NORMAL LABOUR: INTRAPARTUM MANAGEMENT

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Contents

Definition

-spontaneous onset of regular, painful uterine contractions (3 in 10 minutes)

that are associated with:

effacement and progressive dilatation of the cervix (3-4cm or more)

descent of the presenting part of the fetus.

with or without bloody show or ruptured membranes.

-results: birth of neonate followed by expulsion of placenta and membranes

Stages of labour

First stage

-begins with onset of labour (cervical dilatation of 3-4cm) and finishes at full dilatation (cervical dilatation of 10cm).

i) Latent phase:

-dilatation: 3-4cm, effacement: 0.5-3cm (<100%)

-slow, variable in duration phase: 8 hours (nulliparous), 6 hours (multiparous)

Stages of labour

ii) Active phase:

-dilatation: 4-10cm, effacement: 0cm (100cm)

-fast (acceleration, maximum slope, deceleration phase)

-1cm/ hour dilatation (nulliparous, multiparous)

Stages of labour

Second stage

-dilatation: 10cm (full dilatation) until delivery of neonate

i) Passive phase:

-no urge to push, head is high in pelvis

ii) Active phase:

-urge to push, head is low in pelvis

-2 hours (nulliparous), 1 hour (multiparous): no epidural

-3 hours (nulliparous), 2 hours (multiparous): epidural

Stages of labour

Third stage

-delivery of the neonate until expulsion of placenta

i) Active management:

-use of oxytocin and maneuvers to extract placenta

-30 minutes

ii) Physiological management:

-no use of oxytocin or maneuvers to extract placenta

-60 minutes

1st stage management-presenting complaint-symptom

Presenting complaint-symptom

-contractions: menstrual like pain, back ache

-vaginal fluid loss

-mucous plug “bloody show”

-vaginal bleeding

1st stage management-current pregnancy history

Current pregnancy

-last menstrual period (LMP): gestational age estimation (Naegele's rule)

-prenatal examinations: 1st and 2nd trimester ultrasound

-Rh and blood group

-hemoglobin

-Oral glucose tolerance test (OGTT)

-blood pressure

-weight gain

1st stage management-previous history

Obstetric history

-deliveries: number, mode of delivery, gestational age at delivery,

-obstetric complications: hypertension, diabetes, bleeding

-miscarriages, abortions

Medical history

Surgical history

Drugs, allergies

1st stage management-vital signs, urine dipstick

Vital signs

-blood pressure: below or higher than 140/90 mmHg

-pulse: below or higher than 120/min

-temperature: below or higher than 38 degrees

Urine dipstick

-protein

-glucose

-ketones

1st stage management-symphysis fundal height

Symphysis fundal height measurement

-tape measure: symphysis pubis (top)-fundus

-McDonald rule: cm = weeks +/-2 (>20 weeks)

-smaller: IUGR, oligohydramnios, wrong dates

-larger: macrosomia, polyhydramnios, multiple, fibroids

1st stage management-symphysis fundal height

Gestational age anatomical landmarks

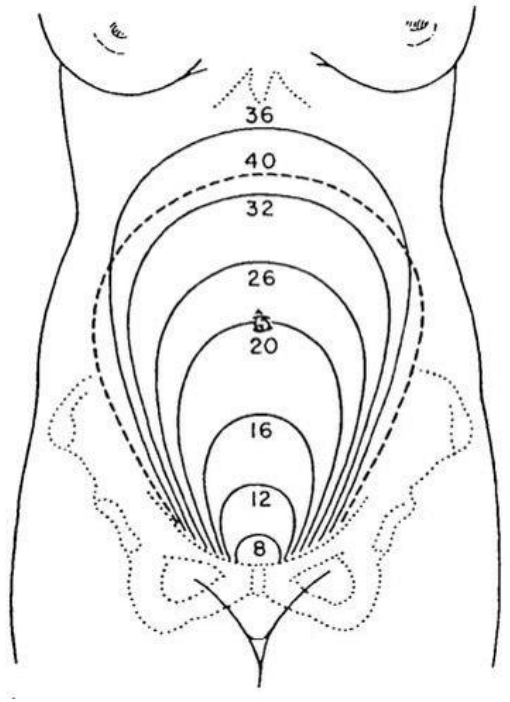
-12 weeks: symphysis pubis

-16 weeks: midway to umbilicus

-20-24 weeks: umbilicus

-36-38 weeks: costal arches

->38 weeks: 2cm below costal arches



1st stage management-symphysis fundal height

1st stage management-Leopold's maneuvers

1st Leopold's maneuver

-examiner: faces maternal head

-both palms, fingers: fundus

-identification of fetal parts at fundus:

round, hard: head → buttocks at lower part of uterus → breech presentation

globular, soft: buttocks → head at lower part of uterus → cephalic presentation

1st stage management-Leopold's maneuvers

1st stage management-Leopold's maneuvers

2nd Leopold's maneuver

-examiner: faces maternal head

-both palms, fingers: lateral aspects of uterus

-identification of fetal back at one side:

fetal back: left or right → fetal heart above fetal shoulder

fetal limbs: left or right → opposite side

1st stage management-Leopold's maneuvers

1st stage management-Leopold's maneuvers

3rd Leopold's maneuver

-examiner: faces maternal head

-one hand: thumb and fingers: above symphysis pubis

-identification of presenting part at lower part of uterus:

hard, round: head → cephalic presentation

globular, soft: buttocks → breech presentation

-identification of engagement or not (0/5-5/5): 0/5: unengaged, 5/5: engaged

1st stage management-Leopold's maneuvers

1st stage management-Leopold's maneuvers

4th maneuver

-examiner: faces maternal pelvis, feet

-both palms, fingers: lower part of uterus

-identification of presenting part at lower part of uterus:

hard, round: head → cephalic presentation

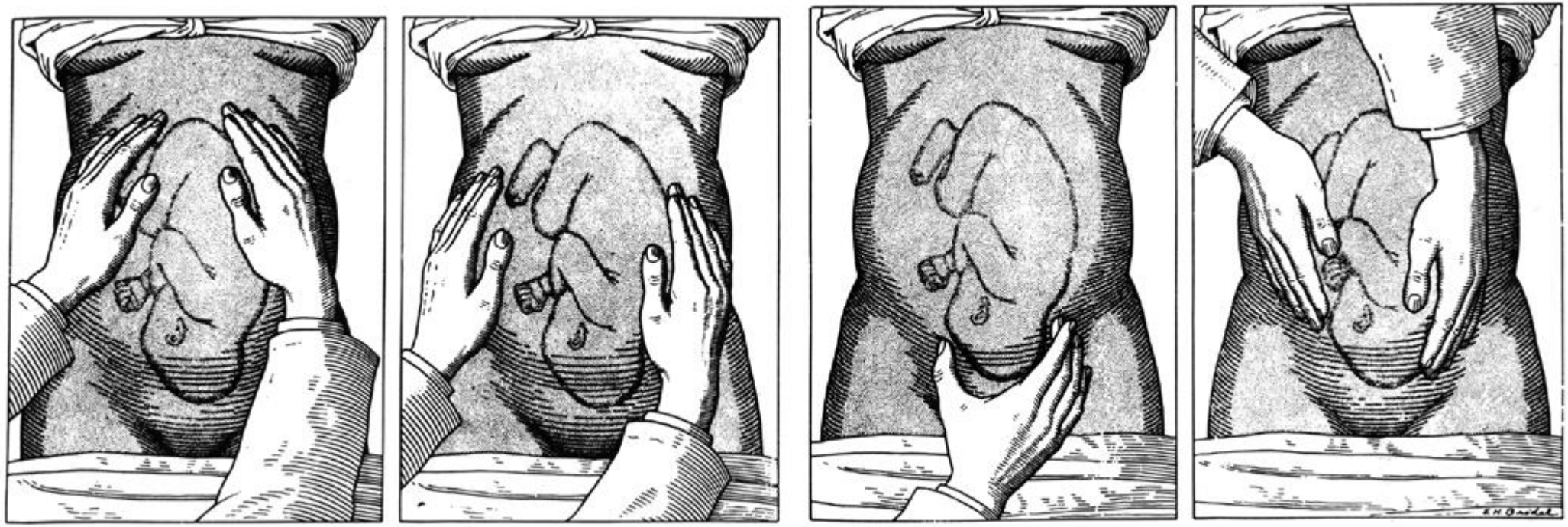
globular, soft: buttocks → breech presentation

-identification of position:

occiput: left or right

1st stage management-Leopold's maneuvers

1st stage management-Leopold's maneuvers



First maneuver

Second maneuver

Third maneuver

Fourth maneuver

1st stage management-digital examination (Bishop score)

Technique

-sterile gloves

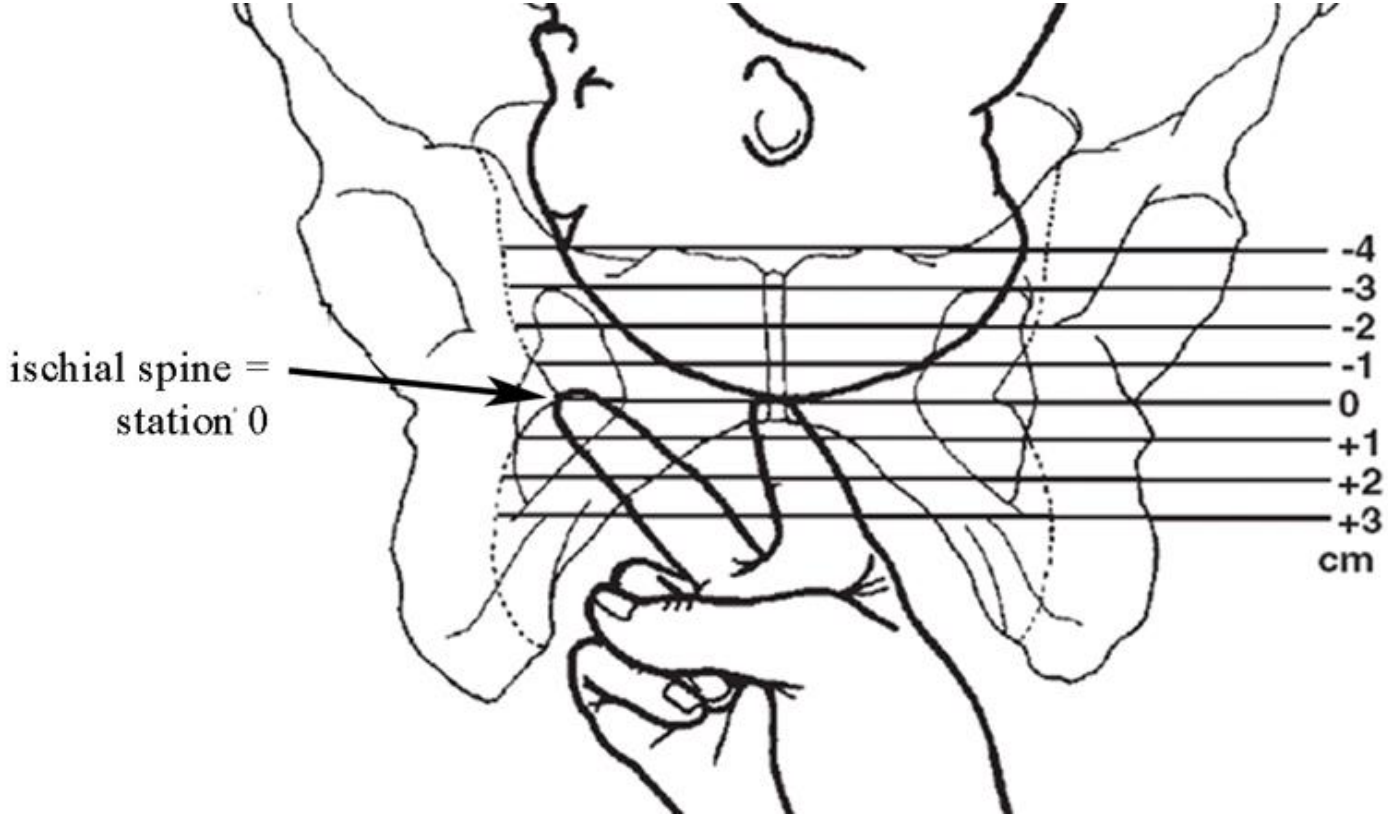
-exclude: placenta previa, PPROM, premature contractions

-insert index and middle finger

-estimate cervical features and fetal head station

-bishop score assessment

1st stage management-digital examination (Bishop score)



1st stage management-digital examination (Bishop score)

Bishop score features

-cervical dilatation: 0 to 10cm

-cervical effacement: 0 to 100%

-cervical consistency: firm to soft

-cervical position: posterior, middle, anterior

-fetal station: unengaged (-), engaged (+)

-bishop score <5-7cm: unfavorable cervix

-bishop score >5-7cm: favorable cervix

1st stage management-fetal membranes assessment

Speculum examination

Indications

i. ruptured membranes:

pool of amniotic fluid in the posterior vaginal fornix

Valsalva maneuver: amniotic fluid from external cervical os

features: color, odor, blood, meconium

vaginal swab: culture

ii. premature contractions

iii. placenta previa

1st stage management-fetal membranes assessment

Speculum examination

-cervix: enlarged, edematous

-mucus plug

-contact bleeding

-cervical polyp

1st stage management-fetal membranes assessment

Suspected ruptured membranes

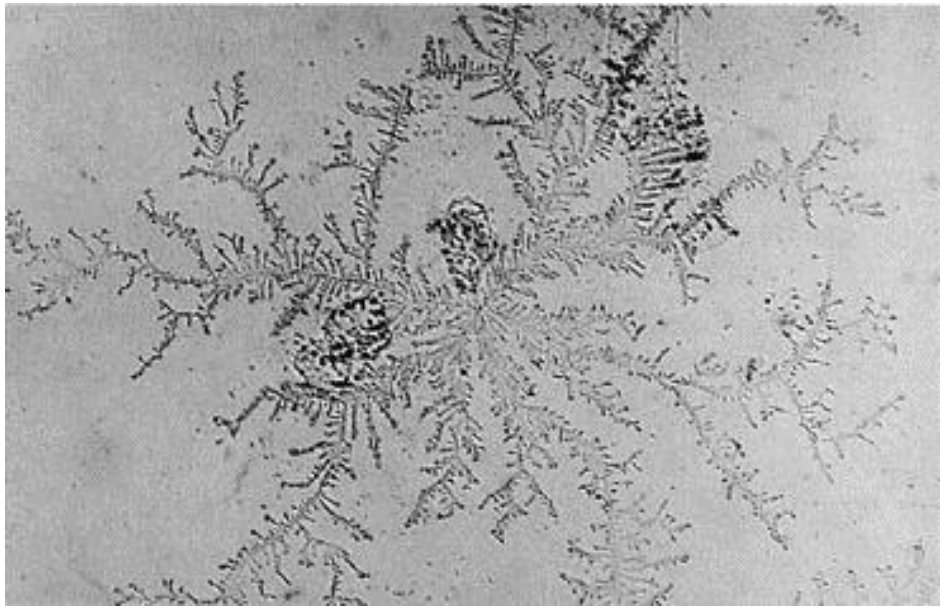
-litmus paper: alkaline vaginal pH: indication of amniotic fluid presence

-fern test: presence of fern pattern on glass slide: amniotic fluid

-Amnisure, ROM plus: identification of amniotic fluid proteins

1st stage management-fetal membranes assessment

fern test



litmus paper test

1st stage management-intermittent auscultation

Technique

-over anterior shoulder: palpable >28 weeks

-hand held doppler, stethoscope: >14 weeks

-measure for a few seconds

-maternal pulse palpation for differentiation from fetal

-normal: 110-160 bpm

Indications

-low risk pregnancy

1st stage management-intermittent auscultation

1st stage management-cardiotocography

Definition

-continuous recording of fetal heart rate and uterine activity by use of a doppler ultrasound device that records a continuous wave either by external monitor (maternal abdomen-shoulder) or internal monitor (fetal scalp electrode) and
tocodynamometer by external monitor (maternal abdomen-fundus)

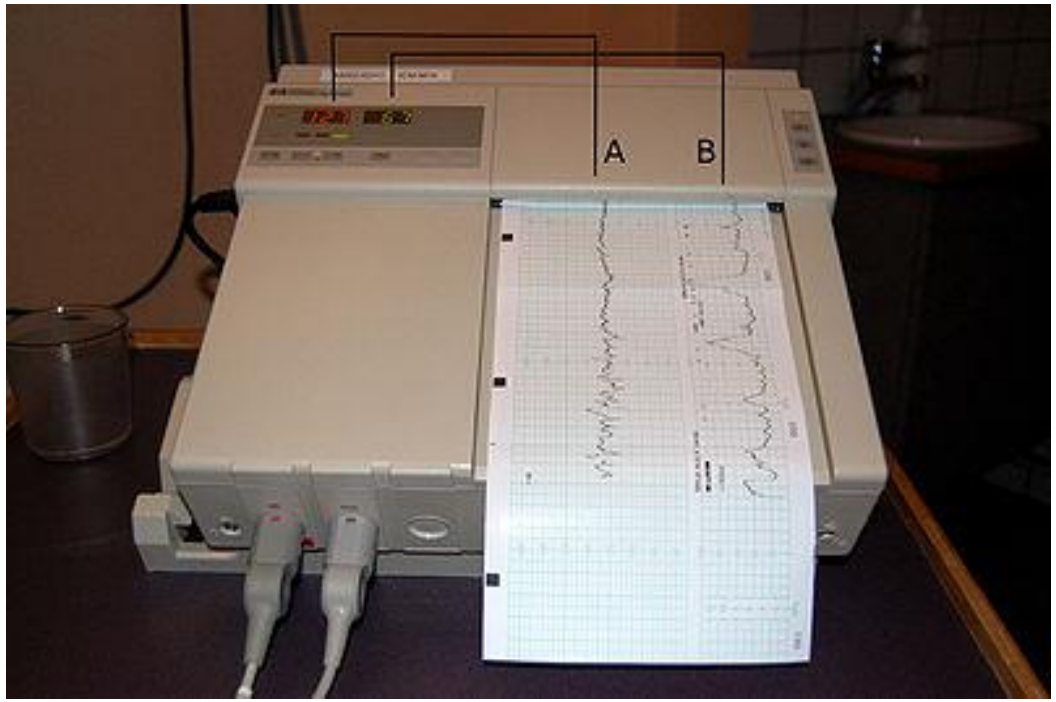
Indications

-high risk pregnancy

-abnormal intermittent auscultation

1st stage management-cardiotocography

Cardiotocograph



1st stage management-cardiotocography

Baseline rate

-approximate FHR between contractions, in a 10 minute period

i. normal: 110-160 bpm

ii. tachycardia: >160 bpm

-maternal fever, thyrotoxicosis, betamimetics, anxiety

-early stage hypoxia, chorioamnionitis, arrhythmia

iii. Bradycardia: <110 bpm

-late stage hypoxia

1st stage management-cardiotocography

Variability

-fluctuations in FHR within 2 cycles

i. Normal: 5-25 bpm

ii. Minimal: <5 bpm

-fetal hypoxia, sleep cycle

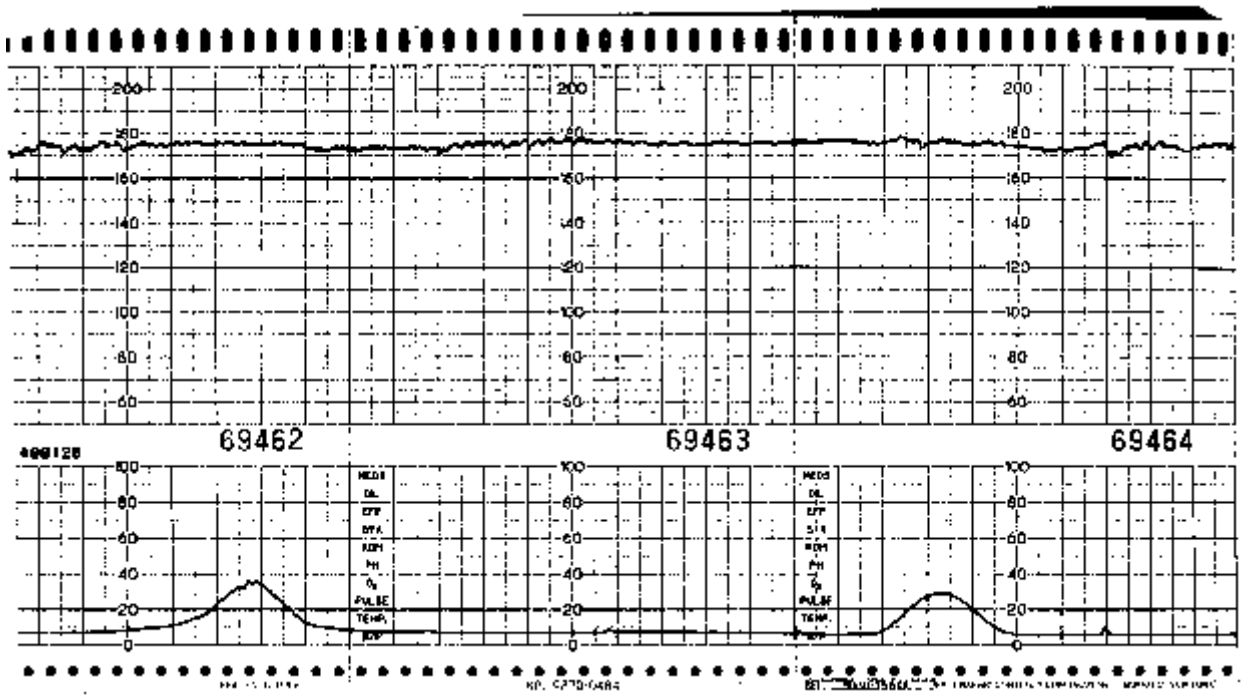
-opioids

iii. Marked: >25 bpm

-unknown significance

1st stage management-cardiotocography

Tachycardia, minimal variability



1st stage management-cardiotocography

Accelerations

-abrupt increases of FHR of > 15 bpm for >15 seconds and <2 minutes

i. present:

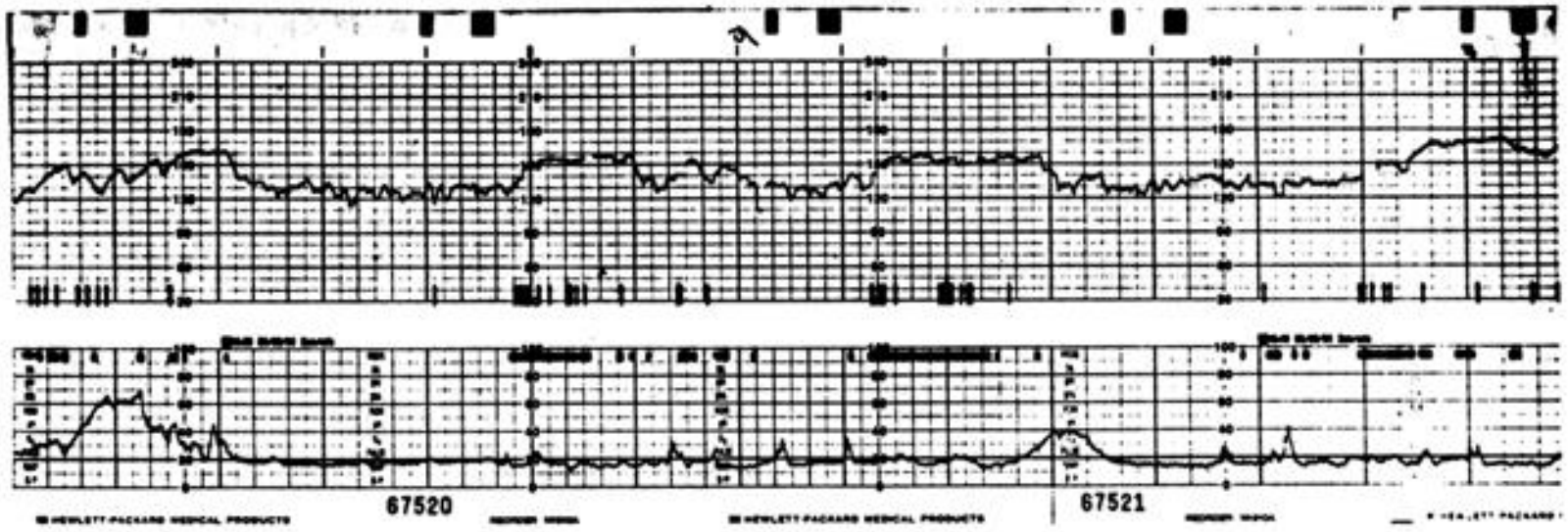
-fetal movements, contractions

ii. Absent:

-sleep cycle

1st stage management-cardiotocography

Accelerations



1st stage management-cardiotocography

Decelerations

-abrupt decreases of FHR of >15 bpm for >15 seconds & <2 minutes

i. Early: mirror image with contractions

-head compression: 2nd stage of labour

ii. Variable: variable relation with contractions

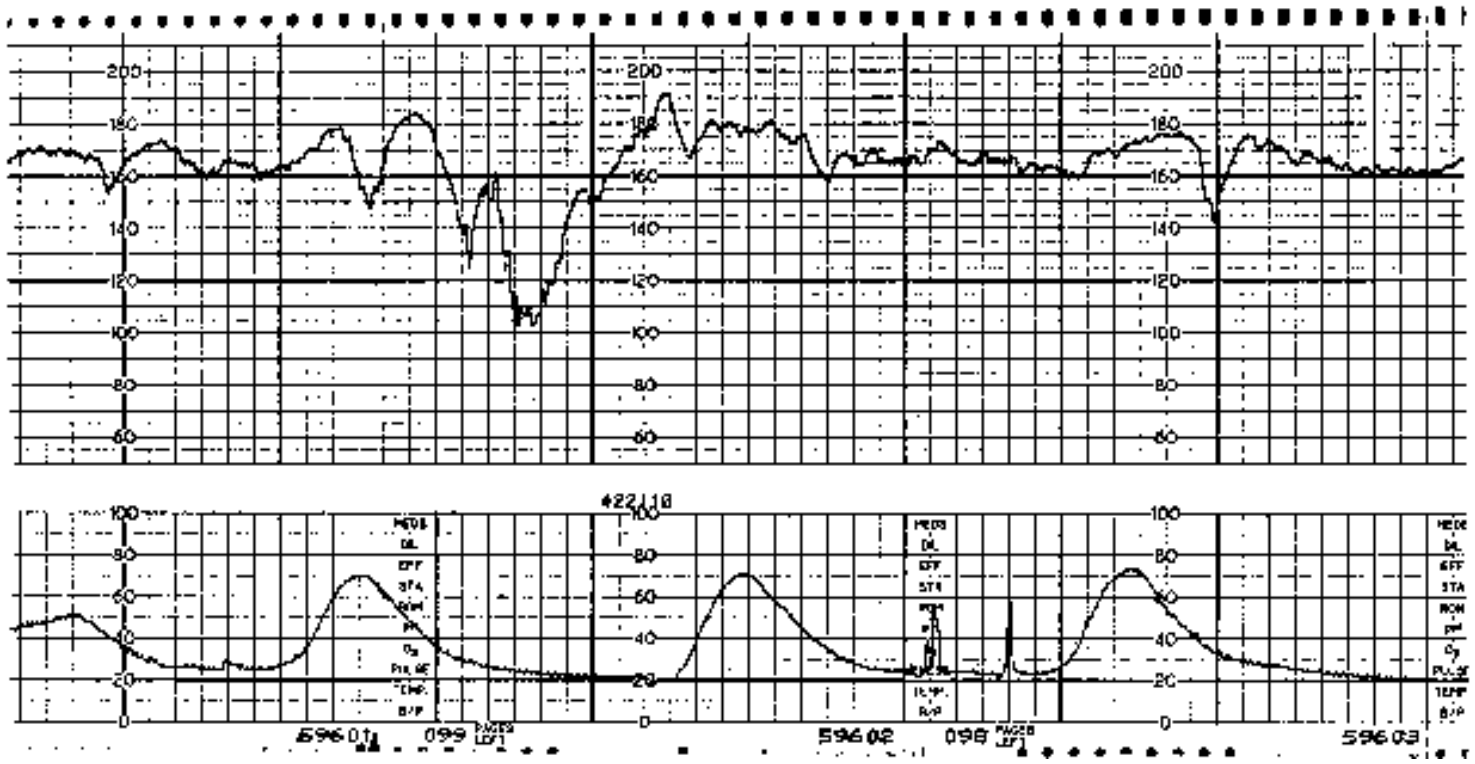
-umbilical cord compression

iii. Late: follow contractions

-hypoxia (placental insufficiency)

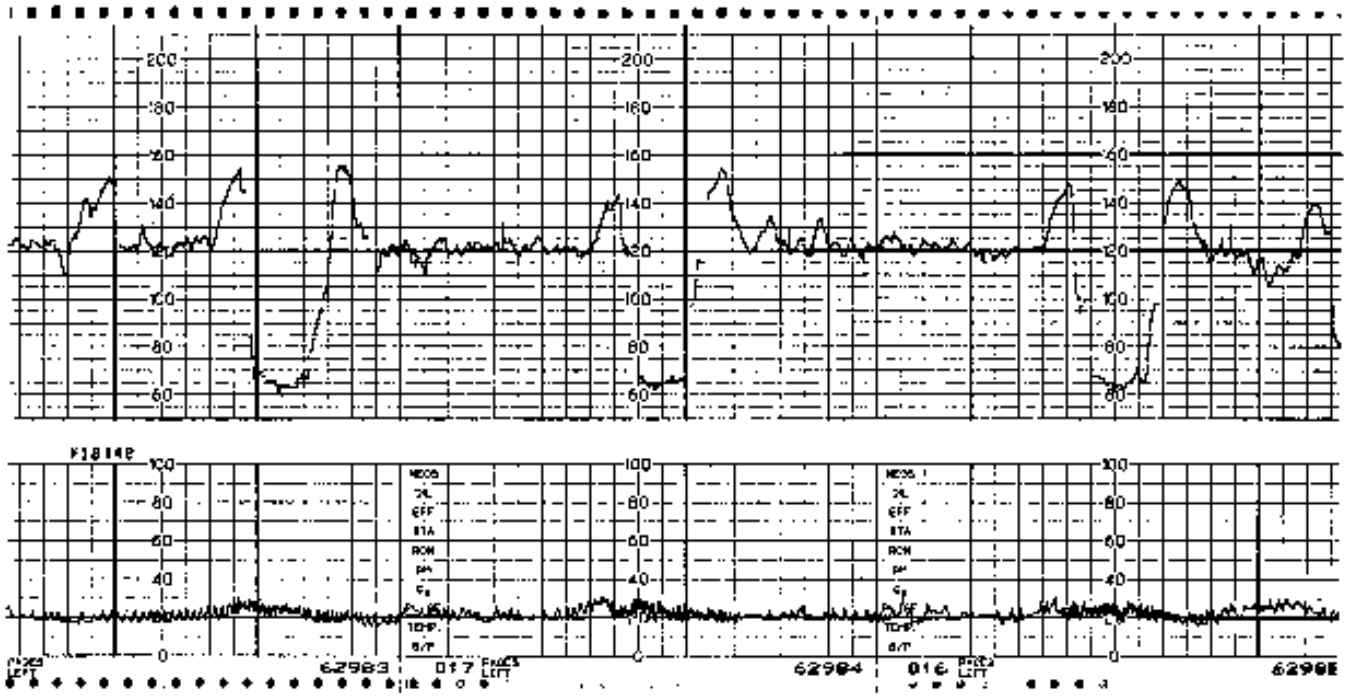
1st stage management-cardiotocography

Decelerations-late



1st stage management-cardiotocography

Decelerations-variable



1st stage management-cardiotocography

Uterine contractions

-uterine activity: frequency, duration, intensity, baseline pressure

i. frequency: >3 in 10 minutes: active labour
ii. Duration:>30-60 seconds: active labour
iii. Intensity: >25 mmHg: active labour
iv. Baseline pressure: 5-20 mmHg: active labour

1st stage management-cardiotocography

Normal CTG

-all 4 features are normal

Suspicious CTG

-1 feature is abnormal → further monitoring and investigation required

Abnormal CTG

-2 features are abnormal → delivery required

1st stage management-fetal blood sampling

Definition

-fetal scalp pH determination in cases of suspicious FHR in order to assist in the clinical decision-making process.

Indications

-suspicious FHR

Results

-pH >7.25 reassuring

-pH 7.20-7.25 borderline

-pH <7.20 delivery

1st stage management-fetal blood sampling

Fetal blood sampling kit

1st stage management-induction of labour

Indications

-unfavorable cervix: dilatation <3cm

Timing

-post-term pregnancy (41/40)

-preeclampsia, PPROM, diabetes, IUGR, chorioamnionitis

Purpose

-cervical ripening: enhance contractions in order to increase dilatation and effacement

1st stage management-induction of labour

Methods

i. Prostaglandins (PGE2, PGE1)

ii. Oxytocin

iii. Cervical ripening balloon

-adverse effects: uterine tetany, uterine rupture (in VBAC)

1st stage management-augmentation of labour

Indications

-inadequate rate of cervical dilatation after dystocia excluded

Timing

-active phase: partograph line passed (1-4h to right side)

Purpose

-enhance contraction frequency, duration, intensity

1st stage management-augmentation of labour

Methods

i. artificial rupture of membranes (amniotomy)

-early: 3-6 cm dilatation

-late: >6 cm dilatation (preferred due to less cord prolapse, infection)

-purpose: enhance contractions, assess amniotic fluid, attach scalp electrode

-result: reduces duration of labour by 1-2 hours

1st stage management-augmentation of labour

ii. Oxytocin

-low dose infusion rate

-high dose infusion rate

-adverse effects: uterine tetany, water intoxication, uterine rupture (in VBAC)

1st stage management-partograph

Components

-patient data

-time

-BP (every 2h), pulse (every 30 min), temperature (every 2h)

-urine dipstick

-cervical dilatation, fetal station, membrane status

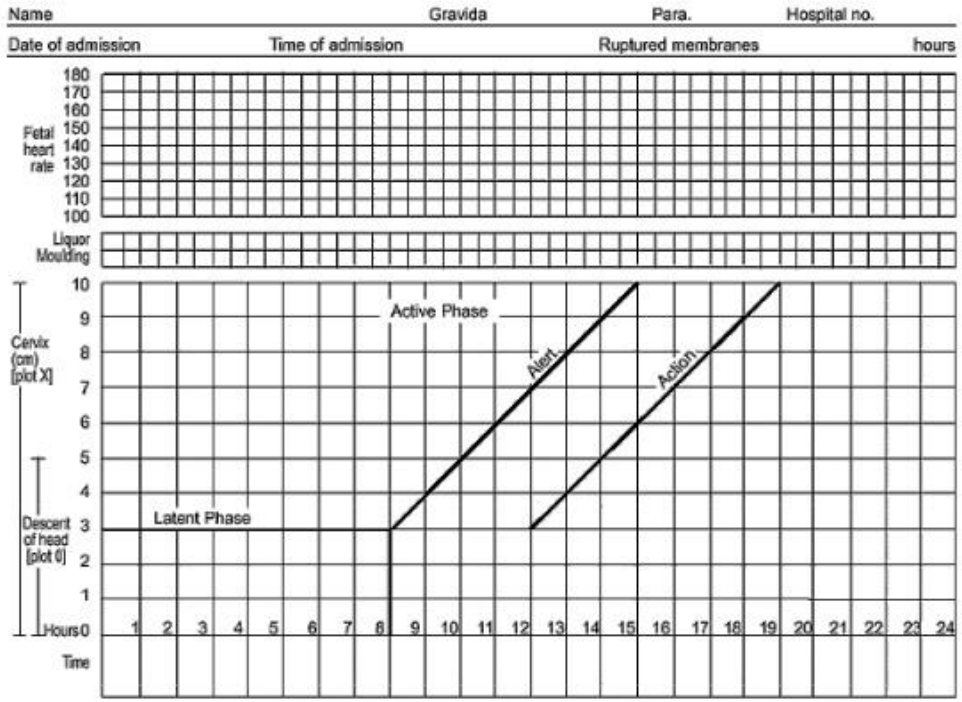
-FHR (every 30 min), contractions (in 10 min)

-drugs: pethidine, oxytocin

-fluids

1st stage management-partograph

Partograph

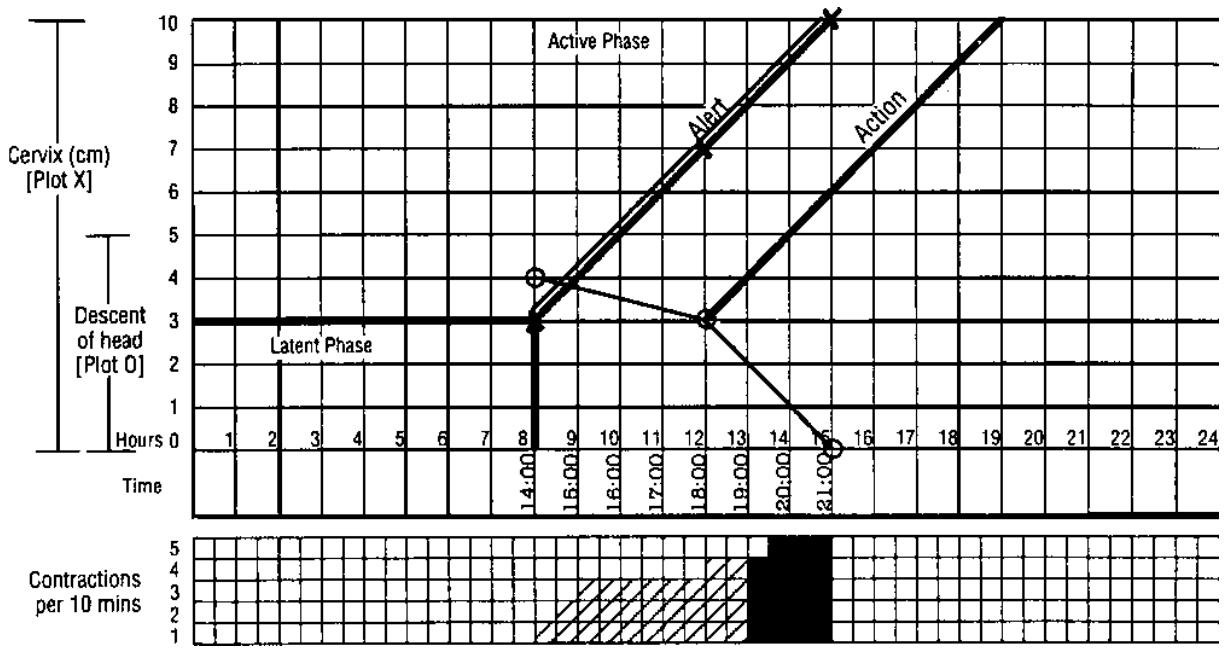


1st stage management-partograph

Use

-identification of slow progression (protraction) or arrest of labour

-necessity for further actions



1st stage management-risk assessment

Risk factors

-induced, augmented labour

-prolonged labour

-prolonged rupture of membranes

-regional analgesia

-VBAC

-abnormal uterine contractility (tetany)

-meconium staining

-suspicious fetal heart rate (intermittent auscultation, admission CTG)

1st stage management-risk assessment

-vaginal bleeding

-intrauterine infection (chorioamnionitis)

-multiple pregnancy

-intrauterine growth restriction

-preterm pregnancy

-breech presentation

-oligohydramnios

-post-term pregnancy

1st stage management-risk assessment

-Rhesus isoimmunization

-hypertension

-diabetes

-cardiac disease

-anemia

-hyperthyroidism

-collagen disease, renal disease

1st stage management plan

i. oral intake

-according to status (low risk light diet allowed, high risk restricted)

ii. enema

iii. iv access-cannula:

-administration of fluids, uterotonics, blood products

iv. ambulation: upright, lateral recumbent position

v. analgesia:

-nitric oxide (inhalational), i.m opioids, epidural analgesia

1st stage management plan

vi. fetal heart rate auscultation:

-low risk: every 15’ (for 1’ after contraction)

-high risk: continuous CTG

vii. digital examination-bishop score:

-every 2-4 hours or after rupture membranes, prior to epidural placement

viii. partogram

-completion in order to diagnose slow progress or arrest of labour

ix. Augmentation of labour (oxytocin, amniotomy)

1st stage complications management-dystocia

Definition

-protraction or arrest of cervical dilatation

-protraction: dilatation <1.2cm/h (nulliparous), <1.5cm/h (multiparous)

-arrest: no change in 4 hours despite adequate contractions

Predisposing factors

-obesity, short stature, nulliparous, epidural analgesia, macrosomia, post-term pregnancy, occiput posterior position

1st stage complications management-dystocia

Complications

-fetal distress, hypoxia, hypoxemia, cerebral palsy

-Bandl's ring, uterine rupture

Management

-augmentation of labour

-caesarean section

1st stage complications management-fetal distress

Definition

-fetal heart rate abnormality

Predisposing factors

-chorioamnionitis

-cord compression, cord prolapse

-uterine tetany, placenta abruption

-fetal sleep, opioids

-placenta insufficiency, vena cava syndrome

1st stage complications management-fetal distress

Complications

-fetal hypoxia, hypoxemia, cerebral palsy, death

Management

-left side, oxygen mask, iv fluids (1000ml)

-discontinue oxytocin infusion, start uterotonics

-vaginal-digital examination, fetal scalp sampling

-C/S

1st stage management-antepartum hemorrhage

Definition

-vaginal bleeding prior to the expulsion of fetus

Predisposing factors

-placenta previa, placenta abruption, vasa previa

Complications

-fetal distress, hypoxia, cerebral palsy, death

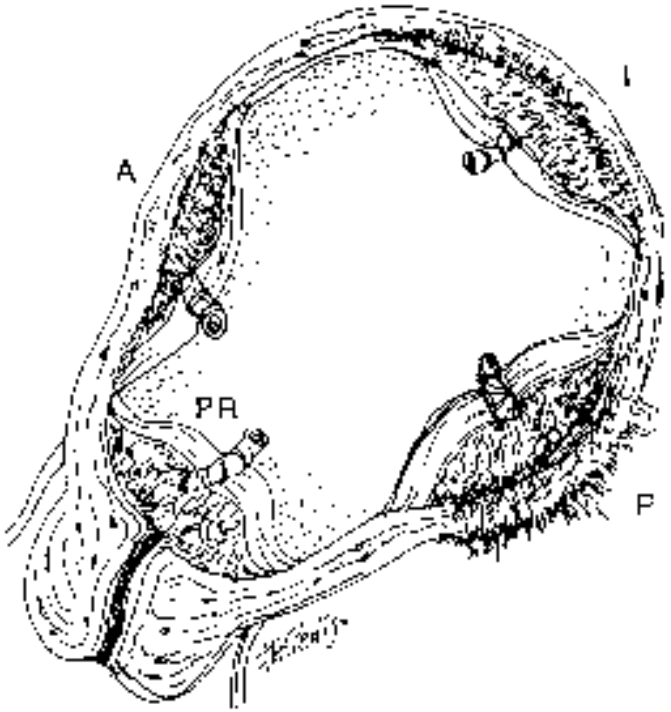
-maternal hypovolemic shock, DIC, death

Management

-caesarean section

1st stage management-antepartum hemorrhage

Placenta previa



placental abruption

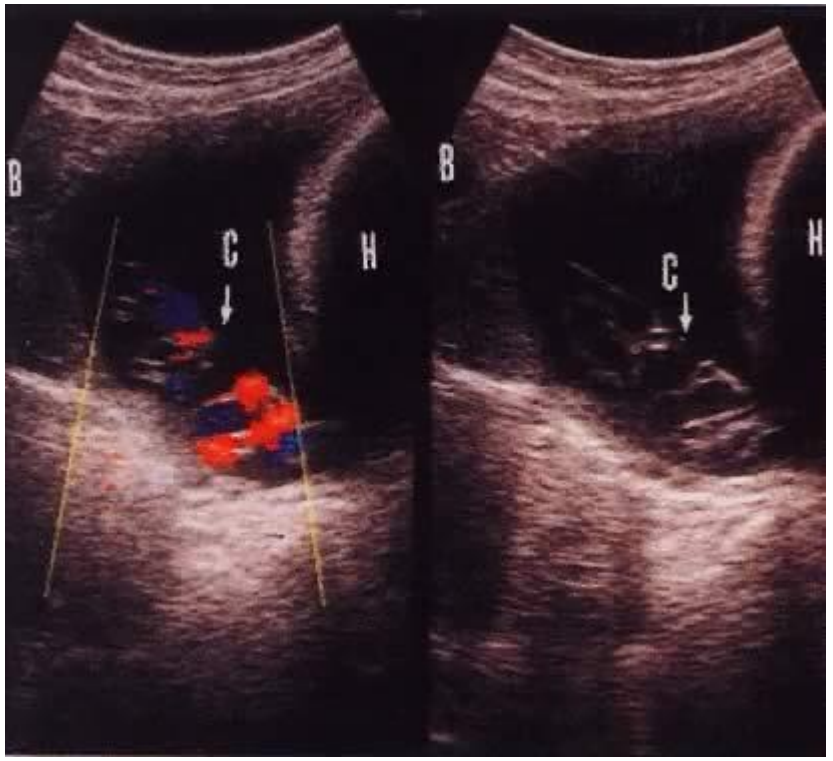
1st stage complications management-umbilical cord prolapse

Definition

-umbilical cord is ahead of fetal presenting part

Epidemiology

-1 in 300-500 deliveries



1st stage complication management-umbilical cord prolapse

Predisposing factors

-unengaged fetal head

-artificial rupture of membranes

-polyhydramnios

-prematurity

-multiple pregnancy

-breech presentation

-multiparous

1st stage complication management-umbilical cord prolapse

Clinical signs and symptoms

-prolonged bradycardia or variable decelerations

-palpable cord in vagina, visible cord in introitus

Complications

-hypoxia, hypoxemia, cerebral palsy, death

1st stage complication management-umbilical cord prolapse

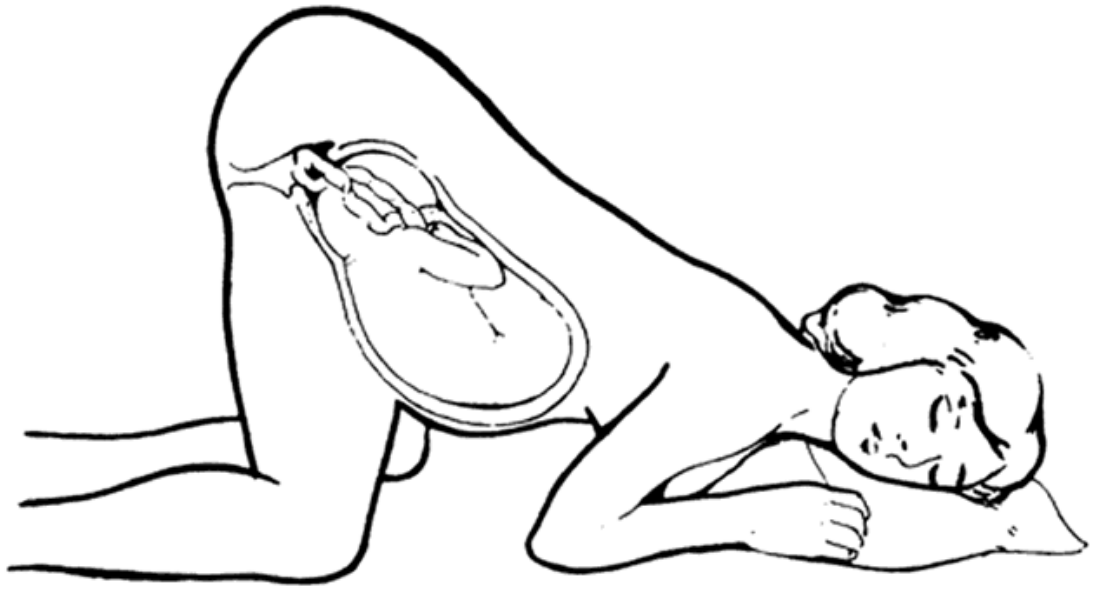
Management

i. Head elevation with palm

ii. Urinary bladder filling 500-1000ml

iii. Knee-chest position

iv. Emergency c/s



1st stage complication management-GBS infection

Definition

-Group B Streptococcus maternal colonization

-positive GBS vaginal, rectal or urine culture

-history of previous early onset neonatal GBS infection

Complications

-early onset neonatal infection: (7 days after birth): pneumonia, sepsis, death

Management

-intrapartum antibiotics (penicillin G or ampicillin i.v)

2nd stage management plan

i. fetal heart rate auscultation:

-low risk: every 5’ (for 1’ after contraction)

-high risk: continuous CTG

ii. vaginal-digital examination-bishop score:

-every 1 hour and after urge to push-defacate

iii. Partogram

iv. Augmentation of labour

2nd stage management plan

v. Pushing

-when presenting part descended or has urge to bear down-defacate

-semi recumbent, lithotomy position

-valsalva pushing: deep breath-tuck chin in- bear down for x3/contraction

2nd stage management plan

vi. Delivery of head

-left hand: vertex-control crowning

-right hand: perineum-ease over hands

vii. External rotation

viii. Expulsion

-hands: downward traction: anterior shoulder, upward traction: posterior shoulder

ix. Cord clamping

-30-60'' after delivery and held below level of placenta

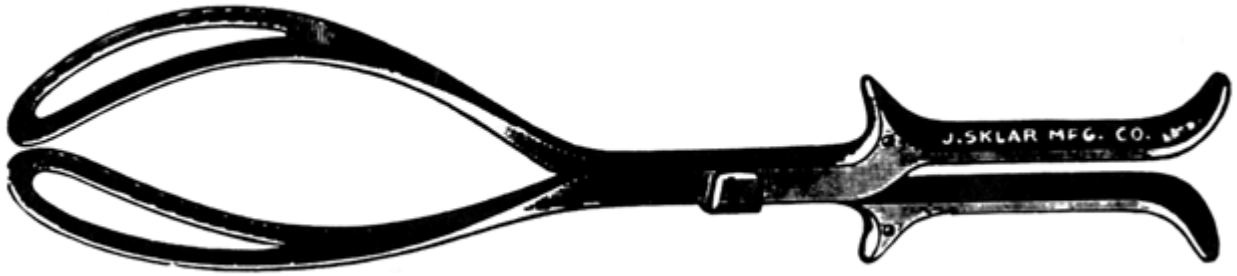
2nd stage management plan

Head delivery

2nd stage complication management-operative delivery

Definition

-use of either forceps or vacuum in order to facilitate delivery of a fetus that is in the 2nd stage of labour and fulfills some pre-requisites and indications.



2nd stage complication management-operative delivery

Pre-requisites

-vertex presentation

-head engaged, station known (+2)

-position known (occipitoanterior, occipitoposterior)

-absence of complete cephalopelvic disproportion

-cervix full dilatation, membranes ruptured

-bladder empty

-analgesia

-adequate experience, determination to stop if ineffective

2nd stage complication management-operative delivery

Indications

-maternal exhaustion

-sedation, epidural analgesia

-prolonged second stage of labour

-fetal heart rate abnormality

-antepartum hemorrhage

Contra-indications

-complete cephalopelvic disproportion

2nd stage complication management-operative delivery

Types

-outlet: scalp visible at perineum, skull reached pelvic floor or perineum

-low: skull at +2

-mid: skull between 0 and +2

-high: above 0

2nd stage complication management-operative delivery

Forceps parts

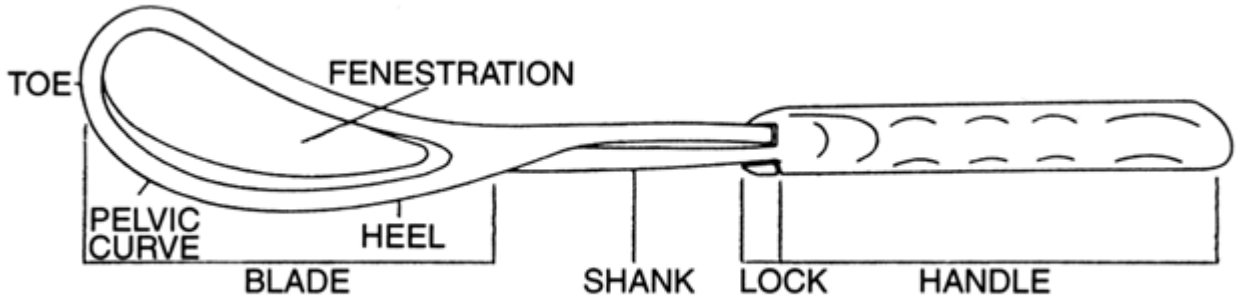
-blades

-shank

-cephalic curve: head

-pelvic curve: maternal tissue

-handle



2nd stage complication management-operative delivery

Forceps application

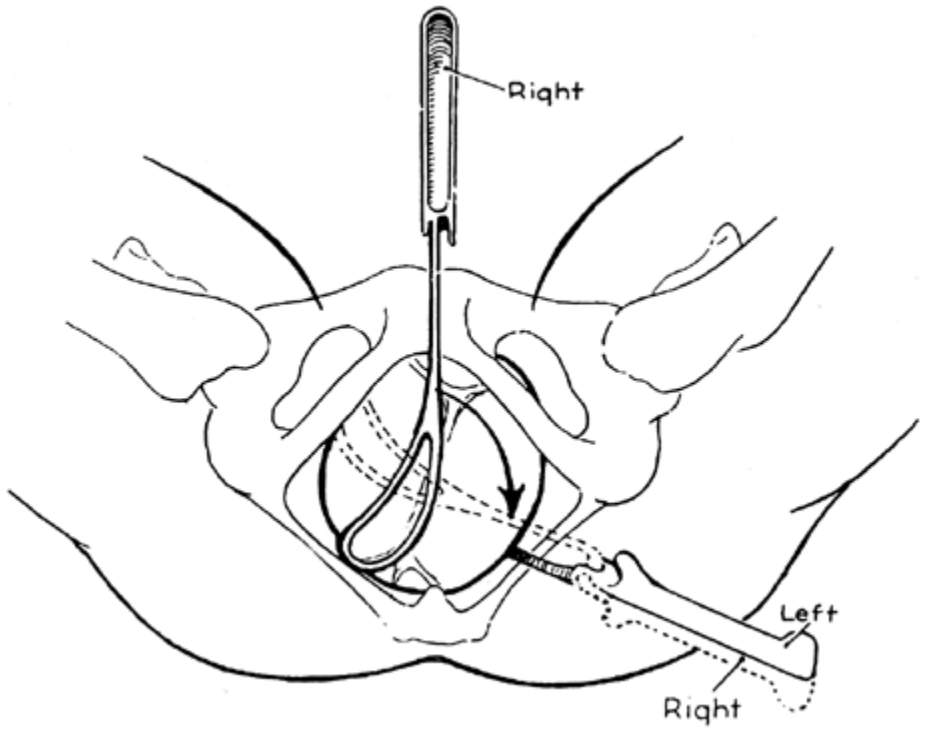
-blades insertion

-position check: posterior fontanelle and sagittal suture in middle

-traction application: downward and parallel to floor

-episiotomy

-removal after head delivery

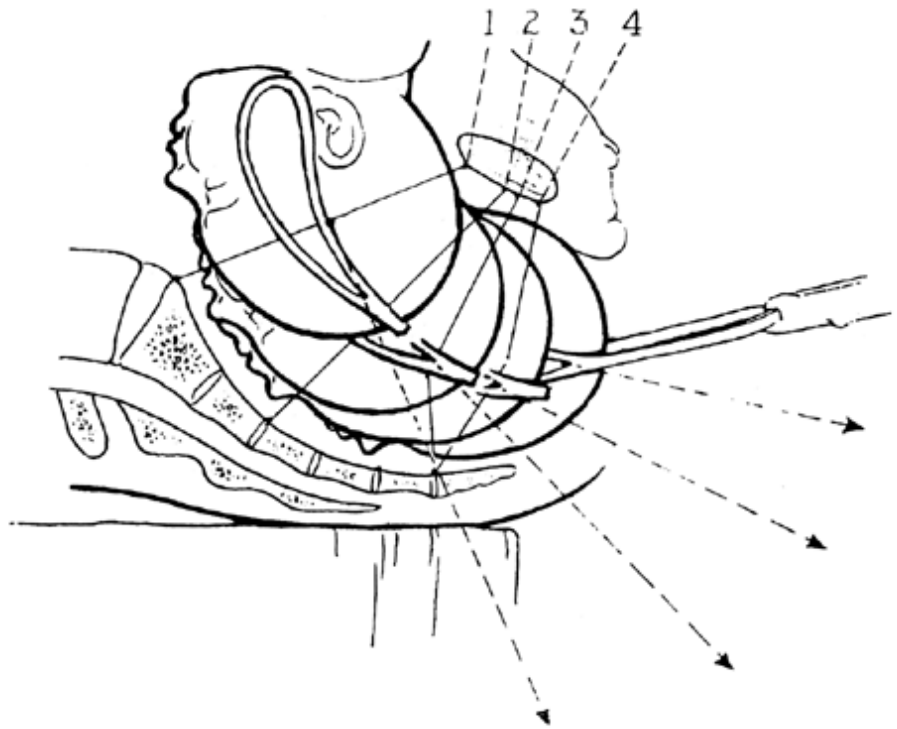


2nd stage complication management-operative delivery

Forceps application

-extraction of fetal head

-follows pelvic curvature



2nd stage complication management-operative delivery

Vacuum types

i. Metal cup extractor

-metal cup, chain, tube, traction bar

ii. Soft cup extractor

-soft cup, tube, traction bar

iii. Soft cup hand held manual extractor

2nd stage complication management-operative delivery

Vacuum types

2nd stage complication management-operative delivery

Vacuum application

-cup applied on the sagittal suture in front of posterior fontanelle

-vacuum creation

-traction during pushing efforts: head rotates as well

-episiotomy

-removal after head delivery

-failure: 3 detachments, 20 minutes since application

2nd stage complication management-operative delivery

Advantages over forceps

-mimics physiological process of labour

-limit on amount of traction applied

-patient may assist with pushing

-less fetal skull injury

-less perineal trauma

2nd stage complication management-operative delivery

Disadvantages over forceps

-no rotation

-more scalp injury (cephalohematomas, retinal hemorrhage)

-more failures to extract fetus

-no application in preterm fetuses (<34/40)

2nd stage complication management-episiotomy

Definition

-incision of perineal body and vagina in order to enlarge vagina opening and facilitate delivery.

Technique

-use of scissors or scalpel at the time of head crowning

-fetus is expected to be delivered in the next 3-4 contractions

2nd stage complication management-episiotomy

Indications

-operative delivery

-breech vaginal delivery

-shoulder dystocia

-large fetus, macrosomia

-short perineum

Contra-indications

-bowel inflammatory disease

-anal fistula

2nd stage complication management-episiotomy

Types

i. Midline (6 o'clock)

-advantages: less pain, less bleeding, better re-approximation

-disadvantages: more anal sphincter injury, less space for maneuvers

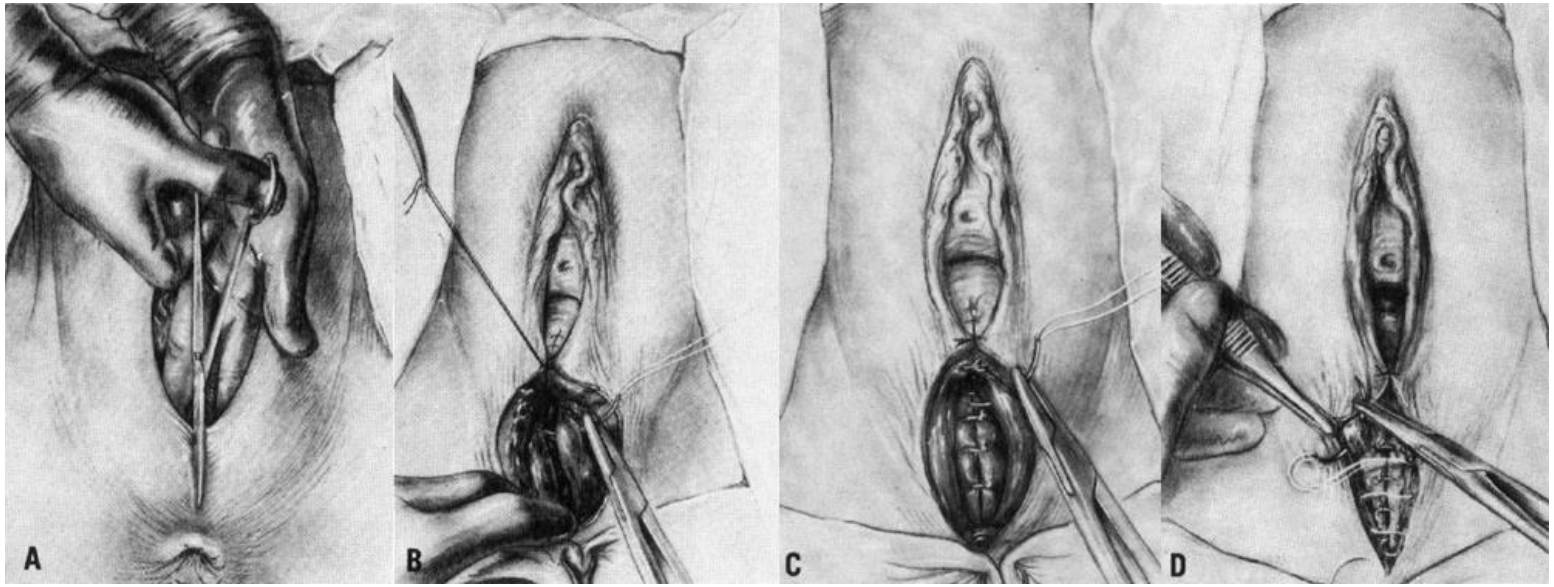
ii. Mediolateral (5 or 7 o'clock)

-advantages: les anal sphincter injury, more space for maneuvers

-disadvantages: more pain, more bleeding, worse re-approximation

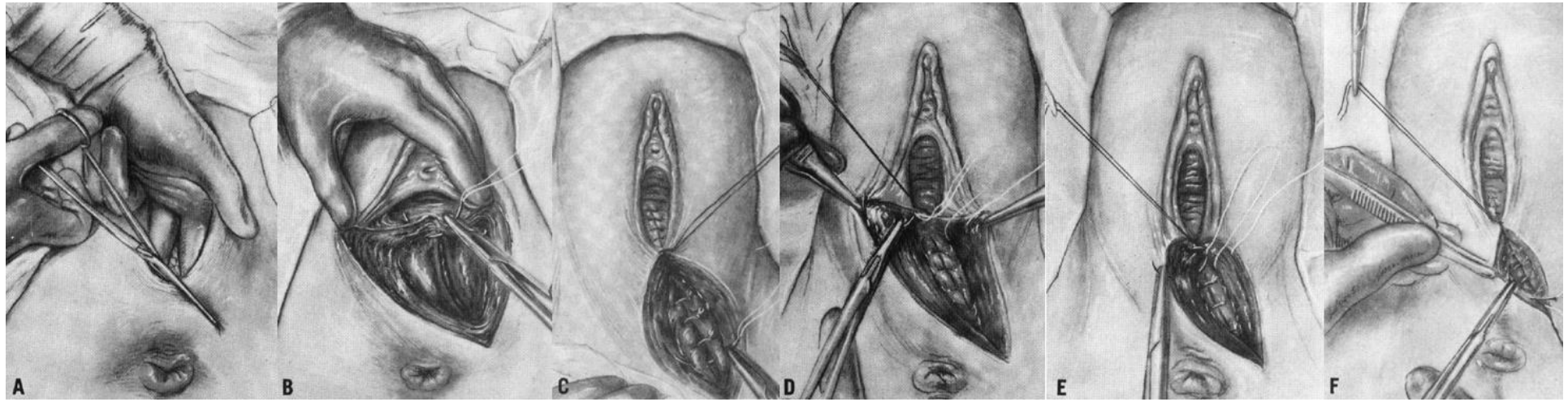
2nd stage complication management-episiotomy

Episiotomy midline technique and repair



2nd stage complication management-episiotomy

Episiotomy mediolateral technique and repair



2nd stage complication management-episiotomy

Repair

-vaginal and per rectum examination: extension, perineal tear

-vaginal wall approximation: continuous suture

-perineal body approximation: interrupted or continuous suture

-skin: interrupted or continuous suture

-vaginal and per rectum examination

2nd stage complication management-episiotomy

Complications

-extension: anal sphincter, rectum

-hematoma formation

-infection

-wound breakdown

-dyspareunia

-anal incontinence (if not properly sutured)

2nd stage complication management-shoulder dystocia

Definition

-impaction of anterior shoulder behind symphysis pubis

-additional obstetric maneuvers required to achieve delivery of the fetal trunk following delivery of the fetal head.

Epidemiology

-0.2-2% of all deliveries

2nd stage complication management-shoulder dystocia

Predisposing factors

-macrosomia (fetal weight >4000-4500gr)

-diabetes mellitus, maternal obesity

-operative delivery

-prolonged 1st or 2nd stage of labour

-short stature, platypelloid pelvic type

Clinical signs and symptoms

-head retracts to perineum following head delivery “turtle sign”

2nd stage complication management-shoulder dystocia

Complications

-postpartum hemorrhage

-perineal tear

-symphyseal separation

-brachial plexus injury (Ebb's palsy)

-clavicular fracture

-hypoxia, hypoxemia, cerebral palsy, death

2nd stage complication management-shoulder dystocia

Management

i. McRoberts maneuver:

-flexion of maternal legs to abdomen

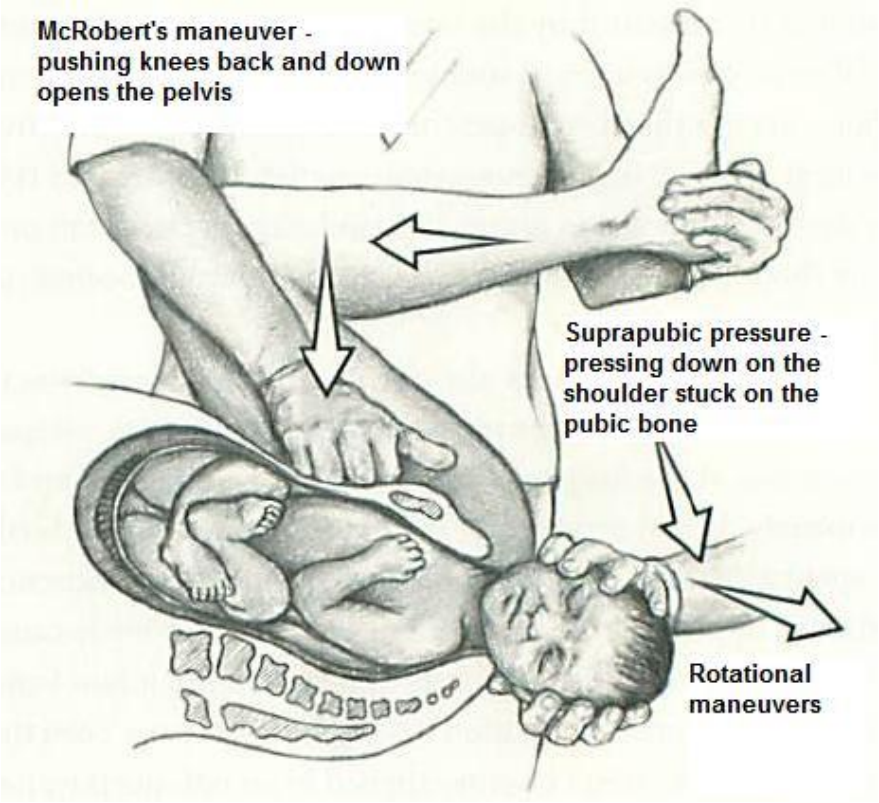
-increased angle of inclination between symphysis pubis and sacrum

ii. Suprapubic pressure

-in combination with McRoberts maneuver

2nd stage complication management-shoulder dystocia

Mc Roberts and suprapubic pressure



2nd stage complication management-shoulder dystocia

iii. Endovaginal maneuvers:

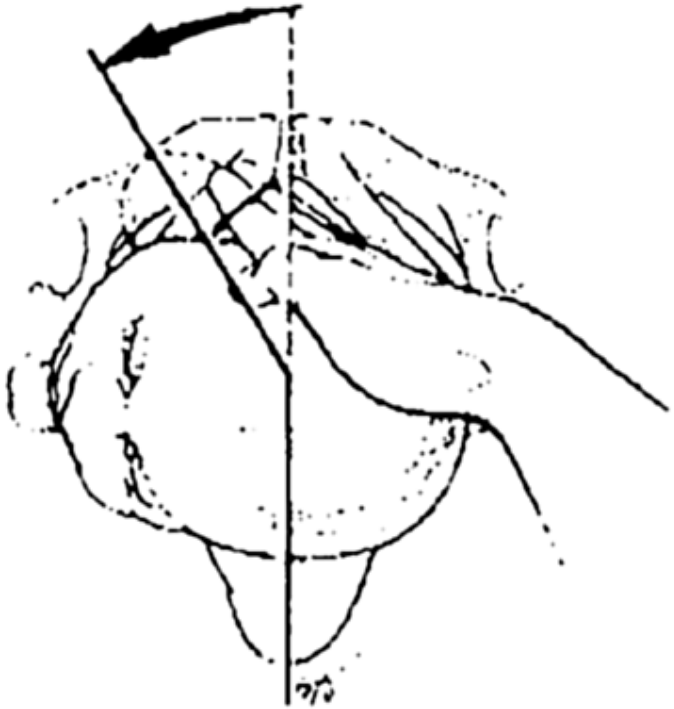
-Rubin II: 2 fingers: posterior aspect of anterior shoulder

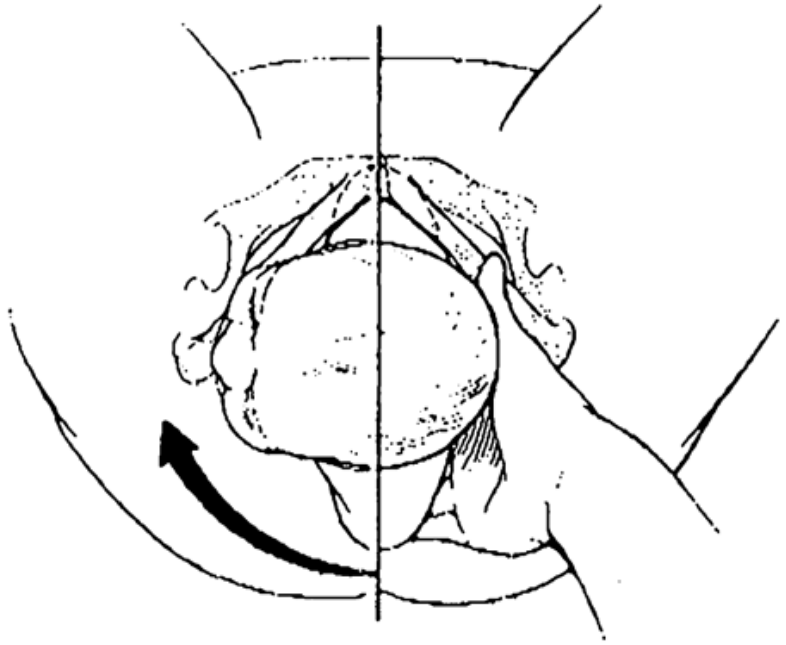
-Woods Screw: 2 fingers: anterior aspect of posterior shoulder

-Reverse Woods Screw: 2 fingers: posterior aspect of posterior shoulder

2nd stage complication management-shoulder dystocia

Endovaginal maneuvers





2nd stage complication management-shoulder dystocia

iv. Removal of posterior arm

-follow posterior arm up to elbow

-flex and pull in front of trunk and face

v. Roll in all fours (Gaskin maneuver)

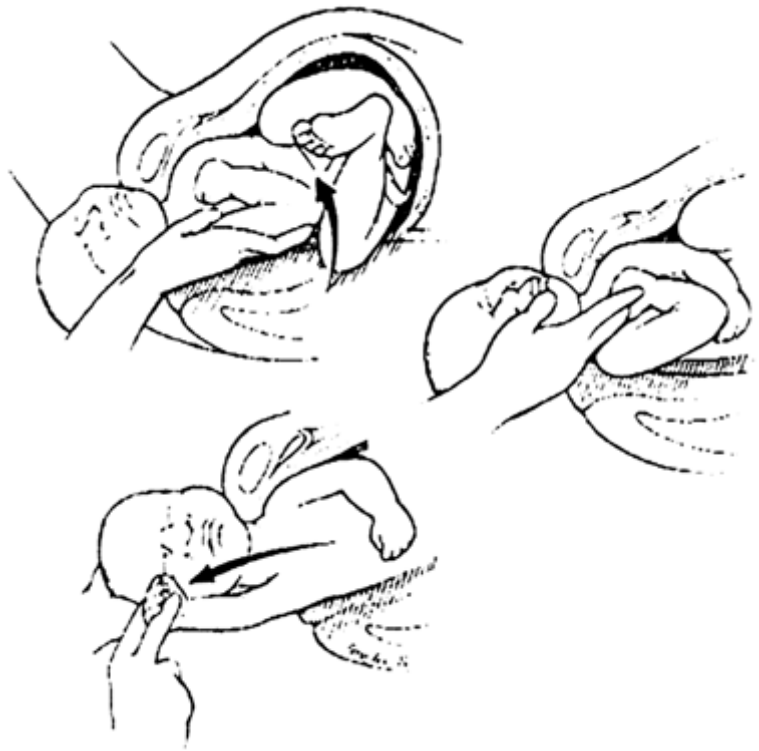
vi. Clavicular fracture

vii. Replace head and c/s

viii. Symphysiolysis

2nd stage complication management-shoulder dystocia

Removal of posterior arm



3rd stage management plan

Physiological management plan

-no uterotonics

-no cord clamping until pulsations stops

-placenta delivery by maternal effort

-nausea, vomiting: 50/1000 women

-blood loss >1000ml: 29/1000 women

-up to 60’ for placenta expulsion

3rd stage management plan

Active management plan

-uterotonics: oxytocin: 10u, i.m (birth of anterior shoulder or after birth)

-early cord clamping: >1’ and <5’

-signs of placental separation

-controlled cord traction (modified Brandt Andrews maneuver)

-nausea, vomiting: 100/1000 women

-blood loss >1000ml: 13/1000 women

-up to 30’ for placenta expulsion

3rd stage management plan

Signs of placental separation

-cord lengthening

-uterus: upwards towards abdominal wall

-gush of blood

-suprapubic pressure: no cord retraction

3rd stage management plan

Controlled cord traction (modified Brandt Andrews maneuver)

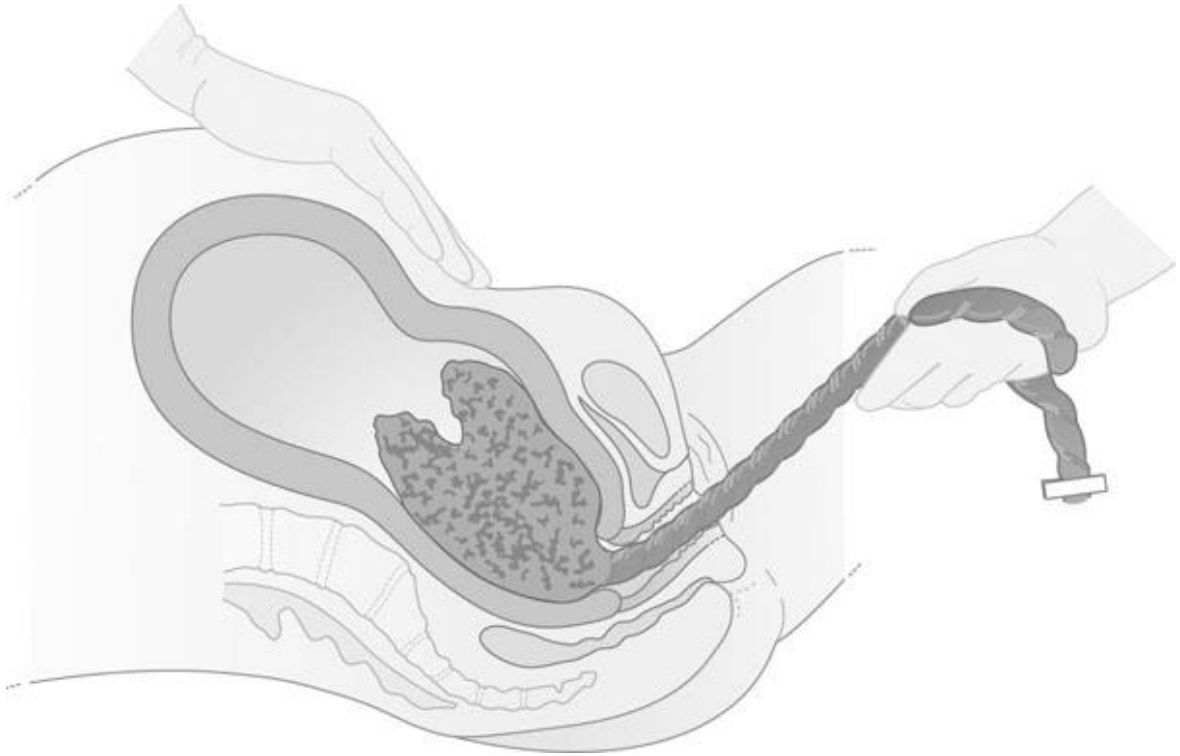
-left hand: palm above symphysis pubis, push upwards, backwards

-right hand: cord traction downwards, backwards

-maternal bearing down efforts

3rd stage management plan

Controlled cord traction



3rd stage management-neonatal assessment

Apgar score

-components: heart rate, respiration, muscle tone, reflex irritability, colour

-grade: 0, 1, 2

-assessment: 1 and 5 minutes after birth

-Apgar score (5') <7: increased morbidity and mortality rate

3rd stage complication management-uterine atony

Definition

-uterine fundus not contracted after placenta delivery

Predisposing factors

-induction, augmentation

-multiparous,

polyhydramnios, infection

3rd stage complication management-uterine atony

Complications

-hypovolemic shock, death

Management

-uterotonics (oxytocin, ergonovine, misoprostol),

-massage, bimanual compression

-balloon tamponade

-compression sutures

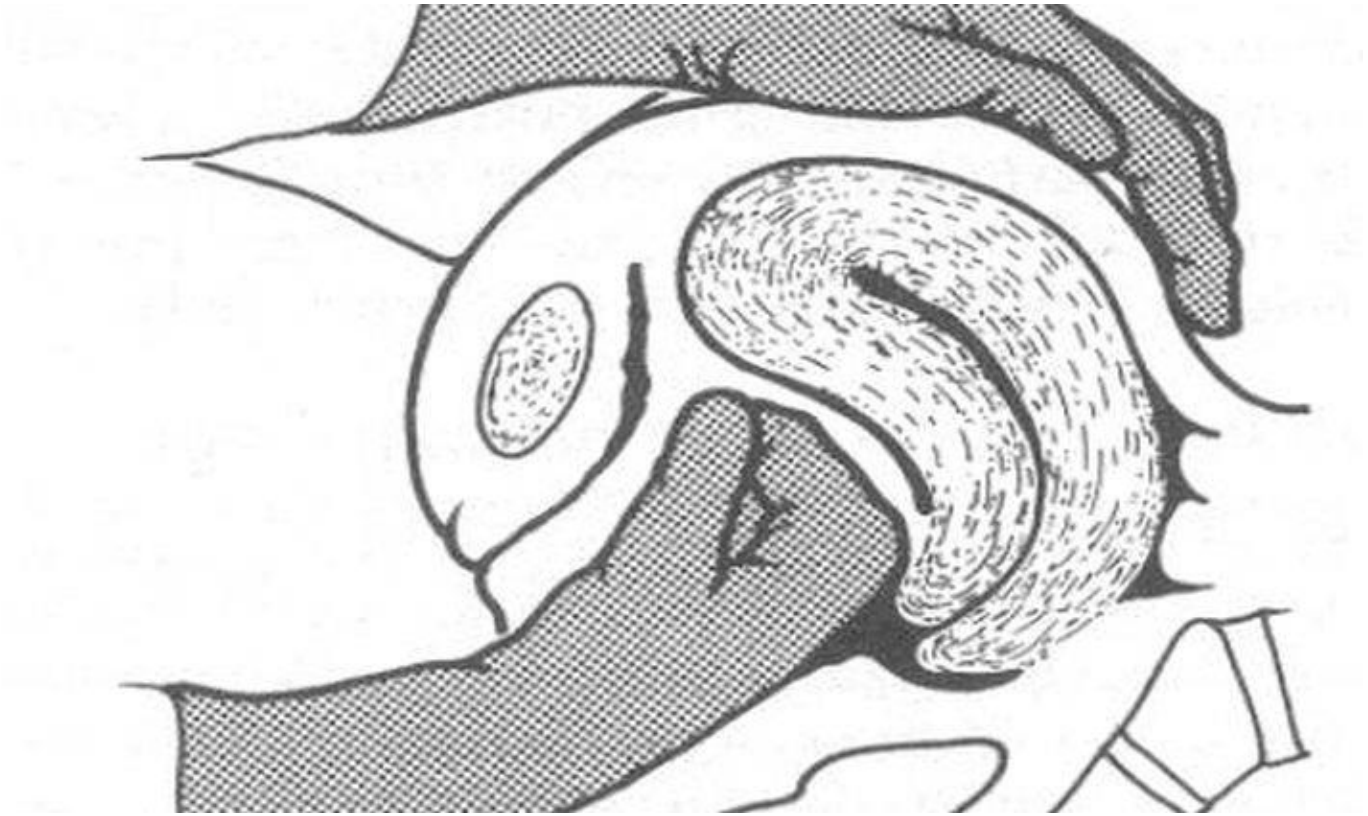
-hysterectomy

3rd stage complication management-uterine atony

Bimanual compression

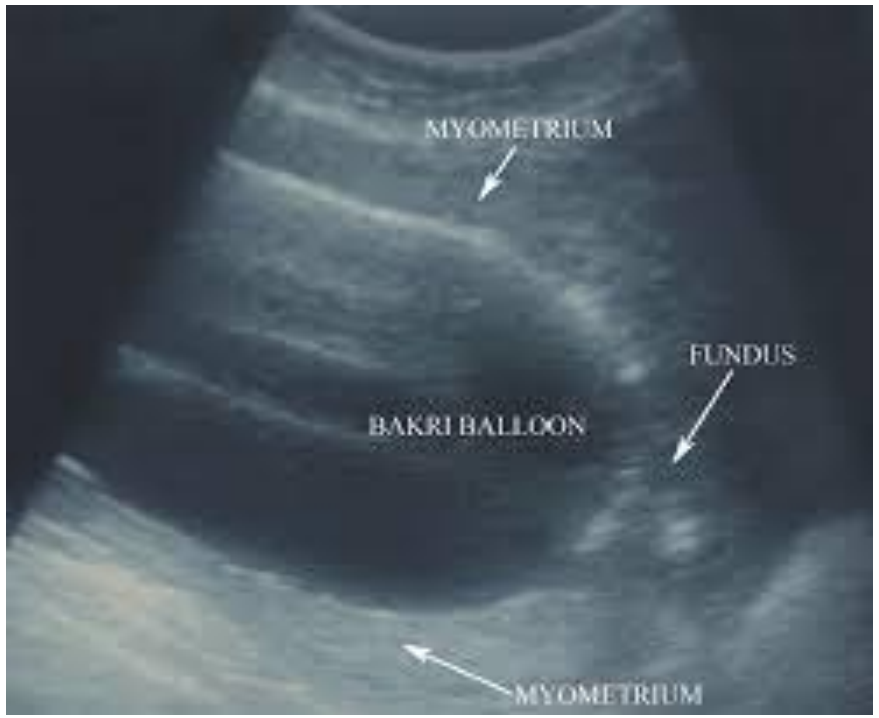
-1 hand: anterior fornix

-1 hand: fundus



3rd stage complication management-uterine atony

Balloon tamponade



3rd stage complication management-uterine atony

Compression sutures

-placed above the fundus in order to compress uterine wall

3rd stage complication management-placental retention

Definition

-part or entire placenta not expelled in 30-60’

Predisposing factors

-multiparous

-preterm, chorioamnionitis

Complications

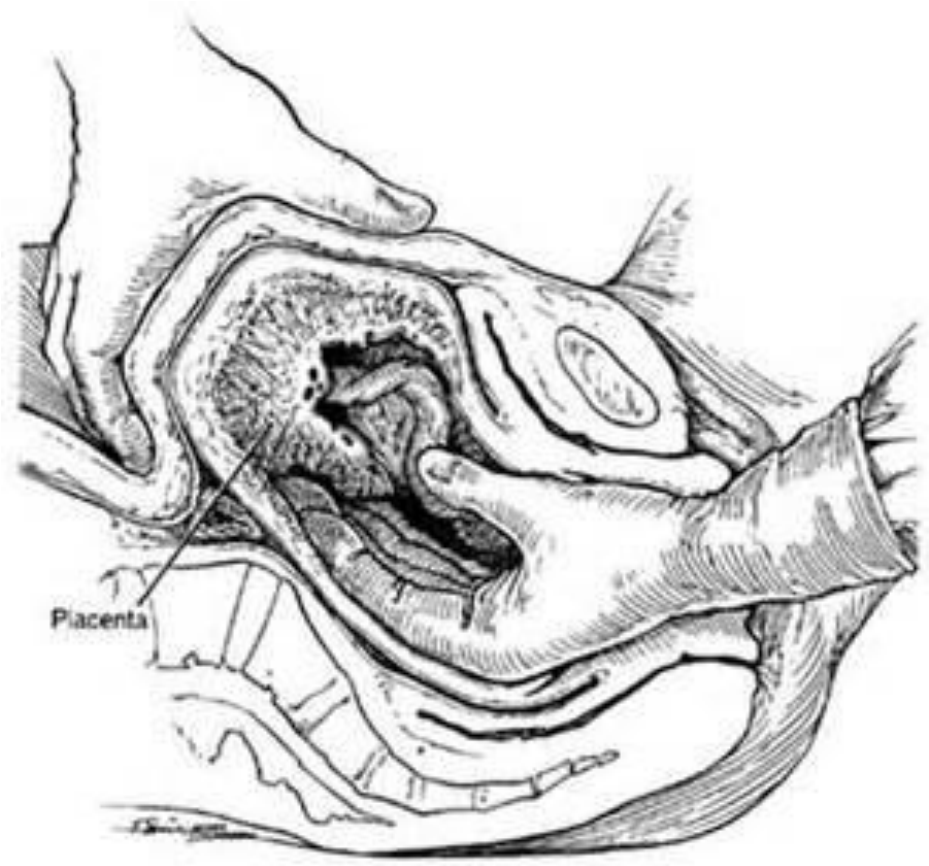
-hypovolemic shock, death

Management

-manual removal

3rd stage complication management-placental retention

Manual removal



3rd stage complication management-perineal tear

Definition

-laceration of anal sphincter or anal mucosa (3rd, 4th degree tear)

Predisposing factors

-macrosomia

-operative delivery

Complications

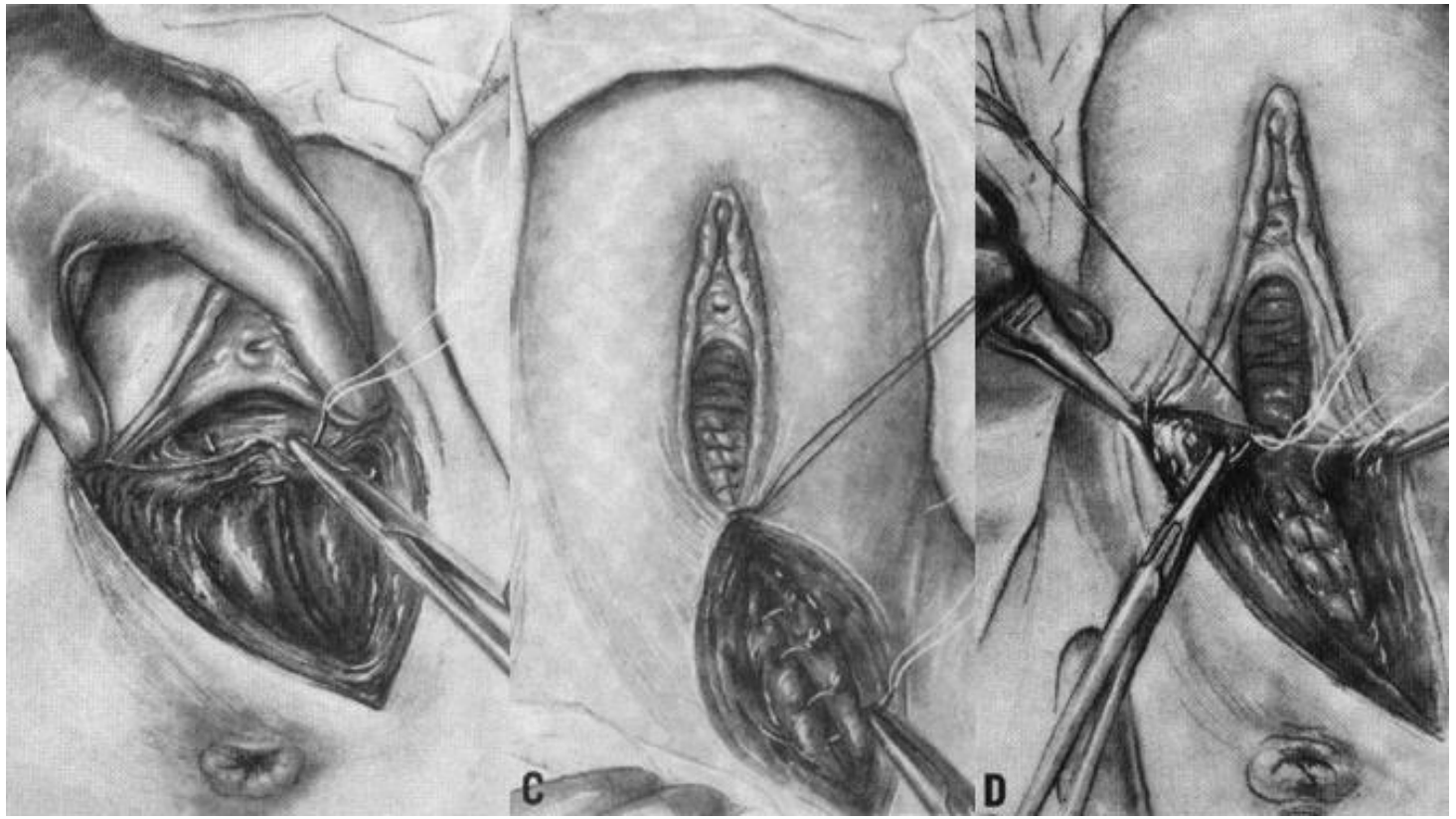
-anal incontinence

Management

-repair

3rd stage complication management-perineal tear

Perineal tear repair



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