdominal pregnancy

The patient is not pregnant but suffers from:

- ascites
- an ovarian tumour
- uterine fibroids
- false pregnancy

MANAGEMENT

BACKGROUND

Spontaneous labour occurs within three weeks of fetal death in 90% of patients. Induction of labour with pitocin often fails if it is tried too soon. This can be a bitter disappointment for the patient. Induction with prostaglandins is more effective but has also more side-effects.

Prostaglandins are expensive and not always available. After three weeks, termination of pregnancy becomes necessary in order to prevent the possible clotting defect.

IN PRACTICE

- Explain to the patient that the baby is probably dead
Within three weeks of fetal death:
 - await spontaneous labour
 - allow the patient to stay at home unless she lives far from the hospital
 - review her weekly in the antenatal clinic
 - give her as much moral support as possible
- After three weeks
 - ask the clinical officer or doctor to see the patient
 - admit the patient into hospital
 - check the clotting time
 - induce with pitocin. Try the regular schedule first unless the gynaecologist decides otherwise
If induction fails, inform the gynaecologist and ask whether a higher dose of pitocin or prostaglandins can be used
 - if induction of labour is contra-indicated, do a caesarean section about four weeks after fetal death
- In case of a clotting defect (rare):
 - seek the help of a gynaecologist
 - have *fresh* blood (less than 24 hours old) available for transfusion
 - induce labour

ANTEPARTUM HAEMORRHAGE

DEFINITION

Antepartum haemorrhage is bleeding from the genital tract after 28 weeks gestation and before the birth of the baby

CAUSES

OBSTETRIC

- placenta praevia
- abruptio placentae
- placental edge bleeding
- ruptured uterus
- unexplained (often called "heavy show")

GYNAECOLOGICAL

- carcinoma of the cervix
- cervical polyp
- cervical erosion
- Trichomonas vaginitis
- vaginal warts
- vaginal varicosity

INITIAL ASSESSMENT

This is usually done by the midwife

- Ask
 - when did the bleeding begin?
 - how much blood have you lost?
 - did you have bleeding earlier in this pregnancy?
 - how many months pregnant are you?
 - are you in labour?
- Check
 - colour of tongue and conjunctivae
 - pulse and blood pressure
 - operation scars on the abdomen?
 - uterus: - contracting, - hypertonic, - tender?
 - fundal height
 - fetal lie, presentation and descent (with an empty bladder)
 - fetal heart
 - the present amount of bleeding

NO VAGINAL EXAMINATION AT THIS STAGE!

EMERGENCIES

These are patients who present with one or more of the following:

- severe bleeding (estimated loss 100 ml or more)
- shock, anaemia or both
- labour

Non-emergencies

These are patients who have none of the above signs.

INITIAL MANAGEMENT

This is also usually done by the midwife

Emergencies

- Admit the patient into the labourward
- Put up an i.v. drip with a large (size 18) needle or cannula
- Take blood for grouping, x-matching and haemoglobin
- Inform the clinical officer or doctor

Non-emergencies

- Admit the patient into hospital
- Take blood for grouping, x-matching and haemoglobin
- Arrange for the clinical officer or doctor to see the patient within 24 hours

ASSESSMENT BY CLINICAL OFFICER OR DOCTOR

Before you can plan the patient's management you need to make a - provisional - diagnosis of the cause of bleeding. This is not easy : always get the help of the most experienced person available!

EMERGENCIES

- See the patient (no management by telephone!)
- Check the history and examination
- Ask yourself two questions:
 1. Has the uterus ruptured?
 - a ruptured uterus due to obstructed labour should be diagnosed at this point
 - scar ruptures are a different matter because they may occur during pregnancy or early labour. You may not be able to diagnose them until you do a laparotomy

2. Can I rule out placenta praevia

YES only if the head or breech is deeply engaged in the pelvis

NO in all other situations

- Only after placenta praevia has been **DEFINITELY** ruled out, do a gentle vaginal examination in the labour ward. Do a speculum examination when necessary
- If placenta praevia cannot be ruled out, do an examination under anaesthesia [see Chapter 40. For what to do if general anaesthesia is not available, see also Chapter 40]

After a digital and speculum examination has been done either in the labour ward or under anaesthesia in theatre, patients can be classified into three groups:

I. Placenta praevia

II. Bleeding from the uterus not due to placenta praevia

Within this group of patients there are three subgroups:

A. Patients with severe abruptio placentae.

This diagnosis should be suspected if there are, alone or in combination, the following signs:

- no fetal heart
- tender and/or hypertonic uterus
- a clotting defect [for the diagnosis of clotting defects see Chapter 15]

B. Patients with a uterine scar. In them a uterine rupture must be suspected

C. Patients with no further clues as to the cause of bleeding

III. Bleeding from a gynaecological cause.

Serious bleeding from gynaecological causes is uncommon but does occur with carcinoma of the cervix or a ruptured varicosity in the vagina

NON-EMERGENCIES

For the assessment of patients with a minor antepartum haemorrhage observation in hospital is always necessary. How long this observation should continue depends on your findings.

- When you see a patient, check the history and the findings of earlier examinations
- Re-examine her with an empty bladder
- Do you suspect placenta praevia?

YES if you find the following:

 - a high head or breech
 - a head or breech overlapping the symphysis pubis by more than two fingerwidths

- transverse or oblique lie of the baby
- NO if the head or breech is in easy contact with the symphysis and does not significantly overlap it

Patients with suspected *placenta praevia*:

- keep the patient in hospital
- explain to her the reason
- correct any anaemia
- avoid speculum or vaginal examination
- do an examination under anaesthesia between 36 and 38 weeks or earlier if recurrent heavier bleeding makes this necessary
- try to keep a pint of blood x-matched at all times

Patients in whom *placenta praevia* is not suspected:

- do a gentle speculum examination. You may find:
 - bleeding from a gynaecological cause [see further under "Treatment and Delivery"]
 - bleeding from inside the cervical canal, the cause of bleeding within the uterus remains unknown.
- Continue to observe the patient in hospital:
 - If there has been no further bleeding for at least three days, she can be discharged home but with strict instructions to return immediately if the bleeding recurs
- Instruct the patient that coitus should be avoided throughout the present pregnancy.
- If the bleeding continues, she must stay in hospital. Examination under anaesthesia must to be done between 36 and 38 weeks.
- The bleeding has stopped. The cause of bleeding remains unknown. Discharge the patient home if there is no further bleeding for three days.

TREATMENT AND DELIVERY

This is the responsibility of the clinical officer or doctor.

PLACENTA PRAEVIA

For most patients caesarean section is best. The technique of caesarean section for placenta praevia is discussed in Chapter 44.

In a few uncommon situations consider vaginal delivery.

1. The cervix is fully dilated.
Usually the mother is badly shocked, the baby is dead and the placenta is partially prolapsed through the cervix. You can remove the placenta and deliver the baby. This will cause less bleeding than caesarean section.

2. The cervix is not fully dilated but the placenta covers only a small part of the internal os.

Much depends on where the placenta is:

- if it is anterior and the lie of the baby is longitudinal, rupture the membranes. Often the presenting part comes down and the bleeding stops
- if the placenta is posterior, rupturing the membranes only works if the baby is very small

If the membranes have been ruptured, stimulate the contractions with pitocin and supervise labour carefully

Regardless of the route of delivery, make sure the patient gets enough i.v. fluids and is transfused adequately.

BLEEDING FROM THE UTERUS NOT DUE TO PLACENTA PRAEVIA

A. Severe *abruptio placentae*

The management is as follows:

Resuscitate

- maintain a good i.v. drip through a widebore needle or cannula
- infuse enough saline, sodium lactate solution and *fresh* blood to keep the systolic bloodpressure near 100 mm Hg. Usually two or three pints of blood are needed but sometimes (much) more. Stored blood is less useful because it does not help to correct the clotting defect but is always more useful than no blood at all.
- avoid dextran solutions (haemacel etc.) which can make the clotting defect worse

Stop pain if this is severe

- give pethidine 25 - 50 mg by slow intravenous injection. Repeat if necessary
Intramuscular injections in a shocked patient have an unpredictable effect and should be avoided

Deliver

- rupture the membranes
- stimulate the contractions with pitocin if necessary, labour is usually fast
- avoid caesarean section if at all possible. Remember the saying of older obstetricians

"If with *abruptio placentae* caesarean section is possible, it is not necessary, but when it is necessary, it is not possible."

- however, consider caesarean section if:
 - the patient seems to be bleeding to death before having had a chance to deliver. Caesarean section is then a desperate step and may sometimes save the mother's life
 - the baby is term and still alive but with signs of severe fetal distress. Rule out a clotting defect before starting the operation
 - there is a transverse lie of a term baby in which case vaginal delivery is impossible.

Note that with caesarean section the uterus will look bruised (the "Couvelaire uterus") but that it contracts normally. Do not do a hysterectomy! Occasionally, however, the uterus does not contract even after very concentrated pitocin infusion. Hysterectomy is then necessary.

After delivery by whatever route:

- give ergometrine 0.5 mg i.v. and put pitocin 10 - 40 units per litre into the drip. Usually the bleeding stops but if there was a clotting defect, a steady trickle may continue for some hours
- monitor kidney function
- insert an indwelling catheter immediately after delivery
- record the urine output, blood loss and fluid intake very carefully. If kidney failure does develop, fluid overload is a very real danger

B. Patients with a uterine scar

If there is bleeding from the uterus, it is impossible to rule out a scar rupture

- do a caesarean section unless the cervix is fully dilated and delivery seems easy
- If the baby is delivered vaginally, examine the uterine scar very carefully afterwards

C. Other patients with bleeding from the uterus

The management of these patients is as follows:

- Allow vaginal delivery unless there is a contraindication (transverse lie, CPD, etc.)
- rupture the membranes
- stimulate the contractions with pitocin
- supervise labour very carefully
- if the bleeding continues, do a caesarean section
- make sure the patient is resuscitated adequately

GYNAECOLOGICAL CAUSES OF BLEEDING

Carcinoma of the cervix

- If the patient is in labour, do a classical caesarean section. If the tumour seems still operable, refer her to a gynaecologist one or two weeks after the operation.
- If the patient is not in labour, refer her to a gynaecologist forthwith.

Cervical polyps

These never cause any serious problem during pregnancy or delivery.

Attempts at removing them during pregnancy may cause serious bleeding, so leave them alone until after delivery.

If there is any suspicion of malignancy, refer to gynaecologist forthwith

Cervical erosion

This never causes problems during pregnancy or delivery. They do not require treatment. A pap smear can be done to rule out malignancy.

Trichomonas vaginitis

This sometimes causes a bloodstained discharge.

- Treat with metronidazole tablets total 2 gm stat. (2 gm usually = 10 tablets but check the dosage)

Vaginal warts

These sometimes cause a bloodstained discharge. They often disappear spontaneously after delivery. Attempts at removal during pregnancy may cause serious bleeding. If there are still some remaining six weeks after delivery, these can be removed by cautery.

Never, at any time, apply podophyllin

Vaginal varicosity

This sometimes bleeds quite severely. A fine catgut figure of eight stitch made with a roundbodied needle will control the bleeding. Vaginal delivery can be allowed.

FITS IN OR IMMEDIATELY AFTER PREGNANCY

CAUSES - FIRST AID - FIRST ASSESSMENT

POSSIBLE CAUSES OF FITS

- eclampsia
- cerebral malaria
- meningitis
- epilepsy
- uncommon conditions, for example:
 - hypoglycaemia
 - intracerebral haemorrhage
 - brain abscess or tumour
 - unexplained.

FIRST AID

Clear the airway

- clean mouth and throat
- suck away secretions
- insert an airway or padded tongue spatula

Stop the convulsions*

- inject slowly (5 - 10 minutes) intravenously "lytic cocktail":
pethidine 50 mg + chlorpromazine (= Largactil) 25 mg +
diazepam (= Valium) 10 mg
or
magnesium sulphate 20 ml of a 20% solution.

FIRST ASSESSMENT

Do not automatically assume that a patient with fits suffers from eclampsia but look carefully for other possible causes: missing cerebral malaria or meningitis is a disaster!

History

Remember to question the relative, friend or midwife, who brought the patient.

- Ask: - How many fits did the patient have before admission?
- What treatment did she receive?
- Has she been ill recently?

*See also Appendix B.

- Did she have fever?
- Did she complain about headache, blurred vision or stomach pain?
- Is she known to have epilepsy?
- What is known of her obstetric history?
- Is she in labour?

Examination

- check the vital signs : pulse, blood pressure, temperature, breathing,
- look for oedema, pallor, jaundice.
- examine for stiffness of the neck.
- check the knee reflexes.
- examine the abdomen.
- do a vaginal examination.

Investigations

Always do

- urine for protein
- haemoglobin
- thick film for malaria

When indicated, check:

- cerebrospinal fluid (lumbar puncture) for protein, sugar, cells and gramstain
- urine: full report
- bloodsugar, blood urea.

Points to remember

- eclampsia is uncommon before 26 weeks of pregnancy and after two days postpartum.
- meningitis in a pregnant patient may produce very little neck stiffness; when in doubt, do a lumbar puncture.
- "routine" treatment of malaria is not the same as the intensive treatment of cerebral malaria.
- unexplained fits are treated as if the patient had eclampsia.

HYPERTENSIVE DISEASES IN PREGNANCY (ECLAMPSIA, PREECLAMPSIA, HYPERTENSION)

INTRODUCTION

Definition of raised blood pressure in pregnancy

In a pregnant woman the blood pressure is considered to be raised if:

- the blood pressure is 130/90 mm Hg or more
- the systolic blood pressure has increased by 30 mm Hg or more
- the diastolic blood pressure has increased by 15 mm Hg or more

We will discuss the following conditions associated with a raised blood pressure in pregnancy:

- eclampsia
- severe preeclampsia (= imminent eclampsia)
- mild to moderate preeclampsia or hypertension
- severe hypertension without imminent eclampsia
- hypertension postpartum

ECLAMPSIA

DEFINITION

Eclampsia is the condition of convulsions in a pregnant woman with a raised blood pressure. Other causes of convulsions, such as, for example, cerebral malaria, meningitis, brain abscess, are excluded [also see Chapter 17]

DANGERS

Maternal death

The common causes of maternal death in eclampsia are:

- aspiration of vomit
- kidney failure
- intracerebral haemorrhage
- failure of more than one organ, for example, heart + liver + kidney

Death of the baby

- intrauterine death due to placental failure
- or
- neonatal death due to asphyxia or prematurity

MANAGEMENT

BEFORE TREATING A PATIENT FOR ECLAMPSIA MAKE ABSOLUTELY SURE THAT SHE DOES NOT SUFFER FROM CEREBRAL MALARIA OR MENINGITIS [see Chapter 17]

Eclamptic fits can begin before, during or after delivery. The medical management is the same in each case but if the patient is still undelivered, she should be delivered as soon as possible. Take the following steps:

1. **KEEP THE AIRWAY CLEAR**
 - nurse the patient on her side
 - clean the mouth, nose and throat regularly of secretions
 - insert an airway or padded tongue spatula

2. **CONTROL THE CONVULSIONS**

There are two methods*

Heavy sedation (lytic cocktail)

Start with a slow (5 - 10 minutes) i.v. injection of pethidine 50 mg + chlorpromazine (Largactil) 25 mg + diazepam (Valium) 10 mg

Continue with an i.v. drip, each litre to contain: pethidine 100 mg + chlorpromazine 50 mg + diazepam 20 - 40 mg. Run the drip so that the patient is deeply sedated, that is: asleep most of the time but responding to questions when you wake her up.

If an i.v. drip is not possible (problems with the veins or in case of fluid overload), give by i.m. injection every 4 - 6 hours: pethidine 50 mg + chlorpromazine 25 mg + diazepam 10 - 20 mg.

Magnesium sulphate

First dose : magnesium sulphate 4 gm (20 ml of 20% solution) by slow i.v. injection.

Repeat doses can be given every four hours but first check that:

- the urine output is at least 100 ml per 4 hours
- the knee reflexes are present
- the respiratory rate is at least 16 per minute

*More information about the lytic cocktail, magnesium sulphate and possible alternatives are found in appendix B.

If not, the next dose should be postponed.

Repeat doses can be: magnesium sulphate 20 ml of a 20% solution by slow injection
or
magnesium sulphate 8 ml of a 50% solution by deep i.m. injection.

3. CONTROL THE BLOOD PRESSURE

- Record the blood pressure hourly
- Start hydralazine if the diastolic pressure is 100 mm Hg or more on two readings. Give 10 – 20 mg i.m. and continue to check the blood pressure hourly. Repeat the same dose as soon as the diastolic pressure is again 110 mm Hg or more.

4. CONTROL THE FLUID BALANCE

- Insert an indwelling catheter with an open drainage system
- Record the urine output four hourly
- Record the fluid intake
- Diuretics:
 - before delivery : none
 - after delivery : frusemide (lasix) 40 mg by any route if urine output is less than 200 ml per four hours (1200 ml/24 hours)

5. DELIVER THE BABY

Patients with eclampsia must be delivered as soon as possible, even if the baby is still (very) premature. The method of delivery depends on the circumstances.

a) Eclampsia before labour or in the latent phase

Induction of labour only if:

- the cervix is very ripe
- the baby is normal or small size
- the pelvis is adequate
- no other contra-indications for vaginal delivery exist

To induce labour, *rupture the membranes* and put up pitocin.

Caesarean section should be done if the patient is unsuitable for induction or if induction is not followed by active labour within four hours.

b) Eclampsia in the active phase of labour

Allow vaginal delivery only if:

- labour is progressing quickly (on the alert line or to the left of it)
 - no contraindications to vaginal delivery exist
- Avoid difficult deliveries. If there is delay, do caesarean section without hesitation

c) Eclampsia during the second stage of labour

- Delivery by the quickest and easiest route
- Avoid difficult vaginal operative deliveries

N.B. AVOID Ergometrine in the third stage, give pitocin 5 U i.m. instead

6. MANAGEMENT AFTER DELIVERY

In patients who had fits before or during labour, fits can recur after delivery. Careful observation and continued treatment are necessary for at least 48 hours after delivery. Keep the patient in the labour ward or another intensive care area. If the patient fits after delivery, continue treatment until at least 48 hours after the last fit.

Pay special attention to the fluid balance. After delivery, oedema fluid tends to “flood” the bloodstream while the kidneys are slow to excrete the excess fluid. This may cause a rise in blood pressure. Encourage a good urine output by the use of frusemide as indicated in 4 above.

If all is well after 48 hours, stop sedation, remove the catheter and send the patient to the ward. Continue four hourly blood pressure checks for a few days.

7. PROBLEMS AND COMPLICATIONS

Continuing fits in spite of heavy sedation or adequate doses of magnesium sulphate

Check first that:

- the diagnosis of eclampsia is correct
- the blood pressure is adequately controlled
- the patient is not in pain (caesarean section wound)

Try another sedative, for example, paraldehyde 10 ml i.m.

or

Combine magnesium sulphate with the lytic cocktail

Anuria or severe oliguria

(Urine output less than 500 ml per 24 hours)

As soon as this is suspected:

- limit the fluid intake to 500 ml per 24 hours + an amount equalling the urine output
- give frusemide 200 mg i.v. stat.
- if no improvement within 24 - 48 hours, refer to medical specialist without delay

The blood pressure stays high for more than 48 hours after delivery

With some eclamptic patients the blood pressure becomes normal within a few days after delivery, with others, this takes a few weeks but with a few it stays permanently high. The latter may need long term antihypertensive treatment.

In the first week postpartum manage as follows:

- accept without treatment blood pressures up to 160/110 mm Hg
- if, 48 hours postpartum the blood pressure is still very high, start a standard antihypertensive regimen like you would use for a non-pregnant patient, for example:
 - bendrofluazide 5 mg od + reserpin 0.2 mg bd
 - or
 - bendrofluazide 5 mg od + methyldopa 0.25 gm qid

Continue this for about four weeks and leave the patient without treatment for two weeks. Then check the blood pressure: if it is still high, long-term treatment is required.

SEVERE PREECLAMPSIA (IMMINENT ECLAMPSIA)

DEFINITION

Severe preeclampsia is the condition in which a pregnant woman with high blood pressure has symptoms or signs indicating that she may get eclamptic fits at any moment.

The symptoms are:

- severe headache
- upper abdominal pain
- vomiting
- eye symptoms (blurred vision, spots before the eyes)

The signs are: - rapidly increasing blood pressure, often but not always, reaching values of 160/110 mm Hg or more

- proteinuria of ++ or more
- oliguria

DANGERS

- Maternal: - development of eclamptic fits
- For the baby: - intrauterine death
- neonatal death due to asphyxia or prematurity

DIAGNOSIS

This can be easily missed if:

- the blood pressure earlier in pregnancy is not known and the present blood pressure is not very high
- the patient presents with symptoms but you forget to check the blood pressure

MANAGEMENT

Once the diagnosis of severe preeclampsia has been made, manage as for eclampsia. For details see the section on eclampsia.

MILD TO MODERATE PREECLAMPSIA OR HYPERTENSION

DEFINITION

- The blood pressure is raised but is below 160/110 mm Hg
- Protein in the urine is 1 + or less
- There are no symptoms of (imminent) eclampsia

Often a distinction is made between preeclampsia and hypertension. We discuss mild to moderate preeclampsia and hypertension together because:

- in many patients the distinction cannot be made
- the management is the same

RISKS

- Progression to severe preeclampsia or eclampsia
- Damage to the placenta, resulting in:
 - premature labour
 - intrauterine death
 - small for dates baby
 - abruptio placentae

ASSESSMENT

- Check the obstetric history: small babies, prematures, still births or abruptio placentae
- Check for symptoms of severe preeclampsia

- Check that the size of the present pregnancy is appropriate for dates
- Test the urine for protein

MANAGEMENT

In pregnancy

As an outpatient

This is only suitable for patients with a good obstetric history and no complications during this pregnancy.

- Encourage the patient to rest at home
- Prescribe sodium phenobarbitone (= phenobarb.) 30 – 60 mg tds.
- Advise salt restriction in the diet if there is marked oedema
- See the patient every two weeks up to 32 weeks and weekly thereafter
- At each visit:
 - check the blood pressure
 - test the urine for protein
 - weigh the patient
 - check for oedema
 - ask about symptoms of severe pre-eclampsia
 - assess the fetal growth
- Book the patient for delivery in hospital

As an inpatient

Indications for admission into hospital during pregnancy are:

- symptoms or signs of severe preeclampsia
- a diastolic blood pressure of 100 mm Hg or more
- a bad obstetric history
- evidence of poor fetal growth
- gestation of 40 weeks or more

Observations in hospital:

- check the blood pressure at least once a day
- test the urine for protein at least once a week
- weigh the patient weekly
- palpate the abdomen once a week to assess the fetal growth:
 - fundal height
 - fetal size
 - amount of liquor round the baby
- ask the mother about the fetal movements regularly
- if complications develop, inform the gynaecologist or the most senior person available

Treatment in hospital

- encourage the patient to rest
- prescribe phenobarb. 30 – 60 mg tds
- do not prescribe antihypertensive drugs or diuretics: they do not improve the outcome of either the mother or the baby*
- consider induction of labour if the gestation is more than 41 weeks (certain dates!) or earlier if:
 - there is a history of stillbirths born before term
 - there is no fetal growth in the course of two or four weeks
 - severe preeclampsia develops

Delivery

- Give good pain relief during the first stage of labour
- Watch for signs or symptoms of severe preeclampsia
- Avoid prolonged labour, shorten the second stage by vacuum extraction
- Do not give ergometrine during the third stage

After delivery

- Observe for symptoms or signs of severe preeclampsia
- Continue mild sedation for 48 hours.

SEVERE HYPERTENSION

WITHOUT IMMINENT ECLAMPSIA

DEFINITION

The blood pressure is 160/110 mm Hg or more but does not rise rapidly, there is not proteinuria and there are no symptoms of severe preeclampsia like headache.

RISKS

These are: – the risks of severe hypertension outside pregnancy:

- stroke
- heartfailure
- kidney failure
- severe preeclampsia “on top of” hypertension
- the complications of damage to the placenta

*There is a (rare) exception to this rule. In patients where a history of repeated stillbirths suggests that the hypertension causes poor development of the placenta, treatment with methyldopa can be considered. It should be started early in pregnancy and the patient should be on bedrest in hospital as well. This treatment is expensive and a heavy burden on the patient. It should only take place under the supervision of a gynaecologist.

The outcome of pregnancy in patients with severe hypertension is often poor.

MANAGEMENT

This is along the lines indicated for mild to moderate preeclampsia and hypertension [see previous pages] with one important difference:

- in the interest of the mother do prescribe antihypertensive drugs
- Continue these until after delivery.
Best is : methyldopa 250 - 500 mg qid.
A good alternative is a betablocker
A poor alternative, but better than nothing at all, is reserpin.

Further:

- Deliver the baby as soon as it seems mature enough for survival
- Only prescribe magnesium sulphate or heavy sedation if severe preeclampsia develops
- Get the opinion of a gynaecologist if at all possible

HYPERTENSION POSTPARTUM

DEFINITION

The blood pressure is raised within 48 hours after delivery

OCCURRENCE

It occurs:

- obviously in patients who had hypertension or preeclampsia before delivery
- suddenly in patients who always had a normal blood pressure (in some of these it is perhaps provoked by ergometrine)

RISK

- Progression to severe preeclampsia and eclampsia

DIAGNOSIS

The raised blood pressure is usually noted during the routine checks after delivery

If the blood pressure was normal during the routine checks, but the patient complains about headache or epigastric pain, it should be rechecked.

MANAGEMENT

Within 48 hours after delivery

If there are signs or symptoms of severe preeclampsia [see page 46], treat as for eclampsia (lytic cocktail etc)

In uncomplicated cases:

- prescribe a mild sedative, for example:
 - phenobarb. 100 - 200 mg stat., followed by 30 - 60 mg tds for two days
- or
- diazepam 10 mg stat., followed by 5 mg tds for two days
- do not use antihypertensives unless the blood pressure is 160/110 mm Hg or more, in which case the patient should be treated as for severe preeclampsia.

After 48 hours

The risk of eclampsia is now quite small even if the blood pressure is still high.

If the blood pressure is less than 160/110 mm Hg:

- no further treatment at present
- allow the patient home
- recheck the blood pressure six weeks after delivery

If the blood pressure is 160/110 mm Hg or more:

- start antihypertensive treatment as for a non-pregnant patient, for example:
 - reserpin 0.2 mg bd + bendrofluazide 5 mg od
 - methyldopa 150 - 500 mg qid + bendrofluazide 5 mg od
- When the blood pressure is at an acceptable level, allow the patient home
- Continue treatment for about four weeks and then stop
- Recheck the blood pressure two weeks later: if the blood pressure is then still raised, permanent antihypertensive treatment must be considered.

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SEVERE ANAEMIA

DEFINITION

Haemoglobin less than 6 gm %.

CAUSES

Common causes are:

- poor red cell production due to low dietary intake of:
 - iron
 - folate
 - protein
- excessive loss of blood or nutrients due to:
 - frequent childbearing and breastfeeding
 - hookworm
 - malaria

Less common causes are:

- poor red cell production due to bone-marrow disease
- blood loss not due to hookworm:
 - recurrent nose bleeds
 - antepartum haemorrhage
 - other causes of bleeding in the gastrointestinal tract
- haemolysis not due to malaria

RISKS

For the mother:

- heart failure
- cerebral anoxia
- death

For the fetus:

- prematurity
- intrauterine death

DIAGNOSIS AND ASSESSMENT

The diagnosis of severe anaemia is usually obvious. However, both the clinical impression of pallor and the laboratory test for haemoglobin are subject to error and can be wide off the mark. When they disagree, a repeat examination is necessary.

The cause(s) of anaemia often go undetected due to our limited laboratory facilities.

Severe anaemia is dangerous to mother and baby.

This danger is acute if:

- heart failure is present:
 - pulse rate of 120/minute or more
 - respirations 24/minute or more
 - shortness of breath in rest
- there are cerebral signs:
 - mental confusion
 - coma
- the haemoglobin level is still dropping due to:
 - haemolysis (jaundice!)
 - bleeding
 - fever
- there is extra work for the heart:
 - fever
 - during labour
 - immediately postpartum

MANAGEMENT

DURING PREGNANCY OR PUERPERIUM

Without signs of acute danger:

- admit into hospital
- take blood specimens for:
 - haemoglobin (full blood count if possible)
 - malarial parasites
 - grouping and x-match
- transfuse two units of packed cells slowly (about 4 hours per unit) give frusemide 40 mg per os or per injection at the start of each unit
- check the vital signs hourly during transfusion
- give a full chloroquin tablet course (4-2-2-2)
- start malaria prophylaxis:
 - chloroquin 2 tablets weekly or
 - pyrimethamine (=Daraprim) 1 tablet weekly
- start folic acid 5 mg daily
- give levamisole (=Ketrax) 3 tablets stat.
- repeat the haemoglobin about 48 hours after transfusion and weekly thereafter

With signs of acute danger:

- admit into labour ward or another high risk area
- inform the most senior person available (gynaecologist, doctor or clinical officer)
- nurse in half sitting position
- start treatment indicated above

- *transfuse urgently*
- supervise the patient closely for a number of days:
after an initial improvement she can deteriorate again if
haemolysis or blood loss continue

DURING LABOUR

- Manage as a patient in acute danger [see above]
- Shorten the second stage by vacuum extraction
- Give ergometrine 0.25 mg i.v. and deliver the placenta by
controlled cord traction
- Keep the patient in the labour ward for at least 24 hours after
delivery for close observation

Part II

Abnormal Labour

THE LABOURGRAPH

Read this chapter with a real labourgraph in front of you.

BACKGROUND

During the first stage of labour the cervix effaces and dilates. If one plots the cervical dilatation in a graph, the progress of labour can be seen at a glance. Figure 20.1 shows the progress of an ideal labour. In the first part of the first stage the cervix dilates only slowly; this is called the *latent phase*. The latent phase ends when the cervix has become fully effaced and is 3 cm dilated. Between 3 cm and full dilatation the cervix dilates faster; this is called the *active phase* of labour.

Both the latent and active phases of labour can be prolonged. The labourgraph helps us to recognise this quickly, before serious trouble has developed. A prolonged active phase in particular is often the first warning of cephalopelvic disproportion.

The Malawi labourgraph spans 22 hours. The first eight hours on the chart are reserved for recordings during the latent phase. How recordings are made when the latent phase lasts longer than eight hours is discussed later in this chapter. The remaining part of the chart is for recordings made during the active phase. In it four lines have been drawn:

- **A** is the alert line. If the cervical dilation follows this line, the cervix dilates 1 cm per hour; this is the slowest rate of dilatation in the active phase which is still normal.
- **M** and **P** are the action lines for multiparae and primigravidae respectively. Action to correct a delay in the active phase should have been taken before these lines have been reached [see Chapter 22]
- The broken vertical line indicates the expected time of delivery [see Chapter 22]

RECORDING ON THE LABOURGRAPH

CERVICAL DILATATION

On admission

If the cervix is still less than 3 cm dilated, the dilatation is recorded at time 0 with an **x**. Write date and clocktime underneath [see Figure 20.2]. If the cervix is 3 cm or more dilated, the dilatation is recorded on the alert line in the active phase [see Figures 20.3 and 20.4].

Later recordings

1. **In the latent phase** when the patient is examined again four hours after admission, there are two possibilities:
 - the cervical dilatation is still less than 3 cm. The dilatation is then recorded at time 4 hours [see Figure 20.2].
 - the cervix is 3 or more cm dilated. This dilatation is also recorded at time 4 hours, but the curve is then "transferred to the alert line" [see Figures 20.5 and 20.6].

If the latent phase is prolonged, the cervical dilatation will still be less than 3 cm after eight hours. It can still be recorded at the appropriate times on the chart, but when the active phase is reached eventually, a new chart must be started [see Figure 20.6].

2. **In the active phase.** The cervical dilatation is plotted at the appropriate times [See Figure 20.3]. If the cervix dilates normally the curve is on or to the left of the alert line. If the curve is on the right of the alert line, the active phase is becoming prolonged.

How often should vaginal examinations be done?

- Once labour is established vaginal examination is done four hourly in a nullipara and three hourly in a multipara
- It should *also* be done at expected time of delivery
 - It should be done *earlier* if:
 - the membranes rupture
 - the patient wants to push
 - the cervix was 7 cm or more dilated at the last examination
 - signs of fetal distress develop.

DESCENT OF THE HEAD

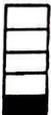
The baby's head is, on examination, divided into five horizontal, equal parts and as labour progresses the number of parts (fifths) remaining *above the brim* is assessed and recorded on the labourgraph with a dot "•" or an "o" [see Figures 20.2 - 20.6]. The number of fifths still above the brim should be determined by abdominal palpation or better still by bimanual palpation at the time of a vaginal examination. The number of fingers that can be placed between the anterior shoulder and the symphysis indicates the number of fifths above the brim. Vaginal examination alone can be very misleading: due to moulding and caput formation the fetal scalp may be seen at the outlet while the largest part of the head is still above the brim.

CONTRACTIONS

The duration of the contractions is recorded as follows:

-  less than 20 seconds
-  20 - 40 seconds
-  more than 40 seconds

The number of contractions per ten minutes is recorded as follows:

-  1/10 minutes
-  3/10 minutes
-  5/10 minutes

FETAL HEART RATE

The fetal heart rate is counted between the contractions, preferably with the patient lying on her side. If she lies on her back the supine hypotensive syndrome can cause slowing of the fetal heart.

The normal heart rate between contractions is 120 - 160 beats per minute. Changes during the contractions are best ignored. They are difficult to assess with the fetoscope and their significance is open to question.

MEMBRANES AND LIQUOR

The following symbols are used:

- I = membranes intact
- C = clear liquor draining
- M = meconium stained liquor draining
- R = membranes ruptured but no liquor draining at present

If the membranes rupture during labour, this should be recorded at the appropriate time [see Figure 20.5].

The following abbreviations are used:

- SRM = spontaneous rupture of membranes
- ARM = artificial rupture of membranes

MOULDING

This is graded as follows:

- 0 = bones normally separated
- + = bones touching-but not overlapping
- ++ = bones overlapping but easily separated
- +++ = bones overlapping and cannot be separated

MATERNAL CONDITION

Pulse rate, blood pressure and temperature are recorded in their appropriate columns.

ADDITIONAL NOTES

Short comments can be written on the labourgraph. Longer notes should be written on a separate sheet of paper.

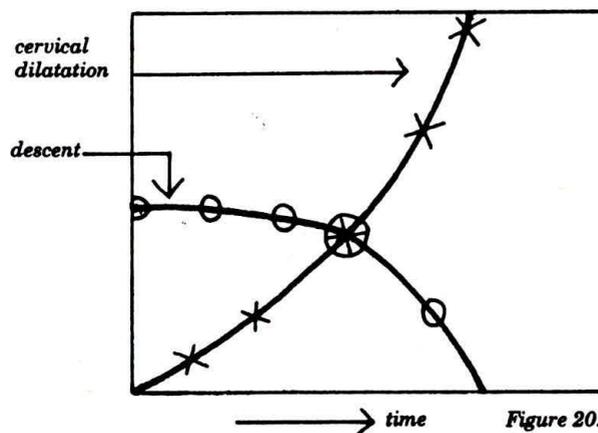


Figure 20.1
The curves of cervical dilatation and descent during a normal labour (not plotted on a labourgraph)

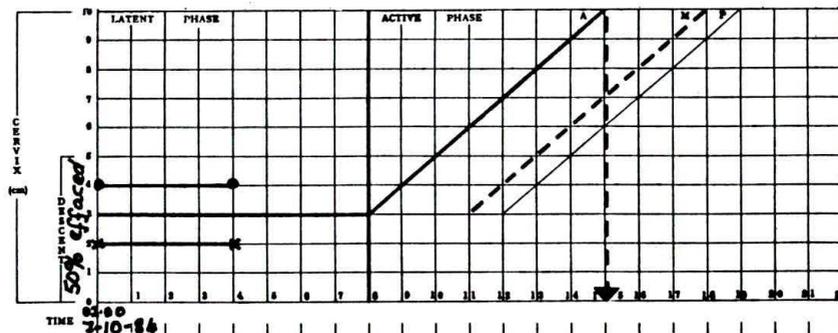


Figure 20.2
Labourgraph of a patient admitted in the latent phase at 02.00 on 7.10.84. Four hours later she was still in the latent phase.

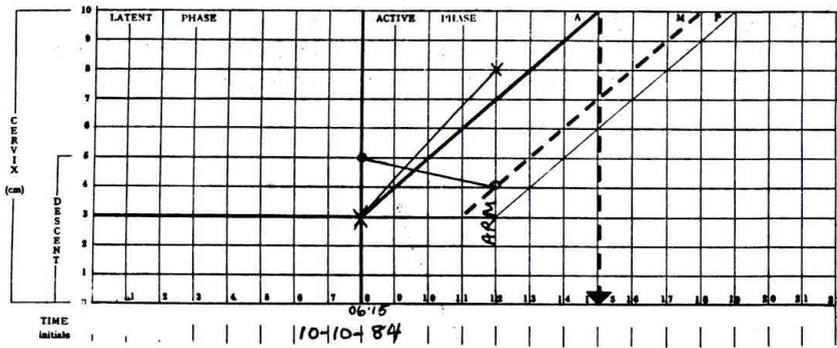


Figure 20.3
Labourgraph of a patient admitted at 06.15 on 10.10.84 with the cervix 100% effaced and 3 cm dilated. Good progress after four hours.

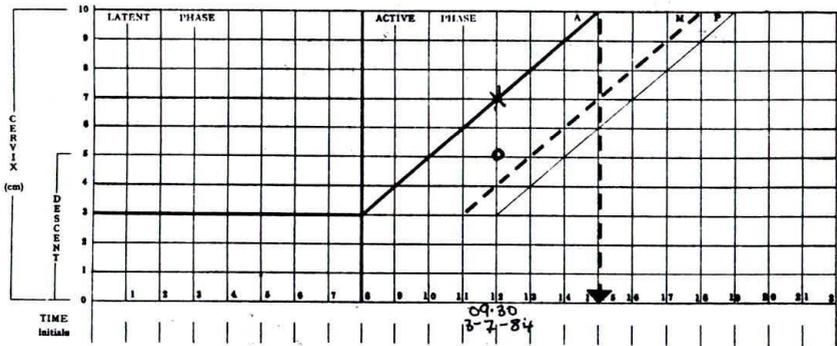


Figure 20.4
Labourgraph of a patient admitted at 09.30 on 3.7.84 at 7 cm dilatation.

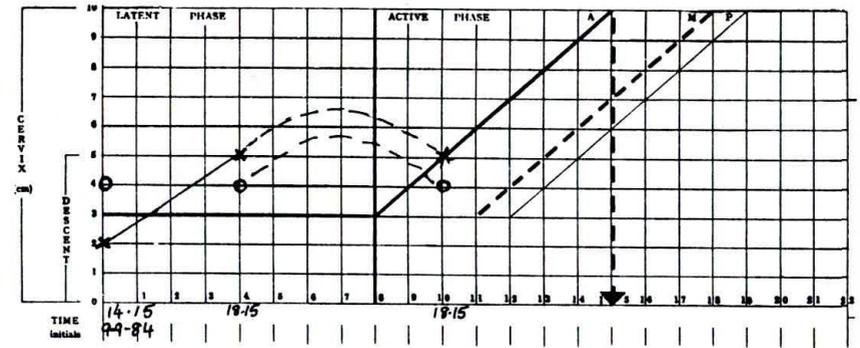


Figure 20.5
Labourgraph of a patient admitted at 14.15 on 9.9.84 with 2 cm dilatation. Four hours later the cervix was 5 cm dilated.

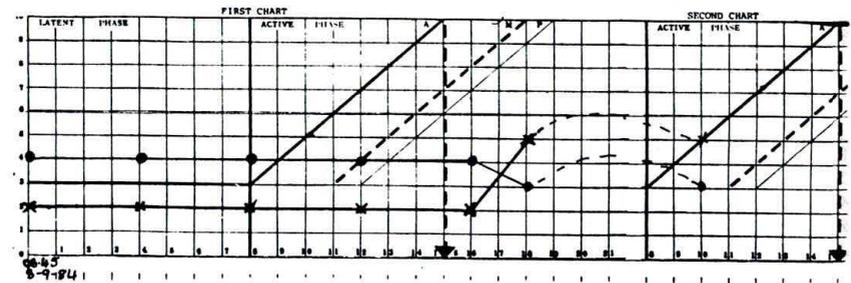


Figure 20.6
Labourgraph of a patient admitted at 03.45 on 2.9.84 who developed a prolonged latent phase. After 18 hours she was at last in the active phase.

THE PROLONGED LATENT PHASE

DEFINITION

The latent phase is prolonged if a patient who was admitted "in labour", has not reached the active phase after eight hours. This covers two different situations: false labour and the truly prolonged latent phase.

FALSE LABOUR

DIAGNOSIS

In the nullipara the cervix remains long and closed or just admits a fingertip. In the multipara the cervix can be one or two centimeters dilated but it is not effaced. The membranes are still intact.

MANAGEMENT

Explain to the patient that she is not yet in labour.

If she wishes, she can go home.

If she insists that she feels painful contractions:

- put her in a quiet area, preferably outside the labour ward
 - sedate her with pethidine 100 mg i.m.
After a good sleep she may now be in labour or the contractions will have stopped altogether
 - do not use diazepam, largactil or sodium amytal for sedation. These make the patient drowsy but do not stop the pain: this can be very unpleasant!
 - do not keep the patient in the labour ward more or less indefinitely : this is very depressing for her!

THE TRULY PROLONGED LATENT PHASE

DIAGNOSIS

Either the cervix is 100% effaced but stays stationary at about 2 cm or it effaces and dilates very slowly.

MANAGEMENT

There are three possibilities

Sedation

- put the patient in a quiet spot
- sedate her with pethidine 100 mg i.m.
Sometimes this must be repeated.



Ambulation

This is only possible during the daytime or in the early evening and the patient should not be too tired.

Induction of labour

- Rupture the membranes and start pitocin drip.

This *must* be done if there are other problems, for example hypertension. It can be done in other patients, but particularly in nulliparae it sometimes fails and then caesarean section becomes necessary. For nulliparae conservative management is usually best.

THE PROLONGED ACTIVE PHASE OF LABOUR

INTRODUCTION

In this chapter only labours with a vertex presentation are considered. A prolonged active phase may present in different forms:

The protracted active phase

The cervix dilates too slowly right from the beginning of the active phase [Figure 22.1].

Secondary arrest

The cervix first dilates more or less normally but then stops dilating altogether. The dilatation is usually 6 cm or more by the time secondary arrest develops [Figure 22.2].

Secondary arrest is often complicated by *oedema of the cervix*

Cervical dystocia

The cervix is abnormal due to scarring or congenital abnormality. It does not dilate in spite of excellent contractions. *This is a rare condition.*

THE PROTRACTED ACTIVE PHASE

DIAGNOSIS

Diagnose a protracted active phase as soon as the curve of the cervical dilatation drifts to the right of the alert line.

Sometimes it is difficult to distinguish between a prolonged latent phase and a protracted active phase, because:

- different examiners do not always agree when exactly the cervix is 3 cm dilated
- in some women the increased rate of cervical dilatation which is typical of the active phase starts a little later than at 3 cm.

CAUSES

Cephalopelvic disproportion with poor uterine contractions secondary to it.

Poor uterine contractions alone, sometimes as a result of fear or exhaustion (for example due to prolonged latent phase). Often the reason for the poor contractions remains uncertain.



DANGERS

- obstructed labour and its complications
- intrauterine infection
- eclampsia
- fetal distress
- unnecessary suffering of the mother.

ASSESSMENT (by senior midwife, clinical officer or doctor)

- review her pregnancy (antenatal card!) and labour up to now
- do a complete examination including a vaginal examination and pelvic assessment
- Look for:
 - a mechanical cause of the delay
 - other problems which make prolonged labour, regardless of its cause, undesirable.

Mechanical causes

1. Gross cephalopelvic disproportion

This is diagnosed on the grounds:

- a severely contracted pelvis in combination with a normal size or large baby
- or
- a high head (4/5 or 5/5 above the brim) with severe moulding; consider a small fontanel in the centre of the pelvis (maximal flexion!) and a large caput as additional unfavourable features.

2. Malpresentation not previously recognized. Examples are:

- brow presentation
- shoulder presentation
- face presentation

3. Soft tissue obstruction. For example;

- a scarred cervix
- vaginal stenosis
- pelvic tumour

Other problems making further prolongation undesirable

For example:

- previous caesarean section scar
- stillbirth or neonatal death with last delivery
- nullipara older than 30 years
- multipara older than 40 years
- severe preeclampsia or hypertension
- fetal distress

- intrauterine infection
- an active phase which has already lasted more than 12 hours

MANAGEMENT (by senior midwife, clinical officer or doctor)

The treatment of the protracted active phase should start as soon as it is diagnosed and certainly not later than when the action line is reached.

There are two options:

- immediate caesarean section
- trial of conservative treatment

Immediate caesarean section

This is indicated if:

- vaginal delivery is impossible or unlikely (gross cephalopelvic disproportion etc.)
- further prolongation of labour is undesirable.

Note that the finding of a borderline pelvis alone is not an indication for immediate section.

Trial of conservative treatment

This consists of:

- artificial rupture of membranes
- pethidine 100 mg i.m.
- rehydration with dextrose 5% in water if necessary
- in nulliparae pitocin drip starting at 5 units per liter and 10 drops per minute [see also Appendix A] *No pitocin for multiparae.*
- check frequently:
 - contractions
 - descent
 - fetal heart
 - blood pressure
- repeat the vaginal examination after three and six hours unless it is indicated earlier (signs of the second stage, fetal distress)
- be prepared for an operative vaginal delivery:
 - vacuum extraction
 - symphysiotomy
- accept defeat and do a caesarean section, if:
 - after six hours the patient is not delivered
 - earlier if fetal distress or signs of severe disproportion develop.

SECONDARY ARREST

DIAGNOSIS

Diagnose secondary arrest if after 6 cm dilatation there is no further dilation for two hours. Look at the examples in Figures 22.1 - 22.5.

Note that:

- if the cervix began by dilating very fast, secondary arrest must sometimes be diagnosed before the alert line is reached [Figure 22.3]
- if the patient is admitted during labour, she may have been in secondary arrest for hours before admission [Figure 22.4]
- the diagnosis of secondary arrest may be delayed, because midwives disagree about the state of cervical dilatation [Figure 22.5].

CAUSES

The main cause is the *high presenting part*. In normal labour the presenting part descends during the latter part of the active phase and stretches the cervix to full dilatation. If the presenting part stays high, this mechanical stretching of the cervix does not take place.

The reasons for the high presenting part can be:

- cephalopelvic disproportion
- malpresentation
- poor contractions
- a still intact bag of membranes.

DANGERS

As long as the membranes are still intact, there is little danger except that labour may become unnecessarily prolonged and that the contractions will gradually become weaker.

After rupture of the membranes the danger is obstructed labour and rupture of the uterus. In a multipara these complications may develop very rapidly.

MANAGEMENT (by senior midwife, clinical officer or doctor)

- Rule out gross cephalopelvic disproportion or malpresentation needing immediate caesarean section
- Rupture the membranes, if these are still intact. Observe the necessary precautions [see Chapter 39]
- If the cervix is soft and 8 - 9 cm, ask the patient to push during a contraction.

In some patients this is all that is needed: the head comes down and

the baby is either born spontaneously or delivered by an easy vacuum extraction.

If it is too early for the patient to push or pushing does not bring the head down within two or three contractions and you do still believe that vaginal delivery is possible:

- with a primigravida
 - put up pitocin for 2 - 4 hours
 - Sedate with pethidine 100 mg i.m.
 - if this does not achieve delivery, do a caesarean section

- with a multipara
 - wait for one hour
 - if she is still undelivered, ask her to push during two contractions
 - if this still does not bring down the head, do an immediate caesarean section.

IMPORTANT DON'TS

- no pitocin for a multipara
- no vacuum extraction if the head is still 3/5 or more above the brim.

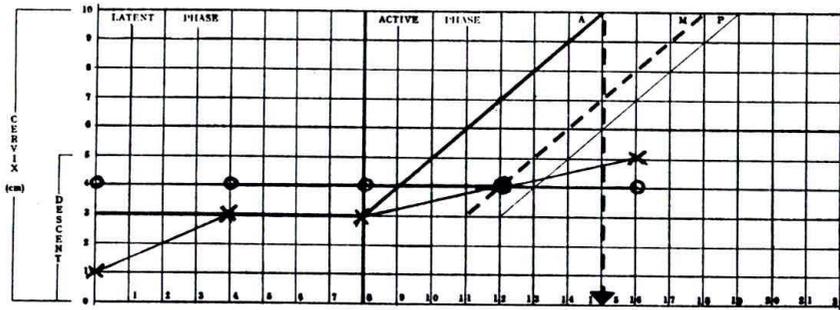


Figure 22.1
Protracted active phase. Treatment was delayed: it should have started at time 12 hours.

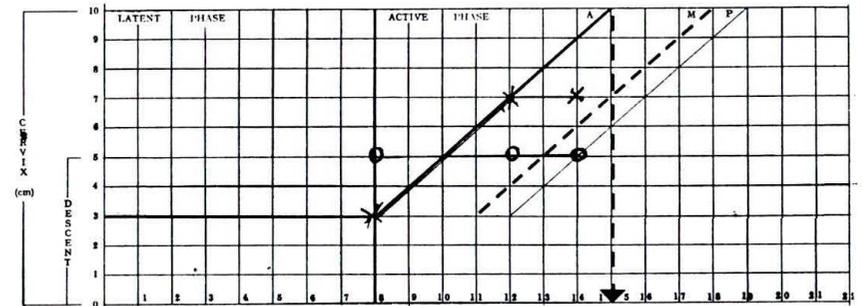


Figure 22.2
Secondary arrest in a multipara.
Note that the vertical line (expected time of delivery) has not been reached yet.

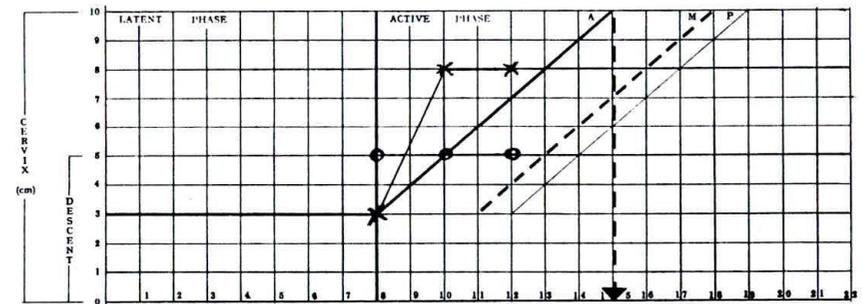


Figure 22.3
Secondary arrest in a multipara.
Note that the diagnosis is made before the cervicograph reached the "alert" line.

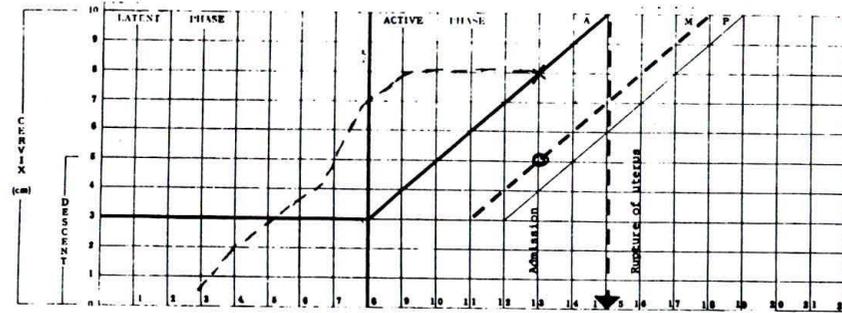


Figure 22.4
Secondary arrest in a multipara who had been in labour at home.
Rupture of the uterus three hours after admission!

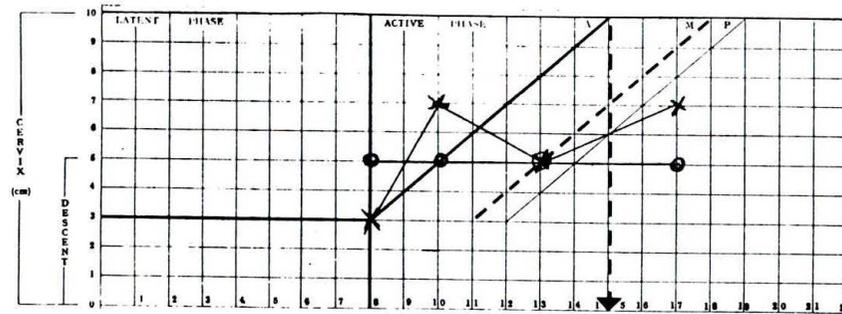


Figure 22.5
Secondary arrest in a multipara. "Bouncing" cervicograph. The dilatation of the poorly applied cervix is assessed differently by three different midwives.

THE OEDEMATOUS CERVIX

DIAGNOSIS

The cervix is 6 cm or more dilated but instead of being thin feels thick and swollen.

CAUSES

- secondary arrest
- obstructed labour
- pushing before the cervix was fully dilated

MANAGEMENT

- ask the patient to push during a few contractions
- if the head comes down, massage the cervix, try to push it gently over the head and deliver the baby
- if this is not possible, do an immediate caesarean section
- do not waste hours in the hope that the oedema will go away again: it will not!

THE PROLONGED SECOND STAGE (VERTEX PRESENTATIONS)

DEFINITIONS

The second stage begins when the cervix is fully dilated and the membranes have ruptured; it ends with the delivery of the baby.

The second stage is *prolonged*:

- in a nullipara after thirty minutes
- in a multipara after twenty minutes

CAUSES

- Unfavourable relation between head and pelvis
 - cephalopelvic disproportion
 - occipitoposterior position
- Soft tissue obstruction
 - tight perineum
 - vaginal septum or stricture
- Poor uterine contractions
- Poor maternal effort
- Combinations of the above factors

RISKS

- Fetal distress
- Progression to obstructed labour

ASSESSMENT

Before you do anything, quickly assess the situation.

HISTORY

- What is the parity?
- Were there any problems with previous deliveries?
- How was the progress during the first stage of labour?
- How long has she now been in the second stage?

EXAMINATION

General condition

- Vital signs
- Dehydration?
- Mental state: can she co-operate?

Abdominal examination

- Contractions
- Size of the fetus
- Presentation
- Descent
- Overlap
- Bladder
- Fetal heart

Vaginal examination

- Dilatation and state of the remaining rim of the cervix, (oedema, tightness?)
- Membranes
- Position of sutures and fontanelles
- Moulding and caput
- Descent by bimanual palpation:
 - between the contractions
 - during a contraction together with maximal maternal effort
- Pelvic assessment

During your examination make sure you rule out silly mistakes:

- cervix not dilated
- membranes still intact

Do not miss signs of obstructed labour [see Chapter 32]. If these are present be prepared for a difficult operative delivery.

MANAGEMENT

Prompt delivery is necessary to prevent fetal distress or obstructed labour.

DO NOT WAIT

The following outline is meant to help you make a decision about the method of delivery. This decision is easy if the head is very high or very low but between these extremes decisions can be difficult. Within this grey zone practical experience is a great help.

VACUUM EXTRACTION

1. **Routine** (by midwife in the labour ward)
 - head 0/5 above the brim with or without moulding
 - head 1/5 above the brim without moulding or with only slight moulding or caput
2. **Trial of vacuum extraction** (by clinical officer or doctor, preferably in theatre)

2. Normal size baby (2500 – 3500 gm)

- Caesarean section for:
 - a previous caesarean section
 - a pelvis which is borderline or worse
 - a footling breech
 - delay in the first or second stage of labour
- Vaginal delivery
 - only if everything is normal

3. Small baby (less than 1500 gm)

Unless your nursery facilities are excellent, the chances of survival for the baby are poor regardless of which route it is delivered

- Caesarean section
 - only for a previous caesarean section (to prevent scar rupture)
- Vaginal delivery
 - in all other cases

N.B. BE CAREFUL NOT TO MISTAKE TWO LITTLE TWINS FOR ONE LARGE BREECH.

NOTE:

A slightly different way of approaching this problem is the Andros score.

	Points		
	0	1	2
Parity	Primigravida	Multipara	-
Gestational age	39 weeks or more	38 weeks	≤ 37 weeks
Estimated fetal weight	over 3600 gm	3200-3590 gm	< 3200 gm
Previous delivery of a breech weighing more than 2500gm	none	one	two or more

A total score of less than 3 indicates that delivery should be by caesarean section

FACE PRESENTATION

VARIETIES

- Mento-anterior
- Mento-transverse
- Mento-posterior

DIAGNOSIS

Face presentation is usually first diagnosed on vaginal examination during labour.

You will feel:

- eyes
- mouth with gums
- nose
- chin

RISKS

- Obstructed labour
- Neonatal breathing problems due to the caput succedaneum on the face
- Fetal distress

MANAGEMENT

During the first stage of labour

- Rule out anencephaly
- Assess the pelvis and the size of the baby
- Assess progress with the labourgraph
- Only allow vaginal delivery if this will be easy:
 - unremarkable obstetric history
 - normal progress during the active phase (graph of cervical dilatation on or on the left of the alert line)
 - small or normal size baby
 - normal pelvis
 - mento-anterior or transverse position
- Do caesarean section for:
 - history of previous caesarean section
 - delay in the active phase of labour as soon as this is noted (there is not a place for acceleration of labour)
 - big baby
 - borderline or worse pelvis
 - mento-posterior position

During the second state of labour

- Observe carefully : progress should be fast
- Make a generous episiotomy
- If not delivered within about 15 minutes, do caesarean section

BROW PRESENTATION

DIAGNOSIS

Brow presentation is diagnosed on vaginal examination during labour.

You will feel:

- the anterior fontanel
- the supra-orbital ridges
- the base of the nose

RISK

- Obstructed labour. Vaginal delivery of a normal size baby is impossible.

MANAGEMENT

Caesarean section as soon as the diagnosis has been made unless the baby is very small

COMPOUND PRESENTATION

DEFINITION

The head presents together with one or more limbs

VARIETIES

- Head + hand (elbow cannot be felt)
- Head + arm (elbow can be felt)
- Head + foot
- Head + more than one limb

DIAGNOSIS

By vaginal examination during labour

MANAGEMENT

Head + hand

- Await spontaneous vaginal delivery. (The presence of a hand only beside the head does not affect the outcome of labour)

Head + arm

- Try to push the arm behind the head. This should be easy. Difficult or prolonged manipulation can cause cord prolapse
- If the arm cannot be pushed back, do caesarean section unless the baby is very small.

Head + foot

- Try to push the foot behind the head
- If this is not easy, do caesarean section unless the baby is very small

Head + more than one limb

- Caesarean section is usually best

SHOULDER PRESENTATION

DIAGNOSIS

On abdominal palpation:

- the "transverse" shape of the uterus
- the head not above the brim but in the iliac fossa or in the flank.

A shoulder presentation is often missed on abdominal palpation during labour.

On vaginal examination:

The diagnosis is obvious if the arm has prolapsed. It is difficult when:

- the shoulder only presents.
This is recognised by identifying the ribs, axilla and clavicle.
- the elbow presents.
This is recognised by identifying the hand.

RISKS

- Obstructed labour
- Cord prolapse

MANAGEMENT

Spontaneous vaginal delivery

- Only if the baby is very small and not viable (less than 30 weeks)

Caesarean section

- If the baby is alive and more than 30 weeks size
- If the baby is dead and spontaneous vaginal delivery or a destructive operation is impossible. [For the technique of caesarean section for shoulder presentation (transverse lie) see Chapter 44]

Destructive operation

- This can be done if:
 - the baby is dead and not too big and
 - the cervix is 7 cm or more dilated and
 - the neck and trunk can be reached easily

[For the technique of destructive operations see Chapter 48]

IMPORTANT DON'T

Do not do internal version. This is only permitted for a second twin with intact membranes.

TWIN DELIVERY

RISKS

- Labour before term
- Premature rupture of membranes
- Poor uterine activity resulting in:
 - prolonged first stage
 - prolonged second stage
 - postpartum haemorrhage
- Malpresentation usually of the second twin

MANAGEMENT

During the first stage of labour and the delivery of the first twin:

- as with singleton pregnancy.

DELIVERY OF THE SECOND TWIN

Two aims: - to deliver the second twin within 30 minutes of the first
- to recognise and deal with malpresentation promptly

In practice

- Check the lie of the second twin by abdominal palpation soon after delivery of the first baby
- If it is transverse or oblique, turn it to a longitudinal lie (breech is perfectly acceptable)
- Do a vaginal examination:
 - identify the presenting part before the membranes rupture
 - if this is difficult because the presenting part is high, put on a clean glove and feel with four fingers or even the whole hand

Further management depends on your findings:

1. **Cephalic or breech presentation**
 - Rupture the membranes [for the necessary precautions see Chapter 39]
 - Await spontaneous delivery
 - Stimulate the contractions with pitocin if necessary
2. **Shoulder presentation or arm prolapse**
 - Keep the membranes intact

- Prepare for operative delivery in theatre under general anaesthesia
- Do internal podalic version and breech extraction (this is the only situation in which this operation is done)
- If you are not familiar with the technique of the internal version, do caesarean section
- If the membranes rupture before you can do internal version, do caesarean section

3. Cord or compound presentation

- If the baby is small, rupture the membranes and hope for a quick vaginal delivery
- If the baby is a good size, do either internal podalic version and breech extraction or caesarean section

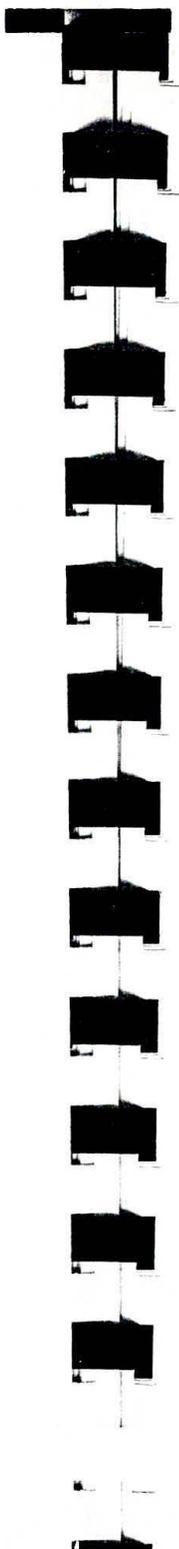
THIRD STAGE OF LABOUR

- Be prepared for postpartum haemorrhage
- Give ergometrine 0.5 mg i.v. after delivery of the second twin
- Deliver the placenta by controlled cord traction.

IMPORTANT DON'TS

- If on vaginal examination you are unable to feel the presenting part, do not wait for it to come down: if the membranes rupture spontaneously and the shoulder presents or the arm prolapses, you are in serious trouble.
- If you feel a large rim of cervix after the delivery of the first twin, do not wait for the cervix to become fully dilated again. Continue with the delivery of the second twin: the cervix will move out of the way as soon as the presenting part comes down.

Beware, however, of a constriction ring: this is a narrowing in the cervix or lower segment due to spasm. It feels very different from the loose rim of cervix due to a high presenting part. A constriction ring may disappear under *deep* anaesthesia but often caesarean section is necessary.



CORD PRESENTATION AND PROLAPSE

DEFINITION AND DIAGNOSIS

The umbilical cord is felt on vaginal examination.

Cord presentation: the membranes are still intact

Cord prolapse : the membranes have ruptured

CAUSES

- Prematurity
- Malpresentation:
 - flexed breech
 - footling breech
 - shoulder presentation
- Cephalopelvic disproportion
- Low implantation of the placenta
- Very long umbilical cord
- Polyhydramnios

MANAGEMENT

CORD PRESENTATION

Immediate caesarean section unless the baby is dead or too small to survive¹.

CORD PROLAPSE

Live baby

- Caesarean section for most patients
- Spontaneous vaginal delivery only if the baby is too small to survive¹
- Vaginal delivery assisted by vacuum extraction only if:
 - patient is a multipara
 - the cervix is fully dilated
 - the vertex presents
 - the baby is normal or small size
 - the pelvis is normal

¹The baby's chances of survival depend very largely on your nursery facilities: without very excellent facilities the chances are close to zero below 30 weeks, doubtful between 30 and 34 weeks and reasonable thereafter.

If immediate delivery is not possible, try to prevent compression and drying of the cord:

- place the patient in the knee-chest position or in the semiprone position with pillows under the hip
- push the head up with two fingers in the vagina*
- if the cord is outside the vagina, wrap it in a warm, saline soaked gauze swab

These manoeuvres are not terribly effective and should never be allowed to interfere with the preparations for a speedy operative delivery!

Dead baby

Await spontaneous vaginal delivery unless this is impossible for other reasons (gross cephalopelvic disproportion etc.).

*An alternative method of preventing cord compression is to fill the bladder with 500 – 1000 ml of saline through a Foley catheter.



THE CONDUCT OF A TRIAL OF SCAR*

This is the responsibility of a clinical officer or doctor!

THE FIRST STAGE OF LABOUR

Reassess fetal size, presentation and pelvis and evaluate the progress of labour carefully with the labourgraph.

Caesarean section during the first stage of labour is indicated with:

- malpresentation (breech, face, brow, cord) or suspected cephalopelvic disproportion on first examination
- a curve of cervical dilatation running on the right of the alert line
- fetal distress
- signs of (impending) rupture of the uterus (vaginal bleeding, tender scar between contractions, hypertonic uterus, shock)
- ruptured membranes for 24 or more hours without contractions after 36 weeks gestation.

N.B. NO PITOCIN IN PATIENTS WITH PREVIOUS CAESAREAN SECTION SCARS.

THE SECOND STAGE OF LABOUR

This should not last more than 20 minutes.

- When the vertex is 2/5 or below, do a vacuum extraction
- If the vertex is 3/5 or above after 30 minutes do a caesarean section.

THIRD AND FOURTH STAGES OF LABOUR

- Delivery of the placenta in the usual manner
- Explore the lower segment with the finger after delivery of the placenta
- Observe for at least two hours in the labour ward for signs of bleeding and shock (vital signs).

*For the indications of a trial of scar see Chapter 5.

OBSTRUCTED LABOUR*

BACKGROUND

In order to understand the condition called "obstructed labour" one must know what happens when a patient labours with a mechanical barrier in the birth canal.

The first stage of labour is often prolonged but can be normal or even short. The membranes rupture and the liquor gradually drains away. Sooner or later, but often *before the cervix has become fully dilated*, the uterine contractions begin to force the fetus from the corpus into the lower segment from where there is no escape because of the obstruction. The lower segment becomes over-stretched and the uterus moulds tightly round the fetus. Because of the excessive pressure on the placenta and umbilical cord the fetus becomes distressed and eventually dies.

In the nullipara a stalemate develops which persists for hours or even days. Cervix, vagina, bladder and rectum trapped between the fetal head and the pelvic bones become necrotic and later slough. After a few days the fetus, softened by maceration and decay, is delivered. If the mother does not die of infection or bleeding, she will be left with a bladder fistula as well as extensive scarring in the vagina.

In the multipara the uterine contractions do not give up but continue their battle until the uterus ruptures.

It is debatable at which point along the course of events one begins to call labour "obstructed". However, a diagnosis of obstructed labour must be made if:

- the overstretched lower segment can be recognised clinically.
- there is damage to the lower genital tract as a result of pressure.

Rupture of the uterus, although the ultimate outcome of obstructed labour in the multipara, is usually discussed as a separate condition.

CAUSES

Common causes of obstruction are:

- cephalopelvic disproportion
- brow presentation
- shoulder presentation or arm prolapse

*An excellent description of the clinical picture of obstructed labour is to be found in Lawson and Stewart's "Obstetrics and Gynaecology in the Tropics", Chapter 11. Highly recommended reading.

Less common causes of obstruction are:

- other malpresentations
- after coming head in breech presentation
- hydrocephalus
- other fetal abnormalities
- locked twins
- pelvic tumour
- stenosis of cervix or vagina
- tight perineum

CLINICAL PICTURE

HISTORY

Patients managed with the labourgraph

There are three possibilities:

- the active phase was protracted
- the onset of the active phase was normal but secondary arrest developed later
- progress was fast through the active phase, but labour becomes acutely obstructed in the second stage

Of course in the patient with an active phase or secondary phase arrest, action should have been taken long before labour became obstructed. Common problems are, however:

- lack of transport to move a patient from a clinic to a larger hospital
- shortage of staff resulting in inadequate supervision during labour or delay in treatment once the problem developed
- failure of staff to appreciate the danger of secondary arrest

Patients admitted late in labour from home

Most of these laboured at home for a very long time and tried all kinds of home remedies. Sometimes, as with the patients in hospital, labour was short and became suddenly obstructed.

EXAMINATION

General condition

Physical and mental exhaustion are nearly always present

Other features are often:

- dehydration due to prolonged labour without drinking, in hot weather
- fever due to intrauterine infection
- (pre)eclampsia as a result of excessive pain and stress

Shock usually indicates rupture of the uterus but can be due to sepsis

Abdominal examination

- Frequent and too strong uterine contractions which drive the patient into a state of panic
- or
- a uterus which has gone into tetanic contraction and sits tightly moulded round the fetus
- Bandl's ring. This is the narrowing between the half empty uterine corpus and the overstretched lower segment. The shape of the uterus resembles that of a peanut shell. In extreme cases the corpus is completely empty, having delivered the fetus and placenta into the lower segment
- a bladder distended by urine and oedema
- bowels distended with gas

Vaginal examination

You will often find:

- oedema of the vulva and cervix
- stinking meconium
- the cause of obstruction:
 - a severely moulded head stuck in the pelvis
 - a prolapsed arm or shoulder presentation

On catheterisation

- concentrated urine
- urine mixed with blood or even stinking meconium

DIAGNOSIS

The diagnosis is **certain**:

- if Bandl's ring is present
- if gross bladder injury (fistula or necrosis) is present

The diagnosis should be **suspected**, when during a protracted active phase, secondary arrest or a prolonged second stage:

- fetal distress develops
- the cervix does not dilate in spite of good contractions
- moulding and caput increase without descent
- the mother becomes restless and anxious

DIFFERENTIAL DIAGNOSIS

1. Rupture of the uterus

Rupture of the uterus is common in the multipara, rare in the nullipara.

The diagnosis is obvious if the fetus is outside the uterus

The diagnosis should be suspected if:

- pallor and shock are present
- the urine is grossly bloodstained
- there is gross bleeding from the vagina

A rupture is impossible to diagnose before delivery if the fetus is still in the uterus and tamponades the bleeding

2. The prolonged latent phase

If the patient and her supporters firmly believe that she is in strong labour, severe maternal distress with dehydration may develop during the latent phase. If she was made to push as well, the vulva and cervix can be oedematous.

In this condition, the cervix is not or only slightly dilated, the membranes are intact and Bandl's ring is absent.

An explanation of the state of affairs, fluids and pain relief are all that is needed.

MANAGEMENT

1. Resuscitation

- Put up an i.v. drip with a large (No. 18) needle or cannula
- If she is mainly dehydrated and exhausted give dextrose 5% one or two litres in about six hours
- If she is shocked, run in saline or sodium lactate as fast as possible

2. Antibiotics

Most patients will need antibiotics. For example:

- x-penicillin 5 mega i.v. stat., continue 2 mega i.v. six hourly plus
- streptomycin 1 gm i.m. stat., continue 1 gm i.m. daily
- or
- chloramphenicol 1 mg i.v. stat., followed by 0.5 gm i.v. six hourly

3. Delivery

If *rupture of the uterus* is certain or seems likely, do a laparotomy.

If the *uterus seems intact* but the *baby is dead*:

Cephalic presentation:

- cervix 7 cm or more dilated + descent 2/5 or below: craniotomy
- all other situations: caesarean section

Transverse lie

- cervix 7 cm or more dilated + neck or trunk easy to reach:
destructive operation
- all other situations: caesarean section

If the *uterus seems intact* and the *baby is alive*

Vertex presentation

- cervix fully dilated + descent 0/5 : vacuum extraction
- + descent 1/5-2/5 : symphysiotomy
- + 3/5 or above : caesarean section
- cervix not fully dilated : caesarean section

Other cephalic presentations : caesarean section

Transverse lie : caesarean section

For the details of operations for obstructed labour refer to Part III of the Manual.

For the complications which can follow obstructed labour during the puerperium see Chapter 55

For the repair of the ruptured uterus see Chapter 45

FETAL DISTRESS DURING LABOUR

DEFINITION

In fetal distress the oxygen supply to the baby in the uterus is poor and as a result the baby is born with an Apgar score [Chapter 57] after one minute of 7 or less.

CAUSES

Poor oxygen or blood supply to the uterus

- in: - the supine hypotensive syndrome
- gross anaemia
- heart or lung disease of the mother

Poor quality placenta

- in: - hypertension
- (pre)eclampsia
- other conditions

Early separation of the placenta

- in: - placenta praevia
- abruptio placentae

Labour-related problems

- in: - obstructed labour
- delay in the active phase or second stage
regardless of the cause
- overstimulation with pitocin
- cord prolapse
- other cord problems: true knots etc

Sick baby, who cannot stand the stress of normal labour

- because of: - congenital abnormality
- intrauterine infection (e.g. syphilis)
- growth retardation
- other conditions

Sometimes no reason for fetal distress is found.

SIGNS

Abnormal fetal heart rate

Fetal distress should be suspected, *if between the contractions*, the fetal heart rate is less than 120/minute or more than 160/minute.

Unfortunately an abnormal fetal heart rate is also often found when there is no fetal distress. For example:

- the fetal heart may be slow at the end of the active phase or during the normal second stage due to compression of the head
- the fetal heart can be faster than 160/minute if the mother has fever.

Sometimes the fetal heart rate is abnormal without an obvious reason.

Meconium in the liquor

Meconium in the liquor can be a sign of fetal distress. Unfortunately it is also often seen where no fetal distress exists. Thick, pea-soup-like meconium is probably more significant than light meconium staining.

ASSESSMENT

The signs of fetal distress may present:

- **in patients with a known obstetric problem** (e.g. obstructed labour, eclampsia or abruptio placentae). In these patients the fetal distress must be assessed together with their other problem
- **unexpectedly** in what seemed to be normal labour. In that case:
 - **if the fetal heart rate is suddenly found to be abnormal**
 - consider the possibility of:
 - cord prolapse
 - onset of the second stage
 - supine hypotensive syndrome
 - other causes
 - do a vaginal examination immediately. If you find:
 - cord prolapse, manage the patient as such [see Chapter 30]
 - full dilatation, deliver the patient
 - **in other patients:**
 - rupture the membranes in order to examine the liquor
 - ask the patient to lie on her side
 - reduce or stop pitocin if this is being given
 - recheck the fetal heart with the patient on her side after five minutes
 - stop suspecting fetal distress if:
 - the fetal heart is now normal and
 - the liquor is clear

- continue to suspect fetal distress if:
 - the fetal heart rate stays abnormal or
 - the liquor contains meconium.
- **if when the membranes rupture, the liquor is found to contain meconium**
 - check the fetal heart rate
 - do a vaginal examination to check for cord prolapse
 - continue to suspect fetal distress even if the fetal heart rate is normal

MANAGEMENT

The treatment of fetal distress is delivery of the baby as soon as possible, if necessary by caesarean section. However, caesarean section carries risks for the mother and these should be considered, particularly as the diagnosis of fetal distress is often merely suspected, not certain.

Caesarean section is indicated if:

1. there is also a maternal indication, for example, obstructed labour.
2. the baby is near term and the mother is a "poor obstetric risk", for example, in the case of:
 - a primigravida of 30 years or older
 - a bad obstetric history
 - hypertension or diabetes in this pregnancy
3. the baby is near term, the signs of fetal distress are severe and delivery cannot be expected soon.

Vaginal delivery is indicated if:

1. the baby is unlikely to survive the neonatal period, for example due to:
 - severe immaturity (gestation less than 30 - 32 weeks)
 - a major congenital abnormality
2. the baby is near term but the signs of fetal distress are mild and labour is progressing quickly. In this case:
 - supervise labour carefully
 - encourage the mother to lie on her side
 - shorten the second stage by a vacuum extraction

There are patients who do not fit these guidelines. Do not hesitate to get the opinion of the most experienced person available.

IMPORTANT DON'T

The following forms of "treatment" for fetal distress are no longer regarded as effective:

- intravenous injection of dextrose 50%
- the use of a fast running dextrose 5% drip
- the administration of oxygen through a nasal catheter.*

*In the past maternal acidosis was considered to be an important cause of fetal distress. A moderate degree of maternal acidosis is now regarded as normal during labour. An intravenous injection of 50% dextrose can be followed by hyperinsulinism and hypoglycaemia in the baby. A fast dextrose 5% drip caused hyponatraemia in mother and baby which can be harmful to both.

Very little of the oxygen administered through a nasal catheter reaches the ternal blood stream and virtually none gets to the baby. Oxygen given through anaesthetic mask is effective and should be given before the induction of anaesthesia.

PRIMARY POSTPARTUM HAEMORRHAGE

DEFINITION

Primary postpartum haemorrhage is bleeding from the genital tract which exceeds 300 ml and which occurs within 24 hours after delivery.

CAUSES

THE PLACENTAL BED

This is the most common site of bleeding. The bleeding does not stop because the uterus does not contract well. Frequent causes of a poorly contracted uterus are:

- fiddling with the uterus during the third stage
- a retained or incompletely delivered placenta
- high parity
- prolonged labour
- twin delivery
- polyhydramnios
- anaesthesia
- full bladder

LACERATIONS

Common causes of bleeding are:

- vulval tears (near urethra and clitoris)
- vaginal tears
- perineal tears

Less common causes of bleeding are:

- cervical tears
- rupture of the uterus
- inversion of the uterus (very rare!)

CLOTTING DEFECTS

These make bleeding from any site worse. They are rare after normal delivery but are seen more often after:

- abruptio placentae
- infected labour

MANAGEMENT

FOR EVERYBODY

SHOUT FOR HELP

- You need to be at least two to deal with any postpartum haemorrhage.

If the blood is clotting

- examine in theatre under anaesthesia [see Chapter 49]

If the blood is not clotting

- arrange for two pints of fresh blood
- continue pitocin in the i.v. drip
- catheterise the bladder
- keep a very careful intake/output chart
- examine under anaesthesia only when a cervical or uterine tear is suspected

RESUSCITATE THE PATIENT IF SHE IS IN SHOCK

- organise a good i.v. drip with a large needle or cannula
- DON'T LOSE TIME*: do a cutdown if necessary
- Start by running in saline or sodium lactate solution very fast. [Further, refer to Chapter 35]

UNUSUAL BUT DESPERATE SITUATIONS

1. Continued bleeding from an empty uterus

If the uterus does not contract after large doses of ergometrine and pitocin, hysterectomy becomes necessary. While the preparations for this are being made, the uterus should be compressed between a fist in the vagina and a hand on the abdomen behind the uterus.

If a clotting defect causes the continued bleeding, transfuse fresh blood and hope that the bleeding will stop.

2. Morbidly adherent placenta

If the bleeding is heavy, perform immediate hysterectomy. If the bleeding can be temporarily controlled with pitocin and you are nervous about the hysterectomy, give high doses of antibiotics and refer to a gynaecologist immediately.

3. Injuries to the uterus

These can be: - a rupture, - a perforation, - a cervical tear extending into the lower segment. Do a laparotomy and assess the damage. Repair may be possible, otherwise perform hysterectomy.

ALWAYS INFORM THE MOST SENIOR PERSON AVAILABLE, if:

- the blood loss is more than 1,000 ml
- the patient does not respond to resuscitation
- there is a clotting defect
- the placenta cannot be removed
- laparotomy or hysterectomy is required

IMPORTANT DON'TS

- never treat postpartum haemorrhage by telephone
- do not postpone manual removal of the placenta or an examination under anaesthesia
- do not pack the vagina.

RESUSCITATION OF PATIENTS WITH SEVERE BLOODLOSS

INTRODUCTION

THE RESPONSE OF THE BODY TO BLOODLOSS

The immediate reaction of the heart and bloodvessels

In order to maintain the blood pressure during severe bloodloss, the heart beats faster and the bloodvessels contract.

After a moderate loss the blood pressure stays stable but after 1,000 – 1,500 ml has been lost it drops suddenly to a systolic pressure of around 50 mm Hg. This level is the body's "last ditch stand". If bleeding continues and no intravenous fluids are given, there will be a second sudden drop of the blood pressure to zero and the patient dies [see Figure 35.1].

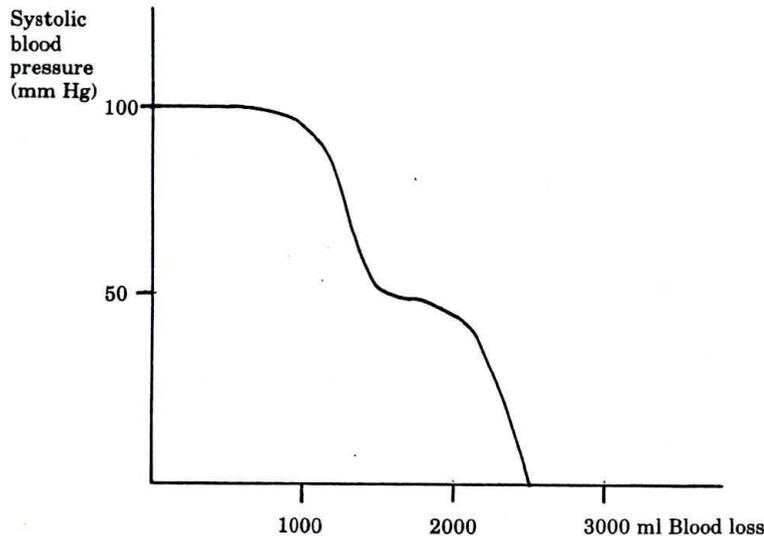


Figure: 35.1 The response of the blood pressure to blood loss without resuscitation.

The renewal of blood

The bloodvolume. After a large bloodloss, the following factors help the return of blood volume to normal:

- fluids (water and salts) move from the tissues into the bloodstream

- the kidneys conserve water and salt and secrete very concentrated urine only
- the patient feels thirsty and drinks more than usual

The haemoglobin. Immediately after a large bloodloss the haemoglobin concentration of the patient's blood is still the same as before because red cells and fluid were lost together. In the next few days the fluid, which restores the bloodvolume back to normal, dilutes the blood and the haemoglobin concentration falls: the patient becomes anaemic. The bone marrow will replace the lost red cells but does so only slowly. Thus it takes a few weeks for the haemoglobin concentration to return to normal.

PATIENTS WHO TOLERATE BLOOD LOSS POORLY

Without resuscitation an acute blood loss of about 2.5 litres will kill most patients. However, many patients die after a much smaller loss. Examples of those who tolerate blood loss poorly are:

- **small women** : they start off with a small blood volume
- **eclamptics** : their blood volume is small in spite of fluid retention and oedema
- **anaemic patients** : the heart is doing extra work already and they have fewer red cells to lose
- **patients with heart disease** : the heart cannot do the necessary extra work

MANAGEMENT

PRINCIPLES

The principles of treatment are simple:

- stop the bleeding
- replace the blood lost by fluids

Restoring the blood volume to normal is more important than the replacement of red cells: here quantity comes before quality! The reason is that an adequate blood volume is necessary to maintain the blood pressure.

Without blood pressure there is no circulation to take the few remaining red cells round to do their work.

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WHAT TO GIVE

1. Donor blood

This resembles more than anything else the blood that was lost. It is often life-saving but does have the following problems:

- it is never available immediately and may not be available at all
- it can cause fatal transfusion reactions
- it can transmit serious infections: syphilis, hepatitis B, malaria, others
- it can cause serious septicaemia if it has not been stored properly

2. Intravenous fluids

a) Normal saline or sodium lactate solution

These are effective in maintaining the blood volume, blood pressure and circulation. They are easy to run in fast, are cheap and are generally available. The main problem is that they do not stay in the blood vessels but tend to "escape" into the tissues. Therefore a much greater volume of these fluids must be given than the volume of blood lost but as a first aid they are fine.

b) Dextran solution (haemacel, etc.)

The advantage of dextran solution over saline and sodium lactate is that it stays in the blood vessels and even attracts fluid from the tissues. There are, however, the following problems:

- it is sticky, like syrup and therefore not easy to run in fast
- it interferes with blood clotting and should not be used in patients with a clotting defect
- it upsets the grouping and x-matching tests in the laboratory
- it is expensive and therefore not always available

c) Dextrose 5% in water

This has the problem that it is lost from the blood vessels even faster than saline or sodium lactate. It should only be used if nothing better is available.

IN PRACTICE

- Put up a reliable drip with a large (No. 18) needle or cannula. If you do not succeed within 10 to 15 minutes, find somebody

more experienced (for example, an anaesthetist) or do a cut down

- Stabilize the drip in an arm with a good splint.

DO NOT LOSE TIME

- Take blood samples for grouping and x-matching
- Run in one litre of normal saline (or sodium lactate) in about 15 minutes
- Judge the effect:
 - if the blood pressure is now about 100mm Hg systolic, run in a second liter more slowly
 - if the blood pressure is still low, run in a second litre of saline fast and start a blood transfusion as soon as possible

- If blood is not available for transfusion, continue to run in saline: three, four or as many litres as are needed
- If available, give a unit (500 ml) of dextran solution after the second litre of saline; a second unit can be given after the third litre of saline; try not to give more than two units of dextran solution.

Never start the resuscitation with dextran, give saline first!

- Monitor frequently:
 - the blood loss (it is usually more than you think)
 - pulse and blood pressure
 - the urine output
 - the fluids which are being given
- Supervise extra carefully patients with a systolic blood pressure of ± 50 mm Hg. They may look quite well but sometimes quite a small extra loss is enough to kill them [see Introduction, this chapter]
- Aim for:
 - systolic blood pressure of 100 mm Hg
 - a pulse rate below 100 beats per minute
 - a urine output of at least 100 ml per four hours

IMPORTANT DON'T

- Do not postpone the operation which is necessary to stop the bleeding until the general condition has improved. Resuscitate the patient and stop the bleeding at the same time. If you raise the blood pressure without stopping the bleeding, the patient loses her last red cells.

Chapter 36

**RETAINED PLACENTA
WITHOUT POSTPARTUM HAEMORRHAGE**

DEFINITION

The placenta is retained within the uterine cavity for more than one hour after delivery. There is no significant bleeding.

CAUSES

- A placenta which is abnormally adherent to the uterine wall over a large area.
- A placenta which has separated but has become trapped in the lower segment due to a spasm of the cervix. The usual cause of such a spasm is either ergometrine or pitocin. The uterine body is well contracted and sits on top of the lower segment.
- The placenta does not separate for an unknown reason.

RISK

Partial separation of the placenta with heavy bleeding at a later stage.

MANAGEMENT

- Stop trying to deliver the placenta by controlled cord traction etc.
- Do *not* give pitocin as long as there is no bleeding (danger : partial separation of the placenta)
- Arrange for an immediate manual removal of the placenta in theatre
- x-match a pint of blood
- Be prepared for a difficult manual removal.

Part III

**Obstetric Procedures
and Operations**

EXTERNAL CEPHALIC VERSION

INDICATIONS

Breech presentation or transverse lie after 32 weeks

CONTRAINDICATIONS

- Uterine scar (caesarean section or myomectomy)
- Antepartum haemorrhage
- Twins
- Hypertension
- Premature rupture of membranes

DANGERS

- Placental separation
- Premature rupture of membranes
- Onset of premature labour
- Knots in the cord

PRECAUTIONS

- Only do easy versions
- Accept failure easily
- Do not use so much force that it hurts the patient
- Do not use anaesthesia

TECHNIQUE

- Explain to the patient what you are going to do
- Check that the bladder is empty
- Listen to the fetal heart
- Ask the patient to bend her knees a little
- Stand on the side of the patient where the baby's back is
- With two hands lift the breech from the pelvis and stabilise it, with one hand in the iliac fossa on your side
- Try, with the other hand, to push the head of the baby into the direction of the pelvis. If the uterus contracts, wait until the contraction is over



- After the version check the fetal heart. This is often slow or irregular but should recover within 5 – 10 minutes with the patient lying on her side. In the rare event that it does not recover, turn the baby back to its original position or consider a caesarean section

CAUSES OF FAILED VERSION

- Tight abdominal wall
- Frank breech
- Breech deep in the pelvis
- Oligohydramnios
- Multiple pregnancy
- Congenital abnormality of the uterus
- Congenital abnormality of the fetus
- Short cord

CATHETERISATION

Before you operate on a patient with obstructed labour you should empty her bladder by putting in a catheter. This can be difficult but with the following method you will nearly always succeed.

- use a medium size (FG 16 or 18) plain catheter, preferably a new one

Never use a metal catheter

- put the catheter into the urethra until it will go no further
- now put two fingers in the vagina between the head and the symphysis, one finger on either side of the urethra
- with your other hand push the catheter in further and guide it into the bladder with the two fingers in the vagina. Sometimes you will have to push the head up a bit.
- when the urine is draining, gently put your hand flat on the abdomen and squeeze the urine out of the bladder.

Do not be surprised if some bladder remains. The bladder wall is often very swollen and oedematous and remains palpable after all urine has been drained.

If catheterisation of the bladder by this method fails (which should be rare), empty the bladder by suprapubic aspiration

- use a large needle and a 20 or 50 ml syringe.
- clean the abdominal skin.
- put the needle in at a point where you feel the bladder swelling best. This is often fairly high (5 or 6 cm) above the symphysis. Make sure, however, not to mistake a ballooned lower segment for the bladder.

ARTIFICIAL RUPTURE OF MEMBRANES WITH A HIGH HEAD

Once the patient is in the active phase of labour it is usually best to rupture the membranes.

When the fetal head is still high, it is tempting to postpone artificial rupture of the membranes in the hope that the head will come down later. This is dangerous because if the membranes rupture spontaneously, cord prolapse may remain unnoticed for some time. *With precautions* immediate artificial rupture of membranes is safer.

With a high head there can be two situations: the head is in contact with the brim or it is not.

THE HEAD IS IN CONTACT WITH THE BRIM

After ruling out possible contraindications, the *midwife* should rupture the membranes.

The contraindications are:

- a head not in contact with the brim
- cord presentation
- severe cephalopelvic disproportion
- malpresentation (breech, face, brow, shoulder)

With a breech or face presentation artificial rupture of membranes is postponed until full dilatation is reached.

For the other contraindications inform the clinical officer or doctor.

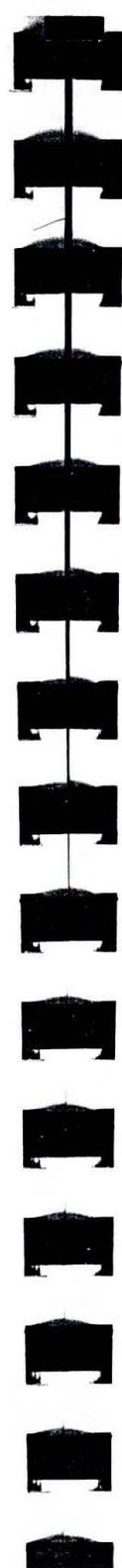
Method of rupturing the membranes

- Make sure the bladder is empty
- Doublecheck for contraindications
- Ask someone else to push the head into the brim by putting a hand either on the fundus or directly onto the head (this is often easier outside a contraction).
- Rupture the membranes with Kocher.
- Keep the fingers in the vagina and let the liquor run out slowly
- Check for cord prolapse
- Check the fetal heart
- If the cord does prolapse, which is rare with the above precautions, put the patient in knee elbow position, inform the clinical officer or doctor and prepare for caesarean section.

THE HEAD IS NOT IN CONTACT WITH THE BRIM

The clinical officer or doctor should see the patient.

- Rule out a full bladder as cause of the high head.
- Check for other possible causes:
 - severe cephalopelvic disproportion
 - constriction ring in the lower segment
 - pelvic tumour
 - low lying placenta which does not reach the internal os
 - polyhydramnios
 - premature baby
 - twins
- For cephalopelvic disproportion or a pelvic tumour, do caesarean section.
- For a constriction ring:
 - rupture the membranes with precautions preferably in theatre and prepared for caesarean section.
 - give pethidine 50 mg i.v. and 50 mg i.m.
 - do caesarean section if head is still high after one to two hours
- For the other situations, rupture the membranes with precautions, preferably in theatre and prepared for caesarean section:
 - if the head comes down, await vaginal delivery
 - if the cord or arm prolapses, do caesarean section.



THE EXAMINATION UNDER ANAESTHESIA FOR ANTEPARTUM HAEMORRHAGE

PREPARATIONS:

- always do this procedure in theatre:
 - i.v. drip with large needle or cannula
 - at least one pint of blood x-matched
 - general anaesthesia and intubation (*not* pethidine and diazepam*)
 - caesarean section trolley ready with sutures etc.
 - nurse scrubbed and gowned and whenever possible also an assistant
 - lithotomy position, vulval toilet, catheterisation.

TECHNIQUE:

- gently insert two Sims's specula; *do not use a bivalve speculum*
- check where the bleeding comes from:
 - a local lesion in the vagina or on the outside of the cervix or
 - inside the uterus
- do a very gentle digital examination and note:
 - the effacement and/or dilatation of the cervix.
 - the presence of clots, placenta or membranes inside the cervical os or inside the lower segment.
 - the presenting part.
 - the presence or absence of the umbilical cord
- assess the pelvis if vaginal delivery is considered
- rupture the membranes if vaginal delivery seems possible. Observe the bleeding : only if this becomes minimal, can the patient be returned to the labour ward for stimulation with pitocin and vaginal delivery.

*NOTE: If general anaesthesia is not available and you are forced to use local infiltration anaesthesia in combination with intravenous diazepam and pethidine, the following policy is probably best:

- Apart from the general anaesthesia make the same preparations as indicated above
- Palpate the abdomen:
 - if you suspect placenta praevia as the cause of bleeding, do a caesarean section straight away without doing a speculum or digital examination first
 - if you do not suspect placenta praevia:
- infiltrate the abdomen wall with local anaesthetic
- gently insert the Sims' specula
- if the bleeding is coming from the uterus and you cannot see the membranes do a caesarean section
- if you do see the membranes, do a gentle examination with the finger and act according to your findings.

VACUUM EXTRACTION

INTRODUCTION

The vacuum extractor is a traction instrument used as an alternative to the obstetric forceps. It adheres to the fetal scalp by suction. The suction cup improves its grip on the scalp by raising an artificial caput: the **chignon**.

The vacuum extractor has the following advantages over obstetric forceps:

- the vacuum cup does not take up room in the often limited space in the birth canal
- the vacuum extractor brings about "autorotation" of the fetal head at the level of the pelvis where this is best, rather than where the person using forceps chooses to rotate the fetal head
- when applied over the posterior fontanel it helps to flex the head and makes the rotation easier
- general anaesthesia is not required and the mother shares in the delivery and helps to push
- episiotomy is not always necessary.

INDICATIONS

- delay in the second stage
- fetal distress
- some cases of cord prolapse
- elective, to avoid maternal effort because of:
 - previous caesarean section scar
 - a prolonged first stage
 - any degree of preeclampsia or hypertension
 - severe anaemia
 - heart disease
 - respiratory problems (asthma, pneumonia etc.)

CONTRAINDICATIONS

- severe cephalopelvic disproportion
- malpresentation : breech, brow, face
- prematurity
- macerated stillbirth

CRITERIA FOR USE OF THE VACUUM EXTRACTOR

- the vertex must be presenting
 - the descent of the head must be exactly known



- the position of the occiput must be exactly known
- the cervix must be more than 8 cm dilated
- contractions must be present
- the bladder must be empty.

ROUTINE VACUUM EXTRACTION

This is done by the midwife in the labour ward:

- the head is 0/5 above the brim with or without moulding
- the head is 1/5 above the brim with only slight caput or moulding

TRIAL OF VACUUM EXTRACTION

This is done by the clinical officer, doctor or specialist preferably in theatre:

- the head is 1/5 above the brim but with severe moulding and caput
- the head is 2/5 or more above the brim.

If the vacuum extraction fails, symphysiotomy or caesarean section must be possible at short notice.

PREPARATION

- explain the procedure to the patient
- make sure the instrument is in working order
- trolley for delivery and suturing ready
- check the resuscitaire for the baby, mucus extractor on the delivery trolley
- put the patient in lithotomy position
- catheterise the bladder if necessary
- clean the vulva and perineum
- repeat the vaginal examination : dilatation, position of the occiput, descent (bimanual palpation!)
- infiltrate the perineum with local anaesthetic in case episiotomy is required
- with a nullipara, if the contractions are weak, put up a pitocin drip

ACTUAL PROCEDURE

Application of the cup

- note the time of application of the vacuum cup
- use the No. 5 medium size cup for most cases
- insert the cup sideways and place the cup over the posterior fontanel as much as possible
- check that there is no tissue between the cup and the head

- ask an assistant to create vacuum with the pump
- check again that no maternal tissue is caught between the head and cup
- increase the negative pressure in steps of 0.2 kg per cm² at a time until a negative pressure of 0.8 kg per cm² is reached. Wait one minute after each increase. The whole procedure should take about five minutes to ensure an adequate chignon.

Traction

- put the thumb of the left hand on the cup and the index finger on the head. In this way you will be able to feel if the head follows the cup
- pull only during the contractions
- make sure you pull at a right angle with the cup and the head. This prevents the cup from slipping off
- observe the rule of three pulls (three contractions really):
 - the first pull should dislodge the head
 - the second brings it down to the perineum
 - the third delivers the head
- make an episiotomy when the head distends the perineum
- *stop if two pulls fail to bring down the head*
- *never pull for more than 20 minutes*

Causes of the cup coming off

- more disproportion than you thought
- instrument leaking (check)
- traction in the wrong direction
- poorly formed chignon because there was already a caput or because the baby is dead
- *stop when the cup has come off twice*

Notes

- record:
 - findings on abdominal and vaginal examination
 - indication for the procedure
 - time of application, size of cup, number of pulls, episiotomy
 - time of delivery, condition of baby

COMPLICATIONS

There should be none if you stick to the rules.

Possible fetal complications:

- brain damage if the disproportion was severe



- scalp necrosis, caused by the cup coming off or pulling too long
- cephalhaematoma

Maternal complications:

- tears of cervix or vagina if these were caught between cup and head.

SYMPHYSIOTOMY

DEFINITION

Symphysiotomy is the division of the symphysis pubis in order to enlarge the pelvic diameters during delivery.

INDICATIONS

Symphysiotomy is indicated for moderate cephalopelvic disproportion which has resulted in one of the following problems:

1. **OBSTRUCTED LABOUR WITH A LIVE BABY**

If the baby's head is deeply jammed into the pelvis and the caput is visible in the vulva, symphysiotomy is life-saving for the mother and therefore a "must"! The alternative, caesarean section, will be disastrous because of tears in the lower segment, bleeding and sepsis.

2. **FAILED TRIAL OF VACUUM EXTRACTION**

Symphysiotomy can be done when a trial of vacuum extraction has failed by a small margin. It will not work, of course, if the cephalopelvic disproportion is gross and the indication for vacuum extraction was wrong in the first place.

3. **DIFFICULT VACUUM EXTRACTION**

Sometimes vacuum extraction succeeds but only with difficulty after prolonged traction and at the expense of brain damage to the baby. Symphysiotomy will make the delivery much easier and helps to avoid injury to the baby.

4. **PROLONGED SECOND STAGE**

If the criteria for symphysiotomy are met [see below] and vacuum extraction alone is unlikely to succeed, immediate symphysiotomy is better than trying a vacuum extraction first.

CONTRAINDICATIONS

- Severe cephalopelvic disproportion
- Malpresentation: breech, brow, face, transverse lie
- Dead fetus (craniotomy is preferable)



- Previous caesarean section
- Maternal deformity (spine, leg)

CRITERIA

- Live baby
- Cervix 8 cm or more dilated
- No overlap (the head should not bulge above the symphysis)
- The head is not more than 2/5 and not less than 1/5 palpable above the symphysis

If the head is too high, symphysiotomy will fail because of severe disproportion, if it is too low, a simple vacuum extraction will be sufficient.

PREPARATION

Ideally you need three helpers; two to hold the legs and one to keep the i.v. drip going, catch the baby, resuscitate it, etc.

- Explain the procedure to the patient
- Give antibiotics as for caesarean section
- Check that:
 - the vacuum extractor is in working order
 - the delivery trolley is ready
 - the resuscitaire for the baby has been prepared.
- If the contractions are weak and the patient is a nullipara, start a pitocin drip
- Put the patient in lithotomy position. Two helpers, *who do not do anything else*, support the legs; the thighs should be abducted at an angle of 80°. This position should be carefully maintained or the strain on the sacroiliac joints becomes too great; lithotomy poles are unsuitable.
- Disinfect the skin over the lower abdomen, symphysis and vulva; use iodine over the symphysis
- Infiltrate the skin and subcutis over the symphysis and the fibrocartilage with 1 or 2% lignocain; also infiltrate the perineum for the episiotomy
- Insert a plain catheter and leave this in
- Apply the cup of the vacuum extractor in the usual manner
- Pull once gently on the vacuum extractor (sometimes delivery is easier than expected and symphysiotomy is not necessary)

THE ACTUAL PROCEDURE

- Insert *one* finger between the fetal head and the symphysis, this automatically pushes the catheter and urethra out of the midline (if you use two fingers, the catheter will tend to stay in the midline)
- Using a scalpel (ideally with a fixed handle) make a vertical stab incision over the symphysis midway between its upper and lower border
- Keeping exactly to the midline, push the knife through the fibrocartilage [see Figure 42.1] until your finger in the vagina feels its point. If this is difficult, you are not in the midline; retreat and try again
- Guided by the finger in the vagina, the knife cuts the lower half of the fibrocartilage and the fibres of the arcuate ligament; stop there!
- Turn the knife 180° and cut the upper part of the fibrocartilage; the joint should now separate and one finger should fit the gap. If this is not the case, the division is incomplete and you must cut a few more fibres

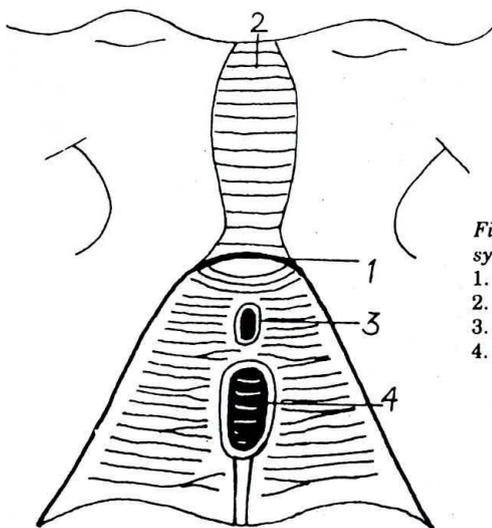


Figure 42.1 The anatomy of the symphysis pubis

1. arcuate ligament
2. fibrocartilage of symphysis pubis
3. urethra
4. vagina

DELIVERY

- Make a large episiotomy
- Pull on the vacuum extractor during a contraction; when the head descends, you will often feel the last fibres of the symphysis snap

- Deliver the head and the rest of the baby "away" from the symphysis to avoid more strain on the urethra
- After delivery of the placenta, check the cervix and vagina for tears
- Repair the skin incision over the symphysis, the episiotomy and whatever tears there are (usually none, fortunately!)
- Replace the plain catheter by a Foley's with an open drainage system
- Put the legs flat

AFTERCARE

- Keep the patient in bed for about three days, there is no need to strap the legs together
- After three days allow the patient to mobilise at the pace she finds comfortable; almost all patients walk well within ten days
- Leave the catheter in:
 - for two or three days if the operation was uncomplicated and the urine is clear
 - for one to three weeks if the urine is blood stained or if pressure necrosis due to obstructed labour is suspected
- Prescribe antibiotics as you would for caesarean section
- Give a simple analgesic like aspirin for a few days

PROBLEMS AND COMPLICATIONS

FAILURE

If you stick strictly to the criteria, failure should be rare. If it happens, caesarean section is the only alternative

BLEEDING

This stops after delivery of the baby. Before delivery it can be controlled by firm pressure

OSTEITIS PUBIS

This infection of the symphysis pubis is serious and may cripple the patient for life. However, it should not occur if reasonable aseptic precautions are taken

INJURY TO BLADDER OR URETHRA

Fistulae can result from faulty technique but are more commonly due to the obstructed labour which necessitated the symphysiotomy in the first place.

Incontinence of urine without a fistula is due to avulsion of the

urethra from the pubic bones. It is rare but serious as it is apparently difficult to treat.

PELVIC INSTABILITY

This is remarkably uncommon. Most patients walk well soon after the operation and have little or no pain. It is, of course, important to avoid too much abduction of the thighs during the procedure. If this does occur, a situation comparable to a fractured pelvis results with extensive soft tissue damage as well. So beware!!

SHOULDER DYSTOCIA

DIAGNOSIS

The head is born but the neck and shoulders fail to appear

CAUSES

Large baby due to:

- diabetes
- postmaturity

RISKS

Maternal:

- lacerations of the vagina
- third degree perineal tear
- rupture of the uterus (as a result of excessive pressure on the abdomen)

Baby:

- asphyxia and death
- damage to the brachial plexus
- fractures of arm, clavicle or neck

MANAGEMENT

The trunk must be delivered within five to seven minutes of the head

- Shout for help
- Put the patient in lithotomy position. This usually has to be improvised:
 - place her with the buttocks on the edge of the bed
 - flex the hips as much as possible and ask her to hold her own legs
- Make a large episiotomy
- Move the head in a downward direction and apply steady traction
- Ask an assistant to apply firm pressure just above the symphysis pubis to push the shoulders into the brim
- If necessary add fundal pressure
- If these manoeuvres fail to deliver the shoulders:
 - Give pethidine 50 mg. i.v.
 - Put a hand behind the head in the vagina and try to rotate the trunk by pushing against the posterior shoulder. Assist this manoeuvre by suprapubic pressure in the opposite direction

- After the shoulders have been rotated into a different position try downward traction and suprapubic pressure again
If this does not work:
- Bring down the posterior arm.
Delivery of the anterior shoulder now is usually easy, but if necessary the trunk can be rotated to make the anterior arm posterior: delivery is then no further problem.

CAESAREAN SECTION

FOR CLINICAL OFFICERS AND DOCTORS

INTRODUCTION

This chapter is for those of you who have done some caesarean sections already and who are, therefore, familiar with the technique of the uncomplicated operation.

PREPARATION

ANTIBIOTICS

Caesarean section during labour

Clean cases

Before operation:

- x-penicillin 5 mega i.v. stat. + streptomycin 1 gm i.m. stat.

After operation:

- x-penicillin 2 mega i.v. or i.m., 6 and 12 hours after operation

Infected cases (temperature 38C° or more, offensive liquor or ruptured membranes of more than 12 hours)

Before operation

- x-penicillin 5 mega i.v. stat. + streptomycin 1 gm i.m. stat.

or

- chloramphenicol 1 gm i.v. stat

After operation:

- x-penicillin 2 mega i.v. or i.m. 6 hourly + streptomycin 1 gm i.m. daily for seven days

or

- chloramphenicol 0.5 gm i.v. or p.o. six hourly for seven days.

Elective caesarean section

No antibiotics!

BLOOD

- Check the haemoglobin
- x-match one pint of blood if possible

CATHETERISATION AND VAGINAL EXAMINATION

The doctor or clinical officer who will do the operation should catheterise the bladder in theatre.

If the patient is in labour do a vaginal examination at the same time in order not to miss unexpected progress and the possibility of a vaginal delivery.

TILT THE PATIENT TO THE LEFT

Tilt the patient approximately 15° to the left by placing a pillow or rolled up towel under the right buttock

ANAESTHESIA

GENERAL ANAESTHESIA

This is only safe if given by a trained anaesthetist who *intubates* the patient.

Never assume that the stomach will be empty because the patient has not taken food for a long time. Emptying of the stomach slows down during labour.

Aspiration of stomach contents will cause a most violent pneumonia which will probably kill your patient.

SPINAL ANAESTHESIA

This is a good technique provided:

- you know the technique and *its complications* in detail
- you put up an i.v. drip and run in 1 – 2 litres of fluid fast
- you tilt the patient to the left [see above]
- you observe the contraindications
 - severe antepartum haemorrhage
 - severe anaemia
 - severe hypertension or preeclampsia
 - serious heart disease

LOCAL INFILTRATION ANAESTHESIA

Safe for mother and baby.

Disadvantages are:

- uncomfortable for the mother
- unsuitable if extensive dissection is required (old scars)
- unsuitable for infected cases because packs cannot be placed by the side of the uterus and thorough cleaning of the abdominal cavity is difficult

Technique

- give diazepam 10 – 20 mg i.v. stat.
- prepare a 1/2% solution of lignocaine
- inject 10 – 20 ml under the skin in the line of the incision

- after a few minutes incise the skin and subcutis
- inject another 10 – 20 ml under the fascia
- after a few minutes incise fascia, muscles and peritoneum
- put a few ml of anaesthetic under the peritoneum of the uterus
- deflect the bladder peritoneum, incise the uterus and deliver the baby
- as soon as the baby is out, inject 50 mg of pethidine i.v., this may have to be repeated once or twice.
- complete the operation

INCISION OF THE UTERUS

There are four acceptable ways of making an incision in the uterus:

- a transverse incision in the lower segment
- a vertical incision in the lower segment
- a transverse incision in the upper segment
- a vertical incision in the upper segment

The techniques of making and closing these incisions are described here, the indications follow later in this chapter.

A fifth method of incising the uterus, the inverted T incision, is not described, as, with forethought, it can always be avoided. It heals poorly and should not be used.

TRANSVERSE INCISION IN THE LOWER SEGMENT

1. Opening of the uterus

- Cut the peritoneum over the lower segment transversely and mobilise the peritoneum and bladder well down
- Identify the midline of the uterus (it may have rotated to the right or the left)
- Incise the lower segment transversely with the scalpel over a short distance
- Enlarge the opening to the right and the left with scissors (this is safer than stretching the incision with your fingers which does not allow you good control over where the lower segment will tear)

2. Repair of the incision

- Identify the lower edge of the incision by placing Green-Armytage forceps
- Start at a point where the lower edge is easy to see
- When you have placed the first clamp, lift it and a further stretch of the edge will come into view
- Place another clamp and continue like this until you have identified the lower edge over its whole length.

A common mistake is to pick up a fold of the posterior wall of the uterus. If you use the above method, that mistake is almost impossible to make.

- Now repair the uterus with two layers of continuous chromic catgut No. 1 or No. 2

3. Difficulties

Heavy bleeding

Bleeding from the edges can be controlled by Green-Armytage clamps until the incision has been sutured.

A (partly) torn branch of a uterine vessel in one of the corners is sometimes easier clamped with an ordinary artery forceps. It may also need to be ligated separately.

Continued bleeding after the incision has been sutured in two layers needs extra figure-of-eight stitches. Do not pull these too tight or they will cut through and more bleeding will result.

Continued oozing is best controlled with a hot pack.

Vertical tears

These are often located in the corners and run downward behind the bladder. Very often there is heavy bleeding as well.

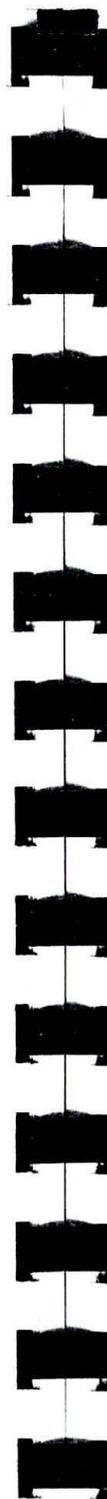
In order to repair these you must be able to see.

- If you are alone with a scrubnurse, ask for an extra assistant
- Identify the edges of the incision and the tear as described above
- Mobilise the bladder further downward if necessary
- Divide the round ligament if necessary : this often makes the lower end of the tear much easier to see
- In the area of the tear use interrupted sutures : these are easier to unpick if you catch the bladder or ureter by mistake
- After repairing the tear check that the ureter has not been caught in a stitch
- Remember that all bleeding can always, at least, temporarily, be controlled by pressure with a hot pack

THE VERTICAL INCISION IN THE LOWER SEGMENT (DE LEE INCISION)

1. Opening of the uterus

- Incise the peritoneum transversely *high* on the lower segment
- Mobilise the peritoneum and bladder well down
- Identify the midline of the uterus



- Incise the lower segment vertically with the scalpel
- Enlarge the incision with the scalpel or scissors : often the upper segment has to be entered

2. Repair of the incision

- Suture the incision with two layers of continuous chromic catgut No. 1 or No. 2
- Make sure that you include the uterine fascia in the second layer or it will continue to bleed
- Repair the peritoneum and pull it high up so that the top end of the incision is covered
- If the upper segment was incised over a long distance, do tubal ligation

TRANSVERSE INCISION OF THE UPPER SEGMENT

1. Opening of the uterus

- Check that the uterus is wide enough for an adequate incision
- Incise the peritoneum over the lower part of the upper segment transversely with the scalpel
- Mobilise the peritoneum away from the incision with scissors
- Incise the uterus transversely in the midline
- Enlarge the incision to the right and left by stretching it with your fingers (it is usually too thick to be cut with scissors)
- Deliver the baby by breech extraction

2. Repair of the incision

- Suture the incision in two layers with continuous chromic catgut No. 1 or No. 2
- Do not catch the full thickness of the uterine wall in the first layer : it is often too thick
- Repair the peritoneum over the incision, preferably with a locking stitch

THE VERTICAL (CLASSICAL) INCISION IN THE UPPER SEGMENT

This is a poor incision and should only be used as a last resort.

It has two dangers:

- it may rupture before labour in a future pregnancy
- infection can spread directly from the uterine into the peritoneal cavity

1. Opening of the uterus

- Identify the midline of the uterus
- Incise the uterus vertically with the scalpel
- Enlarge the incision by stretching it with the fingers
- Deliver the baby by breech extraction

2. Repair of the incision

- Repair the uterus in three layers with a continuous chromic catgut No. 1 or No. 2 suture; each layer should catch about one third of the thickness of the uterine wall; the last layer should be a locking stitch.
- always tie the tubes

CAESAREAN SECTION FOR SPECIFIC INDICATIONS

REPEAT CAESAREAN SECTION

Entry into the abdomen

This can be difficult but the following method is safe:

- Excise the skin scar
- Lift the fascia with two dissecting forceps as close to the umbilicus as possible and incise fascia, muscles and peritoneum to open the abdomen
- If entry into the abdomen at this site proves difficult, do not muddle on
- Extend the skin incision higher up the abdomen, round the umbilicus if necessary, and try again; by going higher it is always possible to find an area free of adhesions
- After the abdomen has been entered, lift the abdominal wall on two fingers and incise the layers one by one: fascia, muscle, peritoneum; in this way the bladder is easily recognised when it appears at the lower end of the incision

Separation of the adhesions

After a previous operation there can be dense adhesions between the uterus and abdomen wall

- Open the parietal peritoneum as far as possible
- Lift the parietal peritoneum with two dissecting or artery forceps to stretch the adhesions
- Cut the adhesions close to the uterus with curved scissors, keep the points of the scissors directed at the uterus
- If a plane of loose connective tissue is found, do the further separation with a finger or a swab; fibrous bands must be cut
- Stay close to the uterus to avoid the bladder
- If dissection of the adhesions proves difficult, give up and make an upper segment incision

Mobilisation of the bladder

After a previous operation the bladder is stuck to the lower segment and cannot be mobilised with the finger or a swab

- Incise the peritoneum on the uterus transversely about 2 cm above the bladder
- Lift the lower edge with two dissecting or artery forceps to stretch the adhesions between the bladder and the uterus
- Cut the adhesions close to the uterus with curved scissors keeping the points of the scissors directed at the uterus
- If this proves difficult, give up and make an incision higher in the uterus

The uterine incision

Usually a transverse incision in the lower segment is possible and with an elective caesarean section this should provide no further difficulty. If the section is done during labour, you may find the head tightly stuck under the old scar in the uterus. If you then make your incision just above the scar, the old scar will probably rupture during delivery of the head of the baby. It is safer to make a V-shaped transverse incision with the point of the V lying across the middle of the scar. This is thus divided and the tension removed. If any tearing occurs, it will be near the midline where it is relatively easy to see and repair

OBSTRUCTED LABOUR WITH A CEPHALIC PRESENTATION

- Enter the abdomen just under the umbilicus in order to avoid the bladder
- If catheterisation before the operation was impossible, empty the bladder now with a needle and syringe; a lot of its swelling will be oedema and this, of course, does not go away
- Mobilise the bladder of the lower segment in the usual manner
- If someone is going to push up the head from below through the vagina, let them start now *before* the uterus is opened; if you postpone this until after the uterus has been opened, the shoulder will prolapse into the incision making delivery more difficult
- Make a transverse incision in the lower segment.
Choose the level of the incision carefully:
 - if it is too high, delivery of the baby will be difficult
 - if it is too low you may enter the vagina
- *Take time to deliver the baby.*
 - between the contractions work two to four fingers between the uterine wall and the head until they are under it

- lift the head from the pelvis by flexing your fingers
- try to avoid "levering" the head out with your whole hand because this often causes vertical, downward tears in the lower segment
- After delivery of the baby and placenta, repair the uterus
- Clean the abdomen very carefully, if the liquor was purulent or offensive smelling, wash the pelvis with warm saline

BREECH PRESENTATION

There should be no difficulty. Make sure, however, that you deliver the baby through the incision with exactly the same manoeuvres that you would use for a vaginal delivery. Failure to do so may cause extensive tearing of the lower segment.

TRANSVERSE LIE

The choice of the incision in the uterus is what matters here. You will meet the following situations

- Labour obstructed

Most of the baby is in the overdistended lower segment. Simple delivery through a transverse lower segment incision will cause extensive tears. Therefore:

- if the baby is dead

- make a transverse incision in the lower segment
- decapitate or eviscerate the baby
- now deliver it whichever way is convenient

- if the baby is alive

- make a vertical incision in the lower segment
- extend the incision into the upper segment until you have enough room to deliver the baby safely

- The patient is in early labour but the lower segment is poorly developed. Most of the baby is in the upper segment

- make a transverse incision in the upper segment
- deliver the baby by breech extraction

- The patient is in early labour, the lower segment is well developed and the membranes are still intact

- make a transverse incision in the lower segment
- deliver the baby by breech extraction

PLACENTA PRAEVIA

Usually the normal transverse incision in the lower segment is possible. If the lower segment is too small for an adequate incision or if it is very vascular, make a transverse incision in the lower part

of the upper segment. If this is also very vascular, make a classical incision.

CONstriction RING

Sometimes the cause of obstruction is a constriction ring either in the lower segment or between the lower and upper segment.

If the baby is entirely above it, make a transverse incision above the constriction. If the constriction is round the baby's neck, make a vertical incision across the constriction.

OTHER PROCEDURES DURING CAESAREAN SECTION

FIBROIDS

Leave these alone. Removal will cause heavy bleeding. If necessary, they can be removed three months later by a second operation.

OVARIAN CYSTS/TUMOURS

These should be removed. Ovarian cystectomy is possible but if bleeding is a problem, salpingo-oophorectomy may be quicker and safer.

ADHESIONS

Adhesions should be separated sufficiently to gain good access to the uterus. However, there is no point in removing adhesions round the adnexa. This often causes troublesome oozing and the adhesions will invariably form again.

BLADDER INJURY

See Chapter 47

TUBAL LIGATION

See Chapter 52

POSTOPERATIVE ORDERS

Routine are:

- intravenous fluids: one to three litres over the first 24 hours, depending on the patient's condition
- pain relief : pethidine 50 - 100 mg six hourly for two days; after that a simple analgesic like aspirin
- antibiotics : as outlined under PREPARATION
- catheter : open drainage only when indicated (blood stained urine, bladder repair, obstructed labour)
- observations: vital signs, fundus, vaginal bleeding

REPAIR OF A RUPTURED UTERUS

INTRODUCTION : REPAIR OR HYSTERECTOMY?

In the course of an operation for ruptured uterus you will have to decide what to do; repair the rupture or do hysterectomy. The following hints are meant to help you make the right decision.

If you have very little or no experience of hysterectomy, repair of the uterus is nearly always best. Hysterectomy will take longer and can cause more bleeding. Only do a hysterectomy when extensive tearing of the uterus makes a repair impossible.

If you do have some hysterectomy experience, your decision can depend on the situation.

Factors in favour of a repair are:

- rupture not too large
- edges clean and easy to see
- little or no infection present.

Factors in favour of hysterectomy are:

- extensive or multiple tears of the uterus
- edges which are necrotic or not easy to reach for suturing (some posterior ruptures, ruptures extending down into the vagina)
- gross infection of the uterus

This chapter describes repair of the uterus, hysterectomy is dealt with in the next chapter.

PREPARATION

Resuscitate the patient

- Put up i.v. drip with large bore needle (No. 18) or cannula
- Give 1 - 2 litres of saline or sodium lactate before starting the operation
- x-match 2 pints of blood

Antibiotics

- Give, for example:
 - x-penicillin 5 mega i.v. stat. + streptomycin 1 gm i.m. stat
 - or
 - chloramphenicol 1 gm i.v. stat.
- Catheterise the bladder

ANAESTHESIA

If the patient's condition is poor, local infiltration anaesthesia [see Chapter 44] is safest.

If general anaesthesia is used, endotracheal intubation is essential. Do not use spinal anaesthesia for patients with a ruptured uterus.

STAFF AND INSTRUMENTS

Needed are:

- you, the surgeon
- a scrubnurse
- if at all possible, a second scrubbed assistant
- a "runner"
- an anaesthetist

The set of instruments used for caesarean section will do, provided you add some large curved clamps or artery forceps.

TECHNIQUE

- Open the abdomen through a midline incision
- Remove fetus and placenta:
 - this is easy if they are free in the abdomen
 - if the fetus is in the broad ligament, open the broad ligament: this is often most easily done by dividing the round ligament over it
 - if the fetus is still inside the uterus (with a posterior rupture for example) you may have to make the transverse incision in the lower segment, as for caesarean section, in order to deliver the baby
- Suck away most of the blood and liquor
- Lift the uterus from the abdomen and assess the damage
- Identify the edges of the tear along its whole length
- Make sure to separate the bladder well away from the edge*
- Divide the round ligament if this makes the tear easier to see
- Trim obviously dead tissue away. Do not trim too much as this makes the repair more difficult and causes bleeding
- Repair the tear in one layer with a continuous chromic 1 or 2 suture. A vertical tear going down to the cervix can be repaired from below upwards but sometimes the other way round is easier: traction on the suture helps to bring the lower end of the tear into view. Carefully identify the edges before

*For repair of bladder injury See Chapter 47.

SUBTOTAL HYSTERECTOMY

INDICATIONS

There are two situations in which even the inexperienced surgeon must attempt hysterectomy if somebody more senior is not available:

- a ruptured uterus with tearing so extensive that repair is impossible
- postpartum haemorrhage not responding to treatment [see chapters 34, 49, and 56].

PREPARATION

Resuscitate the patient

- Put up an i.v. drip with a large bore (No. 18) needle or cannula
- Give 1 - 2 litres of saline or sodium lactate before starting the operation
- x-match 2 pints of blood

Antibiotics

- Give, for example:
 - x-penicillin 5 mega i.v. stat. + streptomycin 1 gm i.m. stat.
- or
- chloramphenicol 1 gm i.v. stat.

Catheterise the bladder

ANAESTHESIA

If the patient's condition is poor, local infiltration anaesthesia [see chapter 44].

If general anaesthesia is used, endotracheal intubation is essential. Do not use spinal anaesthesia.

STAFF AND INSTRUMENTS

Needed are:

- you, the surgeon
- a scrubnurse
- a scrubbed second assistant (essential!)
- a "runner"
- an anaesthetist

- putting in the stitches in order not to include the ureter
- If there is oozing from the broad ligament, put in a drain. This can be brought out either through the tear into the vagina or - preferably extraperitoneally - through the abdominal wall
- Repair the peritoneum over the uterus
- Tie the Fallopian tubes
- Clean the abdomen and wash it with warm saline
- Close the abdominal wall in layers; use deep tension sutures if you expect peritonitis

POSTOPERATIVE ORDERS

- I.v. fluids and blood depending on the patient's condition
- continue antibiotics, for example:
 - x-penicillin 2 mega i.v. six hourly + streptomycin 1 gm daily for seven or 10 days
- or
- chloramphenicol 0.5 gm i.v. six hourly for seven or 10 days
- Pethidine 50 - 100 mg i.m. six hourly for two days
- Remove the drain after one or two days
- Open bladder drainage for 10 - 14 days if the bladder was damaged
- Nasogastric tube if the bowels are distended or peritonitis is expected.

The set of instruments used for caesarean section will do, but you *must* add large curved artery forceps or Kochers, at least 12! A self-retaining abdominal retractor is a great help.

GENERAL POINTS OF TECHNIQUE

Subtotal hysterectomy, which leaves the cervix and perhaps part of the lower segment in place, is easier to perform than total hysterectomy. It causes less bleeding and there is almost no danger to the ureters. Subtotal hysterectomy is still possible when a uterine rupture extends down into the cervix and vagina. In that case the tear in the cervix and vagina is repaired after the body of the uterus has been removed.

Removing the adnexa (adnex = tube + ovary) is often easier than leaving them in place. The reason is that the pedicle of the infundibulopelvic ligament is usually smaller and easier to handle than the pedicle of the cut Fallopian tube and ovarian ligament.

Traction on the uterus throughout the procedure is the key to success in hysterectomy. Traction makes it easier to identify the structures that have to be divided and it helps to keep bladder and ureters out of the way.

The anatomy. Make sure to identify the important structures and landmarks *before* you start removing the uterus. With a ruptured uterus the anatomy can be difficult to recognise and this does not become any easier if you start cutting without knowing exactly what you are doing.

Control of bleeding. For the control of bleeding concentrate on:

- the ovarian vessels either in the pedicle of the infundibulopelvic ligament or in the stump of the cut tube and ovarian ligaments.
- the uterine vessels
- the stump of the cervix or lower segment.

There can be some bleeding from other small vessels but this does not usually cause problems.

TECHNIQUE IN DETAIL (AS FOR RUPTURED UTERUS)

- Open the abdomen
- Remove fetus and placenta [see chapter 45]
- Clean away most of the blood and liquor

- Insert a self-retaining abdominal retractor if this is available
 - Lift the uterus from the abdomen
 - Maintain traction on the uterus with one hand or put in a traction suture
 - Identify the following structures:
 - the corpus uteri
 - the round ligaments
 - tube and ovary on both sides
 - the infundibulopelvic ligaments on both sides
 - the avascular area in each broad ligament
 - the lower segment
 - the bladder
 - the rectum
- [see figure 46.1]

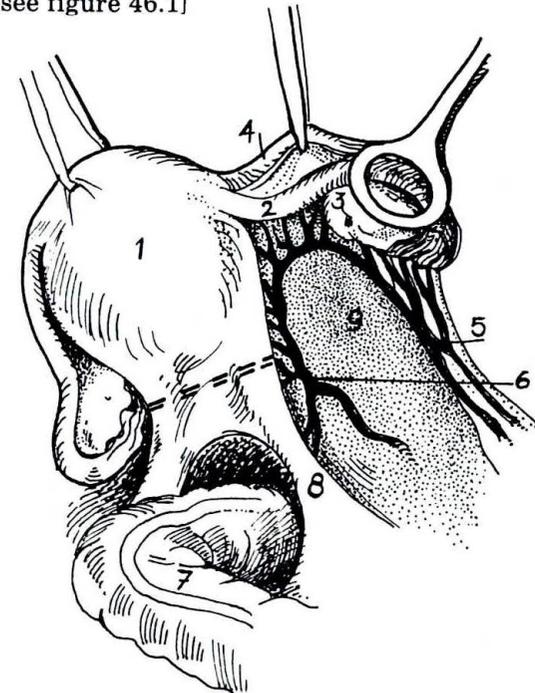


Figure 46.1 The uterus seen from behind prior to hysterectomy

- | | |
|--------------------|-------------------------------------|
| 1. uterine corpus | 6. uterine vessels |
| 2. Fallopian tube | 7. rectum |
| 3. ovary | 8. sacro-uterine ligament |
| 4. round ligament | 9. avascular area in broad ligament |
| 5. ovarian vessels | |

Note that the uterus is being pulled over to the left and that the right adnexa are being lifted in order to show the anatomy clearly

- Identify the rupture and clamp obvious bleeding points
- Pull the uterus to the left and divide the right round ligament between clamps about 2 cm from the uterus; this step opens the anterior peritoneal leaf of the broad ligament
- Enlarge the opening in the anterior leaf of the broad ligament with scissors in a downward direction towards the bladder
- Lift the right adnexa with one hand and push a finger of the other hand from behind through avascular area in the broad ligament; this step helps to define the infundibulopelvic ligament
- Clamp the infundibulopelvic ligament with two artery forceps and cut it
Alternatively, if you wish to leave the adnexa in place, clamp and divide the tube and ovarian ligament near the uterus. If the tube and ovarian ligament are very thick and vascular, the clamping and cutting may have to be done in two steps
- Suture ligate the pedicles of the round ligament and infundibulopelvic ligament (or the cut tube and ovarian ligament)
- Repeat the same procedure on the left side
- Now pull the uterus well up in the midline and cut the peritoneum between the uterus and bladder; extend the incision laterally to meet the incisions in the anterior leaves of the broad ligaments
- Push the bladder off the lower segment with your finger or a swab on a holder; two or three centimeters is enough, pushing it down further can cause bleeding;
if the rupture is in the anterior lower segment, you have to put its edge on stretch with Green-Armytage forceps before you can separate off the bladder
- Now expose the posterior lower segment by pulling the uterus forward over the symphysis pubis
- Divide the peritoneum over the posterior lower segment at about the same level as this was done anteriorly
- Extend the incision laterally to join the openings in the broad ligaments
- Push the lower flap of the peritoneum off the lower segment with a swab on a holder or if this is difficult, cut it loose with scissors
- Now review the situation:
on either side of the uterus you should see a bundle of loose



- connective tissue which holds the uterine vessels; you may have to strip down the peritoneum of the broad ligaments a little further to see them more clearly
- Pull the uterus to the left and clamp the uterine vessels on the right with strong curved Kocher or artery forceps just above the level where the bladder is still attached to the lower segment; make sure the points of the clamp are very close to the uterus (there is no harm in including a little uterine wall!)
 - Place a second clamp inside the first and cut the uterine vessels in between
 - Sutureligate the pedicle
 - Repeat this procedure on the left
 - Now amputate the uterus through the lower segment just above the level of the cut uterine vessels; have artery forceps ready to pick up the cut edge of the lower segment before it disappears in the depth of the pelvis
 - Clamp obvious bleeders
 - If there is a downward tear in the cervix, repair this now after making sure that bladder and ureters are well out of the way
 - Now suture the anterior wall of the lower segment to the posterior wall with figure-of-8 stitches; make sure you include the angles on the left and right as these tend to bleed; leave the centre open for drainage
At this stage the pelvis should be more or less dry.
 - Look for remaining bleeding points and ligate these
 - If there is a lot of oozing from one of the broad ligaments, place a rubber drain in that area and bring it out either through the cervix into the vagina or (preferably extra-peritoneally) through the abdominal wall
 - Close the pelvic peritoneum with a continuous suture; start on the left at the pedicle of the infundibulopelvic ligament and suture the anterior edge of the peritoneum to the posterior edge and place all vascular pedicles under the peritoneum
 - Wash the abdomen with warm saline and close it.

POSTOPERATIVE ORDERS

- i.v. fluids and blood depending on the patient's condition
- Continue antibiotics, for example:
 - x-penicillin 2 mega i.v. six hourly + streptomycin 1 gm daily for seven or 10 days

- or
- chloramphenicol 0.5 gm. i.v. six hourly for seven or 10 days
 - Pethidine 50 – 100 mg i.m. six hourly for two days
 - Remove the drain after one or two days
 - Open bladder drainage for 10 – 14 days if the bladder was damaged
 - Nasogastric tube if the bowels are distended or peritonitis is expected.



REPAIR OF ACUTE BLADDER INJURY

Immediate repair of the bladder is necessary if:

- the bladder has been damaged accidentally during a caesarean section
- during a rupture of the uterus the bladder was torn as well.

With a ruptured uterus, complete closure of the opening in the bladder may prove impossible, if there is a lot of pressure necrosis or if the tear extends far down into the urethra.

The bladder wall near the injury is usually stuck to the lower uterine segment and needs to be mobilised before the opening can be closed.

TECHNIQUE

- Put both the bladder wall and the lower segment on stretch with the help of artery or Allis' forceps or Babcock clamps
- Clear the operation field of blood
- Separate the bladder off the lower segment with a swab on a holder or by cutting with scissors
- The bladder wall round the opening needs to be freed over 1 – 2 cm
- Close the opening in the bladder with two layers of continuous 2/0 chromic catgut:
 - the first layer includes the bladder mucosa and the bladder muscle
 - the second layer inverts the first one
- After the operation has been completed insert an indwelling catheter and maintain *open* drainage for 10 to 14 days.

DESTRUCTIVE OPERATIONS

GENERAL

You should try not to do a caesarean section for obstructed labour, if the baby is already dead. Often a destructive operation is easier and safer, because it carries less risk of bleeding and infection and also because it leaves no uterine scar. However, for a destructive operation to be safe, three points should always be observed:

- the indication must be correct
- you should follow the correct operative technique
- you should be able to do an immediate laparotomy when you discover a rupture of the uterus during the operation.

The following sections explain how destructive operations should be done.

CRANIOTOMY

(The destructive operation for cephalic presentations)

INDICATION

You should do craniotomy if:

- the fetus is dead
- the head presents
- 2/5 or less of the head is above the brim (if the head is higher, caesarean section is usually safer!)
- the cervix is fully dilated
- the uterus is not ruptured

PREPARATION

In the labour ward

- put up an i.v. drip with dextrose 5% in water
- give high doses of antibiotics, e.g. x-penicillin 5 mega i.v. stat, with streptomycin 1 gm i.m. stat
or
chloramphenicol 1 gm i.v. stat
- give painrelief, e.g. pethidine 50 mg slowly i.v.
- take bloodsamples for haemoglobin and x-matching
- shave for a vaginal operation and laparotomy

In theatre (Do not do a craniotomy anywhere else!)

- check the preparations done in the labour ward
- check the i.v. drip
- check the instruments on the trolley
- check that everything is ready for laparotomy

Staff

Needed are:

- you, the surgeon
- one anaesthetist
- one scrubnurse
- one "runner"

Anaesthesia

General anaesthesia with intubation is best. *Do not use general anaesthesia without intubation.* If general anaesthesia is not possible, use spinal anaesthesia or local infiltration anaesthesia of the perineum and vulva.

If local infiltration anaesthesia is used, sedate the patient with:

- pethidine 25 - 50 mg i.v. slowly (N.B. Check what she was given in the labour ward)
- diazepam 10 - 20 mg i.v. slowly.

Technique

- Put the patient in lithotomy position
- Clean and drape the vulva and perineum
- If local anaesthesia is used, infiltrate the perineum with 1/2 or 1% lignocaine
- Catheterise the bladder with a rubber or plastic catheter [see Chapter 38]
- Put one or two Sims specula into the vagina so that you can see the head well. Ask an assistant to hold the specula
- With the knife make a cross-shaped incision through the skin of the head right down to the bone
- With a finger feel for a gap (a suture line or a fontanel) between the bones
- Push a closed pair of scissors between the bones
- Now open and close the scissors a few times while turning them round (the brain should now be coming out from the hole)
- Put a finger through the hole in the skull and check that all brain compartments have been broken up
- Put 3 or 4 strong volsellum forceps or Kochers (even better are Willet's forceps) on the skin or the skin and the bone
- Pull on these forceps and try to turn the posterior fontanel under the symphysis

- If sharp edges of bone come sticking out, protect the vagina with your fingers or remove the offending bone
- Make a large episiotomy
- Deliver the head

After delivery of the head, sometimes delivery of the shoulders is still difficult. In that case:

- Put a hand behind the baby in the vagina and turn the shoulders through 90° or even 180°. Try delivering the shoulders again.

If the shoulders cannot be delivered by turning them, you must bring down the arms one by one.

- Put a hand behind the fetus in the vagina and feel for the posterior shoulder and arm. Pull the arm down gently (the arm can break, but you should not damage the cervix or vagina).
- After delivering the first arm turn the fetus 180° and deliver the second arm in the same way. Further delivery should now be easy.

After delivery of the fetus:

- remove the placenta manually
- Give ergometrine 0.5 mg i.v. stat.
- After removal of the placenta feel immediately for tears of the uterus or lower segment
- Inspect the cervix, vagina and vulva carefully for tears
- Repair the episiotomy and tears
- insert an indwelling catheter for open bladder drainage
- If the uterus is not well contracted, put pitocin 10 - 40 units per 1,000 ml in the i.v. drip.

POSTOPERATIVE ORDERS

- continue the i.v. drip slowly for about 24 hours
- continue with antibiotics in high doses, for example:
 - x-penicillin 2 mega six hourly and streptomycin 1 gm i.m. daily for seven days or
 - chloramphenicol 500 mg six hourly for seven days
- open bladder drainage for 14 days

DESTRUCTIVE OPERATIONS FOR TRANSVERSE LIE

GENERAL

Obstructed labour with a transverse lie and a dead baby is a difficult problem. Destructive operations for transverse lie through the

vagina are more difficult than craniotomy. However caesarean section also has its dangers and should - where possible - be avoided. The operations that can be done are the following:

Decapitation : The fetus' neck is divided and the body and head are then delivered separately

Evisceration : The fetus' chest and/or abdomen are opened and all internal organs are removed. The trunk collapses and delivery by either internal version or decapitation becomes much easier.

Caesarean section in combination with destruction : A transverse incision is made in the lower uterine segment. Decapitation or evisceration is done through the uterine incision.

IMPORTANT DON'TS

Never attempt internal version without doing evisceration first. The risk of rupturing the uterus is enormous. Cutting off the prolapsed arm does not make version any safer!

Do not attempt decapitation or evisceration through the vagina if the fetus is still high in the birthcanal. It is dangerous because you will not be able to protect the vaginal wall and cervix adequately during the operation.

At caesarean section do not attempt to deliver the fetus intact because this will cause severe tearing of the lower segment.

Do not make a classical or inverted T incision in the uterus for a dead fetus.

CRITERIA FOR DECAPITATION OR EVISCERATION BY THE VAGINAL ROUTE

- the fetus is dead
- the lie is transverse
- the cervix is 8 cm or more dilated
- the uterus is not ruptured

You can only decide which operation you are going to perform *after* you have examined the patient under anaesthesia.

Preparation

The preparation of the patient in the labour ward is exactly as for patients undergoing craniotomy. In theatre the preparations are also the same

Anaesthesia

See the section on craniotomy. Good anaesthesia is even more important than with craniotomy because the operation is done higher in the birthcanal.

Technique

- put the patient in lithotomy position
- clean and drape the vulva
- catheterise the bladder

Now with the patient under anaesthesia examine her again. Put one hand in the vagina and support the fundus with the other. Note the following:

- cervical dilatation: If it is less than 8 cm, caesarean section is probably safer
- the lower uterine segment: explore it as far as you can without using force. If you find it ruptured, do a laparotomy now
- the exact position of the fetus: which arm has prolapsed?
where are the head and the neck?
where are the chest, abdomen and back?

Now decide:

- if the neck and the body are both still high in the birthcanal, do a caesarean section
- if the neck can be reached easily, attempt decapitation
- if the neck is difficult to reach but the body is well down, attempt evisceration

Decapitation

- Using the decapitation saw (this is very well described in Lawson and Stewart's Obstetrics and Gynaecology in the Tropics)
 - hook the end of the saw in the thimble
 - put the thimble on the best finger of your best hand and try to bring it round the neck
This is often difficult because there is little room between the neck, the head and the chest. Sometimes it is easier to put the saw over the neck and under the arm
 - when the saw is in position, protect the vagina with specula
 - apply firm traction and saw through the neck
 - pull on the arm: usually this delivers the body
 - put a hand in the vagina and turn the head so that the neck points downwards
 - put one or two volsellum forceps on the neck and deliver the head like the aftercoming head of a breech

- if the head was delivered first, deliver the body by pulling on the other arm. Don't do a version, the cut neck might damage the uterus.
- Using scissors
 - hook one or two fingers round the neck and pull it down
 - protect the vaginal wall with a speculum held by an assistant
 - carefully cut the neck with a pair of strong scissors
 - further delivery will be as described above.

Evisceration

- your assistant should pull on the prolapsed arm
- protect the vaginal wall with one or two specula
- with a knife or a pair of strong scissors make a large opening in the abdomen and/or chest
- put one or two fingers into the opening and remove all internal organs. Make sure you remove the liver, the heart and the lungs. Sometimes the diaphragm has to be perforated with scissors.
- Now reassess the situation:
 - sometimes the breech can be brought down easily by hooking a few fingers behind the fetus pelvis; further delivery is then no problem
 - sometimes a foot or a leg can be felt easily and this can be brought down. The operation is then completed by a very gentle version and breech extraction
 - if the breech cannot be delivered easily, the neck can be brought down for decapitation by pulling on the arm
 - in the unlikely event that all this fails, don't hesitate to do a caesarean section.

After delivery of the fetus see the section on craniotomy

POSTOPERATIVE ORDERS

See the section on craniotomy. Obstructed labour with a transverse lie usually does not cause pressure necrosis of the vagina and bladder. Open bladder drainage for a few days is sufficient.

HYDROCEPHALUS

DIAGNOSIS

On abdominal palpation

The head is large in proportion to the fetal body

On vaginal examination

With a cephalic presentation the wide sutures and fontanelles are felt. If the patient presents with a stuck breech, bimanual palpation will reveal the large size of the fetal head.

x-ray

An abdominal x-ray may confirm the diagnosis but beware with breech presentations: on the x-ray the head may seem much bigger than it actually is (this is due to the way it is projected onto the film)

RISK

Obstructed labour with rupture of the uterus

MANAGEMENT

Cephalic presentation

If progress in the first stage is good, prepare for vaginal delivery.

- When the cervix is about 7 cm dilated, insert a good size needle (lumbar puncture needle, for example) or plastic cannula into the head through a suture and drain the cerebrospinal fluid. The head will collapse and delivery becomes easy
- Do not wait for full dilatation (the large head will stay high and full dilatation may never come)
- If, during the first stage of labour, progress is poor, do caesarean section. At caesarean section drain the cerebrospinal fluid from the head with a needle before you deliver it. If you do not do that, there can be nasty tears of the lower segment.

Breech presentation

If progress is good, wait until the trunk has been delivered up to the neck. Insert a needle through and then under the skin of the neck into the head and drain the cerebrospinal fluid. Delivery then becomes easy.

If progress in the first or second stage is poor, do a caesarean section but drain the cerebrospinal fluid from the head before delivering it through the uterine incision.

IMPORTANT DON'TS

- Do not try to force a too large head through the pelvis
- Do not use pitocin

THE STUCK BREECH

DIAGNOSIS

The usual manoeuvres to deliver the head (Smellie - Veit, supra pubic pressure) have failed and the baby is dead.



CAUSES

- cephalopelvic disproportion
- incompletely dilated cervix
- hydrocephalus

MANAGEMENT

- For management of the hydrocephalic head see previous section
- In other cases sedate the patient with pethidine 50 mg i.v. + 50 mg i.m.
- Wait for about an hour, preferably with the patient in lithotomy position and the baby's body hanging down; often the head is delivered spontaneously after it has had time to mould.

If this fails, craniotomy is necessary. This is best done in theatre under general anaesthesia but it can be done in the labour ward.

- Retract the anterior vaginal wall with a Sims' speculum and expose the posterior aspect of the neck
- With scissors cut a small opening in the skin of the neck
- Make a tunnel under the skin and push the scissors into the head
- Open and close the scissors a few times in different directions to break up the brain compartments
- Pull gently on the neck and while the brain gradually escapes, the head is delivered.

IMPORTANT DON'T

- Do not pull the head with great force through an incompletely dilated cervix: this can cause cervical tears which extend into the lower segment.

THEATRE PROCEDURES FOR POSTPARTUM HAEMORRHAGE

(EXAMINATION UNDER ANAESTHESIA,
MANUAL REMOVAL OF THE PLACENTA,
REPAIR OF A CERVICAL TEAR)

PREPARATION

- Always do these things in theatre:
 - Check that there is a good i.v. drip
 - Replace pitocin by plain saline
 - Check that blood is being x-matched
- Use general anaesthesia *with intubation*
or
diazepam 10 – 20 mg i.v. + pethidine 25 – 50 mg i.v. slowly
- Lithotomy position, clean the vulva, catheterise

**ALWAYS EXAMINE THE WHOLE BIRTH CANAL FROM THE
FUNDUS DOWN TO THE CLITORIS**

EXPLORATION OF THE UTERUS – MANUAL REMOVAL OF THE PLACENTA

- Separate the labia with the fingers of the left hand
- Keeping the fingers together insert the *whole* right hand into the vagina
- Shift the left hand to the abdomen to support the fundus
- Insert the whole right hand or as many fingers as will go in, into the uterus
- If the placenta is still there, gently separate it from the uterus with the fingers, it may have to be removed piecemeal
- Deliver the placenta by pulling the cord with the left hand
- Check the uterine cavity : anterior and posterior wall, tubal angles, the lower segment
- Remove remaining bits of placenta, membranes and decidua. Realise that the placental bed always remains somewhat irregular
- Give ergometrine 0.5 mg i.v. and remove your hand from the uterus only when it begins to contract; if it does not contract well, put pitocin 10 – 40 units per litre into the i.v. drip

**NEVER TAKE ANY KIND OF CURETTE OR OVUM FORCEPS TO
A POSTPARTUM UTERUS!**

INSPECTION OF THE CERVIX, VAGINA AND VULVA

- Have a good light source
- Insert two Sims' specula and ask a helper to hold these
- Grab the anterior lip of the cervix with two spongeholders *Do not* use volsella or any other toothed instrument
- Move the spongeholders round the cervix (they leapfrog) and inspect each part of the cervix in turn : only tears which bleed severely need suturing
- Inspect the vaginal wall by moving the Sims' specula. Remove one speculum altogether if necessary
- Finally inspect the vulva, paying particular attention to the area next to the urethra and clitoris

REPAIR OF A CERVICAL TEAR

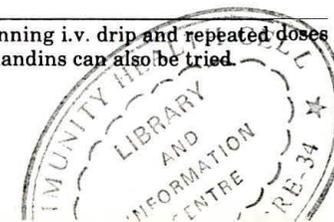
- Have a good light source
- Expose the cervix with two Sims' specula and ask a helper to hold these
- Put a spongeholder on either side of the tear
- Repair the tear with interrupted catgut sutures on a round-bodied needle from above downwards. At times it is easier to suture the other way round : from below upwards. After the first suture has been inserted the spongeholders are removed and the suture is used for traction

DISASTERS

1. **Continued bleeding from an empty uterus**
 - Compress the uterus between a fist in the vagina and a hand on the abdomen and behind the uterus
 - What is the problem : does the uterus not contract?
or
is there a clotting defect?
 - If the uterus does not contract in spite of large* doses of ergometrine and pitocin, hysterectomy is necessary
 - If there is a clotting defect, the bleeding may stop after the transfusion of fresh blood
2. **Part of the placenta cannot be removed**
 - Immediate hysterectomy is best. Temporary control of bleeding may be possible with ergometrine and pitocin

*For example: pitocin 80 units per litre in a fast running i.v. drip and repeated doses of ergometrine 0.5 mg i.v. When available prostaglandins can also be tried.

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- If only a small piece of placenta is remaining, a second attempt at removal can be made a few days later. In the meanwhile the patient should be very carefully watched for bleeding and be given large doses of antibiotics

3. Injury to the uterus

This can be a rupture discovered only after delivery, a cervical tear extending into the lower segment or a perforation made during attempts at removing the placenta.

In each case laparotomy must be done to assess the damage. Be prepared for a hysterectomy



Chapter 50

REPAIR OF A THIRD DEGREE PERINEAL TEAR

DIAGNOSIS*

Place a finger in the anus and lift this slightly. It is then easy to see whether the anal sphincter is torn. A large second degree perineal tear with a partially torn anal sphincter is treated as a third degree tear.

RISK

Incontinence for faeces and flatus if the anal sphincter is not repaired properly.

OPERATION

PREPARATION

Good light and exposure are essential.

The operation is best done in theatre under general anaesthesia. If you have to use local infiltration anaesthesia, sedate the patient with pethidine 50 mg i.v. stat. just before starting the procedure. You need an assistant.

TECHNIQUE

- Place Allis' forceps on the vulval skin on either side of the wound
- Ask your assistant to keep these apart and so expose the wound
- Identify the tear in the bowel mucosa and anal skin and repair this with 2/0 chromic catgut interrupted sutures so that the knots lie in the rectum
- After the bowel and anal skin have been repaired, identify the end of the torn anal sphincter and grasp these with Allis forceps. One end is usually easy to see, the other will have retracted into its "canal" and needs to be retrieved
- Repair the anal sphincter with two or three 2/0 chromic catgut sutures

*Sometimes an old third degree perineal tear, resultant from a previous delivery is seen. These old tears can be repaired 6 - 8 week after delivery.

- Repair the vaginal wall with interrupted 2/0 catgut sutures (there are often multiple tears and a tidy repair can be difficult)
- Repair the perineal (levator) muscles carefully with 0 or 1 chromic catgut sutures
- Repair the perineal skin

POST OPERATIVE ORDERS

- Keep the patient in hospital for 8 – 10 days
- Prescribe liquid paraffin one to two tablespoons daily to keep the stools soft for a week
- The value of antibiotics is debatable
- Explain to the patient and *write on the discharge certificate* that:
 - she should deliver in hospital next time
 - episiotomy is necessary with the next delivery to prevent recurrence of the third degree tear

POSTPARTUM PROLAPSE OF THE CERVIX

DIAGNOSIS

This is obvious if you think of it!

The cervix looks horribly swollen and bruised and may be covered in dirt. The mother's general condition is usually good.

It is possible to confuse postpartum prolapse of the cervix with an inversion of the uterus. However, when the uterus is inverted, the patient is shocked and the fundus can not be felt above the symphysis pubis.

MANAGEMENT

This can be done by the midwife:

- Sedate the patient with diazepam 10 mg i.v.
- clean the cervix
- cover the cervix with a wet towel or a gauze pack and squeeze it gently between two hands: this reduces the swelling
- after a few minutes gently push the cervix back into the vagina
- keep the patient in bed for a few days
- prescribe a broad spectrum antibiotic, for example: Bactrim II twice daily for seven days

POSTPARTUM TUBAL LIGATION

INDICATIONS

Medical

- Conditions which can result in a weak uterine scar:
 - repair of a ruptured uterus
 - classical caesarean section
 - repeat caesarean section (depending on the findings during operation)
- other conditions which make a future pregnancy undesirable, for example a serious heart condition or severe hypertension.

Voluntary

The patient and her husband have completed their family and prefer sterilisation to other forms of contraception.

COUNSELLING

During pregnancy

Tubal ligation *must* be discussed with the patient and her husband if tubal ligation is likely to be necessary on medical grounds, for example with a fourth repeat caesarean section.

It *can* be discussed if the patient asks about it or if you have reason to believe that she might be interested, for example, if she has a large family already.

If you take the initiative, do not pressurise the patient but mention tubal ligation as a possibility only. Drop the subject if she is obviously not interested.

During labour

This is a bad time to discuss such an emotion-laden subject. Only discuss it if you have medical reasons for suggesting a tubal ligation.

Points to be discussed

- tubal ligation is irreversible
- alternative forms of contraception
- the operation itself:
 - it is done within 1 - 4 days after delivery
 - anaesthesia is required (discuss which anaesthesia will be used!)
 - the type of skin incision that will be made
 - the number of days in hospital after the operation

Permission

Obtain written permission from husband and wife. If the patient has no husband, make sure her family supports her decision. Tubal ligation without prior permission is only allowed on medical grounds during an emergency, for example with an operation for ruptured uterus. Such cases should remain exceptions!

CONTRAINDICATIONS

After a vaginal delivery, tubal ligation is contra-indicated if:

- any sign of endometritis is present
- labour was complicated by a serious postpartum haemorrhage
- the patient changes her mind.

ANAESTHESIA

Postpartum tubal ligation can be done under general, spinal or local anaesthesia.

PREPARATION

- Shave the area where the incision will be made
- Catheterisation is not necessary as a routine: a small amount of urine in the bladder helps to bring the uterine fundus into the area of the umbilicus
- Prep and drape the abdomen as usual

TECHNIQUE

- Make a 2 - 5 cm long transverse incision in the skin under the umbilicus
- Retract the skin with two toothed retractors or Allis' forceps
- Lift the fascia with two Allis' forceps and make a transverse incision through the fascia and peritoneum about 2 - 5 cm long
- Clamp any bleeders

Next comes the difficult part which is to identify a Fallopian tube and bring it out through this small incision.

- With a blunt retractor pull the opening in the abdominal wall to the area where you expect to find the right adnexa
- Put a finger behind the uterus and then slide it to the right until you are behind the adnexa. The ovary is posterior to the fallopian tube and the fallopian tube is posterior to the round ligament
- Rotate with your finger the adnexa forward and pick up the Fallopian tube with an artery forceps

You may find that it is easier to use a swab on a holder instead of your finger. If you cannot find the tube by either method, do not hesitate to make your incision larger!

Ligation of the tube by Pomeroy's method:

- Identify a nicely mobile part of the tube (usually this is found at the junction of the isthmus with the ampulla) and lift this with an artery forceps
- Pass a chromic 0 suture on a needle through the mesosalpinx about 2 cm away from the tube; be careful not to puncture a bloodvessel
- Tie the suture round the tube on both sides of the artery forceps and about 1 - 2 cm away from it [see Figure 52.1].
- Remove a small segment of tube with scissors; make sure to leave the remaining stumps $\frac{1}{2}$ - 1 cm long.
- Repeat the same procedures on the left
- Close the abdomen in layers:
 - fascia and skin together with continuous chromic 0
 - the skin with a few interrupted of sutures catgut or mersilene (silk).

POSTOPERATIVE ORDERS

- Full diet, no i.v. drip!
- Pain relief:
 - a mild analgesic, for example: aspirin II 3-4 x/day for 5 days
 - pethidine 100 mg i.m. if necessary the first evening
- Antibiotics: their value is debatable
- Discharge home, if all is well, after one or two days
- Review (and remove the sutures if necessary) after one week

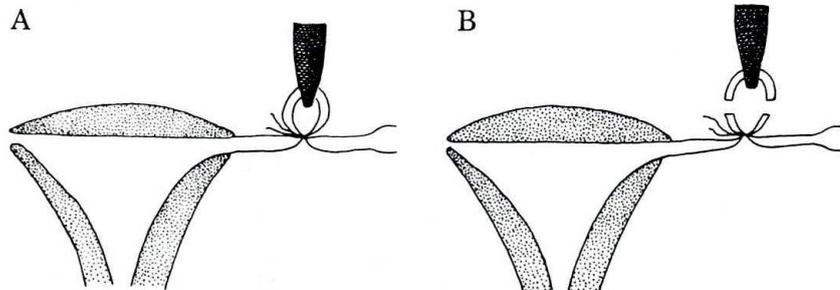


Figure 52.1. Pomeroy's method of tubal ligation.

- A. A loop of Fallopian tube is being lifted with an artery forceps and has been ligated with a chromic 0 suture.
- B. A small segment of tube has been removed.

PUERPERAL INFECTIONS

DEFINITIONS

Fever postpartum : A temperature of 37.5 C° (under the arm) or more on any two days within 14 days after delivery

Puerperal sepsis : Infection of the genital tract following delivery.

CAUSES OF FEVER POST PARTUM

PUERPERAL SEPSIS

Micro-organisms

Many different micro-organisms can cause puerperal sepsis. They can be classified as follows:

- **sexually transmitted organisms** : gonococci, chlamydia
These organisms are present in the cervix before delivery

- **large bowel bacteria**
There are many different kinds of large bowel bacteria. Important examples are : *Escherichia coli* and *Bacteroides fragilis*. These bacteria are carried from the perineum into the birthcanal for example by a vaginal examination.

- **other bacteria**
For example : staphylococci, beta-haemolytic streptococci etc.

Factors which encourage puerperal sepsis

These include:

- poor hygiene or poor aseptic technique during delivery
- manipulations high in the birthcanal
- the presence of dead tissue in the birthcanal after delivery, for example retained products or sloughing vaginal wall following obstructed labour.

Forms

Depending on how the infection has spread puerperal sepsis can present as:

- endometritis
- salpingo-oophoritis
- parametritis (= pelvic cellulitis) : the infection has spread through the wall of the uterus into the broad ligament

- generalised peritonitis
- septicaemia: the infection attacked a vein in the pelvis (a branch of the ovarian or uterine veins) and infected emboli are discharged into the circulation.
- abscesses:
 - in the pelvis as:
 - tubo-ovarian abscess
 - broad ligament abscess
 - abscess in the pouch of Douglas
 - in the subphrenic spaces
 - in multiple places in the abdomen:
 - in the paracolic gutters
 - between small bowel loops

CAUSES OF FEVER OTHER THAN PUERPERAL SEPSIS

Urinary tract infection

- Wound infection (episiotomy, abdominal wound)
- Chest infections : pneumonia or lung abscess (due to aspiration during anaesthesia)
- Mastitis
- Deep vein thrombosis
- Medical conditions: malaria, typhoid, meningitis etc.

ASSESSMENT

Take a history and examine the whole patient for possible causes of fever. Include a rectovaginal examination if the cause of fever is not immediately obvious.

After your clinical assessment you will find one of the following situations:

1. **The cause of fever is (reasonably) certain**
For example : endometritis or urinary tract infection
 - Treat the patient according to your diagnosis
2. **No cause of fever is found**
If the patient is not very ill:
 - send blood for haemoglobin, white blood count and malarial parasites
 - Prescribe a full chloroquin course
 - review the patient daily : look for localising signs or signs of improvement

If the patient is very ill:

- send blood for haemoglobin, white blood count and malarial parasites
- send urine for microscopy and culture if possible (take specimen by suprapubic aspiration or catheter)
- do, if possible, one or more blood cultures*
- order a chest x-ray
- prescribe a full chloroquin course
- start a broad spectrum antibiotic *after* the cultures have been taken
- review the patient daily, look for "hidden" causes of fever [see below]

"Hidden" causes of fever

1. The "hidden" abscess

- Suspect an abscess when the patient has been ill with fever for more than one week
- Look for:
 - a **subphrenic abscess**. Useful signs are:
 - poor air entry over the lower lobe of the lung on the affected side
 - tenderness on palpation between the lower ribs
 - a raised hemidiaphragm on the chest x-ray
 - a **pelvic abscess**. Sometimes it takes a while before an abscess in the pelvis becomes palpable: repeated recto-vaginal examinations every 3 - 4 days are necessary!
 - **(multiple) abscesses in the abdomen**. Abscesses between the bowel loops are often difficult to find. Continuing abdominal distension is often the only sign apart from fever.

2. Septicaemia

In the beginning (spiking) fever and chills are the only sign. Signs of endometritis or infection elsewhere in the pelvis are usually minimal or absent.

After a while signs of "metastatic" infection may appear, for example: pneumonia or lung abscess; liver involvement (jaundice!).

Often after days or weeks an abscess develops at the site of the infected vein in the broad ligament.

* The value of the high vaginal swab, although it is often done, is very limited. It is difficult to exclude contamination with material from the lower vagina and many of the organisms causing puerperal sepsis do not grow in our laboratories (for example, gonococci, chlamydia, B. fragilis)

3. Generalised peritonitis and/or multiple abscesses in the abdomen following caesarean section or ruptured uterus

This diagnosis is often made too late.

Suspect generalised peritonitis if, in the presence of fever:

- three or four days after the operation the abdomen is still distended
- the abdomen remains tender:
 - sometimes all over
 - sometimes only in the flanks where most of the pus collects

Additional signs can be:

- vomiting
- poor bowel sounds
- diarrhoea

The diagnosis is certain and laparotomy urgently needed if these signs persist for more than a week after the original operation.

MANAGEMENT OF PUERPERAL SEPSIS

THE USE OF ANTIBIOTICS

General rules

- Use broad spectrum antibiotics (reason, you do not know which organisms you are dealing with)
- Give high doses (reason: many of the bacteria are not very sensitive to antibiotics)
- If the infection develops in a patient who had prophylactic antibiotics with a caesarean section, do not use the same antibiotics to treat the infection (reason: the infection is probably due to a bacteria resistant to your prophylactic antibiotics)
- If infection develops in a patient who is already on antibiotics, change the antibiotics unless they were started only one or two days ago.
- Do not in general change antibiotics too soon: they need at least three or four days to do their work

Choice of antibiotic

Patient not very ill. Useful regimens are:

- ampicillin 500 mg per os or per injection six hourly
- x-penicillin 2 mega i.m. or i.v. six hourly + streptomycin 1 gm i.m. daily
- bactrim 2 tablets bd
- tetracyclin 500 mg per os six hourly

All these regimens must be given for at least five days, preferably seven

Note that:

- ampicillin or x-penicillin/streptomycin are not effective against chlamydia
- none of these regimens is effective against *B. fragilis*

Patients severely ill. Often more than one micro-organism is involved. *B. fragilis* is frequently one of the micro-organisms. *B. fragilis* only responds to: chloramphenicol, metronidazole or clindamycin.

Useful regimens are:

- ampicillin 500 mg by any route six hourly + metronidazole 400 mg eight hourly
- x-penicillin 2 mega i.v. six hourly + chloramphenicol 500 mg i.v. six hourly

These regimens must be given for at least one week.

Follow-up

- Review the patient daily
- If she does not improve, consider:
 - is the original diagnosis correct?
 - is there an abscess anywhere?
 - is she on the right antibiotic?
- Do not change the antibiotics until you have answered the first two questions.

MANAGEMENT OF THE VARIOUS FORMS OF PUERPERAL SEPSIS

Endometritis

After vaginal delivery

- mild : - ergometrine tablets 1 tds for five days
 - simple analgesic
- severe: - same + antibiotics

After caesarean section

- antibiotics in all cases

Salpingo-oophoritis or parametritis

- antibiotics
- pain relief: simple analgesic, pethidine 50 - 100 mg six hourly if necessary

Generalised peritonitis

- Treat on suspicion alone
- Antibiotics
- i.v. fluids
- Pethidine 50 - 100 mg i.m. six hourly
- Nasogastric tube

If no marked improvement after 24 hours, laparotomy. This is a major procedure. Refer to gynaecologist or surgeon if possible. Do not postpone.

Septicaemia

- Antibiotics
- Consider adding: heparin 5,000 - 10,000 units i.v. six hourly for 10 days
- Refer to gynaecologist if possible

Abcesses

- Posterior colpotomy for abscesses in the pouch of Douglas*
- Laparotomy for abscesses elsewhere in the abdomen.
- Refer to gynaecologist if possible.

*The effect of a posterior colpotomy on the patient's feeling of well-being should be dramatic and manifest within one or two days. If the temperature remains high and she is still ill after two to three days, do a laparotomy to drain the remaining abdominal abscesses.

SECONDARY POSTPARTUM HAEMORRHAGE

DEFINITION

Bleeding from the genital tract in excess of normal lochial loss after the first 24 hours postpartum and until the end of the puerperium.

CAUSES

- Retained products (membranes, placenta)
- Endometritis
- Sloughing of dead tissue (cervix, vagina, bladder, rectum) following obstructed labour
- Breakdown of the uterine wound after caesarean section or ruptured uterus

RISK

- Repeated attacks of (very) heavy bleeding
- maternal death, particularly if it happens far from hospital

MANAGEMENT

- Admit into hospital as an emergency
- Check the haemoglobin
- x-match a pint of blood
- Give ergometrine 0.5 mg i.m. or i.v.
- Put up an i.v. drip
- Add 10 - 40 units of pitocin per litre to the drip, if necessary
- Start broad spectrum antibiotics in high doses by injection.
For example:
 - x-penicillin 2 mega i.v. 6 hourly + streptomycin 1 gm i.m. daily
 - or
 - chloramphenicol 0.5 gm i.v. 6 hourly
- Do an examination under anaesthesia as soon as possible.
Do not postpone this!
- Treat according to your findings:

Retained products or endometritis

- finger curettage
- avoid the use of a curette if possible; if it has to be used, it should be large and blunt.

Sloughing of dead tissues

- remove the slough
- pack the bleeding area tightly for 24 - 48 hours
- if packing does not stop the bleeding, hysterectomy or ligation of the internal iliac arteries may be necessary.

Breakdown of the uterine wound after caesarean section or ruptured uterus

- do laparotomy
- resuture the wound or do hysterectomy

COMPLICATIONS FOLLOWING OBSTRUCTED LABOUR

The main complications following obstructed labour are:

- puerperal sepsis [see Chapter 53]
- secondary post partum haemorrhage [see Chapter 54]
- urinary or rectal fistulae
- nerve injuries

URINARY FISTULAE

CAUSES

The common cause is pressure necrosis of bladder and/or urethra during delivery

Less common causes are:

- injury to bladder or urethra during:
 - caesarean section
 - the operation for ruptured uterus
 - symphysiotomy
- injury to the ureter during:
 - caesarean section
 - the operation for ruptured uterus

DIAGNOSIS

The diagnosis is usually obvious: the patient is continuously wet.

Confusion is possible with:

- severe stress incontinence, in which the urine flows from the urethra
- retention and overflow, in which the (over)full bladder is easily demonstrated

MANAGEMENT

- Continue open bladder drainage for about three weeks to promote healing of the vagina. This is easy if the fistula is small. With a large fistula it can be difficult to keep the catheter in the bladder. Try with a finger in the vagina to guide the catheter into the bladder and inflate the balloon enough to keep it there. If this does not work, remove the catheter and allow the urine to drain through the fistula
- Treat infection with antibiotics
- Prescribe sitbaths once or twice a day (vaginal douches are even better)

- Remove sloughs in theatre if necessary
- Discharge the patient home when all dead tissue has sloughed and the vagina is clean

After four months and *not earlier*, refer the patient to a gynaecologist for repair of the fistula.

Before referral check that:

- the patient's general condition is good
- the haemoglobin is 11 gm% or more
- the vagina and vulva are clean
- urinary tract infection and bilharzia have been treated

RECTAL FISTULAE

CAUSES

The most common cause is pressure necrosis during labour. A less common cause is the placing of sutures through the rectum by mistake during the repair of an episiotomy or perineal tear

MANAGEMENT

- Treat infection with antibiotics
- Clean the vagina with sitbaths or vaginal douches
- Remove sloughs if necessary
- Refer to gynaecologist for repair about four months after delivery

NERVE INJURIES

PRESENTATION

- Common : - dropfoot on one or both sides
- Less common : - weakness of the hip muscles
- weakness of the quadriceps muscle

CAUSES

The most probable cause is pressure during labour

DIAGNOSIS

- Look for signs of nerve injury in every patient who has had obstructed labour
- Check that she can move her toes, ankles, knees and hips in all directions

Nerve injuries are very easily missed if the patient is completely bed-ridden for a few weeks (due to puerperal sepsis for example). If they are missed, contractures develop very quickly.

MANAGEMENT

Principles

- Await spontaneous healing of the nerves. This usually does occur, but may take a long time (months)
- Prevent contractures from developing during the time the muscles are paralysed

In Practice

- Keep the weight of bed sheets and blankets off the legs by using a bed cradle
- Move the affected joints through their full range of movement a few times each day (encourage a relative to help with this)
- For a dropfoot a backslab during the night can be useful
- Encourage the patient to walk

Chapter 56

PUERPERAL PSYCHOSIS

CAUSES

The cause of puerperal psychosis is not known but at an increased risk for puerperal psychosis are patients with:

- a history of (puerperal) psychosis
- a family history of psychosis
- obstetric problems, for example:
 - difficult operative delivery
 - stillbirth or neonatal death
 - premature or sick baby

DANGERS

There is great danger of:

- suicide
- murder : - her own child
- other children

CLINICAL PICTURE

The onset is usually 3 - 5 days after delivery.

Warning symptoms and signs

The patient may complain of headache, tiredness, or not sleeping well. She may further complain that she has no breastmilk or that she is afraid of harming the baby.

You may notice that she is restless and anxious and that she behaves strangely with the baby.

Psychotic stage

Her mental state is unpredictable and changes very rapidly: one moment she is acutely psychotic, the next moment she will appear almost normal.

During the psychotic phase she will appear to be out of contact with her surroundings. She looks puzzled and very frightened.

She can be very violent and dangerous. She may have wrong ideas, delusions and hallucinations.

DIFFERENTIAL DIAGNOSIS

“Toxic states” due to:

- puerperal sepsis
- anaemia
- malaria
- meningitis
- typhoid etc.

are often confused with puerperal psychosis. They disappear as soon as their physical cause is cured.

MANAGEMENT

- Protect - the patient
 - her baby
 - other babies
- Make sure someone is with her all the time. Ask the relatives to help.
- Do not leave her alone!
- Look very carefully for physical illness (puerperal sepsis etc.) and treat this
- Start chlorpromazine (= Largactil) 50 mg per os or by injection three times a day; continue for three weeks, then gradually reduce the dose, continue with 50 mg once a day at night for about 6 months
- Allow her to breastfeed and look after the baby but supervise her carefully
- If she is not markedly better after two weeks, transfer her to Zomba Mental Hospital.

Part V

Neonatal Problems

RESUSCITATION OF THE NEWBORN WITH A LOW APGAR SCORE

ASSESSMENT OF THE BABY'S CONDITION AT BIRTH

We use the Apgar score at one and five minutes after birth:

Sign	Score		
	0	1	2
Heart beat	absent	below 100/minute	over 100/minute
Respiratory effort	absent	weak/irregular	good/crying
Colour	pale or blue	body pink, extremities blue	completely pink
Muscle tone	flaccid	some flexion of arms or legs	well flexed
Reflex irritability (response to suction catheter in the nose)	absent	grimace	cough or sneeze

Interpretation: Normal : score 7 – 10
Low : score below 7

CAUSES OF A LOW APGAR SCORE ONE MINUTE AFTER BIRTH

- Fetal distress [see Chapter 33 for the causes of fetal distress]
- Brain injury due to a difficult delivery
- Severe congenital malformations (heart, lungs, brain)
- Heavy sedation

CAUSES OF A LOW APGAR SCORE FIVE MINUTES AFTER BIRTH OR LATER

- As above
- Inadequate ventilation of the lungs due to:
 - obstructed airway (meconium, mucus, blood)
 - reflex apnea due to excessive suctioning
(this causes a spasm of the vocal cords
making it impossible for the baby to breathe)
 - inadequate artificial respiration
 - respiratory distress due to prematurity of the lungs
- Inadequate heart action (heart rate below 60/minute) due to oxygen lack

MANAGEMENT

PRINCIPLES

- Keep the baby warm
- Make the baby breathe
- Support the heart action if necessary

IN PRACTICE

Preparation before the birth of the baby

- Check the resuscitaire and equipment [see Appendix J]

After birth

- Cut the cord between two clamps
- Put the baby on the warm resuscitaire
- Dry it with a towel and throw this away
- Wrap it in a dry second towel
- Shout for help

Clear the airway

- Suck mouth, throat and nostrils with a mucus extractor
- Do not suction too deep (4 – 5 cm) or too long (15 seconds) as either may cause spasm of the vocal cords
- If thick meconium or mucus is present, use the laryngoscope to see the back of the throat and possibly the vocal cords while you are suctioning
- Do not take too long. Be quick.

Artificial respiration

1. With mask and bag

- Place the face mask firmly over mouth and nose
- Pull the lower jaw forward
- Hold the head in midposition between flexion and extension (if you hyperextend it as you would with an adult, the airway becomes obstructed)
- Squeeze the bag between thumb and forefinger about 30 times/minutes
- Attach the oxygen line to the connection on the bag and set the oxygen flow at 4 litres/minute
- Continue artificial respiration until the baby breathes spontaneously

2. Mouth to mouth ventilation

- This can be done when mask and bag are not available
- Put your mouth over nose and mouth of the baby
 - Draw the lower jaw forward and keep the head in midposition
 - Blow about 30 times/minute
 - Look at the baby's chest to see whether it expands
 - Do not blow too hard: breathe out as you normally would

- and then use the air left in your chest for blowing into the baby

3. Through an endotracheal tube

If the Apgar score is 1 – 3 and you are experienced at intubation, intubate the baby with an endotracheal tube and ventilate through it. If you are not experienced, it is better to use mask and bag.

Antidotes

If the mother had large amounts of pethidine or morphine, give:

- nalorphine 0.5 mg i.m. or
- naloxone 0.02 mg i.m.

External cardiac massage

This is necessary when the heart rate is below 60/minute.

You need a helper.

- Place the tips of index and middle finger over the middle third of the sternum
- Depress the sternum 1 – 1½ cm at a rate of 120 times/minute

Successful resuscitation

- Label the baby
- Take it to the nursery in warm towel
- Keep it warm, preferably in a warm incubator, and give oxygen 2 litres/minute through a small tube in the nose
- Give vitamin K 1 mg
- Start a nasogastric drip through an FG 6 or 8 feeding tube with 0.5% sodium bicarbonate in 10% glucose solution; give 60 ml/kg in 24 hours. [See Appendix J]
- After 24 hours start normal feeds

Failed resuscitation

If the baby is not breathing spontaneously after 20 minutes, there is severe brain damage. Stop resuscitation.

IMPORTANT DON'TS

- Do not suction mouth and throat for more than 15 seconds at a time
- Avoid suctioning too often
- Do not inject vitamin K before the baby is breathing well (ventilate first, inject later)
- Do not give injections into the umbilical vein unless you have had special training to do so
- Do not use nikethamide or other stimulants
- Do not bathe the baby (it is unnecessary and does cool it)

PREVENTION OF MECONIUM ASPIRATION

INTRODUCTION

If the liquor contains meconium, the baby may aspirate this during its first gasps. The result is a nasty aspiration pneumonia which often proves fatal.

PREVENTION

- have a mucus extractor ready at the bedside
- clean and suck out mouth and nostrils as soon as the baby's head is out and *before you deliver the trunk*
- when the whole baby has been delivered, look in the mouth and the throat with a laryngoscope. Do this on the delivery bed if possible, before clamping the cord. Suck away any mucus and meconium that you can see
- only after the airway has been cleared completely, stimulate the baby to breathe or ventilate it with mask and balloon.

Appendices

Appendix A

THE USE OF OXYTOCIN (= PITOCIN)

GENERAL

Pitocin is one of the trade names of oxytocin. Other trade names are: Piton-S and Syntocinon. Although it would be more correct to speak of oxytocin, most people in Malaŵi have become used to the term pitocin and this name will be used here.

Pitocin is used to stimulate the uterine contractions. Unfortunately, it is very difficult to predict how much will be needed and it is very easy to give too much. The dangers of too much pitocin are:

- an increase of the resting tone of the uterus between the contractions which may cause fetal distress
- excessively strong uterine contractions which, in the multipara, may rupture the uterus.

Pitocin should therefore always be started in a small dose. If necessary small amounts can gradually be added.

INDUCTION OF LABOUR

Induction of labour means that the contractions are stimulated either when the patient is not in labour at all or when she is still in the latent phase. This is different from the acceleration of labour [see below].

Indications for induction

- premature rupture of membranes (this is the most common indication)
- intrauterine death [see Chapter 15.]
- other (preeclampsia, hypertension, postmaturity etc.)

Contraindications

- uterine scar
- cephalopelvic disproportion or other impediments to vaginal delivery

Authorisation

A senior midwife can order the induction of labour for premature rupture of membranes in nulliparae and in parae I - V.

Inductions for other indications and inductions in parae VI or more must be ordered by a doctor

Administration

For the induction of labour pitocin is always given in an intravenous drip. The starting and maximum dosage of pitocin depends on the parity and is as follows:

Time	Dosage of Pitocin					
	Nullipara		Para 1 - 5		Para 6 or more	
	U/L	Drops/min	U/L	Drops/min	U/L	Drops/min
0 - 1/2 hr	5	10	1	10	1/2	10
1/2 - 1 hr	5	20	1	20	1/2	20
1 - 1 1/2 hr	5	30	1	30	1/2	30
1 1/2 - 2 hr	5	40	1	40	1/2	40
2 - 2 1/2 hr	10	20	2	20	1	20
2 1/2 - 3 hr	10	30	2	30	1	30
3 - 3 1/2 hr	10	40	2	40	1	40
3 1/2 - 4 hr	10	40	4	20	2	20
4 - 4 1/2 hr	10	40	4	30	2	30
4 1/2 and more	10	40	4	40	2	40

As soon as regular, strong contractions develop, the speed of the drip is not further increased. It may even have to be reduced.

Observations

Check regularly:

- the contractions and the resting tone of the uterus
- the fetal heart rate
- the blood pressure

Failed induction

If there are no contractions after six hours inform the doctor.

Intrauterine death

In cases of intrauterine death higher doses of pitocin may be necessary. Ask the gynaecologist about this.

ACCELERATION OF THE ACTIVE PHASE

This is only allowed in nulliparae! For details about the indication see Chapter 22. The concentration and speed of the pitocin drip are the same as for the induction of labour.

ACCELERATION OF THE SECOND STAGE

This is only allowed: - in a nullipara
- in a multipara for the second twin.

Delivery needs to be effected fairly quickly and therefore a higher dose of pitocin is used:

- start with the maximum concentration of pitocin at 10 drops per minute
- increase the speed of the drip faster than you would during an induction
- stay with the patient all the time and observe the contractions carefully!

THIRD STAGE OF LABOUR

In patients with high blood pressure pitocin 5 units i.m. can be used instead of ergometrine. For the use of pitocin in patients with post partum haemorrhage, see Chapter 34.

Appendix B

DRUGS USED FOR HYPERTENSION IN PREGNANCY AND ECLAMPSIA

1. THE LYTIC COCKTAIL

The action of the drugs in the cocktail is as follows:

- **pethidine** gives pain relief; particularly important during labour or after caesarean section.
- **chlorpromazine** (= Largactil) sedates and lowers the blood pressure. The blood pressure lowering effect can be quite dramatic when it is given intravenously, so inject it slowly!!
- **diazepam** (= Valium) sedates and is an anticonvulsant.

The main problems with the lytic cocktail are:

- **the mother** becomes semiconscious and is therefore helpless as well as uncooperative.
- **the baby** is heavily sedated too. After birth it may have problems with breathing, with feeding and in maintaining its temperature.

The dosages of these drugs in the lytic cocktail

First dose : pethidine 50 mg } by slow (5 - 10 minutes)
chlorpromazine 25 mg } i.v. injection
diazepam 10 mg }

i.v. drip for continued sedation:

pethidine 100 mg }
chlorpromazine 50 mg } in 1 litre of i.v. fluid
diazepam 20 - 40 mg }

2. MAGNESIUM SULPHATE

This acts as an anticonvulsant when given intravenously or intramuscularly. It does not sedate the patient and she stays conscious and can cooperate. The baby is unaffected.

The main problems with magnesium sulphate are:

- it depresses the uterine contractions; pitocin may be needed to correct this.
- an overdose of magnesium sulphate causes respiratory paralysis. Magnesium sulphate is excreted by the kidneys. Overdoses are therefore most likely to happen when the urine output is low because then the excretion of magnesium sulphate is also delayed.

Dosage. Magnesium sulphate is given in the following dosages:

First dose : 4 gm (= 20 ml of a 20% solution) by slow i.v. injection

Repeat doses : Again 4 gm by slow i.v. injection, but preferable is:
4 gm (8 ml of a 50% solution) by *i.m.* injection

Do not give a repeat dose if:

- the urine output is less than 100 ml in four hours
- the respiratory rate is less than 16 per minute
- the knee reflexes are absent

The antidote of magnesium sulphate is Calcium gluconate.

Dose : 10 ml of a 10% solution i.v.

3. ALTERNATIVES

Phenergan. This can be used in the lytic cocktail instead of diazepam. The dose is 25 mg in the first intravenous injection and 50 mg in the drip.

If you do not have the other drugs for the lytic cocktail, you may be able to use *Diazepam alone*. Give repeated intravenous doses of 10–20 mg to stop the convulsions and keep the patient well sedated. You may need large amounts of diazepam to achieve this : 100 mg or more per 24 hours.

Paraldehyde. This is an effective and safe alternative to the cocktail. It sometimes works where the cocktail has failed. The dose is 10 ml *i.m.* every four to six hours.

Sodium phenobarbitone. This is a good anticonvulsant and sedative but it can cause respiratory depression. The dose is 200 mg *i.m.* and this can be repeated every four to six hours.

4. DIURETICS

Frusemide (= Lasix). Quick-acting, can be given orally, *i.m.* or *i.v.* The usual dose with eclampsia is 40 mg two to five times per 24 hours. It should not be given before delivery because it would reduce further the already too small circulating bloodvolume. It is used after delivery when the circulation becomes overloaded with oedema fluid. If persistent oliguria or anuria is suspected, 200 mg *i.v.* may be given in one dose.

5. BLOODPRESSURE LOWERING DRUGS

Hydralazine (= Apresoline). Quick-acting, can be given orally, *i.m.* or *i.v.* The effect lasts up to four hours. In eclampsia the *i.m.* route is probably the most useful.

- intramuscular : 10 mg stat. Check blood pressure hourly. Repeat whenever the diastolic blood pressure is 110 mm Hg or more.
- intravenously : 5 mg stat. Check the blood pressure every 15 minutes. Repeat dose whenever the diastolic blood pressure is 110 mm Hg or more.

Important side effects can be : tachycardia and fluid retention.

Methyldopa (= Aldomet). Slow acting. The full effect is seen only after two to five days. Its action is too slow to be of much use in eclampsia. It is useful for the longterm treatment of severe hypertension in pregnancy. Starting dose : 250 mg qid per os, may increase to 500 mg qid.

Important side effects are : sedation, haemolytic anaemia, hepatitis.

6. DRUGS BEST AVOIDED

Ergometrine *i.m.* or *i.v.* may cause a sudden rise of bloodpressure and worsening of preeclampsia or eclampsia. It should be avoided in all patients with high bloodpressure.

Reserpine should if possible be avoided during pregnancy. It may cause breathing problems with the baby after birth.

Appendix C

CARE OF THE VACUUM EXTRACTOR

The vacuum extractor consists of:

- vacuum bottle of glass
- plastic bung with:
 - vacuum gauge
 - connection piece + screw cap
- vacuum pump
- rubber tubing
- vacuum extractor cups of 40, 50 and 60 mm diameter
- bottom plates for the cups, made of silicone or rubber
- traction chain attached to the cup
- traction handle
- white locking ring for the tubing

CLEANING AND STERILISATION

- vacuum bottle can be rinsed with water
- the gauge does not need cleaning and should *never* come in touch with water (always keep bottle and gauge upright)
- The pump does not need cleaning
- Cups, traction handle, white ring and tubing can be sterilised in 3% savlon in spirit or 0.5% hibitane in 70% methylated spirit. They can be kept in the solution ready for use.
- Do not boil the tubing : it perishes very quickly that way.
- *After use, clean everything carefully before putting it back into the solution.*
- Do not lose the white ring.

*One type of vacuum extractor has the chain attached to the cup - and directed through the tubing. These vacuum extractors have no white locking ring.

Appendix D

EQUIPMENT NEEDED FOR SYMPHYSIOTOMY

Instruments

- 2 gallipots
- 2 sponge holders
- 10 or 20 ml syringe and needles
- episiotomy scissors
- 2 medium size artery forceps for the umbilical cord
- needle holder
- toothed dissecting forceps
- scalpel with a fixed handle*
- vacuum extractor

Sundries

- towels
- gauze swabs
- cetrimide solution 0.5%
- iodine solution 2%
- lignocaine solution 2%
- plain catheter FG 18 or 20
- Foley's catheter FG 18 or 20
- mucus extractor
- chromic 0 or 1 suture
- suture needles: round-bodied and cutting

*A disposable blade on a handle can be used but is rather sharp and thin. Be careful not to cut too deep or too far and do not break the blade.

Appendix E

**EQUIPMENT NEEDED
FOR DESTRUCTIVE OPERATIONS**

Instruments

- 2 gallipots
- 4 sponge holders: - 2 for cleaning,
- 2 for inspection of the cervix
- 2 or 3 Sims' specula, preferably different sizes
- scalpel handle and blade
- strong pair of scissors
- Sim's perforator
- 4 volsellum forceps or strong Kochers or Willet's forceps
- decapitation saw - handles and thimble
- toothed dissecting forceps
- needle holder

Sundries

- towels
- gauze swabs
- cetrimide solution 0.5%
- plain catheter Fg No. 18 or 20
- Foley's catheter FG No. 18 or 20
- chromic 0 or 1 sutures
- suture needles: round-bodied and cutting

Appendix F

**EQUIPMENT FOR THE EXAMINATION UNDER
ANAESTHESIA FOR ANTEPARTUM
HAEMORRHAGE**

Instruments

- gallipot
- 2 sponge holders
- 2 or 3 Sims' specula, preferably different sizes
- Kochers forceps for rupturing the membranes

Sundries

- towels
- gauze swabs
- cetrimide solution 0.5%
- plain catheter FG No. 18 or 20
- Have the caesarean section set ready for immediate use!

Appendix G

**EQUIPMENT FOR THE THEATRE
PROCEDURES FOR POSTPARTUM
HAEMORRHAGE**

Instruments

- gallipot
- 4 sponge holders: - 2 for cleaning
 - 2 for inspection of the cervix
- 2 or 3 Sims' specula, preferably different sizes
- needle holder
- toothed dissecting forceps
- scissors

Drugs

- pitocin ampoules to a total of at least 40 units of pitocin
- ergometrine 0.5 mg ampoules

Sundries

- towels
- gauze swabs
- plain catheter size FG 18 or 20
- cetrimide solution 0.5%
- chromic 0 or 1 sutures
- suture needles: round-bodied and cutting

Appendix H

**EQUIPMENT NEEDED FOR THE REPAIR
OF A THIRD DEGREE PERINEAL TEAR**

Instruments

- gallipot
- 2 sponge holders
- 4 Allis' forceps
- 4 small artery forceps or Kochers forceps
- needle holder
- toothed dissecting forceps
- scissors

Sundries

- towels
- gauze swabs
- plain catheter FG 18 or 20
- cetrimide solution 0.5%
- chromic 0 and 2/0 sutures
- suture needles: round-bodied and cutting

FURTHER READING

The following list is not by any means exhaustive but it does contain books I used while preparing this manual and found to be particularly useful.

General

M.F. Myles: Textbook for midwives ELBS and Churchill Livingstone, 1981. After many revisions still a standard text. Its tone is rather dogmatic and it is mainly directed at conditions in the United Kingdom.

N.A. Beischer + E.V. Mackay: Obstetrics and the Newborn: for midwives and medical students. Saunders, 1979.

This book's main strength is its beautiful illustrations. It is also well written although the organisation of the chapters is in places somewhat unusual making certain items difficult to find. It does have a detailed table of contents and a good index.

D. Llewellyn-Jones: Fundamentals of Obstetrics and Gynaecology: Volume 1: Obstetrics. ELBS, 1982.

This book is very well written and very useful as an introductory text.

R.C. Benson et al.: Current Obstetrics and Gynaecologic Diagnosis and treatment, Lange, Medical Publications, 1984.

This book is USA based and contains much information in a concise format. It is more a book to look things up in than to read from cover to cover.

Books particularly directed at the tropics

J. Lawson and K.S. Stewart: Obstetrics and Gynaecology in the tropics, ELBS.

First published in 1967 this book has become a classic. Although it is now no longer altogether up to date, it is extremely well written and makes excellent background reading, particularly for obstructed labour.

P.R. Myerscough: Munro Kerr's Operative Obstetrics, ELBS, 1982. Although this book was not especially written for the tropics, the present author travelled widely and he often comments on conditions like those that occur in Malaŵi. It is in places rather long-winded but it is sound and makes good and often amusing reading.

R.H. Philpott, K.E. Sapire, J.H.M. Axton Obstetrics, Family Planning and Paediatrics, University of Natal Press, 1977.

This work holds the middle between a manual and a textbook for the tropics. It is well written and although it is mainly directed at the poorer parts of the Republic of South Africa, much of its advice is directly applicable in Malaŵi. Unfortunately this book is not easy to get hold of.

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