LABOUR

MECHANISMS OF NORMAL LABOUR AND BIRTH

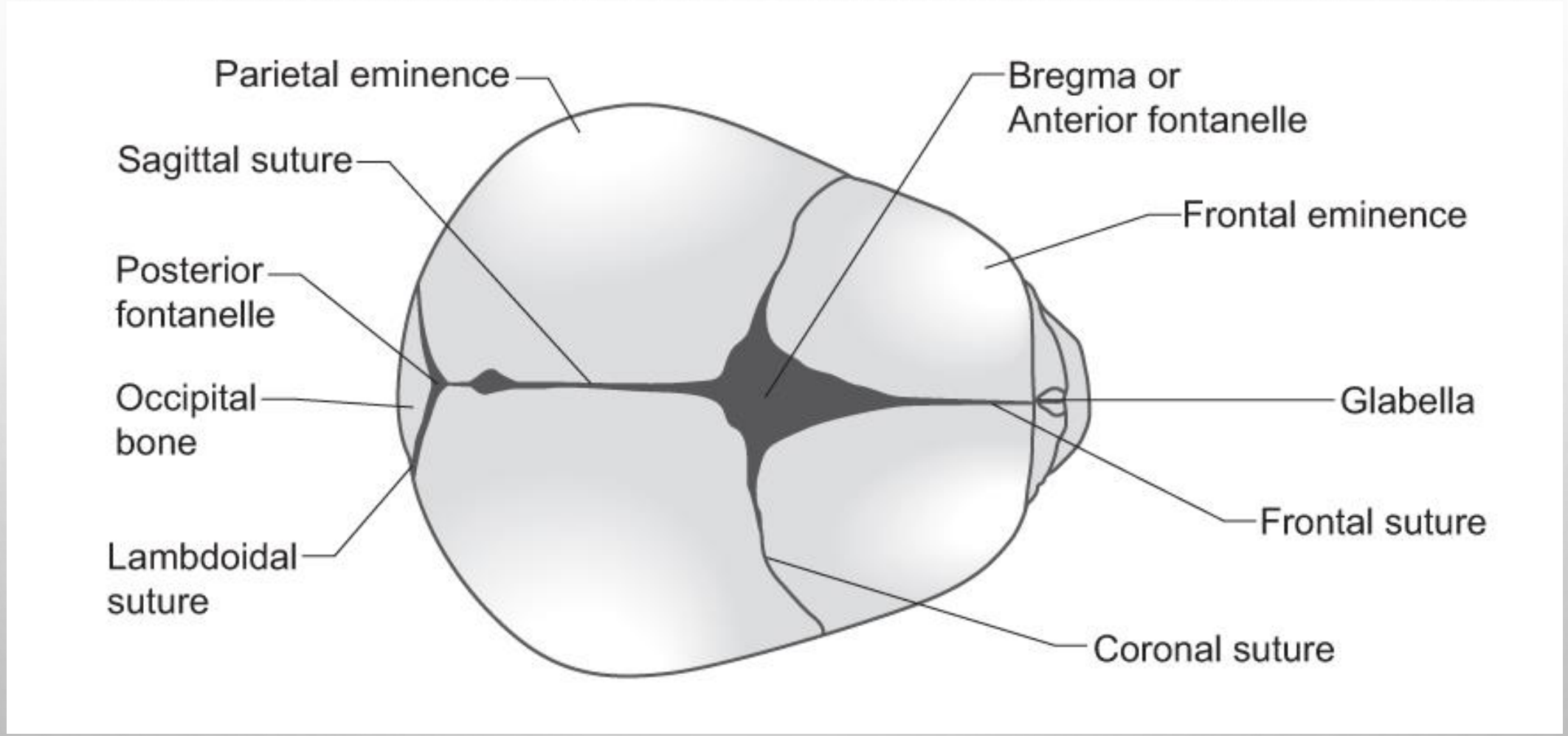
WHEN YOU HAVE COMPLETED LECTURE YOU WILL BE ABLE TO:

- DESCRIBE THE ANATOMY OF THE FETAL SKULL AND FEMALE PELVIS THAT IS RELEVANT TO LABOUR
- DESCRIBE THE CHANGES THAT OCCUR IN THE UTERUS DURING PREGNANCY
- DESCRIBE THE FACTORS THAT ARE INVOLVED IN THE ONSET OF LABOUR
- DESCRIBE THE INITIATION OF HUMAN LABOUR (MOLECULAR MECHANISMS)
- OUTLINE THE MECHANISM OF NORMAL LABOUR AND BIRTH
- DESCRIBE HOW TO MONITOR PROGRESS IN LABOUR.

- TO EFFECTIVELY SUPPORT WOMEN PSYCHOLOGICALLY AND PHYSICALLY THROUGH LABOUR, THERE NEEDS TO BE A SOUND UNDERSTAND OF ITS MECHANISMS.
- LABOUR IS DEFINED IN 2 STAGES; THE LATENT PHASE AND ESTABLISHED LABOUR.
- LATENT FIRST STAGE OF LABOUR IS THE PRESENCE OF UTERINE CONTRACTIONS AND CERVICAL DILATION AND EFFACEMENT UP TO 4 CM.
- WHERE THERE IS REGULAR CONTRACTIONS AND PROGRESSIVE DILATION BEYOND 4CM , A WOMAN IS CONSIDERED TO BE IN ACTIVE OR ESTABLISHED LABOUR.

ANATOMY

- **DIAMETERS OF THE FETAL SKULL:**
  NOTE THAT THE VERTEX IS THE AREA BOUNDED BY THE ANTERIOR AND POSTERIOR FONTANELLE AND THE PARIETAL EMINENCE


Parietal eminence
Sagittal suture
Posterior fontanelle
Occipital bone
Lambdoidal suture
Bregma or Anterior fontanelle
Frontal eminence
Glabella
Frontal suture
Coronal suture

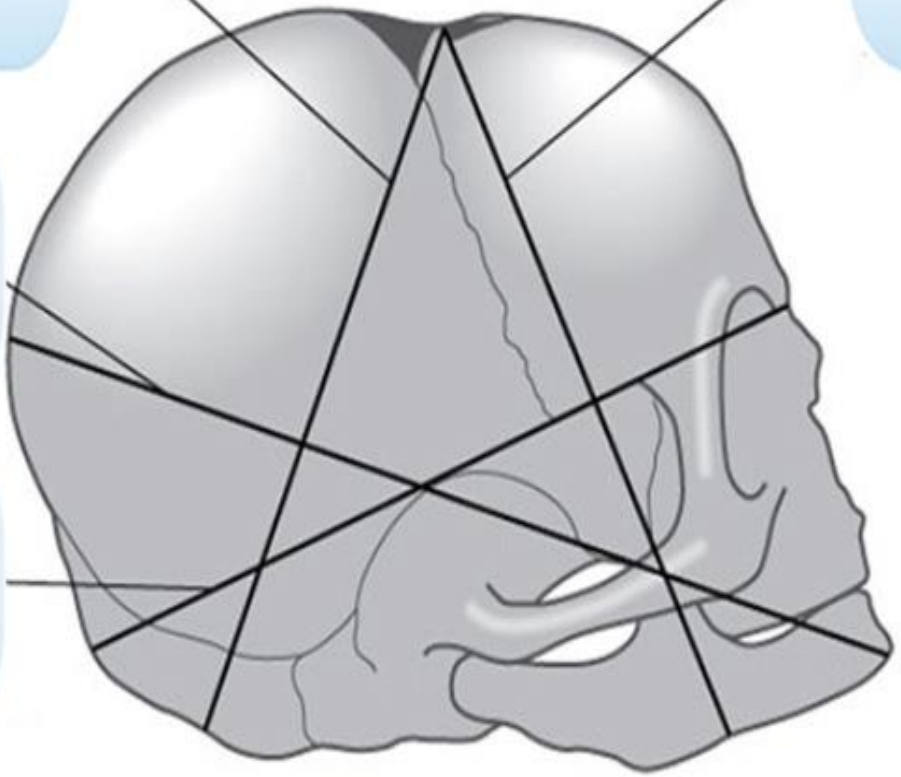
Suboccipitobregmatic
From nape of neck to centre of bregma (9.5cm)

Submentobregmatic
From below chin to centre of bregma (9.5cm)

(Diameters)

Mentovertical
From point of chin to above posterior fontanelle (14cm)

Occipitofrontal
From root of nose to occipital protuberance (11.5cm)



Face = root of nose to junction of head and neck

Vault = from orbital ridges to nape of neck (frontal, parietal, occipital bones). It is compressible

Biparietal (9.5 cm)
Between two parietal eminences

(Diameters)

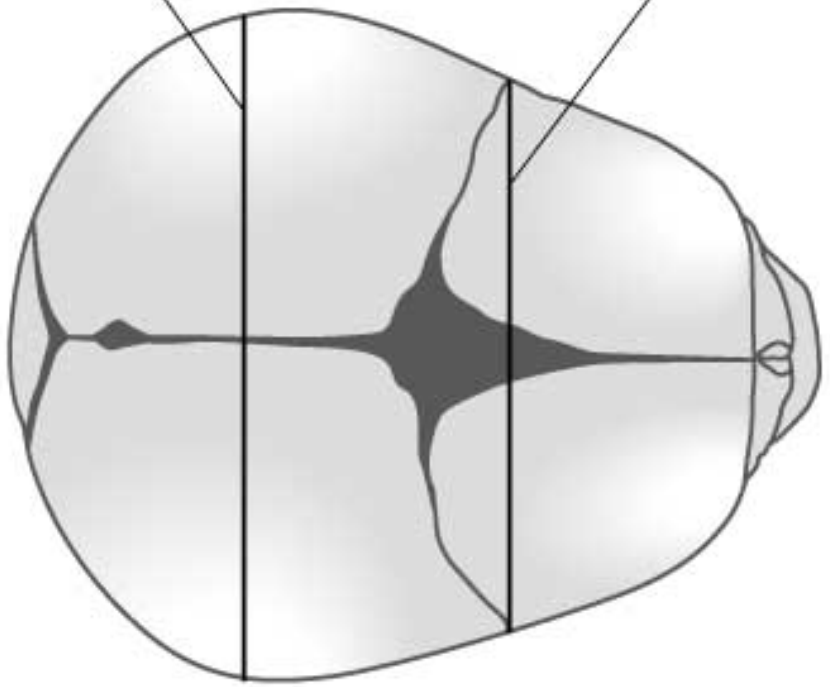
Bitemporal (8.5 cm)
Greatest distance between two halves of coronal suture

(Circumferences)

Suboccipitobregmatic x biparietal (28 cm)
These are engaging diameters of well-flexed vertex presentation

Occipitofrontal x biparietal (33 cm)
These are engaging diameters of deflexed vertex presentation and found in occipitoposterior positions

Mentovertical x biparietal (35.5 cm)
This is the largest circumference of the head and is found in brow presentation

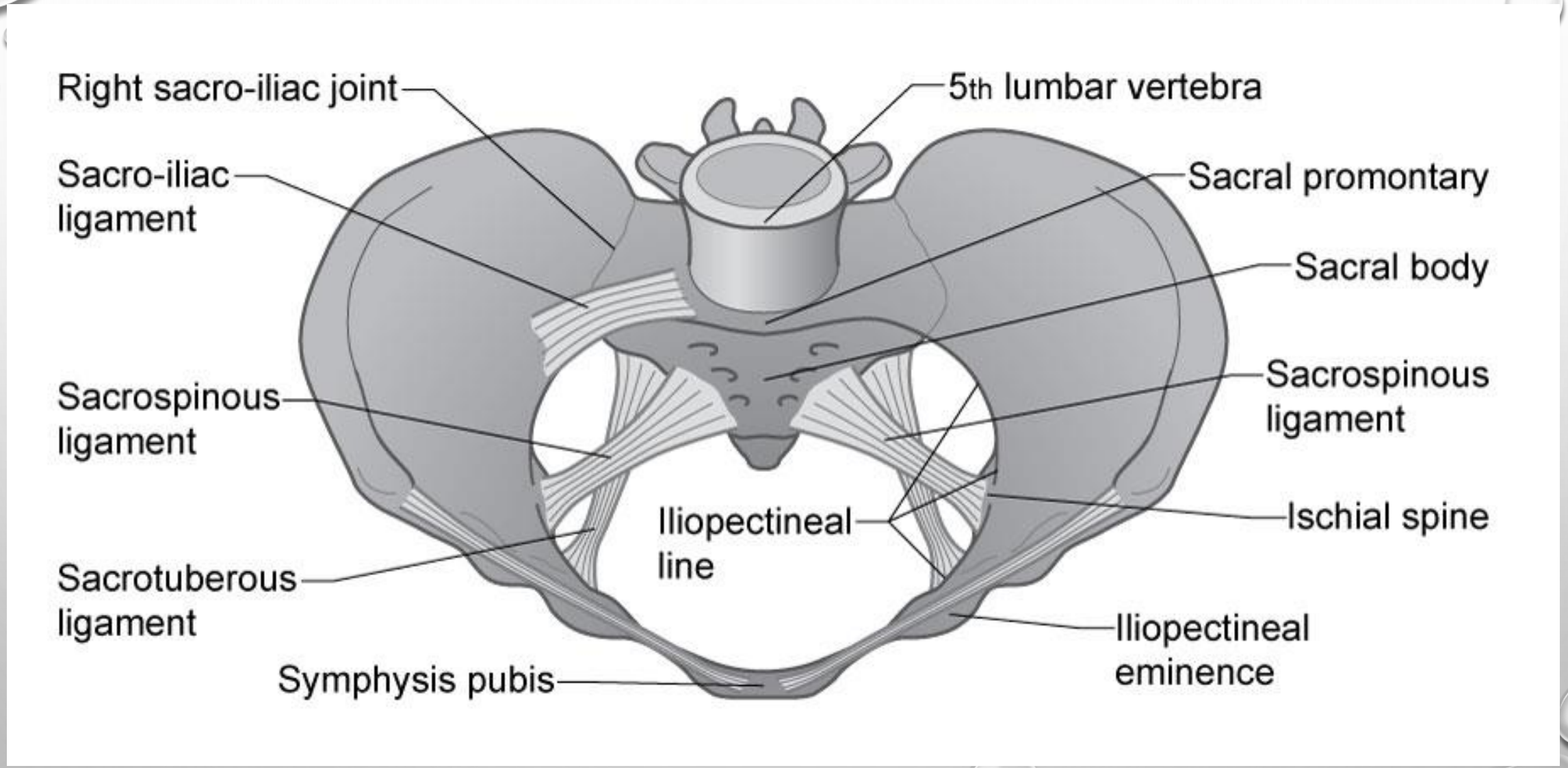


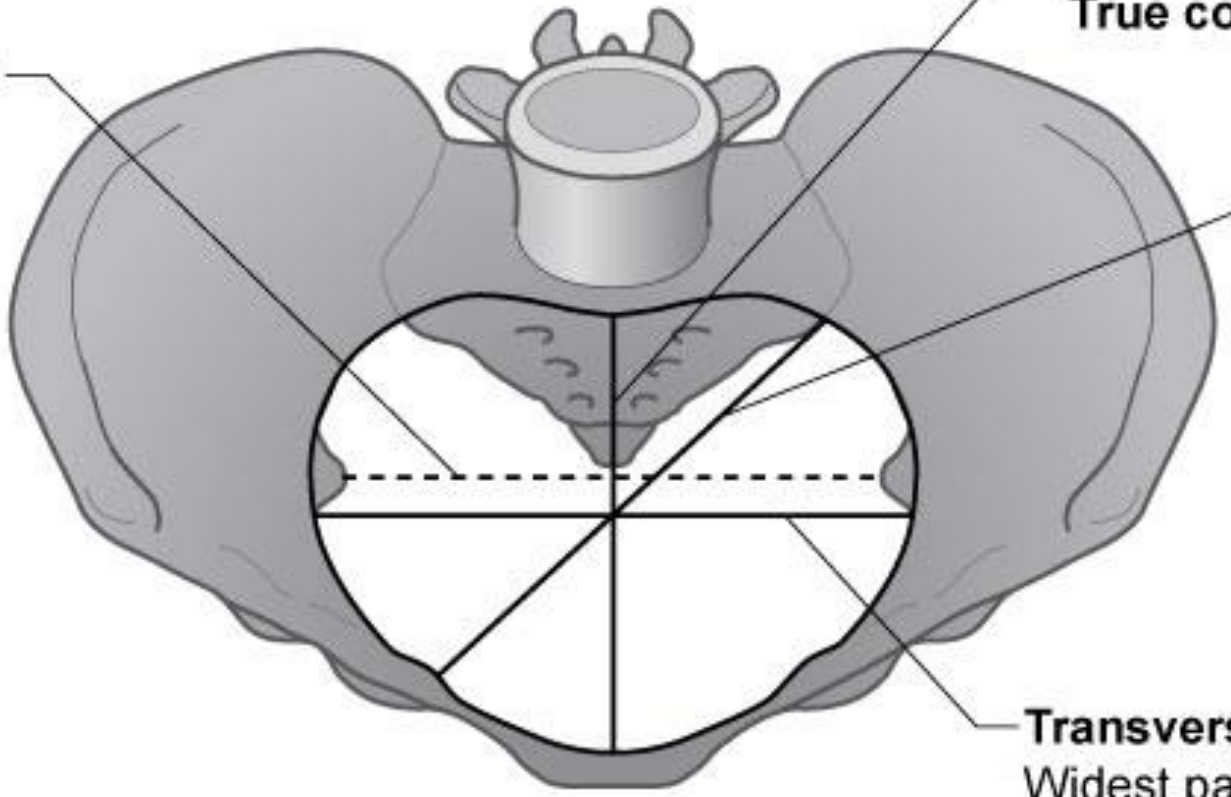
The vertex is the area bounded by the anterior and posterior fontanelle and the parietal eminence

SUMMARY OF PRESENTING DIAMETERS

Vertex	Suboccipito–bregmatic	9.5 cm
Deflexed OP	Occipito–frontal	11.5 cm
Brow	Mento–vertico	13.0 cm
Face	**Submento–bregmatic**	**9.5 cm**

ANATOMY OF THE PELVIS


Right sacro-iliac joint
5th lumbar vertebra
Sacro-iliac ligament
Sacral promontary
Sacral body
Sacrospinous ligament
Sacrospinous ligament
Iliopectineal line
Ischial spine
Sacrotuberous ligament
Iliopectineal eminence
Symphysis pubis



Anteroposterior or
True conjugate diameter

Interspinous diameter
Between tips of ischial spines. This is a diameter of the cavity

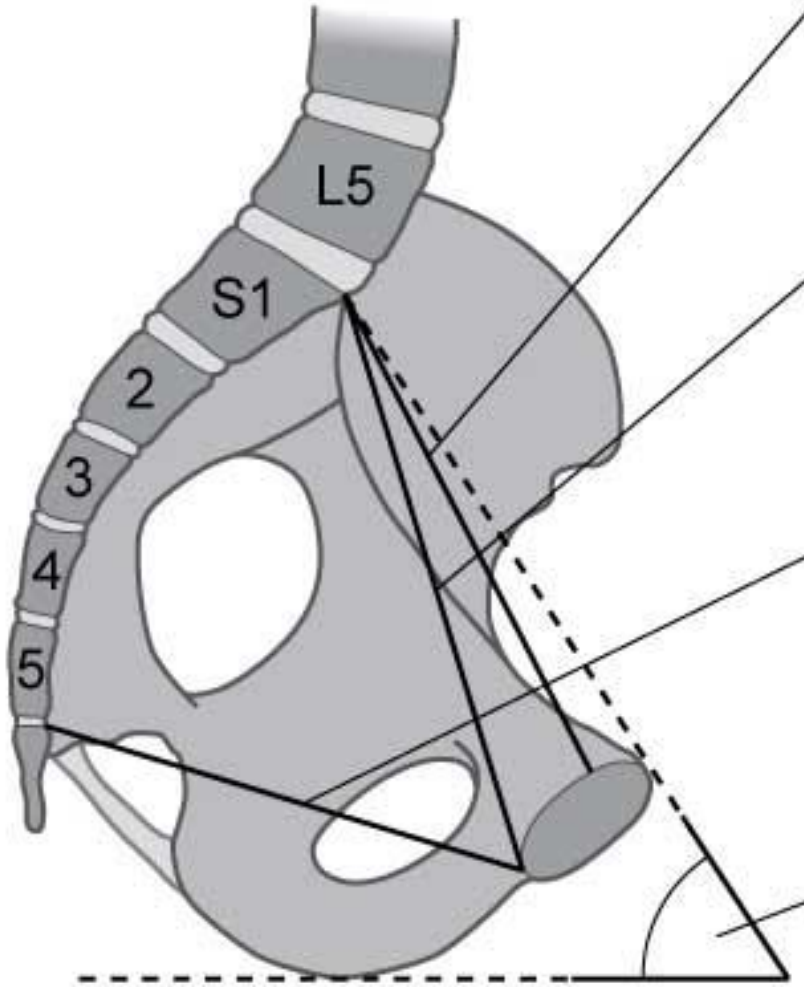
Left oblique diameter
Left sacroiliac joint to right iliopectineal eminence

Transverse diameter
Widest part of brim

The plane of the brim is bounded anteriorly by the pubis, laterally by the iliopectineal lines, posteriorly by the alae and promontory of the sacrum

Note that the plane of the brim is bounded

- ANTERIORLY BY THE PUBIS,
- LATERALLY BY THE ILIOPECTINEAL LINES,
- POSTERIORLY BY THE ALAE AND PROMONTORY OF THE SACRUM.

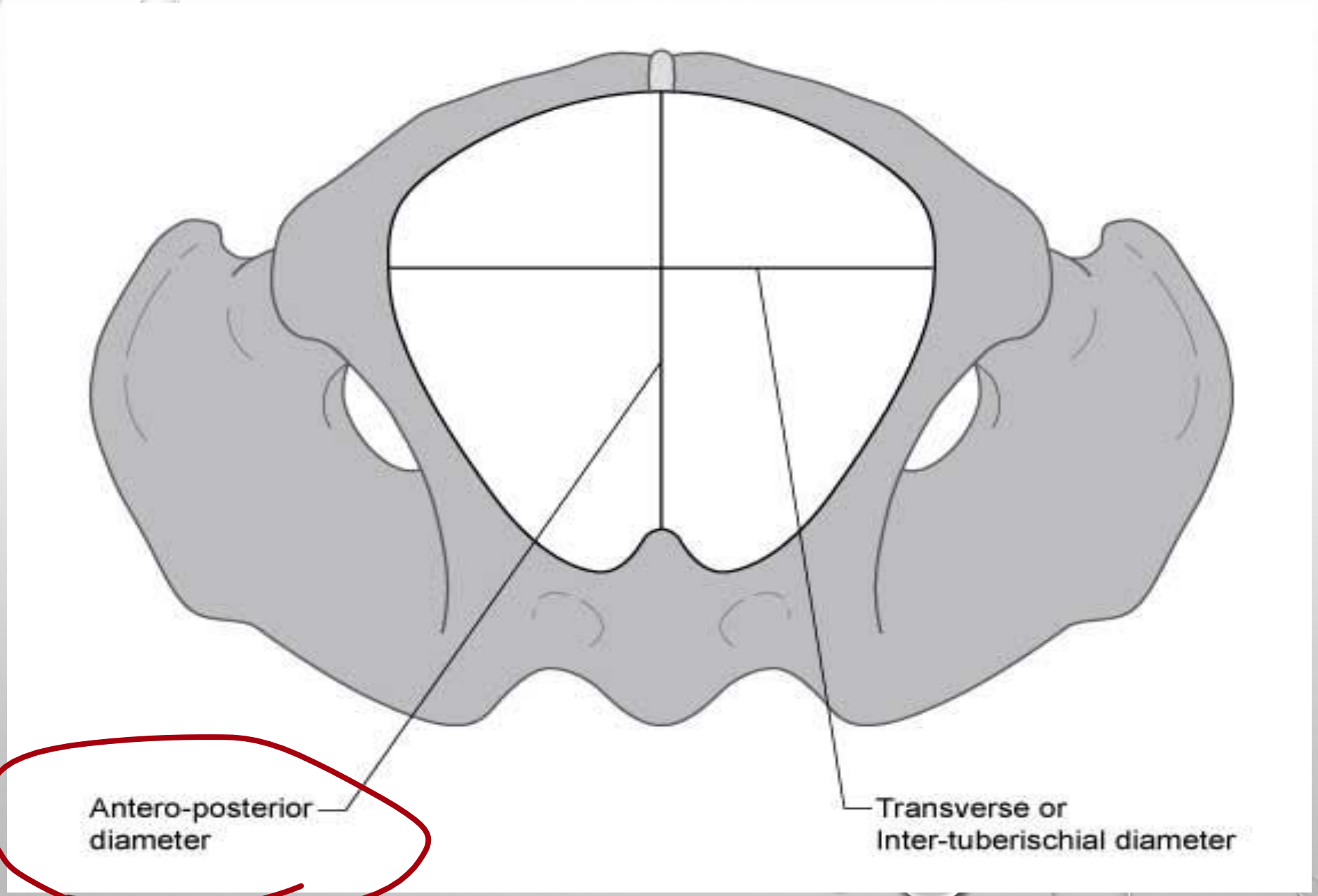


True conjugate of brim
From sacral promontory to upper and inner border of symphysis pubis

Diagonal conjugate diameter of brim
From sacral promontory to under border of symphysis pubis

Antero-posterior diameter of outlet
Under body of symphysis pubis to end of sacrum or coccyx if fused

Inclination of pelvic brim 50°–60° (usually 55°)

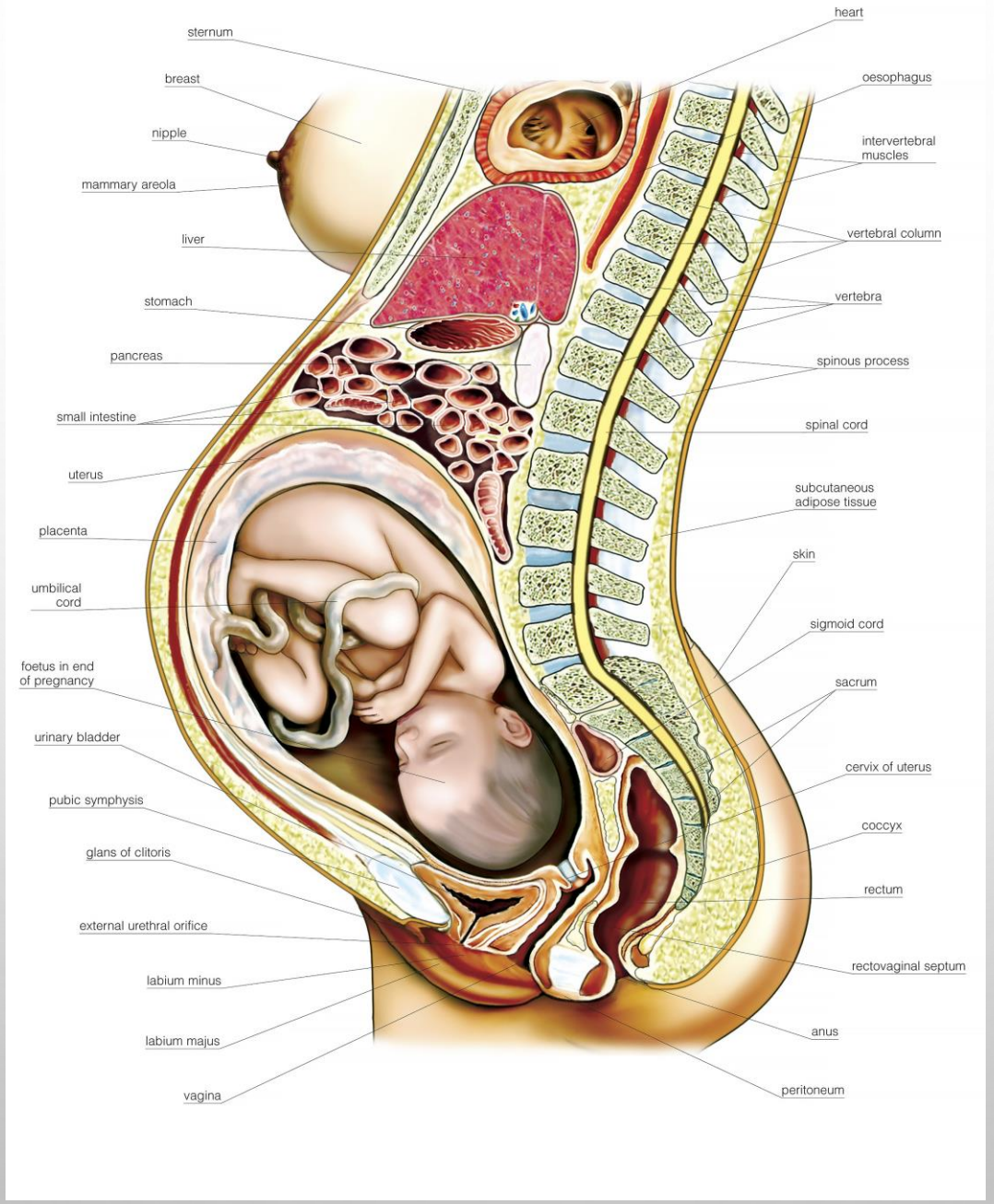

Antero-posterior
diameter
Transverse or
Inter-tuberischial diameter

KEY POINTS

- SMALLEST DIAMETER OF FETAL SKULL IS THE SUBOCCIPITO-BREGMATIC – 9.5CM (VERTEX)
- ALL NON VERTEX PRESENTATIONS LIKELY TO CONTRIBUTE TO CEPHALO-PELVIC DISPROPORTION

CHANGES IN THE UTERUS DURING PREGNANCY

- REMARKABLE CHANGES OCCUR IN THE ANATOMY OF THE UTERUS DURING PREGNANCY TO ACCOMMODATE THE RAPIDLY GROWING FETUS.
- THE UTERUS IS A THICK-WALLED HOLLOW ORGAN COMPOSED PRIMARILY OF SMOOTH MUSCLE. THE SMOOTH MUSCLE FIBRES INTERDIGITATE TO FORM A SINGLE FUNCTIONAL MUSCLE, WHICH INCREASES DURING PREGNANCY, PRIMARILY BY HYPERTROPHY AND, TO A LESSER EXTENT, HYPERPLASIA.

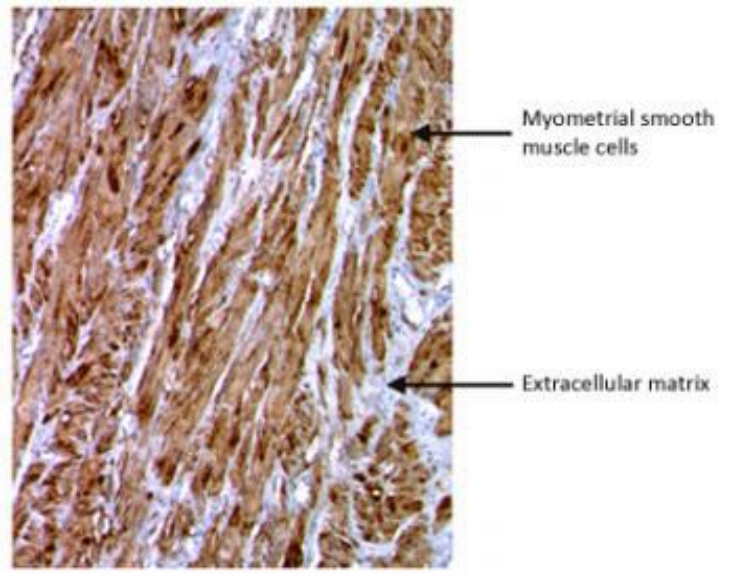

sternum
breast
nipple
mammary areola
liver
stomach
pancreas
small intestine
uterus
placenta
umbilical cord
foetus in end of pregnancy
urinary bladder
pubic symphysis
glans of clitoris
external urethral orifice
labium minus
labium majus
vagina
heart
oesophagus
intervertebral muscles
vertebral column
vertebra
spinous process
spinal cord
subcutaneous adipose tissue
skin
sigmoid cord
sacrum
cervix of uterus
coccyx
rectum
rectovaginal septum
anus
peritoneum

CHANGES IN THE UTERUS AND CERVIX DURING PREGNANCY

	Non-pregnant uterus	Term uterus
Weight	50 g	950 g
Length	7.5 cm	30 cm
Depth	2.5 cm	20 cm
Shape	Flattened pear	Ovoid and erect
Position	Anteverted and antiflexed in pelvic cavity	Rotated to right in the abdominal cavity
Length	7.5 cm	30 cm
	Non-pregnant cervix	**Cervix at term**
Length	2.5 cm	2.5 cm
Colour	Pink	Blue and vascular

MYOMETRIAL QUIESCENCE

- THE UTERUS IS A THICK-WALLED HOLLOW ORGAN COMPOSED PRIMARILY OF SMOOTH MUSCLE. THE SMOOTH MUSCLE FIBRES INTERDIGITATE TO FORM A SINGLE FUNCTIONAL MUSCLE, WHICH INCREASES DURING PREGNANCY, PRIMARILY BY HYPERTROPHY AND, TO A LESSER EXTENT, HYPERPLASIA.



- THE UTERUS IS SPONTANEOUSLY ACTIVE AND, USING ELECTROMYOGRAPHIC MEASUREMENTS, CONTRACTILE ACTIVITY CAN BE DETECTED IN BOTH PREGNANT AND NON-PREGNANT WOMEN. TWO DIFFERENT TYPES OF ELECTROMYOGRAPHIC ACTIVITY HAVE BEEN DESCRIBED IN THE MYOMETRIUM OF THE PREGNANT RHESUS MONKEY, REFERRED TO AS CONTRACTURES AND CONTRACTIONS, AND ARE BELIEVED TO BE PRESENT IN MOST SPECIES.

CONTRACTURES

- THE UTERUS IN PREGNANT AND NONPREGNANT STATE IS SPONTANEOUSLY ACTIVE. THIS CAN BE DETECTED USING ELECTROMYOGRAPHIC MEASUREMENTS. TWO DIFFERENT TYPES OF ELECTROMYOGRAPHIC ACTIVITY HAVE BEEN DESCRIBED IN THE MYOMETRIUM OF THE PREGNANT RHESUS MONKEY, REFERRED TO AS CONTRACTURES AND CONTRACTIONS.
- CONTRACTURES REPRESENT LOW AMPLITUDE, LONG-ACTING UTERINE ACTIVITY, WHICH COMMENCE EARLY IN PREGNANCY; IN WOMEN THESE WERE FIRST OBSERVED BY BRAXTON HICKS IN 1873. CONTRACTIONS ARE HIGH AMPLITUDE AND OF SHORT DURATION, AND ARE CHARACTERISED BY NOCTURNAL OR LABOUR UTERINE ACTIVITY.
- THE LEVEL OF ACTIVITY IN THE UTERUS THROUGHOUT PREGNANCY IS LOW, COMPARED WITH THAT MEASURED DURING LABOUR AND THE IMMEDIATE PUERPERIUM, WHEN STRONG CONTRACTIONS OCCUR TO EXPEL THE FETUS AND PLACENTA, AND THEN MAINTAIN HAEMOSTASIS.
- THE MYOMETRIAL CELLS COMMUNICATE WITH ONE ANOTHER THROUGH INTERCELLULAR CHANNELS CALLED GAP JUNCTIONS. GAP JUNCTIONS INCREASE WITHIN THE MYOMETRIUM AT THE ONSET OF LABOUR. THEY ARE UNDER HORMONAL CONTROL, WITH PROGESTERONE INHIBITING, AND ESTRADIOL STIMULATING THEIR FORMATION. IN ADDITION, PROSTAGLANDINS REGULATE GAP JUNCTION FORMATION AND FUNCTION.
- WHEN SMOOTH MUSCLE IS STRETCHED, IT USUALLY RESPONDS BY CONTRACTING. AND YET, DURING PREGNANCY, THE MYOMETRIAL SMOOTH MUSCLE REMAINS RELATIVELY QUIESCENT DESPITE THE INCREASING UTERINE DISTENSION WITH ADVANCING GESTATION. THE MECHANISMS CONTROLLING THIS QUIESCENCE ARE POORLY UNDERSTOOD, THOUGH A NUMBER OF SMOOTH MUSCLE INHIBITORY ('PRO-PREGNANCY') AND STIMULATORY ('PRO-LABOUR') FACTORS HAVE BEEN DESCRIBED.

OBESITY AND SMOOTH MUSCLE CONTRACTILITY

- OBESE WOMEN ARE KNOWN TO BE AT INCREASED RISK OF CAESAREAN SECTION IN THE FIRST STAGE OF LABOUR, EVEN IN INDUCED LABOURS. OBESE WOMEN HAVE ALSO BEEN SHOWN HAVE A HIGHER RATE OF POST PARTUM HAEMORRHAGE. THEREFORE EFFICIENT UTERINE ACTIVITY IS REQUIRED TO NOT ONLY EXPEL THE FETUS AND PLACENTA BUT ALSO TO MAINTAIN HAEMOSTASIS.

CERVICAL RIPENING

- THE PHENOMENON OF CERVICAL RIPENING, DEFINED AS THE INCREASED SOFTENING, DISTENSIBILITY, EFFACEMENT AND DILATATION OF THE CERVIX, PRELUDE TO THE ONSET OF LABOUR.
- THESE CHANGES ARE DUE TO ALTERATIONS IN THE BIOMECHANICAL PROPERTIES OF CERVICAL TISSUE, INCLUDING A REDUCTION IN COLLAGEN CONCENTRATION, AN INCREASE IN WATER CONTENT AND A CHANGE IN PROTEOGLYCAN/GLYCOSAMINOGLYCAN COMPOSITION. ONE IMPORTANT CHANGE INVOLVED IS A REARRANGEMENT AND REALIGNMENT OF COLLAGEN
- THE PROCESS OF CERVICAL RIPENING HAS BEEN COMPARED TO AN INFLAMMATORY REACTION. THE INFILTRATION OF CERVICAL TISSUE WITH INFLAMMATORY CELLS HAS BEEN SHOWN IN EXPERIMENTAL CIRCUMSTANCES AND DURING HUMAN PARTURITION AT TERM.

THERE ARE A NUMBER OF FACTORS POSSIBLY LINKED TO CONTROLLING CERVICAL RIPENING INCLUDING:

- PROSTAGLANDINS
- ESTROGENS
- PROGESTERONE AND ANTIPROGESTERONES
- RELAXIN
- INFLAMMATORY MEDIATORS
- NITRIC OXIDE
- APOPTOSIS.

IN CLINICAL PRACTICE, CERVICAL RIPENING IS ASSESSED USING THE BISHOP SCORE. THE PARAMETERS OF THIS SCORE INCLUDE:

Parameter	0	1	2	3
Dilatation	<1 cm	1–2 cm	2–4 cm	>4 cm
Length	>4 cm	2–4 cm	1–2 cm	<1 cm
Consistency	Firm	Average	Soft	
Position	Posterior	Mid	Anterior	
Station	–3	–2	–1, 0	+1, +2

IATROGENIC METHODS COMMONLY EMPLOYED TO ENCOURAGE CERVICAL RIPENING IN CLINICAL PRACTICE INCLUDE:

Pharmacological	Mechanical
Misoprostol - Prostaglandin E1	Foleys Catheter
Dinopostone – Prostaglandin E2	Single / Double Balloon catheter

RUPTURE OF THE FETAL MEMBRANES

- RUPTURE OF THE FETAL MEMBRANES IS A VITAL PART OF NORMAL LABOUR. DURING SPONTANEOUS LABOUR AT TERM, THE MEMBRANES REMAIN INTACT UNTIL AFTER THE ONSET OF LABOUR IN 90% OF WOMEN – IN ONLY 10% OF WOMEN DO THEY RUPTURE PRIOR TO THE ONSET OF LABOUR (PRELABOUR OR PREMATURE RUPTURE OF THE MEMBRANES, PROM).
- IF MANAGED CONSERVATIVELY, 70% OF MOTHERS WILL ESTABLISH IN LABOUR SPONTANEOUSLY WITHIN 24 HOURS, AND 90% WILL ESTABLISH BY 48 HOURS. AS THE INTERVAL BETWEEN RUPTURE OF THE FETAL MEMBRANES AT TERM AND BIRTH INCREASES, SO MAY THE RISK OF FETAL AND MATERNAL INFECTION.

THE TERM PROM TRIAL WAS CONDUCTED TO INVESTIGATE OUTCOMES (PRIMARILY NEONATAL INFECTION) IN WOMEN MANAGED IN DIFFERENT WAYS (HANNAH ET AL)

THE TRIAL CONCLUDED THAT:

- IN WOMEN WITH PROM AT TERM, INDUCTION OF LABOUR WITH OXYTOCIN OR PROSTAGLANDIN E2 AND EXPECTANT MANAGEMENT RESULT IN SIMILAR RATES OF NEONATAL INFECTION AND CAESAREAN SECTION
- INDUCTION OF LABOUR WITH INTRAVENOUS OXYTOCIN RESULTS IN A LOWER RISK OF MATERNAL INFECTION THAN DOES EXPECTANT MANAGEMENT
- WOMEN VIEW INDUCTION OF LABOUR MORE POSITIVELY THAN EXPECTANT MANAGEMENT.

KEY POINTS

- UTERINE MYOMETRIAL FIBRES HYPERTROPHY IN PREGNANCY INCREASING TERM UTERINE WEIGHT TO 950G
- CONTRACTURES ARE LOW AMPLITUDE, LONG ACTING UTERINE ACTIVITY (BRAXTON HICKS)
- CONTRACTIONS ARE HIGH AMPLITUDE, SHORT DURATION UTERINE ACVITITY (LABOUR CONTRACTIONS)
- CHOLESTEROL IS AN IMPORTANT COMPONENT OF CELLULAR SMOOTH MUSCLE MEMBRANES
- INTRACELLULAR CALCIUM STORES ARE THOUGHT TO HAVE A DIRECT EFFECT ON THE FORCE AND STRENGTH OF THE MYOMETRIAL SMOOTH MUSCLE FIBRES CONTRACTILITY.

INITIATION OF HUMAN LABOUR

- DESPITE MAJOR ADVANCES IN MOLECULAR BIOLOGY AND THE SCIENCE OF REPRODUCTION, THERE IS STILL MUCH THAT IS NOT KNOWN ABOUT THE PHYSIOLOGICAL PROCESSES INVOLVED IN THE INITIATION OF LABOUR.
- THE SEARCH FOR THE TRIGGERING MECHANISM THAT INITIATES HUMAN LABOUR, INITIALLY FOCUSED ON OXYTOCIN AND HAS SINCE INCLUDED PROSTAGLANDIN PRODUCTION, GROWTH FACTORS, CYTOKINES, ENDOTHELINS, GAP JUNCTION FORMATION AND, MORE RECENTLY, PLACENTAL CORTICOTROPIN-RELEASING HORMONE AND NITRIC OXIDE WITHDRAWAL.

THE ROLE OF THE FETUS

- IT WOULD SEEM LOGICAL THAT THE FETUS SHOULD PLAY A ROLE IN THE ONSET OF LABOUR AT TERM. IN SHEEP, FETAL CORTISOL TRIGGERS PARTURITION BY INCREASING THE ACTIVITY OF PLACENTAL ENZYMES, INCLUDING 17A-HYDROXYLASE AND P450 C-17,20 LYASE, THAT ENABLE PROGESTERONE CONVERSION TO ESTRADIOL. THE INCREASE IN ESTRADIOL RELATIVE TO PROGESTERONE STIMULATES MYOMETRIAL OXYTOCIN RECEPTORS, GAP JUNCTION FORMATION, PROSTAGLANDIN PRODUCTION AND MATERNAL PITUITARY OXYTOCIN RELEASE – EVENTS LEADING DIRECTLY TO LABOUR AND DELIVERY.
- IN HUMAN PREGNANCY SIMILAR PATHWAYS ARE ACTIVATED AT TERM, WHEN CIRCULATING LEVELS OF FETAL PLASMA CORTISOL ARE ALSO RAISED. HOWEVER, THE TARGET FOR CORTISOL ACTION IN THE OVINE PLACENTA, 17A-HYDROXYLASE, IS ABSENT IN THE HUMAN PLACENTA AND THERE IS NO CONSISTENT RISE IN MATERNAL PLASMA CONCENTRATIONS OF ESTROGENS OR DECLINE IN PROGESTERONE CONCENTRATIONS BEFORE THE ONSET OF LABOUR IN HUMANS. HENCE, IF FETAL CORTISOL IS A FACTOR CONTROLLING THE ONSET OF HUMAN PARTURITION, ITS MODE OF ACTION MUST BE DIFFERENT FROM THAT IN SHEEP.

PROGESTERONE WITHDRAWAL THEORY

- THE PROGESTERONE-WITHDRAWAL THEORY REMAINS THE LEADING HYPOTHESIS FOR INITIATING CERVICAL REPINING AND UTERINE CONTRACTIONS IN LABOUR. PROGESTERONE INHIBITS HUMAN MYOMETRIAL CONTRACTIONS AND DECREASES GAP JUNCTION FORMATION.
- LABOUR IS AN INFLAMMATORY PROCESS AND PROGESTERONE IS RECOGNISED TO BE AN ANTI-INFLAMMATORY AGENT. WHILST EXOGENOUS PROGESTERONE DOES NOT POSTPONE THE ONSET OF PARTURITION AT TERM IN HUMANS AS IT DOES IN SHEEP, ANTI-PROGESTERONES ACTIVATE MANY OF THE PATHWAYS INVOLVED IN THE ONSET OF LABOUR AND INDUCE UTERINE CONTRACTILITY AND CERVICAL RIPENING.
- THESE OBSERVATIONS SUGGEST A ROLE FOR PROGESTERONE IN THE MAINTENANCE OF PREGNANCY, AND ALSO SUGGEST THAT A DECLINE IN PROGESTERONE SENSITIVITY, OR AN UNCOUPLING OF PROGESTERONE ACTION IN LATE PREGNANCY WITHOUT AN ACTUAL FALL IN THE HORMONE'S CONCENTRATION, COULD BE AN IMPORTANT FACTOR IN THE INITIATION OF HUMAN LABOUR.
- POSSIBLE UNCOUPLING MECHANISMS INCLUDE LOCAL METABOLISM OF PROGESTERONE, PROGESTERONE INACTIVATION BY A SPECIFIC BINDING PROTEIN, BY ENDOGENOUS ANTIPROGESTERONE, OR BY A CHANGE IN THE NUMBER OR AFFINITY OF PROGESTERONE RECEPTORS.

CORTICOTROPIN-RELEASING HORMONE

- A ROLE FOR CORTICOTROPIN-RELEASING HORMONE (CRH) IN THE INITIATION OF HUMAN LABOUR HAS BEEN PROPOSED. CRH IS A HYPOTHALAMIC PEPTIDE WHICH IS NOW KNOWN TO BE SECRETED BY PLACENTAL TROPHOBLASTS INTO THE MATERNAL CIRCULATION.
- MATERNAL PLASMA CRH LEVELS RISE DURING PREGNANCY. ELEVATED PLASMA CRH LEVELS HAVE BEEN ASSOCIATED WITH PRETERM LABOUR. THE AVAILABILITY OF CIRCULATING CRH IS INFLUENCED BY THE CRH BINDING PROTEIN (CRH-BP) THAT BINDS TO THE HORMONE AND PREVENTS ITS RECOGNITION AT THE CRH RECEPTOR.
- CRH-BP IS PRESENT IN THE MATERNAL CIRCULATION IN SUFFICIENT CONCENTRATIONS TO BLOCK THE BIOACTIVITY OF CRH. APPROXIMATELY 3 WEEKS PRIOR TO THE ONSET OF SPONTANEOUS LABOUR, THE CONTINUING RISE IN PLASMA CRH CONCENTRATIONS IS ACCOMPANIED BY AN ABRUPT FALL IN CRH-BP CONCENTRATIONS IN THE MATERNAL CIRCULATION AND AMNIOTIC FLUID.
- CRH RECEPTORS ARE PRESENT IN THE MYOMETRIUM AND FETAL MEMBRANES, AND CRH STIMULATES THE RELEASE OF PROSTAGLANDINS FROM HUMAN AMNION AND DECIDUAS, AND HAS BEEN REPORTED TO POTENTIATE THE ACTION OF OXYTOCIN AND PROSTGLANDIN F2A IN STIMULATING MYOMETRIAL CONTRACTIONS.
- FURTHERMORE, CRH INDUCES THE SYNTHESIS OF PROSTAGLANDINS AND GLUCOCORTICOIDS, WHICH IN TURN STIMULATE FURTHER PLACENTAL CRH SECRETION, CREATING POSITIVE FEEDBACK LOOPS IN THE MATERNAL, FETAL AND AMNIOTIC COMPARTMENTS, WHICH MAY DRIVE THE ONSET OF LABOUR

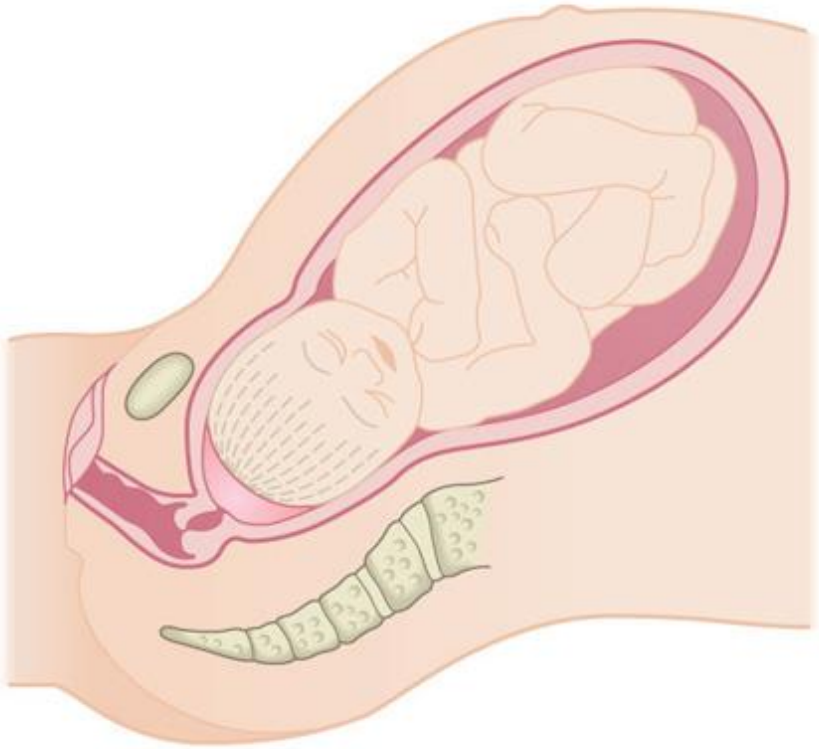
THE MECHANISM OF NORMAL LABOUR AND BIRTH

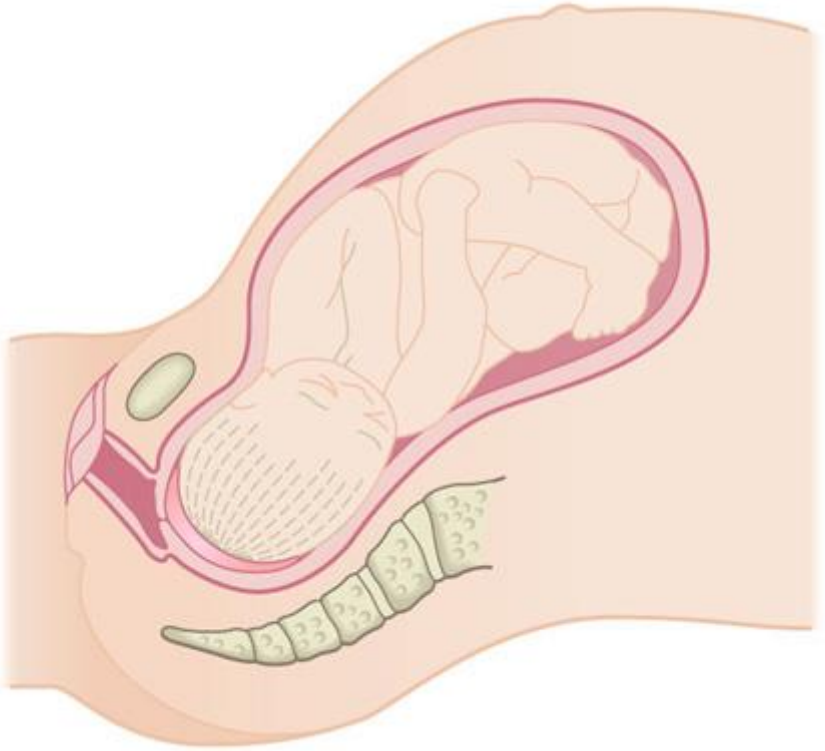
- THE ONSET OF NORMAL LABOUR IS CHARACTERISED BY CERVICAL RIPENING – EFFACEMENT AND DILATATION OF THE CERVIX – AND SUBSEQUENT EXPULSION OF THE FETUS BY UTERINE CONTRACTION.

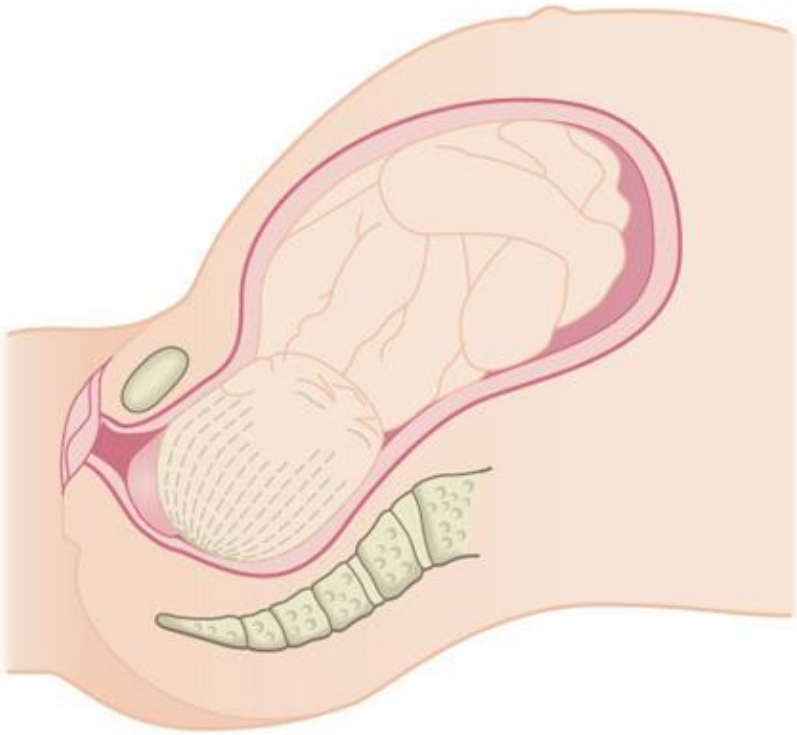
- TO BE COMPLETED SUCCESSFULLY, THE FETUS HAS TO PASS THROUGH THE MATERNAL BONY PELVIS. THE WIDEST POINTS OF THE FETUS ARE THE HEAD (IN THE ANTERO–POSTERIOR PLANE), AND THE SHOULDERS (LATERALLY ACROSS THE SHOULDER TIPS). NORMALLY, THE HEAD ENTERS THE PELVIC BRIM IN AN OCCIPITO–LATERAL POSITION (LEFT OR RIGHT). WITH FLEXION OF THE FETAL NECK, THE PRESENTING DIAMETER IS SUBOCCIPITO–BREGMATIC (NORMALLY ABOUT 9.5 CM). WITH PROGRESSIVE UTERINE ACTIVITY, THE HEAD DESCENDS AND ENGAGES IN THE PELVIS. ONCE IT REACHES THE V-SHAPED PELVIC FLOOR, THE FETAL HEAD ROTATES 90° TO AN OCCIPITO–ANTERIOR POSITION. LESS COMMONLY, THE HEAD ROTATES TO AN OCCIPITO–POSTERIOR POSITION, WHICH MAY RESULT IN A PROLONGED OR OBSTRUCTED LABOUR. THE HEAD THEN CONTINUES ITS DESCENT BEYOND THE ISCHIAL SPINES WHERE IT EXTENDS, DISTENDS THE VULVA AND IS DELIVERED.
- DURING THIS PROCESS, THE BABY'S SHOULDERS ARE ENTERING THE PELVIC INLET IN A TRANSVERSE POSITION. WHEN THEY REACH THE PELVIC FLOOR, THEY ALSO ROTATE TO AN ANTERO–POSTERIOR POSITION. SINCE THE HEAD IS BY NOW COMPLETELY DELIVERED, IT ROTATES BACK TO THE TRANSVERSE POSITION ALONG WITH THE SHOULDERS, A PROCESS CALLED RESTITUTION. THE SHOULDERS ARE THEN DELIVERED (EXPULSION)BY APPLYING AXIAL TRACTION TO THE BABY'S HEAD ALONG THE LINE OF THE BABY'S SPINE – DIFFICULTY DELIVERING THE SHOULDERS IS CALLED SHOULDER DYSTOCIA AND IS AN OBSTETRIC EMERGENCY.

the head flexion, descends(continuous all through labor) and engages in the pelvis

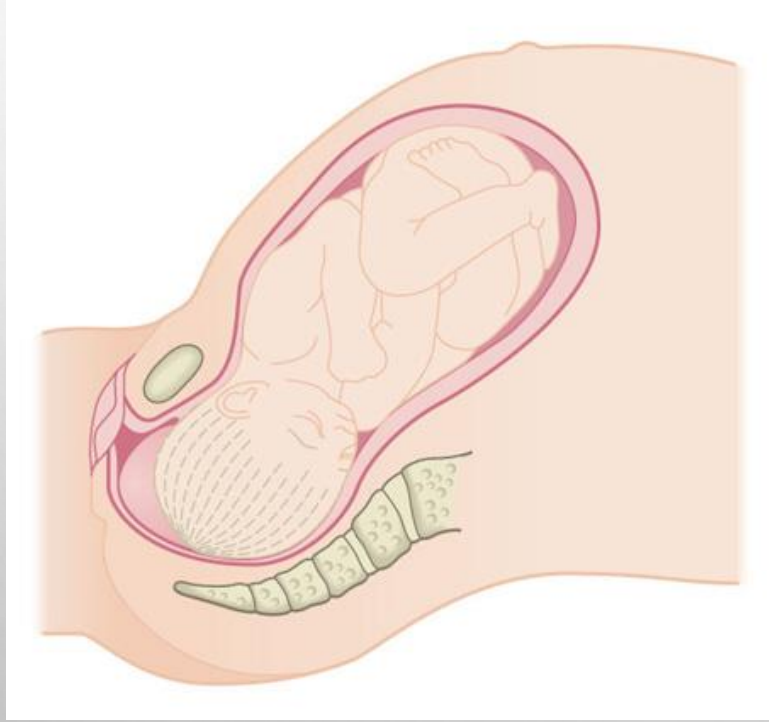
Is it possible for the head to flex after engament ??

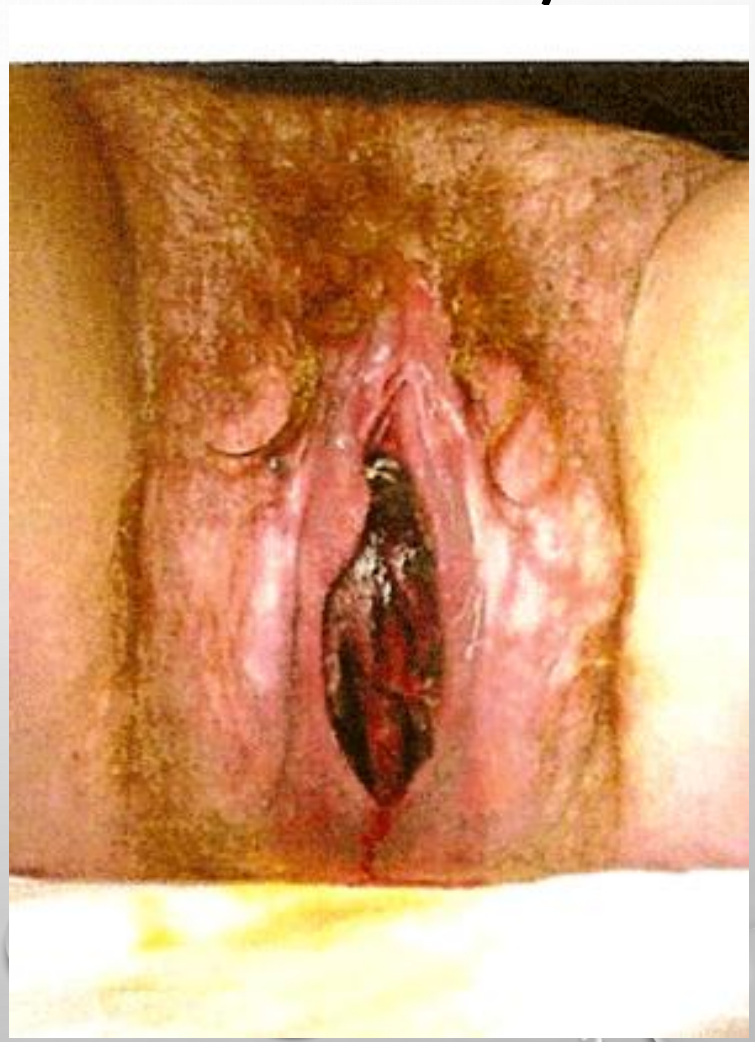




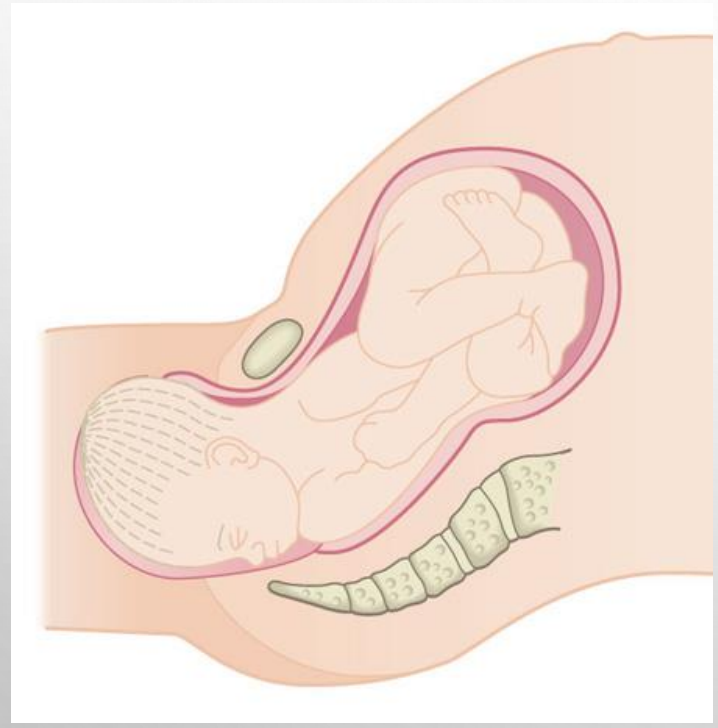


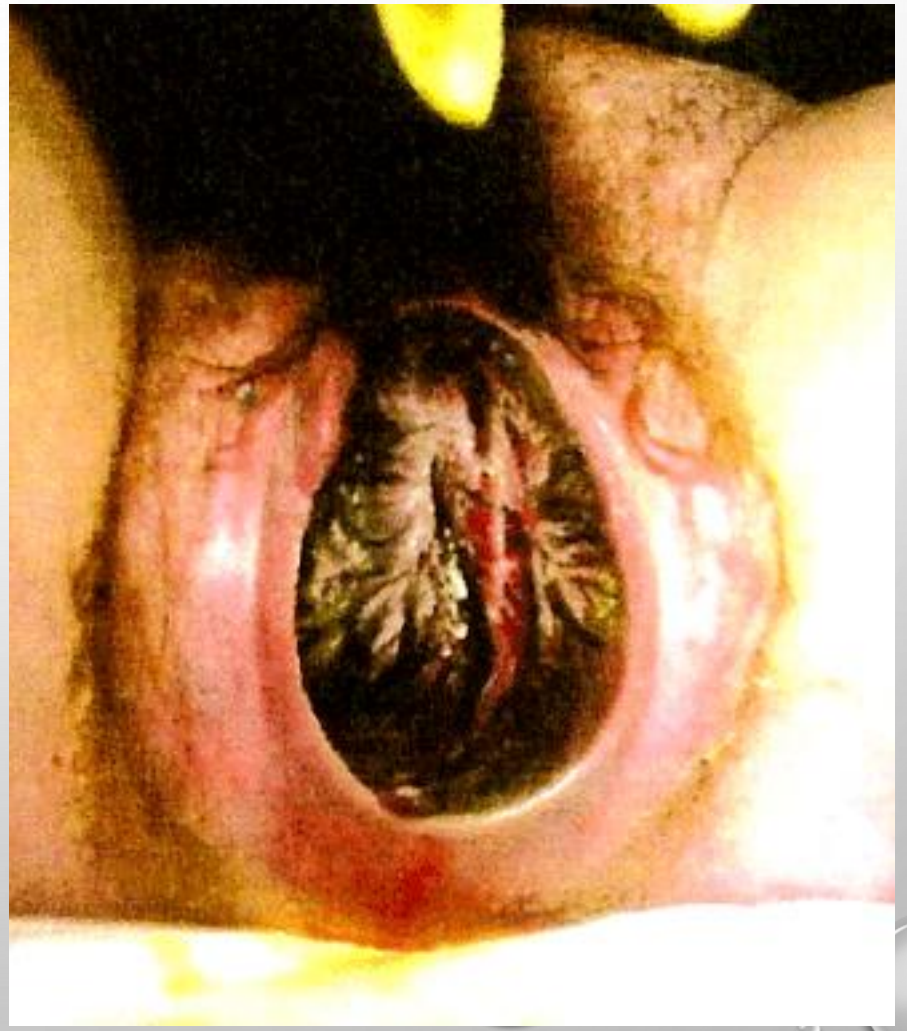
THE FETAL HEAD ROTATES 90° TO AN OCCIPITO–ANTERIOR POSITION(INTERNAL ROTATION)



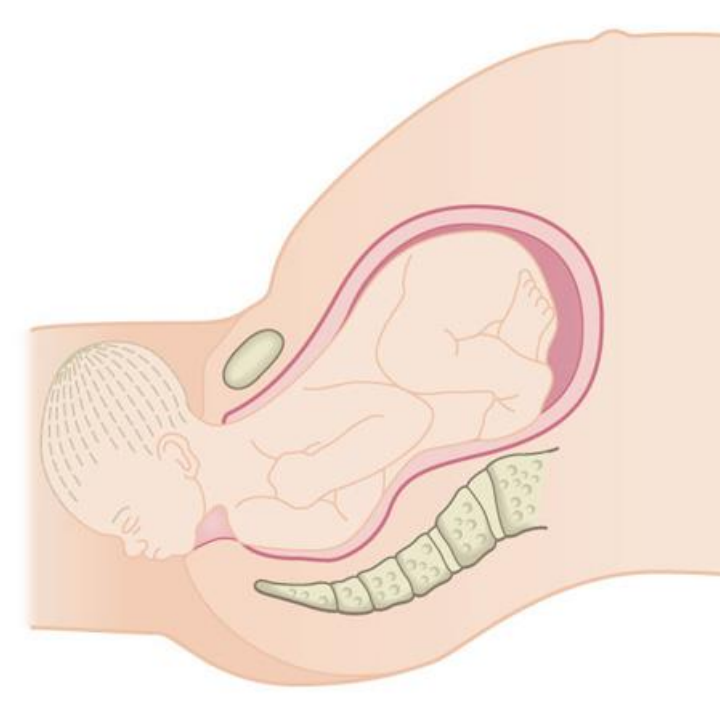


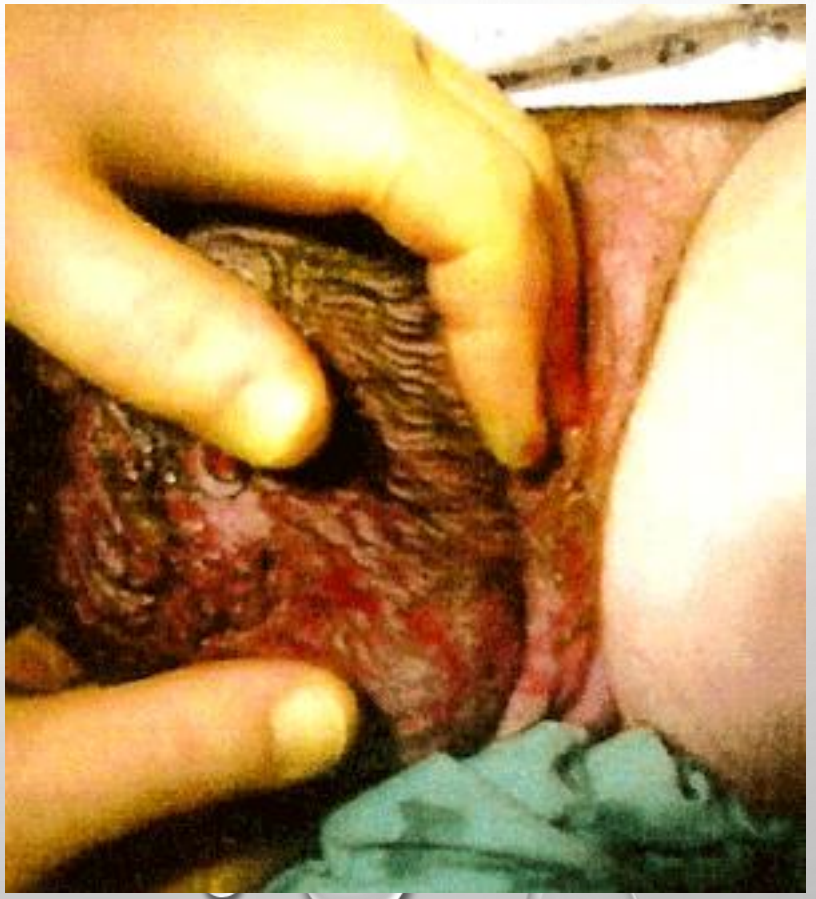
EXTENSION



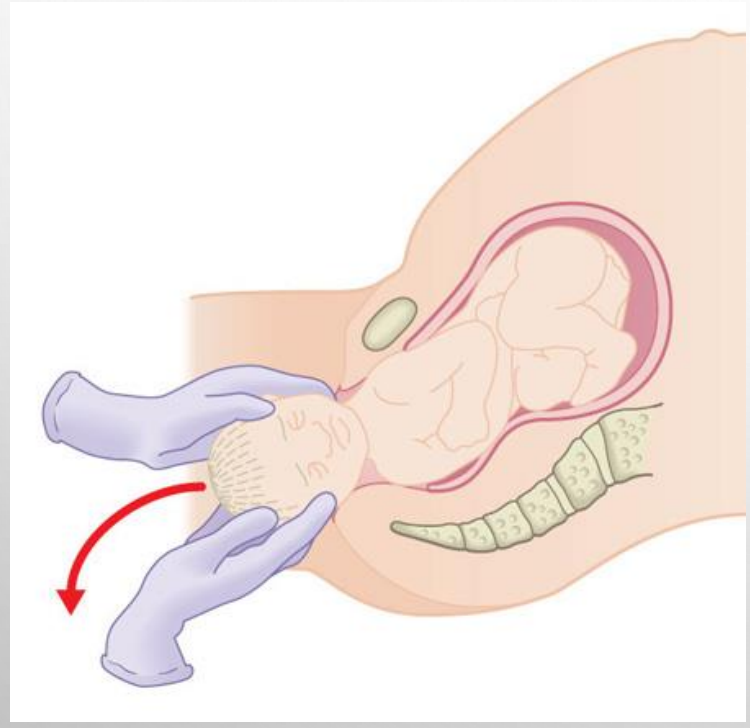


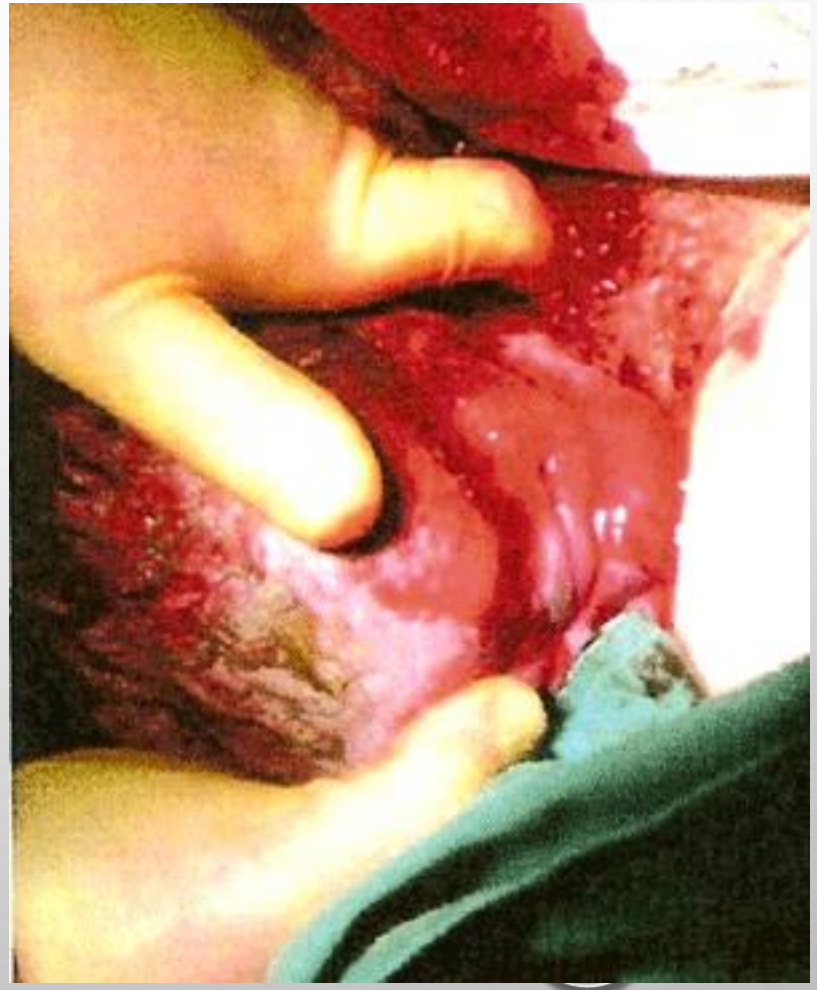
COMPLETE EXTENSION



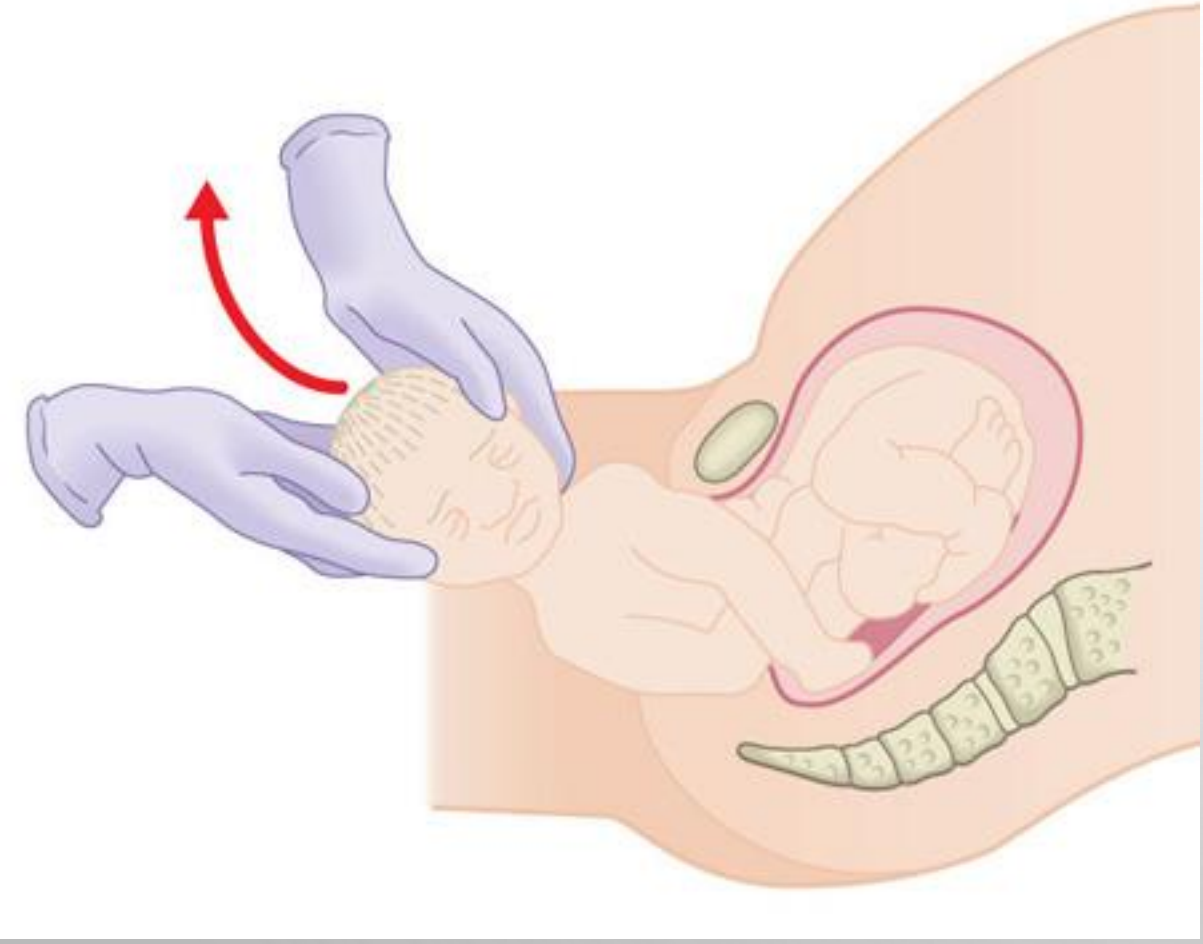


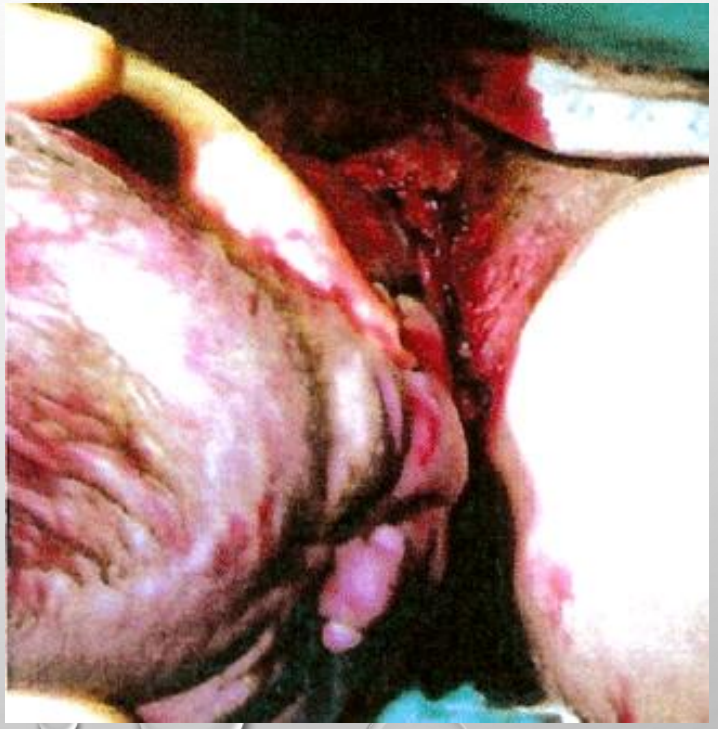
RESTITUTION(EXTERNAL ROTATION) TO DELIVERY DELIVERY OF THE ANTERIOR SHOULDER



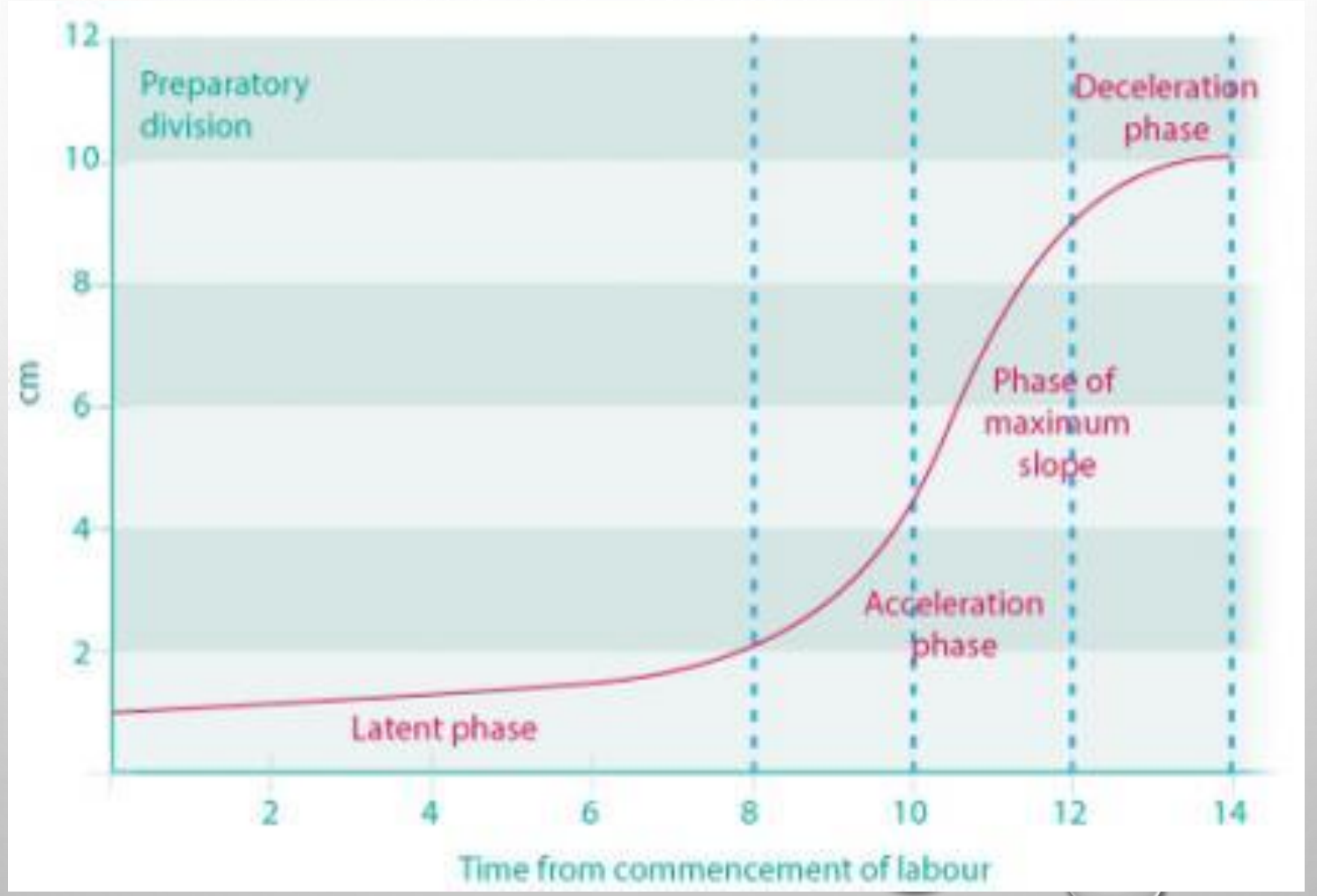


DELIVERY OF THE POSTERIOR SHOULDER





PROGRESS IN LABOUR



THERE ARE THREE STAGES OF LABOUR

1st stage	**Defined from the onset of regular uterine activity associated with effacement and dilatation of the cervix, and descent of the presenting part. The latent phase of labour is from the onset of contractions until the cervix is 4cm fully effaced and the active phase is when the fully effaced cervix dilates**
2nd stage	Defined from full dilatation of the cervix to delivery of the baby. This has been subdivided into the propulsive phase (when the head descends to the pelvic floor) and the expulsive phase (when the mother experiences a desire to push until the baby is delivered)
3rd stage	Defined from delivery of the baby to delivery of the placenta

- THE DURATION OF LABOUR IS VARIABLE AND DEPENDS UPON PARITY, GESTATION, SIZE OF THE BABY, WHETHER THE LABOUR IS SPONTANEOUS IN ITS ONSET OR HAS BEEN INDUCED, AND PREVIOUS OBSTETRIC PERFORMANCE.
- USING CLINICAL OBSERVATIONAL DATA IN THE 1950S, FRIEDMAN PRODUCED CURVES OF CERVICAL DILATATION VERSUS TIME (FRIEDMAN'S CURVE), WITH AVERAGE PROGRESS DURING THE ACTIVE PHASE OF 1.1 CM PER HOUR AND AVERAGE LENGTH OF LABOUR OF 12 HOURS FOR NULLIPAROUS WOMEN AND 6 HOURS FOR MULTIPAROUS WOMEN.
- LARGER AND MORE RECENT OBSERVATIONAL DATA FROM RESEARCH ON MORE THAN 12 000 WOMEN INDICATE THAT NORMAL LABOUR TAKES LONGER THAN FRIEDMAN PROPOSED. FOR EXAMPLE , ALBERS (1999) INVESTIGATING THE LENGTH OF LABOUR IN WOMEN WHO HAD NOT RECEIVED EPIDURAL ANAESTHESIA OR AN OXYTOCIN INFUSION FOUND THAT THE AVERAGE LENGTH OF LABOUR FOR NULLIPAROUS WOMEN WAS 19.4 HOURS AND 13.7 HOURS FOR MULTIPAROUS WOMEN.
- THESE DATA, WHICH HAVE BEEN REPLICATED IN DIFFERENT POPULATIONS, INDICATE THAT A RATE OF CERVICAL DILATATION OF LESS THAN 1 CM PER HOUR IS NORMAL IN WOMEN WITH HEALTHY PREGNANCIES – A RATE OF 0.5 CM PER HOUR OR EVEN 0.3 CM PER HOUR MAY EVEN BE REGARDED AS NORMAL.

GUIDELINES ON THE DURATION OF STAGES OF LABOUR

- **LATENT FIRST STAGE OF LABOUR** – A PERIOD OF TIME, NOT NECESSARILY CONTINUOUS, WHEN THERE ARE PAINFUL CONTRACTIONS AND THERE IS SOME CERVICAL CHANGE, INCLUDING CERVICAL EFFACEMENT AND DILATATION UP TO 4 CM
- **ESTABLISHED FIRST STAGE OF LABOUR** – WHEN THERE ARE REGULAR PAINFUL CONTRACTIONS AND THERE IS PROGRESSIVE CERVICAL DILATATION FROM 4 CM.
- SECOND STAGE OF LABOUR:
- **PASSIVE SECOND STAGE OF LABOUR** – FULL DILATATION OF THE CERVIX PRIOR TO OR IN THE ABSENCE OF INVOLUNTARY EXPULSIVE CONTRACTIONS
- **ACTIVE SECOND STAGE OF LABOUR** – WHEN THE BABY IS VISIBLE, OR THERE ARE EXPULSIVE CONTRACTIONS WITH A FINDING OF FULL DILATATION OF THE CERVIX OR OTHER SIGNS OF FULL DILATATION OF THE CERVIX, OR THERE IS ACTIVE MATERNAL EFFORT FOLLOWING CONFIRMATION OF FULL DILATATION OF THE CERVIX IN THE ABSENCE OF EXPULSIVE CONTRACTIONS.
- THIRD STAGE OF LABOUR:
- **THIRD STAGE OF LABOUR** – THE TIME FROM THE BIRTH OF THE BABY TO THE EXPULSION OF THE PLACENTA AND MEMBRANES

DURATION OF FIRST STAGE OF LABOUR

		Lower value	Upper value
Nulliparous	Latent phase	1.7 hours	15.0 hours
	Active first stage	1.0 hour	19.4 hours
Parous	Latent phase	Not studied	Not studied
	Active first stage	0.5 hours	14.9 hours

Based on these data, it is recommended that women should be informed that while the length of established first stage of labour varies between women, first labours last on average 8 hours and are unlikely to last over 18 hours. Second and subsequent labours last on average 5 hours and are unlikely to last over 12 hours

SECOND STAGE OF LABOUR

	Mean (SD) minutes	Upper limit (mean+2SDs) minutes
Nulliparous (n=3664)	54(44)	142
Parous (n=6389)	18(21)	60
n = 3 descriptive studies. Excludes women with epidural and/or oxytocin		

Based on these data, it is recommended for a nulliparous woman, suspect delay if progress (in terms of rotation and/or descent of the presenting part) is inadequate after 2 hours of active second stage. Offer vaginal examination and then offer amniotomy if the membranes are intact.

For a multiparous woman, suspect delay if progress (in terms of rotation and/or descent of the presenting part) is inadequate after 1 hour of active second stage. Offer vaginal examination and then offer amniotomy if the membranes are intact .

DURATION OF THIRD STAGE OF LABOUR

*THE THIRD STAGE OF LABOUR IS DIAGNOSED AS PROLONGED IF NOT COMPLETED WITHIN 30 MINUTES OF THE BIRTH OF THE BABY WITH ACTIVE MANAGEMENT OR 60 MINUTES FROM BIRTH WITH PHYSIOLOGICAL MANAGEMENT.

*ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOUR SHOULD INCLUDE THE FOLLOWING THREE COMPONENTS:

- ROUTINE USE OF UTEROTONIC DRUGS
- DEFERRED CLAMPING AND CUTTING OF THE CORD
- CONTROLLED CORD TRACTION AFTER SIGNS OF SEPARATION OF PLACENTA

*PHYSIOLOGICAL MANAGEMENT OF THE THIRD STAGE OF LABOUR SHOULD INCLUDE THE FOLLOWING THREE COMPONENTS:

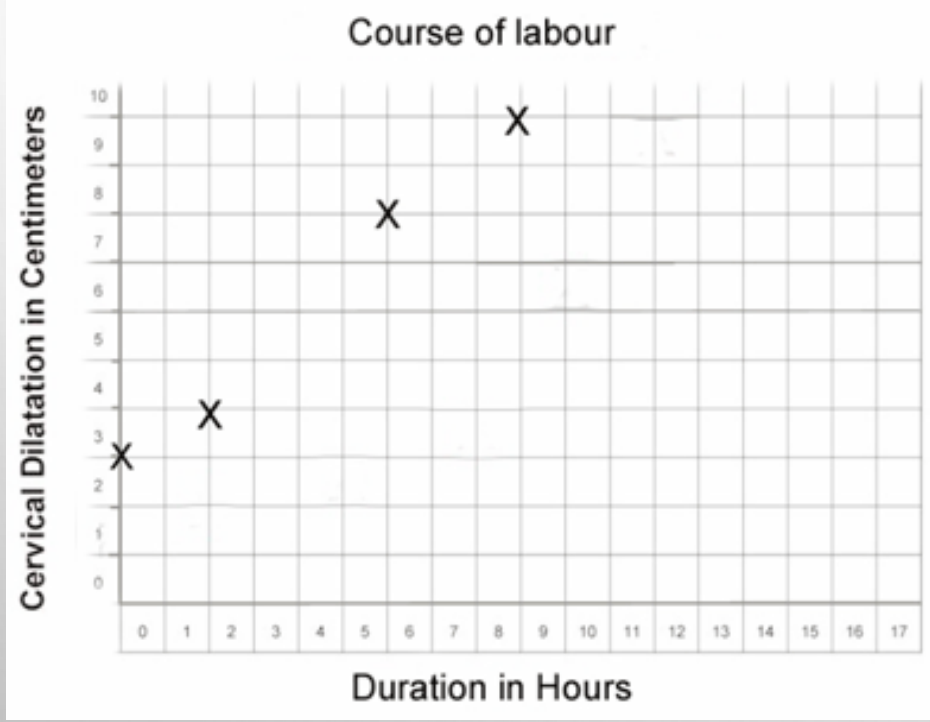
- NO ROUTINE USE OF UTEROTONIC DRUGS
- NO CLAMPING OF THE CORD UNTIL PULSATIONS HAVE CEASED
- DELIVERY OF PLACENTA BY MATERNAL EFFORT.

HOLISTIC CARE OF WOMEN IN LABOUR

- IT IS ESSENTIAL THAT AS OBSTETRIC CAREGIVERS WE COMMUNICATE CLEARLY WITH WOMEN, INFORMING THEM OF ALL THE BIRTHING OPTIONS THEY HAVE TO ENSURE THEY HAVE A POSITIVE BIRTHING EXPERIENCE. GOOD COMMUNICATION AND INTERACTIONS THROUGHOUT THE BIRTHING PROCESS SIGNIFICANTLY AFFECT THE WOMAN'S EXPERIENCE, WHICH IN TURN AFFECTS HER MENTAL AND PHYSICAL HEALTH, AND IMPROVES BONDING WITH THE BABY POSTNATALLY. BY REFLECTING ON ONE'S OWN WORDS AND BODY LANGUAGE, LISTENING CAREFULLY, COMMUNICATING CLEARLY AND APPROPRIATELY WHILST RESPECTING A VARIETY OF DIFFERENT CULTURES, CAREGIVERS HAVE THE ABILITY TO DIRECTLY EMPOWER WOMEN TO MAKE THEIR OWN DECISIONS.
- COMMUNICATION DOES NOT REFER TO THE SPOKEN LANGUAGE ONLY. GOOD COMMUNICATION ALSO ENCOMPASSES NONVERBAL QUES, SUCH AS GREETING PATIENTS WITH A SMILE, WELCOMING BODY LANGUAGE, STANDING OPENING THE DOOR, RESPECTING PERSONAL SPACE AND MAINTENANCE OF A CALM/CONFIDENT APPROACH. WHEN SPEAKING BE AWARE OF ASKING OPEN QUESTIONS, ADDRESSING ANY WORRIES OR ANXIETIES.
- THE NOTION OF HOLISTIC CARE IN LABOUR HAS BEEN ENDORSED BY THE LATEST GUIDELINE ON INTRAPARTUM CARE, WHERE THE IMPORTANCE OF GOOD INTRAPARTUM COMMUNICATION AND RESPECT FOR AUTONOMY HAS BEEN EMPHASISED.

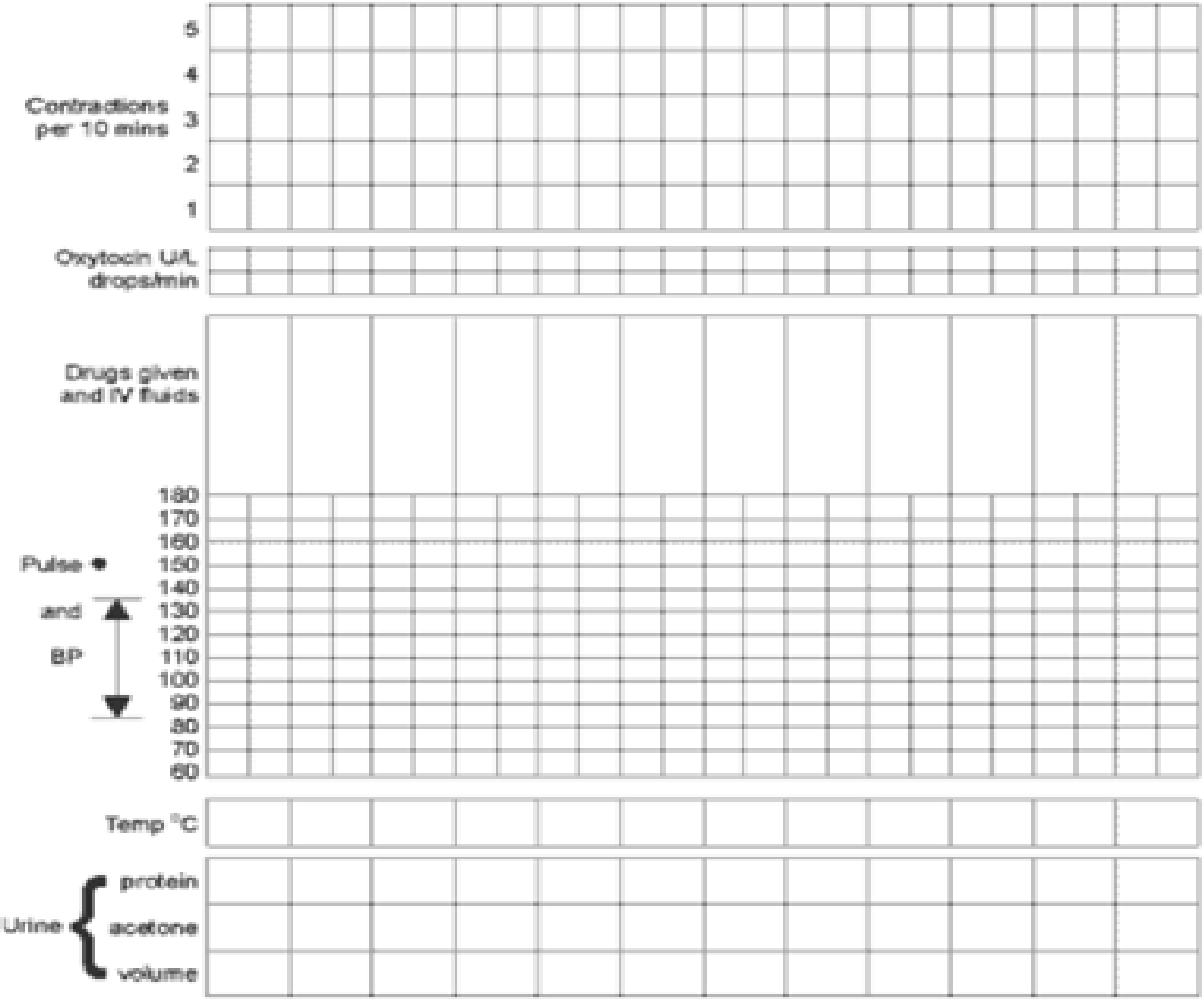
- IN TERMS OF LOCATION OF BIRTH, LOW RISK MULTI AND NULLIPAROUS WOMEN SHOULD BE MADE AWARE OF THE OPTIONS THEY HAVE TO BIRTH AT HOME, A FREE STANDING MIDWIFERY UNIT, ALONGSIDE MIDWIFERY UNIT OR A CONSULTANT LED OBSTETRIC UNIT. WOMEN SHOULD BE PROVIDED WITH INFORMATION AND THE STATISTICS ABOUT ALL BIRTH SETTINGS, FOR EXAMPLE: OUTCOMES OF SPONTANEOUS DELIVERY, ACCESS TO A FAMILIAR MIDWIFE, ACCESS TO MEDICAL STAFF, ACCESS TO ALL FORMS OF ANALGESIA AND POSSIBLE REASONS FOR TRANSFER TO AN OBSTETRIC UNIT. THIS INFORMATION SHOULD BE CONVEYED TO THE PATIENT IN A WAY SHE UNDERSTANDS AND REPEATED IF FELT ADDITIONAL DISCUSSIONS ARE NEEDED. AS CAREGIVERS IT IS IMPERATIVE WE RESPECT FREE CHOICE AND DO NOT DISCLOSE OUR OWN PERSONAL VIEWS OR JUDGMENTS.
- EDUCATING WOMEN AND CHATTING WITH THEM FACE TO FACE WITH REGARDS TO ALL THE BIRTHING CHOICES THEY HAVE AVAILABLE SHOULD OCCUR THROUGHOUT THE ANTENATAL PERIOD. WRITTEN INFORMATION SHOULD ALSO BE PROVIDED WHERE APPROPRIATE.
- ONE-TO-ONE CARE IN LABOUR HAS BEEN SHOWN TO SIGNIFICANTLY IMPROVE OUTCOMES AND THE PROVISION OF LABOUR. EVIDENCE FROM A SYSTEMATIC REVIEW DEMONSTRATED THAT THIS SIMPLE ACTION OF ONE-TO-ONE SUPPORT HAS THE POWER TO REDUCE CAESAREAN SECTIONS, OPERATIVE VAGINAL DELIVERY, USE OF ANALGESIA AND NEGATIVE FEELINGS DURING LABOUR.

NORMAL PARTOGRAM



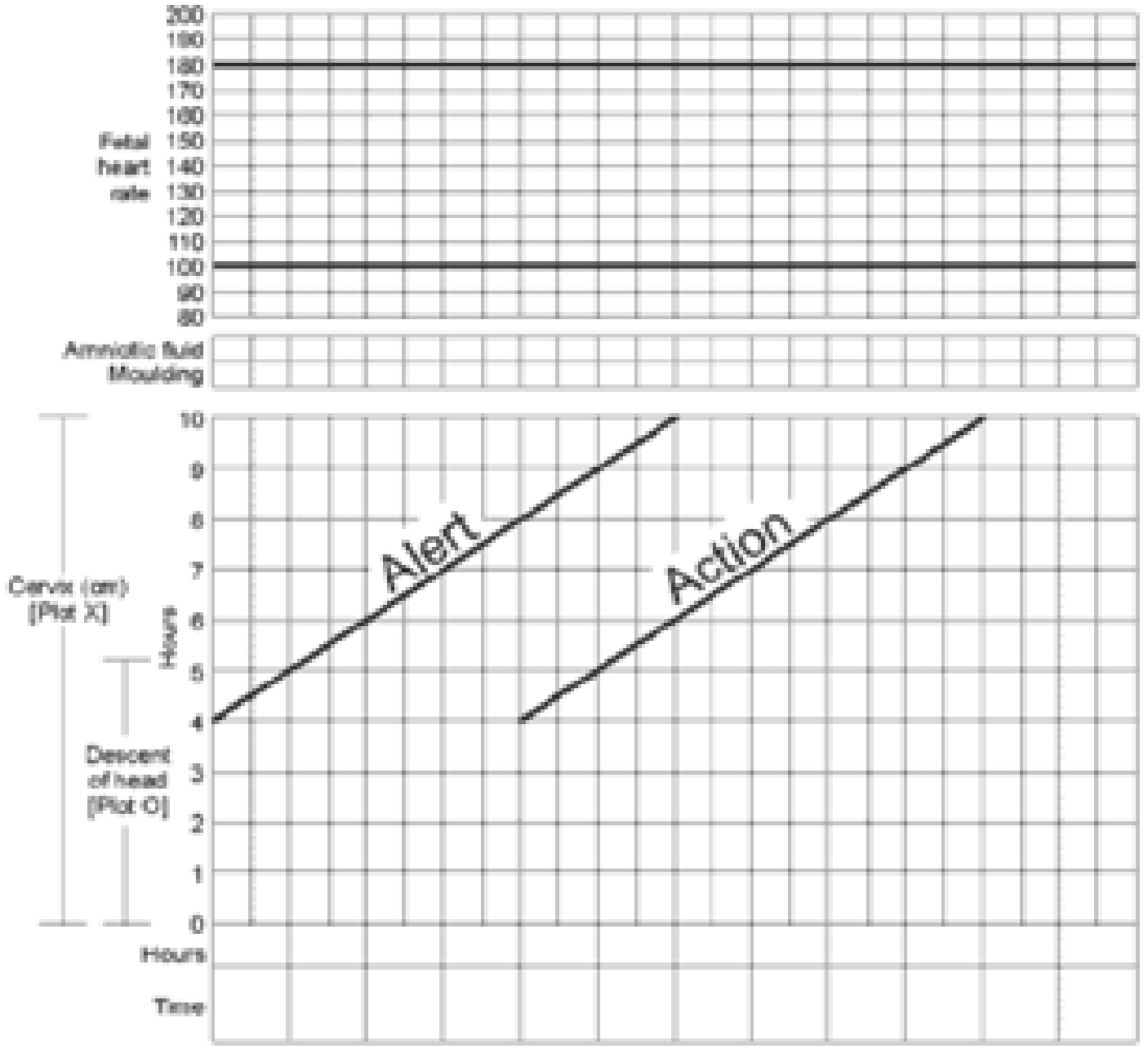
A 36-year-old para 1 presents to the maternity unit in spontaneous labour at term. In her previous pregnancy she had a ventouse (vacuum) delivery of a 3.32 kg baby. On admission to the unit she is 3 cm dilated. She is contracting 4 in 10 minutes and her contractions are assessed as moderate.
Two hours later, the vaginal examination is repeated and her cervix is 4 cm dilated. She is encouraged to mobilise and her membranes are left intact. Four hours later she has a spontaneous rupture of the fetal membranes.
She is now 8 cm dilated. Three hours later she reports an urge to push – on examination her cervix is fully dilated with the fetal vertex below the ischial spines, in an occipito–anterior position. Thirty minutes later she has a spontaneous vertex delivery.

The modified WHO partogram



Name | Gravida | Para | Hospital number

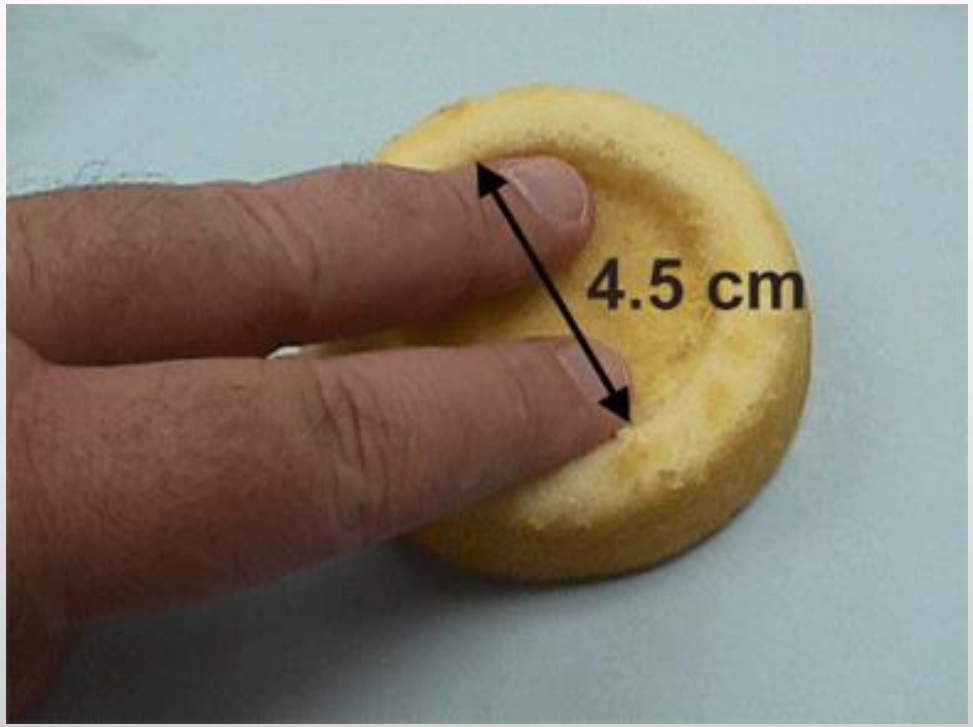
Date of admission | Time of admission | Ruptured membranes | hours



KEY POINTS

- A “HOLISTIC APPROACH” SHOULD BE ADOPTED TO ENSURE WOMEN’S PHYSICAL AND PSYCHOLOGICAL NEEDS ARE MET IN PREGNANCY
- GOOD COMMUNICATION AND SUPPORT THROUGHOUT PREGNANCY HAS A POSITIVE EFFECT ON LABOUR AND IMPROVES POSTNATAL BONDING
- COMMUNICATION ENCOMPASSES BOTH VERBAL AND NONVERBAL LANGUAGE
- CAREGIVERS SHOULD RESPECT FREE CHOICE AND HELP TO EMPOWER THE WOMAN TO MAKE HER OWN BIRTHING DECISIONS
- EDUCATING WOMEN TO BIRTH CHOICES SHOULD OCCUR IN THE ANTENATAL PERIOD
- ONE-TO-ONE CARE IN LABOUR DECREASES INTERVENTIONS AND NEGATIVE FEELINGS IN LABOUR

PRACTICAL MANAGEMENT OF LABOUR
VAGINAL EXAMINATION AND CERVICAL ASSESSMENT

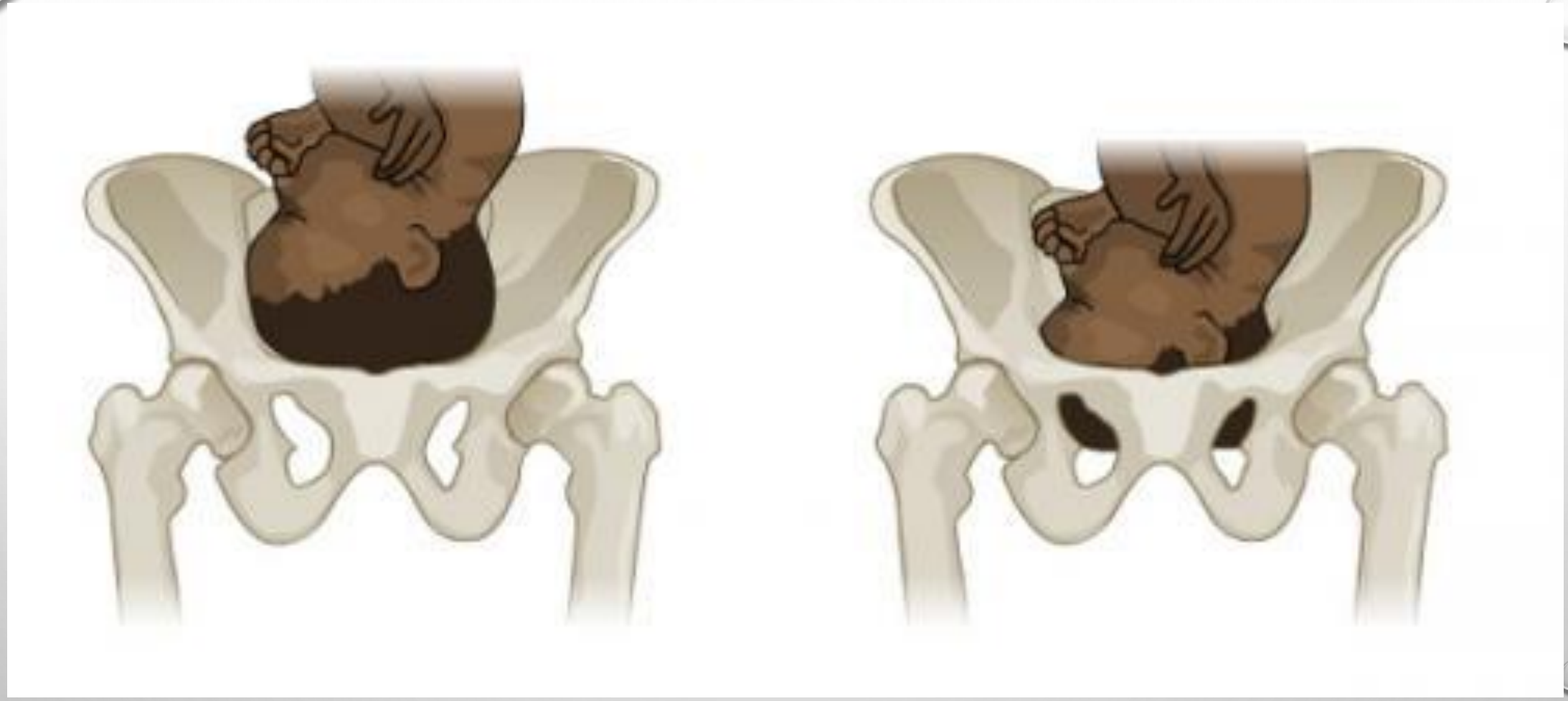


A training device to assess cervical dilatation

-THE WORLD HEALTH ORGANISATION'S *PRINCIPLES OF PERINATAL CARE* RECOMMEND THAT 4-HOURLY VAGINAL EXAMINATIONS DURING NORMAL LABOUR ARE ADEQUATE. IDEALLY THEY SHOULD BE PERFORMED BY THE SAME PROFESSIONAL TO MINIMISE INTER-OBSERVER VARIATION.

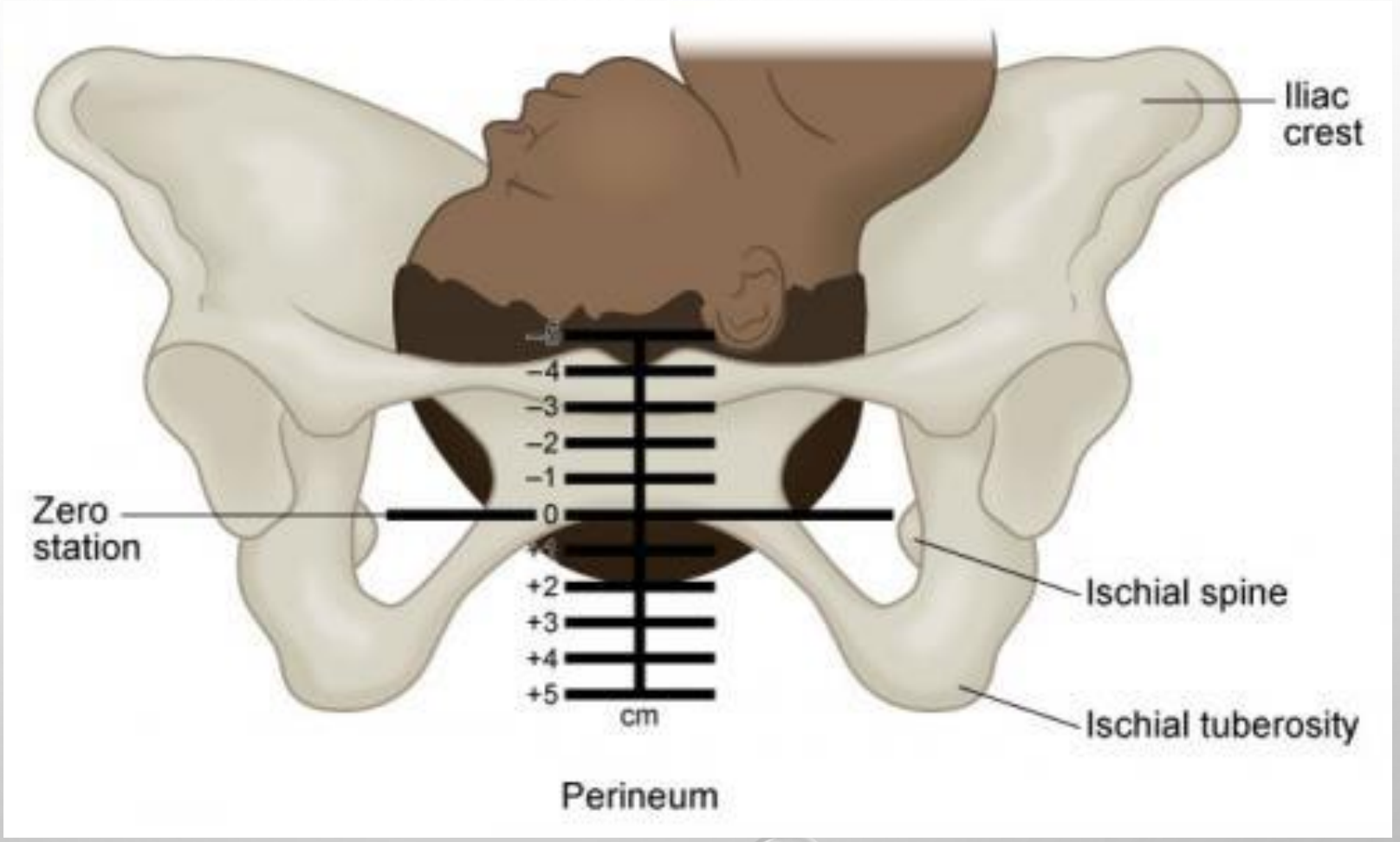
-DURING A VAGINAL EXAMINATION, THE FOLLOWING SHOULD BE NOTED:

- COLOUR OF THE AMNIOTIC FLUID, AND THE PRESENCE OR ABSENCE OF MECONIUM
- DILATATION OF THE CERVIX
- STATION OF THE PRESENTING PART – IN CM ABOVE OR BELOW THE ISCHIAL SPINES .
- POSITION OF THE PRESENTING PART – REFERRING TO THE OCCIPUT IF THE PRESENTATION IS CEPHALIC OR SACRUM IF BREECH
- PRESENCE OF **CAPUT AND MOULDING – WHICH MAY INDICATE OBSTRUCTED LABOUR



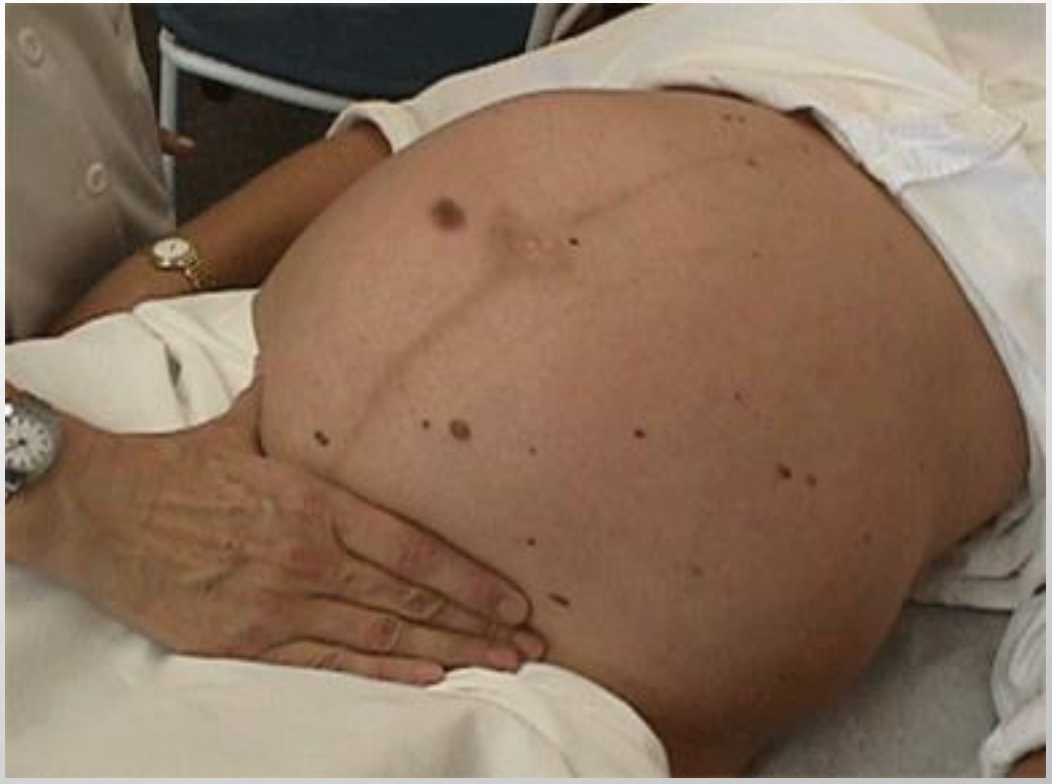
Progress in labour may include determining the station of the presenting part.

Progress in labour may include determining the station of the presenting part



ABDOMINAL PALPATION

- ABDOMINAL PALPATION DURING LABOUR BY A SKILLED EXAMINER CAN IDENTIFY THE FETAL PRESENTATION (DESCRIBED IN FIFTHS BY THE AMOUNT OF FETAL HEAD PALPABLE ABOVE THE PELVIC BRIM), DESCENT OF THE PRESENTING PART AND ROTATION OF THE FETAL HEAD.
- THE HEAD IS ENGAGED IF 2/5, 1/5 OR 0/5 OF THE FETAL HEAD IS PALPABLE ABDOMINALLY.



MONITOR UTERINE ACTIVITY

- UTERINE ACTIVITY IS ROUTINELY MONITORED IN LABOUR BY PALPATION AND BY MEASURING THE LENGTH, STRENGTH AND DURATION OF CONTRACTIONS. UTERINE ACTIVITY OVER A 10 MINUTE PERIOD IS PLOTTED ON THE PARTOGRAM. WOMEN OFTEN REPORT INCREASING, REGULAR UTERINE ACTIVITY AT THE ONSET OF LABOUR.
- STUDIES HAVE SHOWN THAT OBESE, NULLIPAROUS PATIENTS HAVE GREATER DIFFICULTY PERCEIVING CONTRACTIONS. INCOORDINATE UTERINE ACTIVITY IS ONE OF THE MOST COMMON COMPLICATIONS OF THE PRIMIGRAVID LABOUR AND IS CORRECTED WITH AN INTRAVENOUS INFUSION OF SYNTHETIC OXYTOCIN.
- OTHER TECHNIQUES THAT HAVE BEEN USED TO MONITOR UTERINE ACTIVITY IN LABOUR INCLUDE INTRAUTERINE PRESSURE TRANSDUCERS AND TRANSABDOMINAL UTERINE ELECTROMYOGRAPHY

PROGRESS IN THE SECOND STAGE OF LABOUR

- PROGRESS IN THE SECOND STAGE OF LABOUR IS DETERMINED BY DESCENT AND ROTATION OF THE FETAL HEAD ON VAGINAL EXAMINATION. DURING THE PROPULSIVE PHASE THE HEAD IS RELATIVELY HIGH, THE POSITION IS OCCIPITO–TRANSVERSE, THE LOWER VAGINA IS NOT STRETCHED AND THE WOMAN HAS NO URGE TO PUSH. DETAILS OF THE DECENT OR THE PRESENTING PART AND CERVICAL DILATION ARE DOCUMENTED ON THE PARTOGRAM.
- IN THE EXPULSIVE OR ACTIVE PHASE OF THE SECOND STAGE THE FETAL HEAD HAS REACHED THE PELVIC FLOOR AND THE WOMAN USUALLY HAS A STRONG DESIRE TO PUSH. NOT ALL WOMEN EXPERIENCE THE URGE TO PUSH WHEN THE CERVIX IS FULLY DILATED – THE INVOLUNTARY DESIRE TO BEAR DOWN CAN OCCUR BEFORE OR AFTER COMPLETE CERVICAL DILATATION, WHEN THE PRESENTING PART IS AT AN ADVANCED STATION.
- IT IS NOT UNCOMMON FOR LABOURING WOMEN TO BE ENCOURAGED TO START PUSHING WITH EACH CONTRACTION AS SOON AS THE DIAGNOSIS OF CERVICAL FULL DILATATION IS MADE; HOWEVER, THE USE OF SUSTAINED VALSALVA BEARING DOWN EFFORTS IS ASSOCIATED WITH ADVERSE MATERNAL AND FETAL EFFECTS. DELAYING ACTIVE PUSHING UNTIL THE WOMAN HAS AN INVOLUNTARY URGE OR THE FETAL HEAD IS VISIBLE ON THE PERINEUM HAS BEEN SHOWN TO REDUCE THE INCIDENCE OF FORCEPS DELIVERY, THE NEED FOR CAESAREAN SECTION AND SHORTENS THE ACTIVE BEARING DOWN PHASE OF THE SECOND STAGE.

EFFECTS OF SUSTAINED VALSALVA BEARING DOWN EFFORTS

Fetal	**Lower fetal pH**
	Lower fetal pO_2
	Higher fetal pCO_2
	More frequent occurrence of non-reassuring fetal heart rate (FHR) patterns
	Delayed recovery of FHR decelerations
Maternal	Increased maternal stress and fatigue
	Increased perineal trauma
	Increased risk of subsequent urogynaecological dysfunction
Newborn	Newborn acidaemia
	Lower Apgar scores

POSITION FOR WOMEN DURING THE SECOND STAGE OF LABOUR

- IN MOST WESTERN CULTURES, WOMEN ADOPT OR ARE ADVISED TO ADOPT THE SUPINE POSITION FOR DELIVERY, EVEN THOUGH THIS IS ASSOCIATED WITH NEGATIVE MATERNAL, FETAL AND NEONATAL HAEMODYNAMIC OUTCOMES.
- IN WOMEN WHO SUSTAIN PERINEAL TRAUMA, DELIVERY IN THE SUPINE POSITION IS ASSOCIATED WITH A REDUCED MEAN BLOOD LOSS AND INCIDENCE OF PPH COMPARED WITH OTHER POSITIONS
- WOMEN SHOULD BE ALLOWED TO MAKE INFORMED CHOICES ABOUT THE BIRTH POSITIONS IN WHICH THEY MIGHT WISH TO ASSUME FOR DELIVERY OF THEIR BABIES. THE RECOMMENDATION IS THAT WOMEN SHOULD BE ENCOURAGED TO ADOPT ANY POSITION WHICH THEY FIND MOST COMFORTABLE AND SHOULD NOT BE ENCOURAGED TO LYE FLAT OR SEMI SUPINE, MORE SO IN THE SECOND STAGE LABOUR.


Rocking
Kneeling with birthing ball
Squatting
Semi-sitting with partner
Leaning forward
On hands and knees
Squatting with partner
Lying on your side

THIRD STAGE OF LABOUR

- DURING THE THIRD STAGE OF LABOUR, THE PLACENTA SEPARATES FROM THE UTERUS WHEN THE UTERUS CONTRACTS DOWN AFTER THE BABY HAS BEEN DELIVERED. THIS SEPARATION IS OFTEN ASSOCIATED WITH A SMALL VAGINAL BLEED, LENGTHENING OF THE CORD AND A RISING UP AND FIRMING OF THE UTERUS.
- EXPECTANT MANAGEMENT OF THE THIRD STAGE INVOLVES ALLOWING THE PLACENTA TO DELIVER SPONTANEOUSLY OR AIDING BY GRAVITY OR NIPPLE STIMULATION. IN ACTIVE MANAGEMENT OF THE THIRD STAGE, A PROPHYLACTIC OXYTOCIC DRUG IS ADMINISTERED BEFORE DELIVERY OF THE PLACENTA, THE CORD IS CLAMPED AND CUT EARLY, AND CONTROLLED CORD TRACTION OF THE UMBILICAL CORD IS PERFORMED.
- THE DRUGS MOST COMMONLY EMPLOYED TO FACILITATE THE THIRD STAGE ARE SYNTOCINON (5 OR 10 UNITS) OR SYNTOMETRINE (A COMBINATION OF 5 UNITS SYNTOCINON AND 0.5 MG ERGOMETRINE), ADMINISTERED INTRAMUSCULARLY.
- BLOOD LOSS IN THE THIRD STAGE OF LABOUR DEPENDS ON HOW QUICKLY THE PLACENTA SEPARATES FROM THE UTERINE WALL AND HOW EFFECTIVELY UTERINE MUSCLE CONTRACTS AROUND THE PLACENTAL BED.
- THE AVERAGE AMOUNT OF BLOOD LOSS IN THE THIRD STAGE IS DIFFICULT TO ASCERTAIN BECAUSE DIFFERENT MANAGEMENT STRATEGIES AND DIFFERENT WAYS OF ASSESSING BLOOD LOSS LEAD TO MARKEDLY DIFFERENT AMOUNTS. BLOOD LOSS OF GREATER THAN 500 ML IS REGARDED AS A POSTPARTUM HAEMORRHAGE (PPH).

KEY POINTS

- VAGINAL EXAMINATIONS IN LABOUR SHOULD BE 4 HOURLY – IDEALLY BY THE SAME INDIVIDUAL TO IMPROVE CONTINUITY OF CARE
- CERVICAL DILATION, UTERINE ACTIVITY AND IMPORTANTLY VERTEX POSITION AND DESCENT SHOULD BE CAREFULLY DOCUMENTED ON THE PARTOGRAM
- GOOD TECHNIQUE AND ADVICE SHOULD BE PROVIDED TO WOMEN FOR PUSHING TO AVOID THE VALSALVA BEARING DOWN EFFECTS
- WOMEN SHOULD BE ENCOURAGED TO ADOPT THEIR OWN POSITIONS DURING LABOUR
- LYING FLAT AND SEMI SUPINE POSITIONS ARE NOT RECOMMENDED IN LABOUR

PROLONG AND OBSTRUCTED LABOR

ASSESSMENT OF PROGRESS IN LABOUR

WHEN YOU HAVE COMPLETED THIS TUTORIAL YOU WILL BE ABLE TO:

- RECOGNISE DYSFUNCTIONAL(PROLONG) LABOUR WHEN REVIEWING PARTOGRAMS
- RECOGNISE THE POTENTIAL CAUSES FOR DYSFUNCTIONAL LABOUR

NORMAL LABOUR

- NORMAL LABOUR IS CHARACTERISED BY THE ONSET OF REGULAR CONTRACTIONS ASSOCIATED WITH CERVICAL EFFACEMENT AND DILATATION WITH PROGRESSIVE DESCENT OF THE PRESENTING PART.

ACCURATE DIAGNOSIS OF LABOUR

- LABOUR AND PROGRESSION IN LABOUR REQUIRES PAINFUL UTERINE ACTIVITY AND CERVICAL DILATATION. THE PRESENCE OF CONTRACTIONS MAY, THEREFORE, HERALD THE COMMENCEMENT OF LABOUR FOR A WOMAN AND HER PERCEPTIONS BUT IT ALSO REQUIRES PROFESSIONAL ASSESSMENT TO DETERMINE CERVICAL EFFACEMENT AND DILATATION.
- LABOUR IS DIAGNOSED WHEN THERE IS REGULAR PAINFUL UTERINE ACTIVITY AND PROGRESSIVE CERVICAL DILATATION OF 4 CM OR MORE. PRIOR TO THIS, LABOUR IS THOUGHT TO BE IN THE LATENT PHASE.
- IT IS IMPORTANT IN THE MANAGEMENT OF A LABOURING WOMAN THAT LABOUR IS DIAGNOSED ACCURATELY AS COMMENCING THE PARTOGRAPH TOO EARLY IN A WOMAN'S LABOURING EXPERIENCE MAY CAUSE MISDIAGNOSIS OF PROLONGED LABOUR AND LEAD TO UNNECESSARY INTERVENTION.

ACTIVE MANAGEMENT OF LABOUR

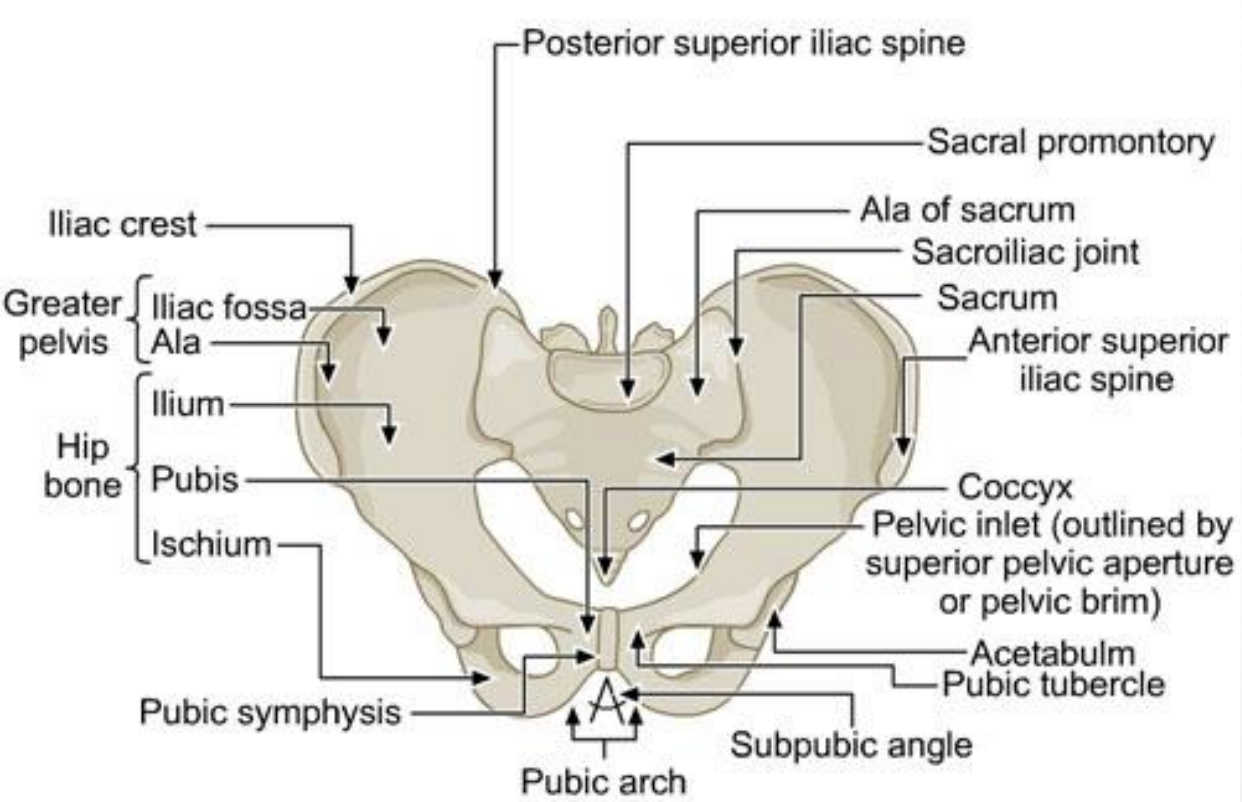
ACTIVE MANAGEMENT OF LABOUR INCLUDES:

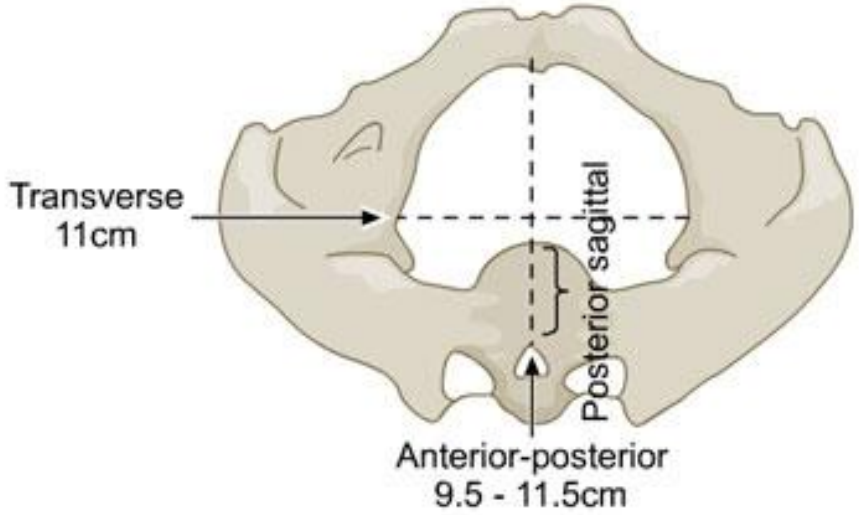
- ONE-TO-ONE CONTINUOUS SUPPORT
- STRICT DEFINITION OF ESTABLISHED LABOUR
- EARLY ROUTINE AMNIOTOMY
- ROUTINE 2-HOURLY CERVICAL EXAMINATION
- OXYTOCIN IF LABOUR BECOMES SLOW.

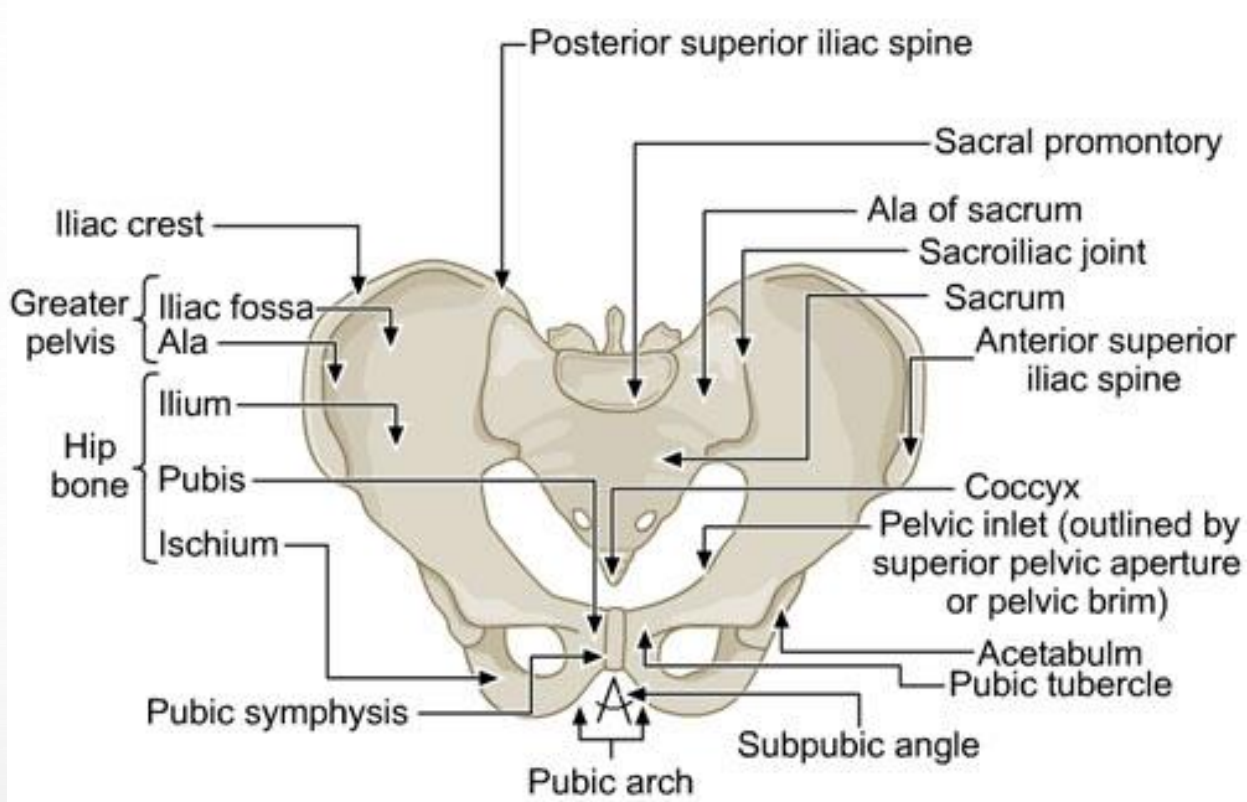
ALTHOUGH THIS PACKAGE OF MANAGEMENT REDUCES THE LENGTH OF THE FIRST STAGE OF LABOUR, IT HAS NO EFFECT ON CAESAREAN SECTION RATES AND THERE IS NO EVIDENCE THAT THIS SHOULD BE OFFERED ROUTINELY TO NORMAL LABOURING WOMEN.

FEMALE PELVIS - THE PASSAGE

- THE FEMALE PELVIS CONSISTS OF A PAIR OF INNOMINATE BONES (PUBIS, ISCHIUM AND ILIUM) JOINED ANTERIORLY BY THE PUBIC SYMPHYSIS WHILE ARTICULATING WITH THE SACRUM AND COCCYX POSTERIORLY.
- THE BRIM OF THE PELVIS IS COMPRISED OF THE UPPER BORDER OF THE PUBIC SYMPHYSIS, ILIOPECTINEAL LINE, ALAE OF THE SACRUM AND SACRAL PROMONTORY. THE BRIM OF THE NORMAL GYNAECOID PELVIS IS ALMOST ROUND ALTHOUGH THE SACRUM INTRUDES POSTERIORLY. THE TRANSVERSE DIAMETER OF THE BRIM GENERALLY MEASURES 13.5 CM AND HAS AN AP DIAMETER OF 11.5 CM.
- THE MIDPELVIS IS ALMOST CIRCULAR IN OUTLINE AND IS BORDERED BY THE APEX OF THE PUBIC SYMPHYSIS, THE ISCHIAL SPINES, THE SACROSPINOUS LIGAMENT AND THE TIP OF THE SACRUM. CONTAINED WITHIN THE MIDCAVITY IS THE PLANE OF LEAST DIMENSION, WHICH MEASURES 10.5 CM IN ITS TRANSVERSE PLANE AT THE LEVEL OF THE ISCHIAL SPINES. IT IS AT THIS LEVEL THAT ARREST OF LABOUR COMMONLY OCCURS.
- THE OUTLET IS DIAMOND SHAPED AND IS BOUNDED BY THE SUBPUBIC ARCH, ISCHIAL TUBEROSITIES, SACROTUBEROUS LIGAMENTS AND THE COCCYX. IT MUST BE REMEMBERED THAT THIS PLANE AND THE BRIM MAKES AN ANGLE OF 55 DEGREES WITH THE HORIZONTAL IN THE ERECT POSITION.


Posterior superior iliac spine
Sacral promontory
Iliac crest
Ala of sacrum
Sacroiliac joint
Greater pelvis
Iliac fossa
Ala
Sacrum
Anterior superior iliac spine
Hip bone
Ilium
Pubis
Coccyx
Ischium
Pelvic inlet (outlined by superior pelvic aperture or pelvic brim)
Acetabulm
Pubic tubercle
Pubic symphysis
Subpubic angle
Pubic arch


Transverse 11cm
Posterior sagittal
Anterior-posterior 9.5 - 11.5cm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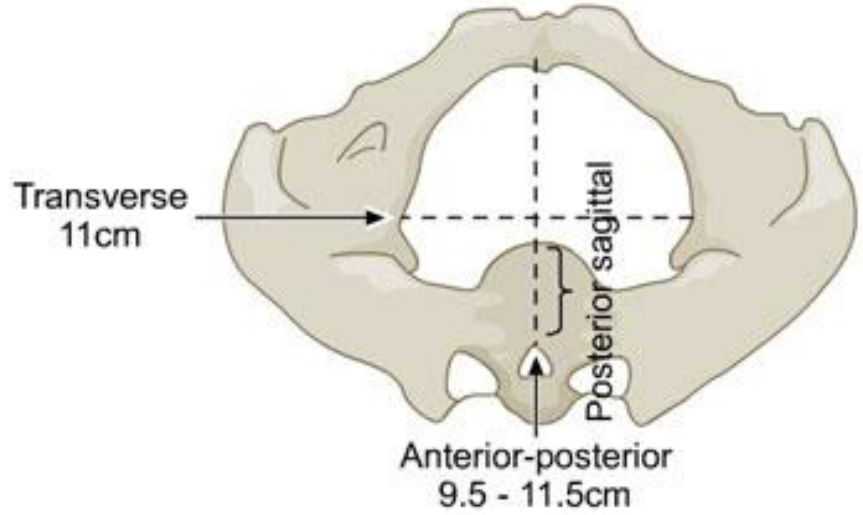
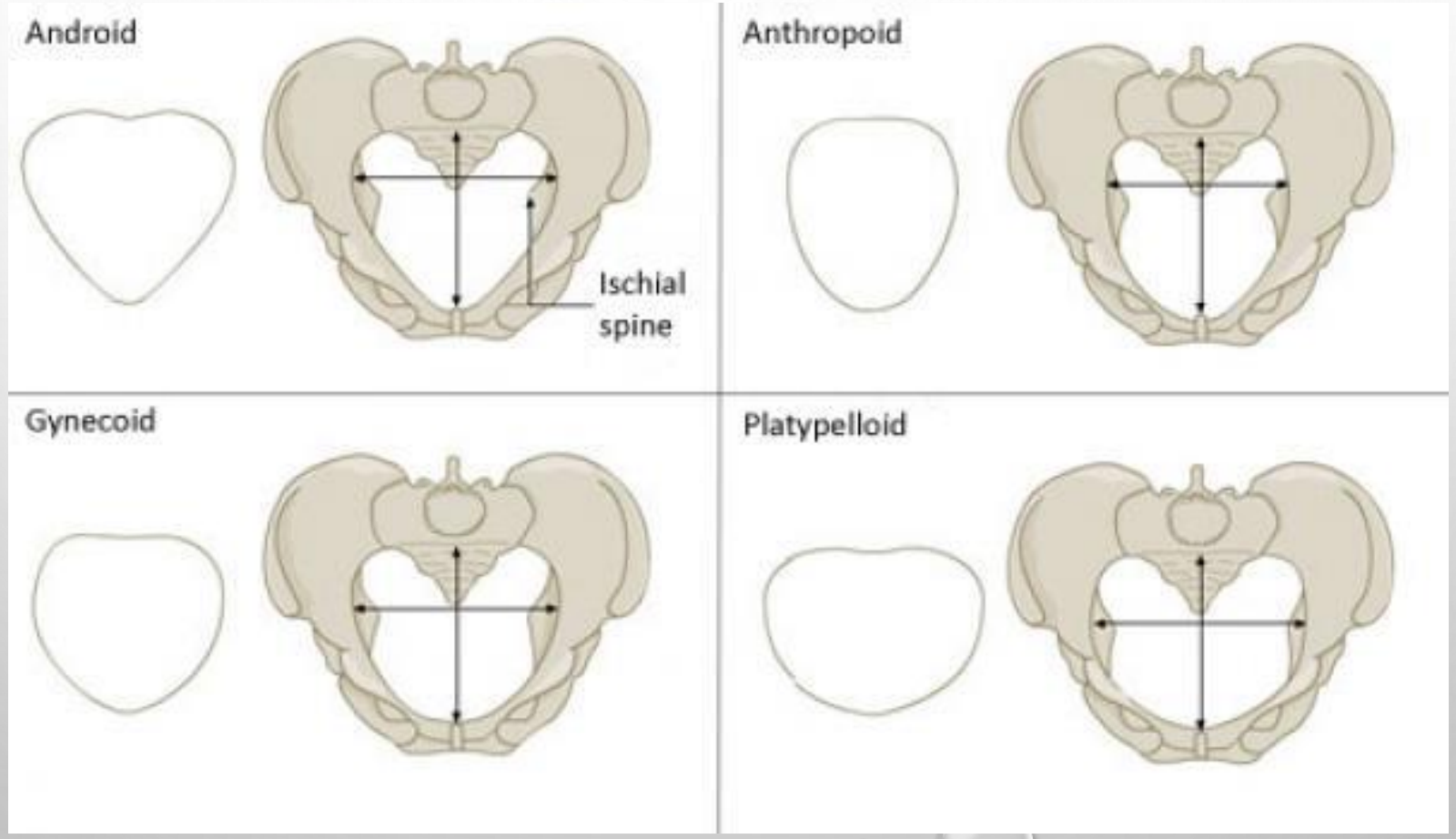

Transverse 11cm
Posterior sagittal
Anterior-posterior 9.5 - 11.5cm

PELVIS SIZE AND SHAPE



Type	Inlet	Midcavity	Outlet
Android (male-like)	Heart-shaped	Intraspinous diameter reduced	Public arch narrow
Anthropoid (ape-like)	Ovoid AP > transverse diameter	Adequate	Pubic arch >90 degrees
Gynaecoid (normal female)	Oval Transverse > AP diameter	Adequate	Pubic arch >90 degrees
Platypelloid	Transverse > AP diameter	Wide intraspinous diameter	Wide public arch

Maternal short stature is associated with a small pelvis and possible problems at labour. There is evidance to suggest women of short stature may be at an increased risk of caesarean section. You should be aware of this in women of short stature.

NUTRITION

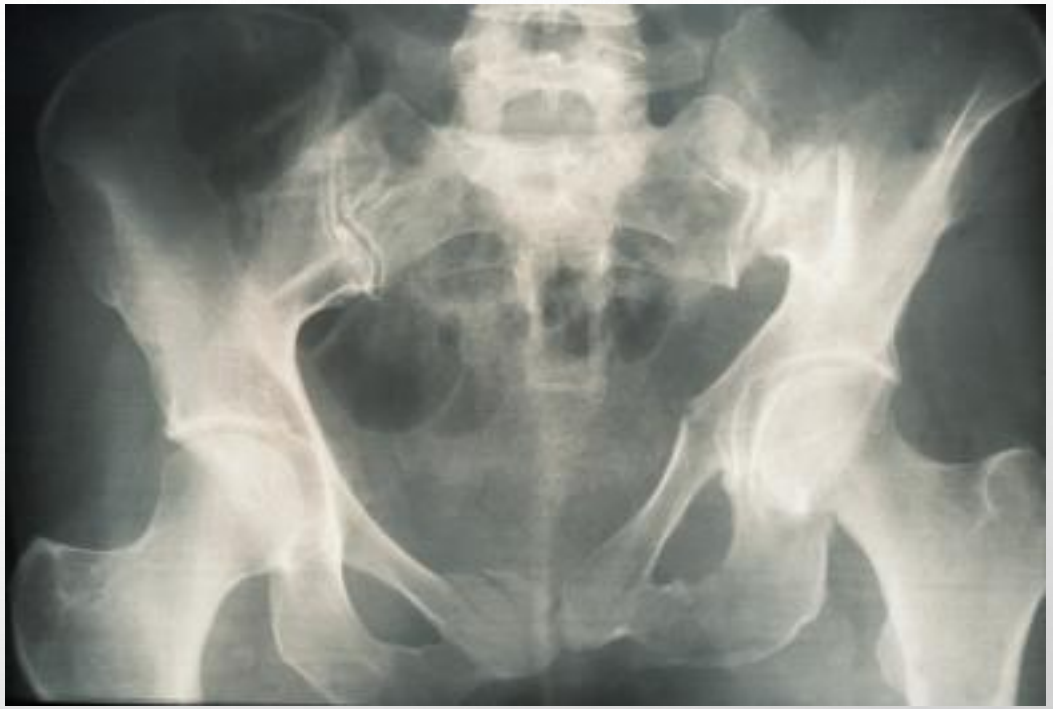
- NORMAL BONE DEVELOPMENT DEMANDS ADEQUATE NUTRITION AND INTAKE OF CALCIUM, PHOSPHORUS AND VITAMIN D. ANY IMPAIRED INTAKE OF THESE ESSENTIAL MINERALS AND VITAMINS WILL RESULT IN IMPAIRED BONE STRENGTH WITH THE RISK OF DISTORTION ASSOCIATED WITH WEIGHT BEARING.
- RICKETS CAN AFFECT THE DEVELOPMENT OF THE PELVIS AND RESULT IN A KIDNEY-SHAPED INLET, SECONDARY TO A PUSHED FORWARD SACRAL PROMONTORY. THIS ABNORMAL INLET IS ASSOCIATED WITH A REDUCED ANGLE OF INCLINATION OF THE PELVIC BRIM, BUT A SIZEABLE PELVIC CAVITY DUE THE PUSHED BACK SACRUM.
- IN OSTEOMALACIA, THE SACRAL PROMONTORY IS PUSHED FORWARD AND THE PELVIC SIDEWALLS INWARDS, WHICH NARROWS THE PELVIC OUTLET

IMPAIRED GAIT

- THIS MAY RESULT IN UNEQUAL WEIGHT DISTRIBUTION BETWEEN EACH SIDE OF THE PELVIC GIRDLE DURING CHILDHOOD, WHICH RESULTS IN UNILATERAL PELVIC DISTORTION.
- EXAMPLES OF THIS WILL INCLUDE CONGENITAL DISLOCATION OF THE HIP, POLIOMYELITIS OR SPINAL ANOMALIES SUCH AS KYPHOSCOLIOSIS.
- VARIOUS ACQUIRED CONDITIONS AFFECTING THE SPINE, PELVIS AND LOWER LIMBS CAN RESULT IN ALTERATION IN SHAPE AND FUNCTIONAL CAPACITY OF THE PELVIS AND HAVE AN IMPACT ON LABOUR. A KYPHOSIS OF THE THORACIC SPINE AND ASSOCIATED LUMBAR LORDOSIS RESULTS IN A REDUCED ANTERIOR–POSTERIOR (AP) DIAMETER OF THE PELVIS INLET. A LUMBAR SCOLIOSIS AFFECTS MAINLY THE CONTOUR OF THE PELVIS INLET. SPONDYLOLISTHESIS, WHERE THE FIFTH LUMBAR VERTEBRAE RIDES FORWARD ON THE FIRST SACRAL VERTEBRAE, RESULTS IN A RIDGE WHICH ALSO LEADS TO A REDUCTION IN THE AP DIAMETER OF THE PELVIC INLET.

TRAUMA/PELVIC FRACTURES

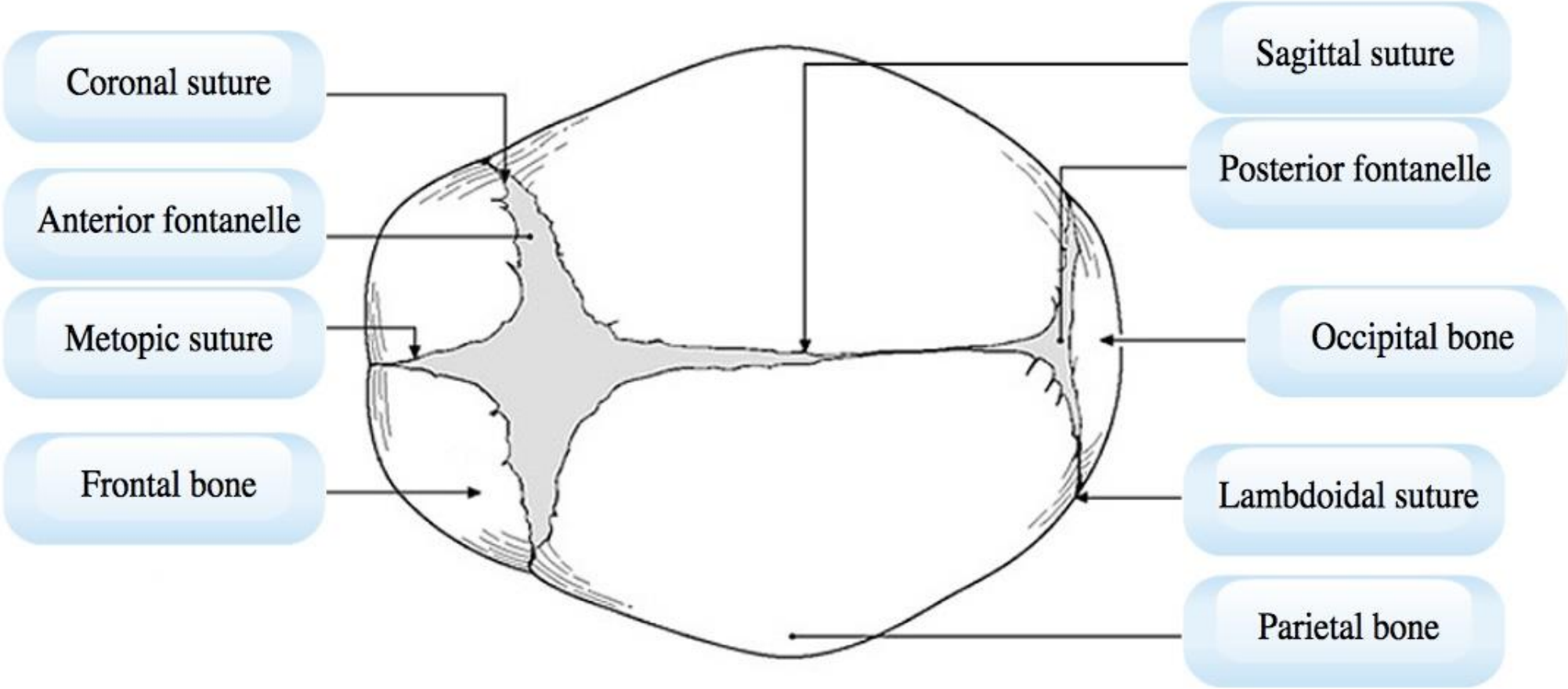
- PELVIC RING FRACTURES FOLLOW HIGH VELOCITY TRAUMA AND ARE OFTEN ASSOCIATED WITH LIFE-THREATENING INJURIES. STABILITY OF A PELVIC FRACTURE IS DEPENDENT ON THE INTEGRITY OF THE PELVIC RING.
- MALUNION FOLLOWING UNSTABLE FRACTURES MAY RESULT IN PELVIC CONTRACTURES.



X-ray of the pelvis showing fractured floor of left acetabulum and pubic rami caused by fall on side

FETUS - THE PASSENGER

- THE CRANIUM IS MADE UP OF FIVE BONES – TWO PARIETAL BONES, TWO FRONTAL BONES AND THE OCCIPUT. SUTURE LINES SEPARATE THESE SKULL BONES. THE SAGITTAL SUTURE SEPARATES THE TWO PARIETAL BONES, THE FRONTAL SUTURE SEPARATES THE TWO FRONTAL BONES, THE LAMBDOID SUTURE SEPARATES THE OCCIPITAL BONE AND THE PARIETAL BONES.
- THE ANTERIOR FONTANELLE IS DIAMOND-SHAPED AND IS FORMED BY THE JUNCTION OF THE SAGITTAL, FRONTAL AND TWO CORONAL SUTURES. THE POSTERIOR FONTANELLE IS Y-SHAPED AND IS FORMED BY THE JUNCTION OF THE SAGITTAL AND TWO LAMBDOID SUTURES.


Coronal suture
Anterior fontanelle
Metopic suture
Frontal bone
Sagittal suture
Posterior fontanelle
Occipital bone
Lambdoidal suture
Parietal bone

FETAL SIZE

- THE FETAL SIZE WILL DEPEND ON LARGELY GENETIC INFLUENCES, AND CAN BE INFLUENCE BY MATERNAL DIABETES.
- A LARGE BABY IN RELATION TO THE PELVIC CAPACITY CAN RESULT IN CEPHALOPELVIC DISPROPORTION AND FAILURE TO PROGRESS IN LABOUR, OR DIFFICULTY AT DELIVERY SUCH AS SHOULDER DYSTOCIA.

PRESENTATION

FACTORS THAT INFLUENCE THE DIAMETER OF THE PRESENTING PART:

- PRESENTATION AND POSITION
- MALFORMATIONS
- OVERALL FETAL SIZE.
- THE PORTION OF THE FETAL SKULL THAT PRESENTS IN LABOUR IS DEPENDENT ON THE DEGREE OF FLEXION OF THE FETAL HEAD.
- DURING THE COURSE OF NORMAL LABOUR THE VERTEX PRESENTS AND, DUE TO THE INSERTION OF THE SPINE POSTERIORLY, FLEXION OF THE FETAL HEAD RESULTS. THE WIDEST TRANSVERSE DIAMETER IN THIS POSITION IS THE BIPARIETAL DIAMETER (9.5 CM). THE SAGITTAL DIAMETER TENDS TO BE THE SUBOCCIPITOBREGMATIC DIAMETER (9.5 CM; BELOW THE OCCIPUT TO THE CENTRE OF THE ANTERIOR FONTANELLE).
- IF THE HEAD FAILS TO FLEX, THE RESULTING DIAMETER IS THE OCCIPITOFRONTAL (11–12 CM; OCCIPUT TO THE ROOT OF THE NOSE). FURTHER HEAD EXTENSION RESULTS IN THE BROW PRESENTATION AND THE MENTOVERTICAL DIAMETER (14 CM; CHIN TO THE CENTRE OF THE SAGITTAL SUTURE). CONTINUED EXTENSION RESULTS IN A FACE PRESENTATION AND SUBMENTOBREGMATIC DIAMETER (9.5 CM; ANGLE BETWEEN THE NECK AND CHIN AND THE CENTRE OF THE ANTERIOR FONTANELLES).
- MALFORMATIONS MAY ALSO INFLUENCE THE SIZE OF THE PRESENTING PART. EXAMPLES OF THIS WILL INCLUDE ANOMALIES SUCH AS HYDROCEPHALUS OR LARGE SPACE OCCUPYING LESIONS SUCH AS TERATOMAS.

UTERINE CONTRACTIONS - THE POWERS

- UTERINE CONTRACTIONS ARE THOUGHT TO ORIGINATE FROM A PACEMAKER LOCATED NEAR THE CORNUA OF THE UTERUS. THE CONTRACTION WAVE SPREADS DOWNWARD IN A PERISTALTIC WAVE. AS MYOMETRIAL FIBRES CONTRACT AND SHORTEN THEY UNDERGO RETRACTION. IN NORMAL CIRCUMSTANCES, THE INTENSITY OF THE CONTRACTION IS GREATEST IN THE UPPER UTERINE SEGMENT AS THERE IS GREATER MUSCLE MASS IN THIS REGION.
- THE INTENSITY AND FREQUENCY OF CONTRACTIONS INCREASE AS LABOUR PROGRESSES. THIS IS PERHAPS AIDED BY THE FERGUSON REFLEX, IN WHICH MECHANICAL STRETCHING OF THE CERVIX ENHANCES UTERINE ACTIVITY.

KEY POINTS

SUCCESS OF LABOUR DEPENDS ON:

- SIZE OF MATERNAL PELVIS
- SIZE OF FETAL HEAD
- PRESENTATION AND POSITION OF FETUS
- EFFICIENCY IF UTERINE CONTRACTIONS
- COMPLIANCE OF THE CERVIX AND SOFT TISSUE.

DELAY IN LABOUR

THE DEFINITION OF DELAY IN THE FIRST STAGE OF LABOUR NEEDS TO TAKE INTO ACCOUNT:

- CERVICAL DILATATION OF <2 CM IN 4 HOURS (PRIMIGRAVIDA)
- CERVICAL DILATATION OF <2 CM IN 4 HOURS OR A SLOWING OF PROGRESS (MULTIPAROUS)
- DESCENT AND ROTATION OF THE FETAL HEAD
- CHANGES IN STRENGTH, DURATION AND FREQUENCY OF UTERINE CONTRACTIONS.

LATENT PHASE

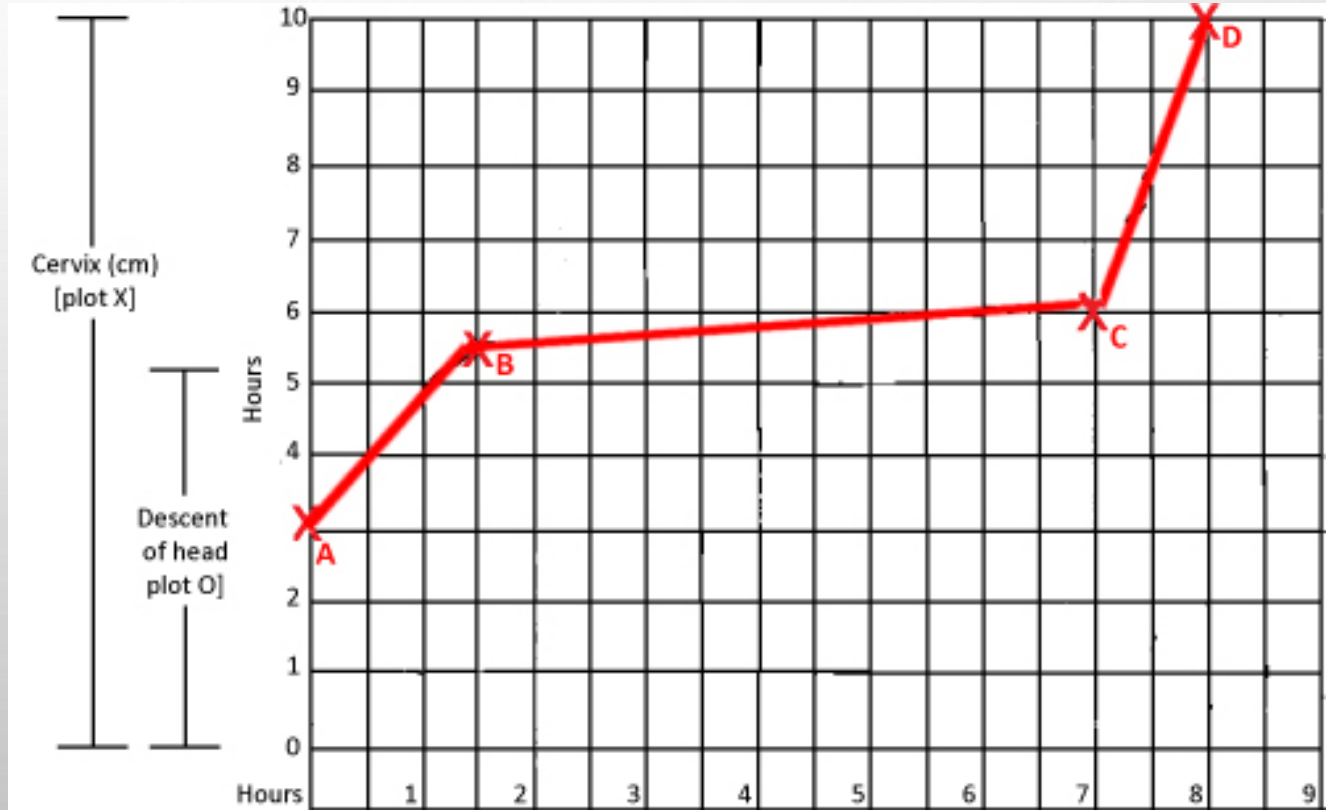
- THE LATENT PHASE IS A PERIOD OF TIME, NOT NECESSARILY CONTINUOUS, WHEN THERE ARE PAINFUL CONTRACTIONS AND THERE IS SOME CERVICAL CHANGE, INCLUDING EFFACEMENT AND DILATATION UP TO 4 CM.
- THIS PHASE CAN BE DIFFICULT TO MANAGE AS MANY WOMEN CAN HAVE PAINFUL CONTRACTIONS FOR PROLONGED PERIODS OF TIME WITH LITTLE IN THE WAY OF CERVICAL CHANGE. THIS IS BOTH EXHAUSTING AND DEMORALISING FOR WOMEN. IT IS IMPORTANT THAT WOMEN ARE SUPPORTED AND REASSURED THAT THIS IS A NORMAL STAGE OF LABOUR. THEY SHOULD BE WELL HYDRATED AND ADVISED REGARDING NUTRITION AND MOBILISATION. THE MANAGEMENT OF THIS STAGE SHOULD BE CONSERVATIVE AND A DECISION TO AUGMENT LABOUR SHOULD BE BASED ON THE PRESENCE OF MATERNAL AND OBSTETRIC REASONS.

SECONDARY ARREST

- SECONDARY ARREST OCCURS WHEN THERE IS NO CHANGE IN CERVICAL DILATATION FOR MORE THAN 2 HOURS(AT LEAST) FOLLOWING A PERIOD OF NORMAL ACTIVE PHASE DILATATION.

CAUSES OF SECONDARY ARREST INCLUDE:

- CEPHALOPELVIC DISPROPORTION
- MALPOSITION OR MALPRESENTATION
- INADEQUATE OR INCOORDINATE UTERINE ACTION.
- AN EXAMPLE OF SECONDARY ARREST IS ILLUSTRATED ON THE PARTOGRAM BELOW. THE POOR PROGRESS BETWEEN LABELS B AND C ON THE PARTOGRAM WERE DUE TO INCOORDINATE UTERINE ACTION WHICH WAS CORRECTED BY SYNTOCINON® COMMENCED AT TIME POINT C

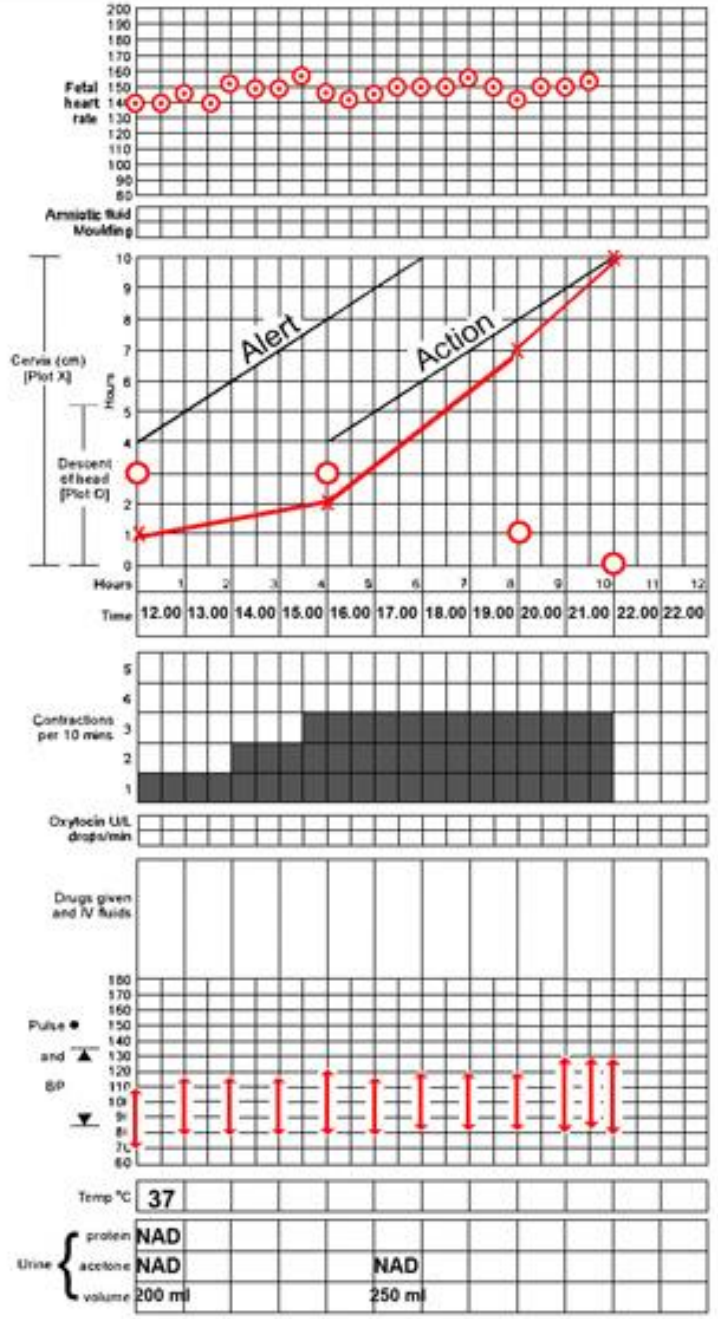


THE PARTOGRAM

- DYSFUNCTIONAL LABOUR CAN BE DIAGNOSED BY CAREFUL AND REPEATED ASSESSMENT OF THE POWER, PASSAGE AND THE PASSENGER. THE PARTOGRAM IS A MEANS OF GRAPHICALLY DISPLAYING THIS INTRAPARTUM INFORMATION IN A CLEAR AND FOCUSED WAY AND FACILITATES EFFECTIVE TRANSFER OF INFORMATION. THE PARTOGRAM HAS BEEN IN USE FOR OVER 20 YEARS AND ITS USE HAS BEEN SHOWN TO BE ASSOCIATED WITH A REDUCTION IN PROLONGED LABOUR, REDUCTION IN THE AUGMENTATION OF LABOUR AND A REDUCTION IN SEPSIS.

Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours



USES OF THE PARTOGRAM

- THE PARTOGRAM IS COMMENCED FOLLOWING ACCURATE DIAGNOSIS OF ESTABLISHED LABOUR. THE EXPECTED PROGRESS IN LABOUR IS 1 CM/HR ALTHOUGH IN PRIMIGRAVID WOMEN THERE ARE FEWER INTERVENTIONS IF IT IS ACCEPTED THAT PROGRESS CAN BE 0.5 CM/HR. AN ACTION LINE OF 4 HOURS SHOULD BE USED, AS EARLIER ACTION LINES INCREASE INTERVENTIONS. IF PROGRESS IS TO THE RIGHT OF THE ACTION LINE, THEN IT IS CONSIDERED TO BE PROLONGED AND ACTION SHOULD BE TAKEN.
- A 4-HOUR ACTION LINE REDUCES THE RATE OF CAESAREAN SECTIONS.

DETAILS OF THE POWER

- FREQUENCY OF CONTRACTIONS – NUMBER OF CONTRACTIONS OCCURRING OVER A 10 MINUTE PERIOD ARE RECORDED AND PLOTTED
- DURATION OF CONTRACTIONS – EFFECTIVE UTERINE ACTIVITY IS GENERALLY SUSTAINED FOR A PERIOD GREATER THAN 40 SECONDS
- AMPLITUDE – THIS IS A SUBJECTIVE ASSESSMENT OF THE PERCEIVED STRENGTH OF CONTRACTIONS. THE VALUE OF FORMAL INTRAUTERINE PRESSURE MONITORING IS LIMITED.

DETAILS OF THE PASSENGER

- FETAL HEART RATE RECORDING – LISTENING TO THE FETAL HEART FOLLOWING A CONTRACTION EVERY 15 MINUTES FOR A PERIOD OF ONE MINUTE DURING THE FIRST STAGE. THE FETAL HEART RATE SHOULD BE RECORDED AFTER EACH EXPULSIVE CONTRACTION DURING THE SECOND STAGE
- STATION - POSITION OF THE LEADING POINT OF THE PRESENTING PART IN RELATION TO THE ISCHIAL SPINES
- POSITION – COUNT THE NUMBER OF SUTURES: THREE AROUND THE POSTERIOR FONTANELLES AND FOUR AROUND THE ANTERIOR FONTANELLES
- MOULDING – THIS REFERS TO CHANGES IN RELATIONSHIP BETWEEN SKULL BONE (1+ SUTURE LINES TOUCH, 2+ SUTURE LINES OVERLAP AND ARE REDUCIBLE, 3+ SUTURE LINES OVERLAP AND ARE IRREDUCIBLE)
- APPLICATION TO THE CERVIX
- CAPUT FORMATION.

DETAILS OF THE PASSAGES: CERVIX

- EFFACEMENT
- DILATATION

PROLONGED LABOUR AND MORBIDITY

IF DELAY IS SUSPECTED IN THE FIRST STAGE OF LABOUR, THE FOLLOWING FACTORS SHOULD BE TAKEN INTO ACCOUNT:

- PARITY
- CERVICAL DILATATION AND RATE OF CHANGE
- UTERINE CONTRACTIONS
- STATION AND POSITION OF PRESENTING PART
- THE WOMAN'S EMOTIONAL STATE
- REFERRAL TO THE APPROPRIATE HEALTHCARE PROFESSIONAL.
- YOU SHOULD OFFER THE WOMAN ONE-TO-ONE SUPPORT, HYDRATION AND EFFECTIVE PAIN RELIEF.

CORRECT MANAGEMENT OF LABOUR IS AN IMPORTANT ISSUE TO DECREASE MATERNAL AND PERINATAL MORBIDITY AND MORTALITY

MORBIDITY FROM PROLONGED LABOUR INCLUDES

- INCREASED RISK OF INSTRUMENTAL DELIVERY AND CAESAREAN SECTION
- TRAUMATIC DELIVERY RESULTING IN FETAL AND MATERNAL MORBIDITY, E.G SHOULDER DYSTOCIA
- KETOSIS RESULTING FROM DEHYDRATION AND ANAEROBIC METABOLISM
- THIRD STAGE COMPLICATIONS SUCH AS POSTPARTUM HAEMORRHAGE AND RETAINED PLACENTA
- UTERINE RUPTURE
- FISTULA FORMATION RESULTING FROM PROLONGED COMPRESSION OF THE ANTERIOR VAGINAL WALL AND BLADDER BY THE PRESENTING PART.

KEY POINTS

- OFFER SUPPORT AND REASSURANCE IN THE LATENT PHASE OF LABOUR
- PARTOGRAMS HAVE BEEN TRADITIONALLY USED TO MONITOR PROGRESS OF LABOUR
- BEFORE A DIAGNOSIS OF DELAY IN LABOUR IS MADE, CONSIDERATION SHOULD BE GIVEN TO THE 'WHOLE PICTURE' OF CERVICAL PROGRESS, UTERINE ACTIVITY AND DESCENT/ ROTATION OF THE VERTEX.

WHAT IS YOUR ACTION ????

ARTIFICIAL RUPTURE OF MEMBRANES

- ARTIFICIAL RUPTURE OF THE MEMBRANES (ARM) SHOULD BE CONSIDERED IF DELAY IN THE FIRST STAGE OF ESTABLISHED LABOUR IS SUSPECTED, I.E., IF THE RATE OF CERVICAL DILATATION IS LESS THAN 0.5 CM/HOUR. THERE IS GOOD EVIDENCE THAT AMNIOTOMY SHORTENS THE LENGTH OF LABOUR.

PRIMIPAROUS AUGMENTATION

- OXYTOCIN CAN BE USED TO AUGMENT LABOUR IF PROGRESS IS UNSATISFACTORY 2 HOURS FROM ARM.
- OXYTOCIN WILL INCREASE THE AMPLITUDE, DURATION AND FREQUENCY OF CONTRACTIONS AND SHOULD BE GIVEN BY A LOW VOLUME INFUSION PUMP. REGIMENS SHOULD COMMENCE AT A LOW RATE AND BE INCREASED AT INTERVALS OF 30 MINUTES WITH THE DOSE TITRATED AGAINST CONTRACTIONS, AIMING TO ACHIEVE THREE TO FOUR CONTRACTIONS IN 10 MINUTES. USING THIS REGIMEN REDUCES THE INCIDENCE OF UTERINE HYPERTONICITY, REDUCES OXYTOCIN DOSES AND REDUCES CAESAREAN SECTION RATES FOR FETAL HEART RATE ANOMALIES.

- IF THERE IS A DELAY IN PROGRESS IN MULTIPAROUS WOMEN THEN THEY SHOULD BE ASSESSED BY AN EXPERIENCED OBSTETRICIAN AND AN ABDOMINAL AND VAGINAL EXAMINATION PERFORMED PRIOR TO ANY DECISION REGARDING THE USE OF OXYTOCIN.
- VAGINAL EXAMINATION SHOULD BE PERFORMED 4-HOURLY AFTER COMMENCEMENT OF OXYTOCIN.
- HYPERSTIMULATION IS ASSOCIATED WITH AN INCREASE IN CONTRACTION FREQUENCY WITH A RISE IN UTERINE BASELINE TONE AND RESULTANT REDUCED PLACENTAL PERFUSION. OXYTOCIN REGIMENS SHOULD BE REDUCED IN THE PRESENCE OF HYPERCONTRACTILITY.

MULTIPAROUS AUGMENTATION

- IF A DELAY IN PROGRESS IS SUSPECTED IN A MULTIPAROUS WOMAN, AN EXPERIENCED OBSTETRICIAN SHOULD ASSESS HER AND AN ABDOMINAL AND VAGINAL EXAMINATION PERFORMED PRIOR TO ANY DECISION REGARDING THE USE OF OXYTOCIN.
- IF THERE IS NO EVIDENCE OF CEPHALOPELVIC DISPROPORTION, THEN CAUTIOUS USE OF OXYTOCIN MAY BE APPROPRIATE. IF THERE IS STILL FAILURE TO PROGRESS DESPITE AUGMENTATION, THEN AN EARLY DECISION REGARDING MODE OF DELIVERY SHOULD BE MADE.

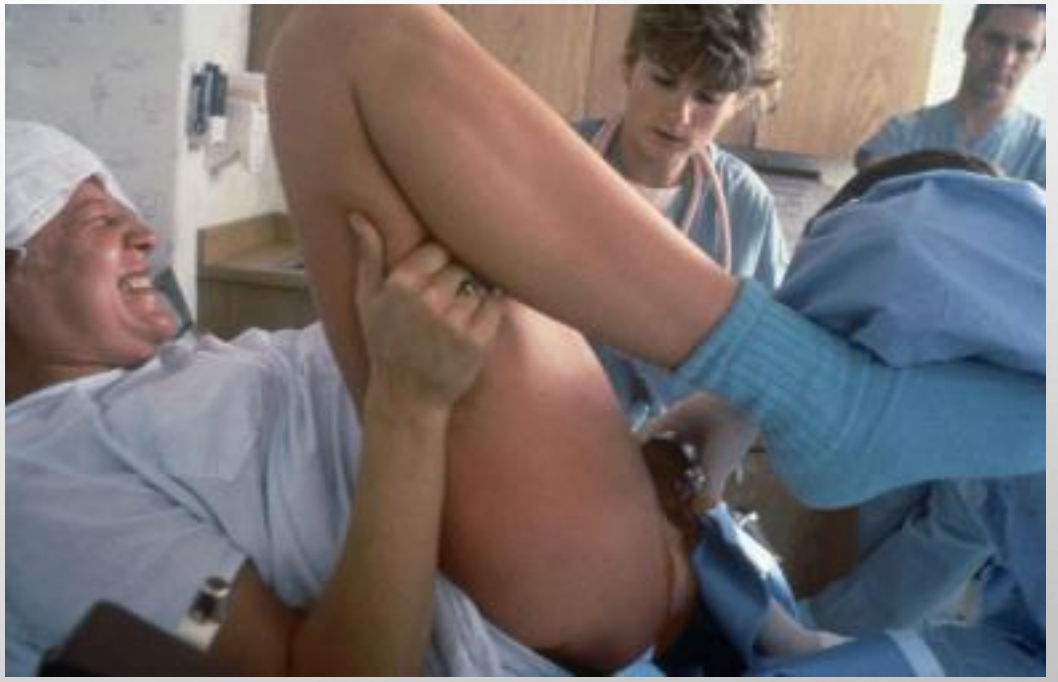
OBSTRUCTED LABOR

- IF THERE IS NO PROGRESS (ROTATION AND CERVICAL DILATION) DESPITE CORRECTION OF THE UTERINE CONTRACTION AFTER FOUR HOUR OF ACTION THIS MEANS FAILURE TO PROGRESS IN THE FIRST STAGE OF LABOR AND CPD MOSTLY THE CAUSE.

- SIGNS OF OBSTRUCTION MAY APPEAR SUCH AS MOULDING AND CAPUT.
- C/S SHOULD BE CONSIDERED (NO ROLE FOR INSTRUMENTAL DELIVERY THIS STAGE)

SECOND STAGE

- **PASSIVE SECOND STAGE OF LABOUR**
- FULL DILATATION OF THE CERVIX PRIOR TO, OR IN THE ABSENCE OF, INVOLUNTARY EXPULSIVE CONTRACTIONS.
- **ACTIVE SECOND STAGE**
- THE BABY IS VISIBLE
- EXPULSIVE CONTRACTIONS AND A FULLY DILATED CERVIX
- ACTIVE MATERNAL EFFORT ONCE CONFIRMATION OF FULL DILATATION IN THE ABSENCE OF EXPULSIVE CONTRACTIONS.



HOW FREQUENT YOU ASSESS PROGRESS OF THE ACTIVE SECOND STAGE ??

- HOURLY .
- IF NO CHANGE ASSESS THE CAUSE…
- IF NO IMMENT DELIVEREY IN 2 HOURS ONE HOUR FOR MULTI …
- CONSIDER INSTRUMENTAL OR C/S

PROGRESS IN THE SECOND STAGE

- **NULLIPAROUS WOMEN**
- IN WOMEN IN THEIR FIRST LABOUR, DELIVERY WOULD BE EXPECTED WITHIN 3 HOURS OF THE COMMENCEMENT OF THE ACTIVE SECOND STAGE, AND DELAY IS DEFINED AS AN ACTIVE STAGE THAT HAS LASTED MORE THAN 2 HOURS. IF BIRTH IS NOT IMMINENT THEN A MANAGEMENT PLAN SHOULD BE MADE FOR CONSIDERATION OF OPERATIVE DELIVERY.
- **PAROUS WOMEN**
- DELIVERY IS EXPECTED TO OCCUR WITHIN 2 HOURS OF THE START OF ACTIVE SECOND STAGE, AND DELAY IS DIAGNOSED IF AFTER 1 HOUR DELIVERY IS NOT IMMINENT

INTERVENTIONS

- IN NULLIPAROUS WOMAN WITH INADEQUATE UTERINE ACTIVITY, OXYTOCIN CAN BE USED IN THE SECOND STAGE IF THERE IS A MALPOSITION OR TO AID DESCENT OF THE PRESENTING PART. PRIOR TO COMMENCING AN INFUSION, ASSESSMENT OF THE WOMAN SHOULD BE MADE BY AN EXPERIENCED OBSTETRICIAN.
- IN MULTIPAROUS WOMEN WITH SUSPECTED DELAY IN THE SECOND STAGE, AN EXPERIENCED OBSTETRICIAN SHOULD ASSESS THE WOMAN, INCLUDING ABDOMINAL PALPATION AND VAGINAL EXAMINATION PAYING PARTICULAR ATTENTION TO POSITION, STATION, AND BOTH CAPUT AND MOULDING SIGNS OF OBSTRUCTION.

POSTURE

- THE WOMAN SHOULD BE ENCOURAGED TO ADOPT WHATEVER POSITION SHE FINDS MOST COMFORTABLE DURING LABOUR, ALTHOUGH THE SUPINE POSITION SHOULD BE ACTIVELY DISCOURAGED IN ORDER TO AVOID CAVAL COMPRESSION. GRAVITY AND MOVEMENT ARE CONSIDERED TO ASSIST FETAL DESCENT AND OPTIMAL FETAL POSITIONING.
- THERE MAY BE BENEFITS IN THE UPRIGHT OR LATERAL POSITION IN TERMS OF REDUCING THE DURATION OF THE SECOND STAGE OF LABOUR, REDUCTION IN INSTRUMENTAL DELIVERY RATES, REDUCTION IN EPISIOTOMY RATES AND PERINEAL TEARS AND A REDUCTION IN FETAL HEART RATE ANOMALIES.

PAIN RELIEF

- PAIN MAY ACT TO SUPPRESS UTERINE ACTIVITY VIA THE AUTONOMIC NERVOUS SYSTEM. PAIN AND ANXIETY STIMULATE THE SYMPATHETIC NERVOUS SYSTEM AND ADRENALINE IS KNOWN TO BE A POTENT INHIBITOR OF UTERINE ACTIVITY. FEAR AND A SENSE OF LOSS OF CONTROL DURING LABOUR ARE THOUGHT TO INCREASE THE PERCEPTION OF PAIN.

SUPPORT

CONTINUOUS SUPPORT IN LABOUR:

- REDUCES THE NEED FOR ANALGESIA
- REDUCES OPERATIVE DELIVERY RATES
- IMPROVES APGAR SCORES
- MAY SHORTEN THE DURATION OF LABOUR
- IMPROVES PATIENT SATISFACTION RATES.

IF THERE NO PROGRESS DESPITE ADEQUANT CONTRACTION ???

- THE COUD BE DUE POOR MATERNAL EFFORT (USE INSTRUMENTAL IF POSSIBLE)
- OR CPD USUALLY SIGNS OF OBSTRUCTION WILL APPEAR (CAPUT AND MOULDING)
- INSTRUMENTAL POSSIBLE (FULFILL PREREQUISITES)
- OR C/S

KEY POINTS

- TAKE STEPS TO ACTIVELY REDUCE THE RISKS OF MORBIDITY WITH PROLONGED LABOUR
- BE AWARE OF THE DIFFERING EXPECTATIONS FOR PROGRESS IN LABOUR IN PRIMIPAROUS AND MULTIPAROUS WOMEN
- IF DELAY IN LABOUR IS SUSPECTED IN A MULTIPAROUS WOMAN A THOROUGH ASSESSMENT IS INDICATED PRIOR TO ANY DECISION FOR THE USE OF OXYTOCIN
- ENCOURAGE MOBILITY AND A POSITION THAT IS MOST COMFORTABLE TO THE WOMAN
- OFFER ANALGESIA
- CONTINUOUS SUPPORT AND REASSURANCE IN LABOUR

CASE STUDY

- A 31-YEAR-OLD PRIMIGRAVIDA WITH AN UNEVENTFUL ANTENATAL COURSE IS ADMITTED AT 39 WEEKS OF GESTATION WITH PAINFUL UTERINE ACTIVITY.

- **OUTLINE WHAT INITIAL ASSESSMENTS SHOULD BE PERFORMED, EITHER BY THE MIDWIFE OR DOCTOR?**

- THE WOMAN IS FOUND TO BE 4 CM, FULLY EFFACED WITH 5/5 HEAD PALPABLE ABDOMINALLY. FOUR HOURS LATER SHE IS VERY DISTRESSED AND INVOLUNTARILY PUSHING. THE MIDWIFE ASKS YOU TO MAKE A PLAN OF MANAGEMENT FOR THE WOMAN.

- **WHAT INFORMATION DO YOU NEED TO KNOW BEFORE YOU CAN MAKE A MANAGEMENT PLAN?**

- THE MATERNAL AND FETAL CONDITION ARE SATISFACTORY. THE UTERINE ACTIVITY IS IRREGULAR AND THERE IS CLEAR LIQUOR DRAINING. THERE ARE 4/5 HEAD PALPABLE ABDOMINALLY AND THE MIDWIFE THINKS THE WOMAN IS STILL 4 CM BUT IS UNSURE.
- **WHAT WOULD YOUR MANAGEMENT BE AND WHAT WOULD YOU DISCUSS WITH THE WOMAN?**

- SEVEN HOURS LATER SHE IS FULLY DILATED. THE POSITION IS OP AT THE 0 STATION AND THERE ARE 2/5 PALPABLE ABDOMINALLY. THERE ARE 2+ CAPUT AND NO MOULDING.
- **IN THE ABSENCE OF FETAL DISTRESS EXPLAIN WHEN AND WHY YOU WOULD REASSESS HER.**
- **WHAT WOULD YOU DO IF, DESPITE ACTIVE PUSHING FOR 1 HOUR, SHE WAS UNDELIVERED?**

DEFINITIONS

- **LIE**
- THIS REFERS TO THE RELATIONSHIP BETWEEN THE LONGITUDINAL AXIS OF THE UTERUS AND THE LONGITUDINAL AXIS OF THE FETUS. THIS IS GENERALLY LONGITUDINAL BUT MAY BE TRANSVERSE OR OBLIQUE.
- **PRESENTING PART**
- THIS IS THE PORTION OF THE FETUS FELT ON VAGINAL EXAMINATION.
- **POSITION**
- THIS IS THE RELATIONSHIP BETWEEN A DEFINED AREA OF THE PRESENTING PART (KNOWN AT THE DENOMINATOR) AND THE MOTHER'S PELVIS.
- **STATION**
- THIS REFERS TO THE LEVEL OF THE PRESENTING PART IN RELATION TO THE ISCHIAL SPINES.

- **ATTITUDE**
- THIS REFERS TO THE RELATIONSHIP OF THE FETAL HEAD AND LIMBS TO THE FETAL TRUNK. THE ATTITUDE IS GENERALLY ONE OF FLEXION.
- **VERTEX**
- THIS IS THE AREA BOUNDED BY THE ANTERIOR FONTANELLE (BREGMA), POSTERIOR FONTANELLE AND THE BIPARIETAL EMINENCES.
- **OCCIPUT**
- THIS IS THE AREA BELOW THE POSTERIOR FONTANELLE.
- **SINCIPUT**
- THIS IS THE AREA IN FRONT OF THE ANTERIOR FONTANELLE. THIS IS DIVIDED INTO THE BROW (AREA BETWEEN THE ANTERIOR FONTANELLE AND THE ROOT OF THE NOSE) AND THE FACE (AREA BELOW THE ROOT OF THE NOSE).