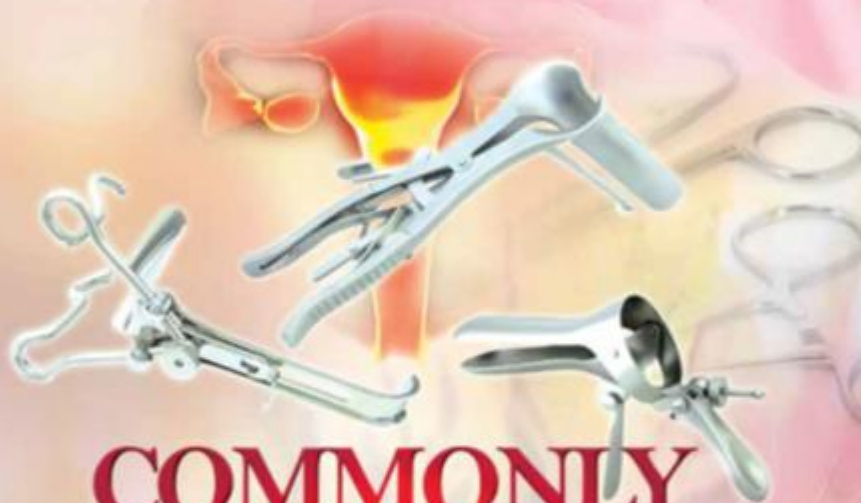


BY
SOE LWIN
TIN MOE NWE



**COMMONLY
USED INSTRUMENTS
AND
PROCEDURES IN**

O&G

Commonly Used Instruments and Procedures in O & G

FOREWORD

Faculty of Medicine and Health Sciences is committed to produce a competent and compassionate graduate to meet the health care needs of the community through educational excellence and research of international standards. There is a need to ensure that graduate during they studying in medical school are well equipped to handle common instruments and procedures in Obstetrics and Gynaecology, the authors make it a very simple and mostly illustrated for the reader to understand the commonly used instruments and procedures in the field of basic Obstetrics and Gynaecology posting.

I would also like to congratulate the authors of this book for come up with a first edition of book entitle commonly used instruments and procedures in O&G.

I hope students will benefit and find the book useful during their Obstetrics and Gynaecology posting not only for the preparing for the O&G clinical examination but also for future practice as physician.

Prof Dr. Ahmad Hata Rasit
Deputy Vice Chancellor
Academics and Internationalisation
Universiti Malaysia Sarawak

FOREWORD

I would like to congratulate Associate Prof Dr. Soe Lwin on the publication of the second edition of his book, “Commonly Used Instruments and Procedures in O&G”. There has been some update from the previous edition with the addition of CTG and PROM test. I believe this book would be beneficial to undergraduate medical students as well junior doctors in the Obstetrics and Gynecology specialty.

Clinical component of medical teaching can be very daunting especially to the juniors. In the first few days in the posting, many tools, instruments, and procedures may appear unfamiliar and unusual. With the hustle and bustle of a busy clinic and hospital, doctors may not have the time to explain everything in detail to the juniors.

This book is meant as a revision tool for commonly used instruments that you may see while in your Obstetrics and Gynecology posting. I hope it would make your learning more interactive and enjoyable experience. I would like to commend Dr. Soe for his tireless efforts in writing and compiling this book which I believe will benefit all of you.

Sincerely

Prof Dr. Asri Bin Said

Dean

Faculty of Medicine and Health Sciences

UNIMAS

Preface

This book is prepared for students of the Faculty of Medicine and Health Sciences (FMHS), Universiti Malaysia Sarawak (UNIMAS), but it can be useful for medical students and nursing students studying elsewhere. It is not only served them in medical school but is of great value during their house staff training.

During their course of study, medical students rarely have the chance to observe surgeries being performed especially in COVID-19 endemic period. Even when the chance presents itself, most surgeons and nurses do not have much time to explain each of the surgical tools and procedures used. Moreover, although many of the procedures are performed in Outpatient Department (OPD) clinics, students have very limited opportunities to learn each one of them.

Therefore, the purpose of this book is to familiarize medical students with the instruments and procedures that are commonly used in the field of O & G in the hope of preparing them for their surgical careers.

In this book, the detailed histories of each of the surgical instruments are not provided. Instead, the information has been organized so that students can easily access the essential details about these surgical tools.

Furthermore, some chapters describe human anatomy along with the instruments and procedures to help students in recalling some information they have already learned. This second edition have added some procedures which are important for medical students.

Lastly, we hope that this book will be a useful resource for medical and nursing students from any university and welcome any comments to improve our book.

We are grateful to our colleagues who made helpful comments and encouraged us to publish this book for the Faculty of Medicine and Health Sciences (FMHS) UNIMAS medical students and nursing students.

Finally, this book would never have been completed without the untiring efforts, skill and ever-cheerful countenance of Consultant and Head of Department of Obstetrician and Gynaecologist Professor Dr. Haris Njoo Suharjono. He carefully read and accurately commented in each section of the manuscript until all sections were completed.

Second Edition: 2022

This book is prepared by the following lecturers from the Faculty of Medicine and Health Sciences UNIMAS who have years of teaching experiences.

1. Associate Professor Dr. Soe Lwin
M.B.B.S (Yangon), M.Med.Sc (O & G) (Yangon)
2. Associate Professor Dr. Tin Moe Nwe
M.B.B.S (Yangon), Diploma in Medical Education (Yangon)
Ph.D. (Anatomy) (Japan)

Acknowledgement

My heartfelt thanks go to several people who have helped in many ways from the start to the end. It will be hard to mention in words as their help are invaluable.

Firstly, I would like to thank all our contributors who are experts in their respective fields and have devoted their valuable time towards producing this book.

I thanked my lovely wife, who has supported this work by giving her valuable suggestion and encouragement at all times.

My sincere thanks go to our Senior Consultant and Head of Department of Obstetrics and Gynaecologist Professor Dr. Haris Njoo Suharjono from Sarawak General Hospital, who has also given valuable suggestions and comments.

I would also like to thank my colleagues at the Obstetrics and Gynecology Department FMHS, UNIMAS who have helped in preparing this book.

Last but not least, I would like to thank to my staff from the Labour Ward and Operation Theatre of Sarawak General Hospital who have collected and taking photographs of the instruments for this book.

My heartfelt gratitude to proof-reader O & G Specialist Dr. Nurulhuda Samsudin from Sarawak General Hospital, reviewer Associate Professor Dr. Si Lay Khaing (Consultant O&G) from University of Malaya and UNIMAS Publisher for accepting this work for the University publication.

Soe Lwin

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General knowledge/terminology for surgical instruments

- Non traumatic** ----- Without trauma to the tissue/organs
- Traumatic** ----- Causing Injury by penetration or crushing
- Dilatation** ----- Enlarging an opening in a progressive manner
- Dissection** ----- Process of separating tissues through anatomical planes by using sharp or blunt instrumentation
- Grasping** ----- Holding in a traumatic or non-traumatic manner
- Retraction** ----- Stabilizing a tissue layer in a safe position for exposure of a part
- Sharp** ----- Instrument with a cutting edge or pointed tip(s) that is used to cut or dissect tissue
- Excision** ----- Removal of tissues by surgical cuts
- Incision** ----- Surgical cut made into a tissue or organ
- Cannula** ----- a tube that is inserted into a body cavity for drainage of fluid
- Drainage tube** ----- A tube that is inserted into a body cavity for drainage of fluid
- Trocar** ----- A device used for penetration of tissue layers. It is commonly used for percutaneous endoscopy. It is used as a temporary pathway for gases, other instrumentation, or the removal of an organ or substance

Classification of the instruments

- Cutting and Dissecting
- Grasping and Holding
- Clamping and Occluding
- Exposing and Retracting
- Suturing and Stapling
- Viewing
- Suctioning and Aspirating/curettage
- Dilating and Probing/curettage
- Measuring
- Micro-instrumentation

Important point in operation is sharp instruments, swabs and related items

which should be counted **four times**: - 1. Prior to the start of the procedure;

2. before closure of a cavity within a cavity

3. before wound closure begins and

4. at skin closure or the end of the procedure.

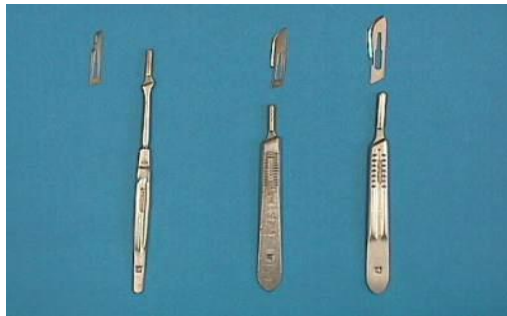
Scalpel (Blade)



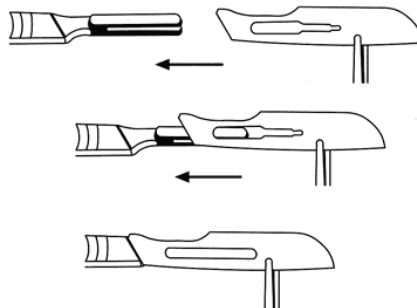
- This is used for dissecting or making an incision.
- It is the best instrument for division of tissue.
- It is less traumatic to surrounding tissues.
- It should be held in a way that will permit full control of the instrument and freedom of movement.
- It composed of the blade and the blade handle.

- There are a number of different blades and each has a different function.
- No. 10: general dissecting
- No. 11: stab incision
- No. 12: Tonsil dissection
- No. 15: plastic dissection
- No. 20 - 24: skin incision

Blade holder



#7, #3, #4
(left to right)



- Above diagram shows the correct way and safe to assemble the blade to the blade holder.

- There are many sizes of blade holder.
- Scalpel is a sharp knife.
- In surgery, the commonly used blade holders are No. 3 and 4.
- It holds the scalpel and acts as a handle.
- Tenotomy- Percutaneous tenotomy knife is the use to make small holes in a tendon through the skin.
- **7 handle with 15 blade (deep knife)** - Used to cut deep, delicate tissue.
- **3 handle with 10 blade (inside knife)** – Used to cut superficial tissue.
- **4 handle with 20 blade (skin knife)** - Used to cut skin.



- This photo shows the correct way to handle the blade holder.

Scissors



Four different types of scissors

- **Utility** - Cut material that may dull the blade
- **Suture** - Remove suture material
- **Surgical** - Cut soft tissue, different sizes, blades can be straight, curved, blunted or pointed
- **Dissecting** - Separate and differentiate tissues especially for fine dissection

Lister Bandage Scissors



- Used to remove bandages and dressings.
- Probe tip is blunt; inserted under bandages with relative safety.

Iris Suture Scissors



- Used to remove sutures.
- Blade has beak or hook to slide under sutures.

Mayo straight scissors



Mayo curved scissors



- Mayo scissors have straight and curve design
- Mayo straight scissors (to cut suture material not use on tissue)
- Used when cutting through large muscle masses, cartilage, or other non-delicate tissue, tough tissues.
- Mayo curved scissors, ob-gyn (to cut ligaments, uterus), surgical (fascia, muscle, breast)
- Blades are thick and $\frac{1}{3}$ of instrument length

Metzenbaum scissors



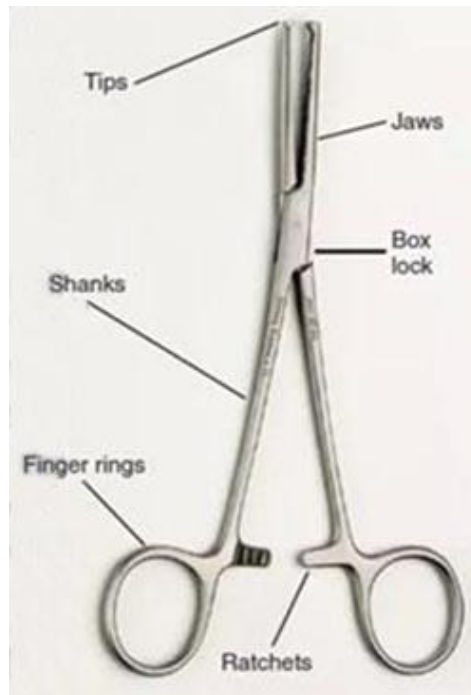
- Scissors are used to cut the delicate tissues, such as peritoneum, intestine.
- Blades are thin, delicate, and 1/4 of the overall length.
- Blades can be straight or curved.

Forceps

Artery forceps

- To clamp/grasp the artery to achieve haemostasis by compressing the blood vessels and occlude the hollow organs for hemostasis or to prevent spillage of contents.
- There are many type of artery forceps.
- They vary in size for use on fine, delicate vessels to large vascular pedicles.
- Artery forceps can also be used to grasp tissues, sutures and other prosthetic materials.

Artery forceps



Curved artery forceps



Straight artery forceps



- These are used as hemostats to grasp the blood vessels and arrest the flow of blood.

Mosquito artery forceps



- Used to hold delicate tissue or compress a bleed vessels during fine surgery.
- Artery forceps are primarily used as haemostatic forceps to grasp vessels and allow ligation of those vessels.

- They vary in size for use on fine, delicate vessels to large vascular pedicles. Artery forceps can also be used to grasp tissues, sutures and other prosthetic materials.

Allis tissue holding forceps



- It is used to grasp tissue, fairly traumatic to the tissue or organs.
- Used for grasping skin such as the linea alba or tissue being removed from patient (e.g. tumor, skin, etc.)
- Available in short and long sizes.
- A "*Judd-Allis*" holds intestinal tissue; a "*heavy Allis*" holds breast tissue.

Babcock forceps



- To grasp delicate tissues eg: soft tissue, lymph nodes, fallopian tubes, ovary, intestine and appendix , etc:
- Available in short and long sizes.
- Prevent the trauma to the tissue or organs.

Kocher tissue holding forceps



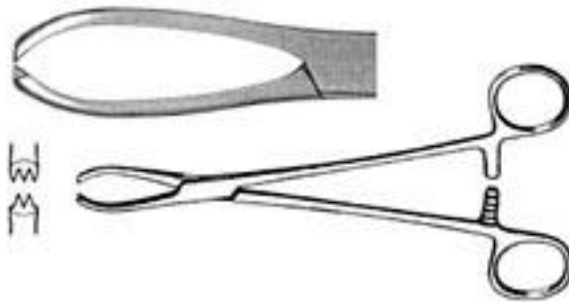
- It is used to grasp heavy tissue. May also be used as a clamp. The jaws may be straight or curved. (Other names: Oschner).
- It has a hook at the tip of the blade.

Lister Sinus forceps



- It is commonly used for inserting or removing packing in the sinus cavity e.g., perineal abscess
- To wider to open the abscess for proper drainage of the pus.
- This product is straight with serrated tips and a length of 7 inches.
- It has no lock at the handle.

Littlewood forceps



- Traumatic grasping clips.
- Typically used in gaining entry into the abdomen during the insertion of the umbilical port during laparoscopy to grasp the rectus sheath or umbilical cicatrix.

- Also used to hold the anterior and posterior lip of vaginal vault during vault closure in total abdominal hysterectomy.

Lane forceps



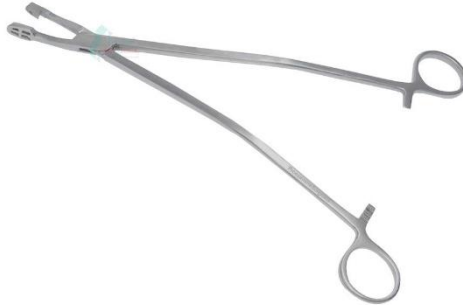
- It is designed for holding bones.
- These heaveweight forceps have long ratcheted handles and curled-up handle end to facilitate traction.
- The blades enclose a diamond-shaped aperture when closed and have deep spikes.

Sponges forceps



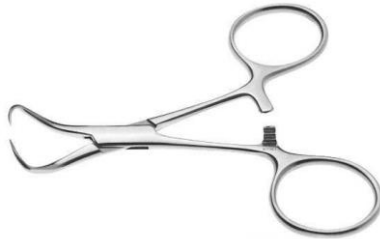
- Sponge forceps handle sponges, gauzes, or sensitive medical supplies.
- Sponge forceps to hold antiseptic cotton swabs and gauze before the surgery.
- Use to remove the product of conception (POC) at the cervical os in case of incomplete miscarriages.
- Use to avulse the pedunculated endocervical polyp.

Cervical Punch Biopsy forceps



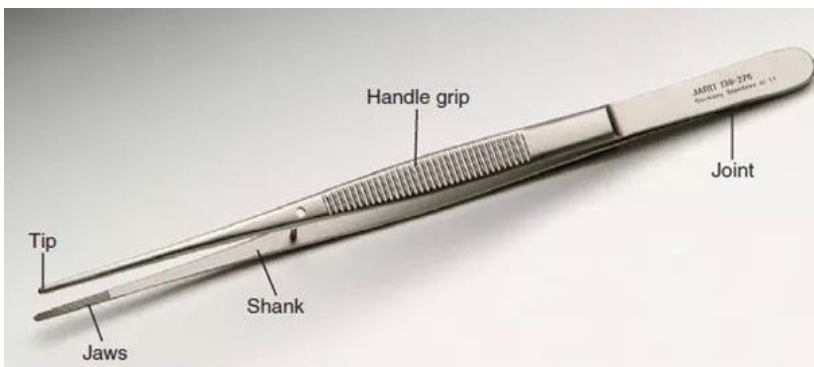
- This is a cervical punch biopsy forceps to take cervical biopsy during colposcopy.
- The bleeding at the site of biopsy should be stopped by application of silver nitrate or Monsel's paste.

Towel clip forceps



- Penetrating design
- Used to secure drape to the patient by clip the towel and allow to exposure of the operative site
- Available in 3 1/2" or 5 1/2" size

Dressing forceps (Non- tooth forceps)



- To grasp delicate tissue while they are being sutured, dissected or excised.
- To compress the vessels during diathermy for haemostasis
- Short smooth pick-ups are used to grasp delicate tissue like intestine.

Tissue forceps (Tooth forceps)



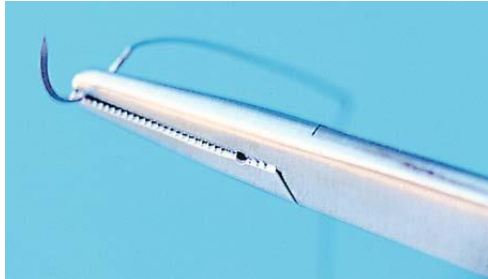
- To grasp very delicate tissue, muscle, skin, nerve or blood vessels for dissecting, suturing or excising.
- Single toothed on one side; fits between two teeth on the other side.
- Available as 1x2 or 2x3 or 3x4.

Needle holder

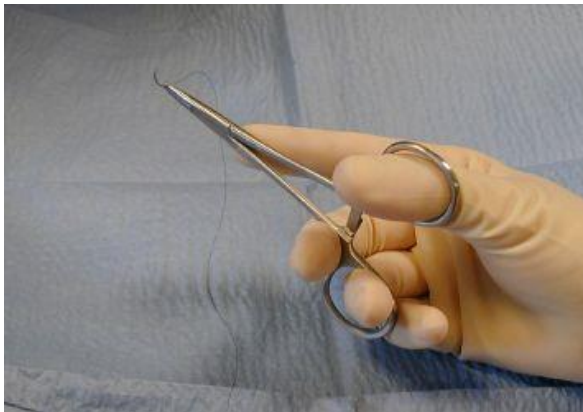


- To hold needles when suturing.
- They may also be placed in the sewing category.

- The length may be short, medium and long depending upon surgeon's preference and procedure.
- It has groove to hold needle within jaws



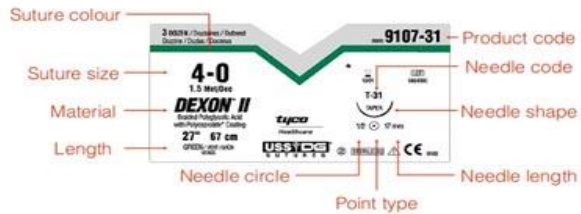
The needle must be held with needle holder at $\frac{1}{3}$ of the needle length with $\frac{1}{3}$ of the needle holder tip. Above photo shows how to hold the suturing needle with with needle holder.



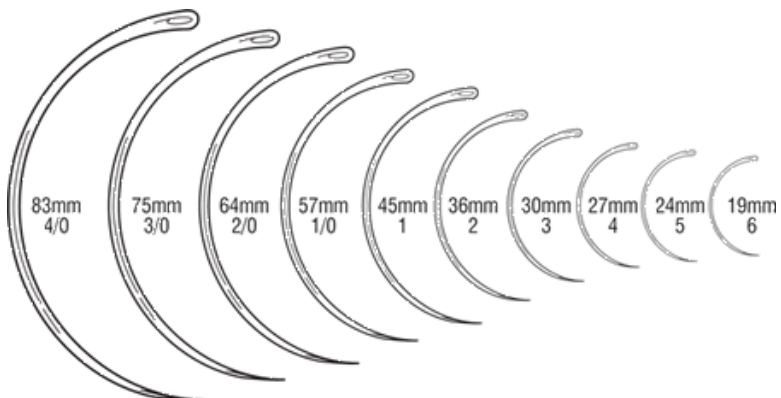
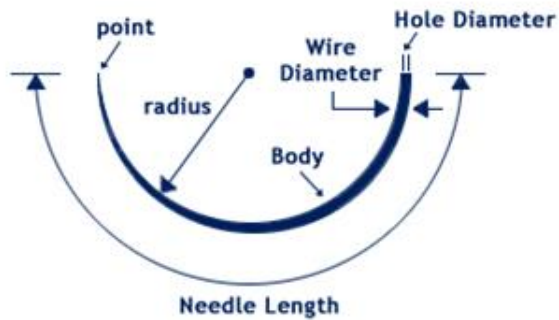
- Above photo shows how to handle the needle with needle holder.

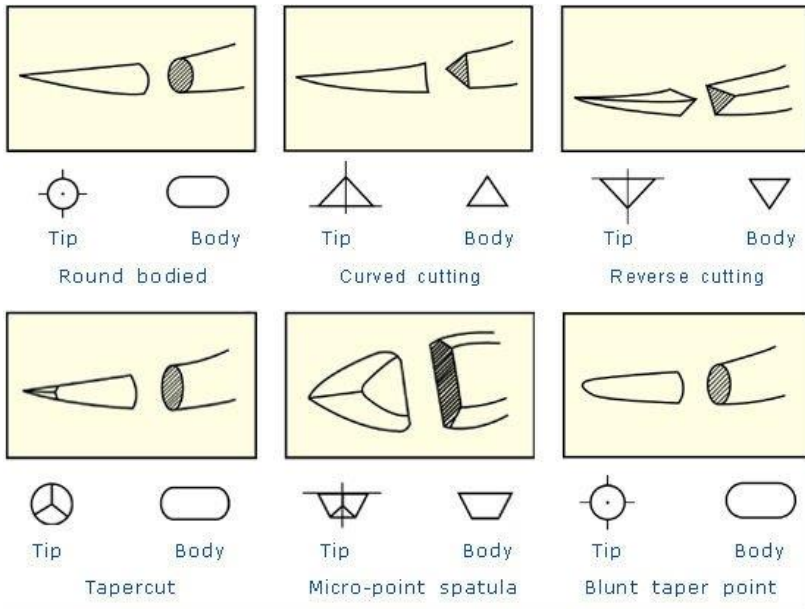
Surgical Sutures

Suture Packing



Anatomy of the Needle





There are various types of needles depend on the cycle of the needle, length of the needle and tip of the needle.

Circle of the needle – $\frac{1}{2}$ circle, $\frac{3}{8}$ circle and straight needle

Length of the needle – 19, 24, 27, 30, 36, 45, 57, 64, 75, 83 mm

Nature of the tip of the needle – round body, cutting needle, blunt needle

The choice of the needle depends on the nature of tissue to be sutured, for example, cutting needle to be used for skin suturing.

Regarding the suture material, the surgeon must know the nature of the suturing material such as synthetic, mono or polyvalent, soluble or non-

soluble, size of the thread and length of the treads. Again, the choice of the suture material depends on the nature of tissue, type of procedure etc.

Suture size

United States Pharmacopeia (USP)

USP size	Diameter in mm
10-0	0.02
8-0	0.04
5-0	0.10
4-0	0.15
3-0	0.20
2-0	0.30
0	0.35
1	0.40
2	0.50
3	0.60

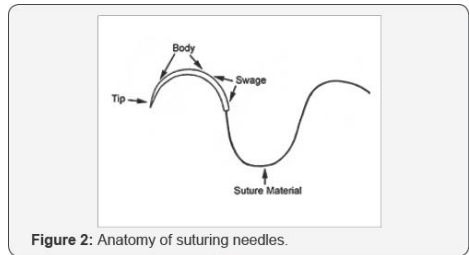
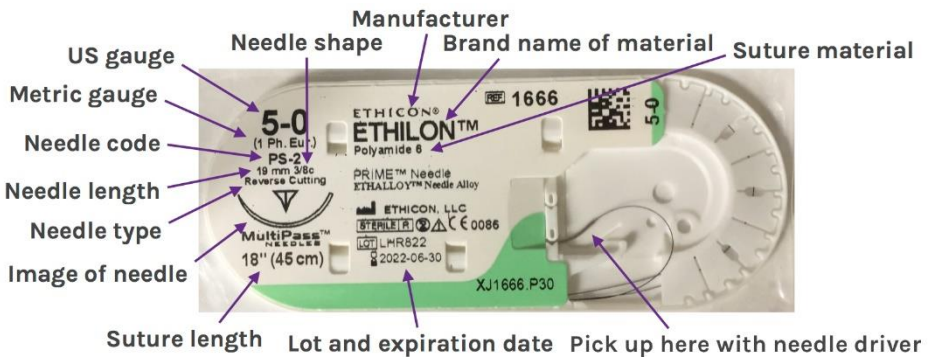


Figure 2: Anatomy of suturing needles.

Figure 1: USP size

USP = United States Pharmacopeia

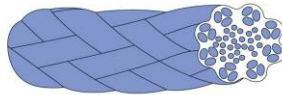
- The nature of suture material natural or synthetic.
- It is monofilament or poly-filament/braided.
- It is absorbable or non-absorbable.



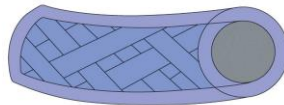
Suture types

Suture types							
Absorbable				Non-absorbable			
Braided		Monofilament		Braided		Monofilament	
Vicryl	Vicryl rapide	Monocryl	Fast absorbing gut	Chromic gut	Ethibond	Silk	Ethilon

Multifilament



Multifilament coated



Monofilament



Retractors and exposing instruments

- used to hold back or retract organs or tissue to gain exposure to the operative site with little trauma.
- Used to deflect or retract tissue safely away from working surgical field
- They are either "self-retaining" (stay open on their own) or "manual" (held by hand).
- When identifying retractors, look at the blade, not the handle.
- They have various size of the blades

Deaver's Retractor



- To retract abdominal wall, chest incision or organs. Available in various widths, described as Broad Deaver's or Narrow Deaver's.

Morris retractor



- To retract abdominal wall or organs.

Farabeuf retractor



- Farabeuf Double-Ended Retractor is a versatile handheld retractor that is used in many procedures. It may be used in dentistry, in wrist and hand procedures, or in hernia repair to name a few. The instrument is a solid piece of stainless steel with one angled blade at each end. Each blade is smooth, blunt, and also has a slight upward lip at the end.

Balfour's Retractor



- Self-retaining retractor to retract edges of abdominal walls and muscles during deep abdominal procedures.
- It prevents trauma to other tissues and organs.

Senn- Miller Retractor



- Senn-Miller Retractor is a multipurpose surgical device that allows surgeons to pull back and hold tissues away from the operating site during general surgery.

Richardson Retractor



- **Richardson** retractor (manual) is used to retract deep abdominal or chest incisions.

Suction and aspiration

Yankauer suction tip (tube)



- Suction devices remove blood and other fluids (such as ascites fluid, pus) from a surgical or dental operative field.
- Used in abdominal laparotomy or within a cavity with copious amounts of fluid.
- The outer filter shield prevents the adjacent tissues from being suctioned in to the apparatus.

Labour ward procedures

Pinard stethoscope



Apply the ear piece of the Pinard to right/left ear of the health care provider

Doptone



- To listen the fetal heart sound and count the fetal heart rate.

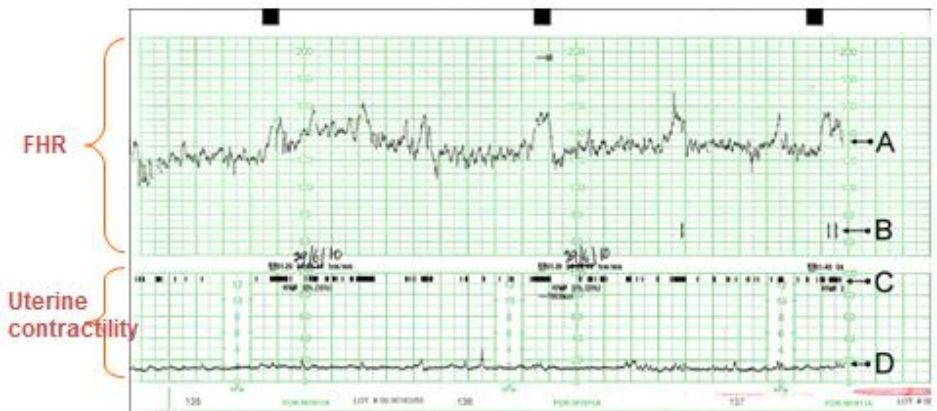
Procedure:

- Identify the anterior shoulder of the fetus
- Apply the earpiece of the Pinard to right/left ear **(See at page 29)**
- Ensure there is a watch on the wrist
- Check maternal pulse first, to differentiate with fetal heart beat
- Count heart rate within 1 min or 15 seconds x 4
- Its use has limitation in case of obese patient and polyhydramnios.
- Doptone is usually used in second trimester of pregnancy.
- Doptone and ultrasound can be used to detect the fetal heart sound.

Cardiotocography (CTG)

(CTG) is a technical means of recording the fetal heartbeat and the uterine contractions during pregnancy. The machine used to perform the monitoring is called a cardiotocograph, more commonly known as an electronic fetal monitor (EFM).





- A – FHR
- B – Maternal movements
- C – Fetal movements
- D – Uterine contractions

Advantages

- FHR & contraction can be monitored & recorded at the same time
- Reduce rates of seizure in newborn

Disadvantages

- Prevent mother from moving
- Unable to change position
- Increase interventions (instrumental deliveries or C-sec)

Interpretation of CTG: DR C BR A VA DO

DR	DEFINE RISK FACTORS
C	UTERINE CONTRACTIONS
BRA	BASELINE HEART RATE
V	VARIABILITY
A	ACCELERATION
D	DECELERATION
O	OVERALL COMMENT

Baseline fetal heart rate

- Normal range is 110 – 160 bpm
- Bradycardia <100 bpm
- Tachycardia > 170 bpm

The rate of fetal heart which is controlled mainly by the

- ANS
- ANS consist of Sympathetic activity ----- Tachycardia
Parasympathetic activity ----- Bradycardia

Also controlled by

- chemoreceptor ----- changes in O₂ level
- baroreceptor ----- changes in arterial pressure

Also related to maturity of the vagus nerve and gestational age

Also related with changes in placental blood flow, hypoxia, external stimuli, temperature and drugs

Causes of fetal tachycardia

MOTHER CAUSES	FETAL CAUSES
Maternal fever/infection	Chorioamnionitis
Dehydration	Prolonged fetal activity/stimulation
Hyperthyroidism	Chronic fetal hypoxemia
Anemia	Fetal anemia
Maternal anxiety	Supraventricular tachycardia
Cigarette smoking	Fetal cardiac abnormalities
Medication or drug response, e.g.: - parasympatholytic drugs - beta-sympathomimetic drugs - illicit drugs	Compensatory response to transient fetal hypoxemia

Causes of fetal bradycardia

MOTHER CAUSES	FETAL CAUSES
Maternal hypotension	Maturity of the parasympathetic nervous system
Prolonged maternal hypoglycemia	Umbilical cord occlusion/prolapse
Maternal hypothermia	Cardiac conduction defects
Connective tissue diseases	Congenital heart disease
Maternal supine positioning	Decompensating fetus
Medication or drug response, e.g.: - Inderal - atenolol - labetalol	Excessive/prolonged parasympathetic (vagal) stimulation

Variability

Baseline varies within a particular band width **excluding accelerations and decelerations**. It indicates the integrity of the autonomic nervous system. (1 min segment of the trace)

Normal beat to beat variability is 5 – 25 bpm

Causes of reduced beat to beat variability

MOTHER CAUSES	FETAL CAUSES
Medication or drug response; e.g.: - CNS depressants - morphine - pethidine - alcohol - methadone	Fetal CNS anomalies, e.g.: - anencephaly - hydrocephaly
	Fetal sleep cycles
	Prolonged or severe fetal hypoxia
	Fetal cardiac anomalies
	Persistent fetal tachycardia

Acceleration

Transient increase in heart rate of **15bpm** or more and lasting **15s or more**

The recording of at least **2 accelerations in a 20 min** period is considered a reactive trace.

Deceleration

Transient episode of **slowing** of the heart rate below the baseline level of \geq **15bpm** and lasting **15s** or more

Type 1 or Early deceleration

- Onset of deceleration consistent with contraction.
- Early deceleration in late 1st stage and 2nd stage of labour with the descent of the head.
- Uterine contraction associated with fetal head compression Increased intra-cranial pressure stimulate the vagal nerve bradycardia.



Figure: Type 1 or Early deceleration

Type 2 or Late deceleration

- Fall of FHR during the contraction, which is through > 20s after the peak of contraction and returning to baseline after the contraction.
- As a result of decreased uterine blood flow
- Always associate with significant fetal hypoxia

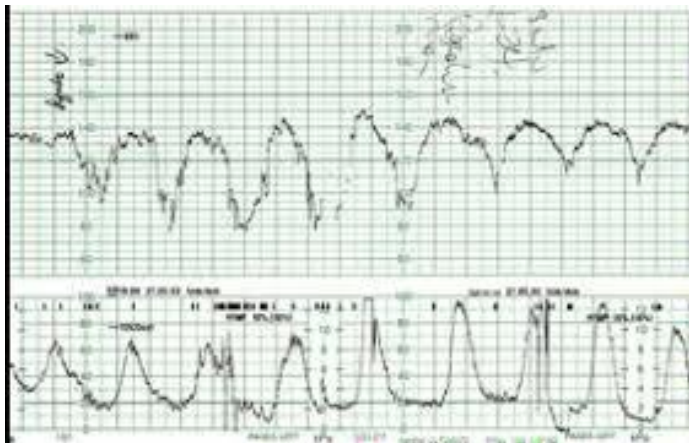
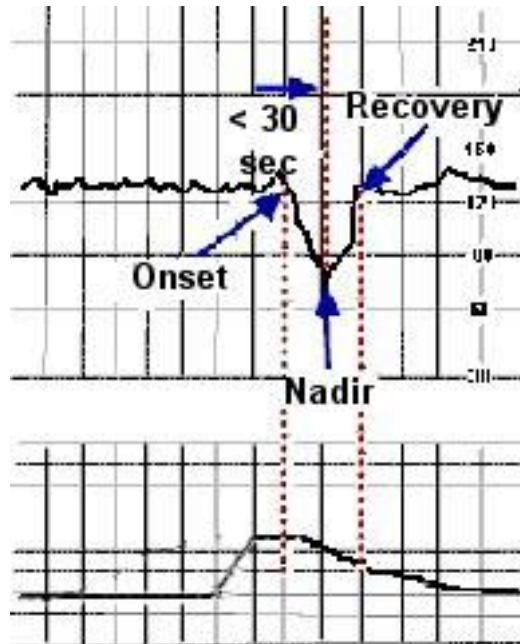


Figure: Type 2 or Late deceleration



- Gradually decrease in the heart rate
- Nadir and recovery occurring after the uterine contraction
- Nadir of deceleration occur 30 seconds or more after the onset of deceleration

Causes of late deceleration

- Maternal hypotension from supine positioning, trauma, hemorrhage, or epidural or spinal anesthesia.
- Maternal chronic or pregnancy-induced hypertension.
- Maternal collagen vascular disease.
- Maternal diabetes mellitus.
- Uterine hyperstimulation from oxytocin or prostaglandin.
- Maternal cardiovascular disease.

- Placental postmaturity.
- Illicit drug use (e.g., cocaine, amphetamines, etc.).
- Abruption placentae.
- Placental malformation.

Pathology of late deceleration

In normal pregnancy, during the uterine contraction, less oxygen-rich maternal blood is available in the intervillous spaces for oxygen transfer into the fetal circulation.

This decrease in placental perfusion results in a decline in maternal-fetal oxygen transfer and a decrease in fetal PO₂. When fetal PO₂ falls below a minimal normal threshold, chemoreceptors located in the fetal aorta and carotid arteries detect this decreased PO₂ and activate the parasympathetic nervous system via the vagus nerve. The vagus nerve is a cranial nerve that innervates the sinoatrial (S-A) and atrioventricular (A-V) nodes, the pacemakers that control heart rate. Vagal stimulation to these pacemakers results in a slowing of the fetal heart rate. Since the fall in fetal PO₂ occurs after the contraction is well established, the decrease in FHR also occurs well after the contraction has begun. It takes some time for the reduced uteroplacental oxygen transfer to decrease fetal PO₂ levels sufficiently to trigger a response. This time is referred to as “lag” time, and it accounts for the delay in onset of a late deceleration until after the contraction is well established.

Likewise, when uteroplacental oxygen transfer becomes optimal again, it takes some seconds before fetal blood PO₂ returns to normal, accounting for the delay in FHR return to baseline until well after the contraction is over.

Changes in the fetal blood pressure offer the second theory to explain the mechanism of late decelerations. During a uterine contraction, as less oxygen is available in the intervillous space, the compromised fetus may respond by releasing norepinephrine and epinephrine. These catecholamines, in turn, would produce a rise in the fetal blood pressure which, in turn, would produce a reflex bradycardia.

Variable deceleration

- The timing of the slowing of the FHR in relation to the uterine contraction varies and can occur in isolation.
- Typically, rapid onset and recovery.
- Persistent indicate umbilical cord compression.
- Classic variable decelerations demonstrate an initial brief acceleration (Primary “shoulder” acceleration or anterior “shoulder”), followed by an abrupt, precipitous fall from the baseline that recovers back to baseline as abruptly as it fell. This recovery then is followed by a second, brief acceleration (secondary acceleration or posterior “shoulder”).

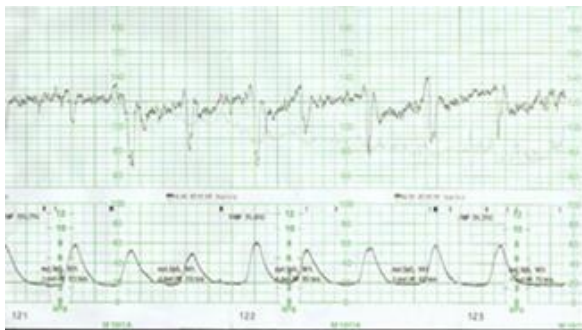


Figure: Variable deceleration

Physiology of variable deceleration

Variable decelerations result from compression of the umbilical cord. The umbilical cord consists of two small, thick-walled arteries and one large, thin-walled vein. The arteries transport deoxygenated blood and waste products away from the fetus back to the placenta. The vein transports oxygenated blood and nutrients from the placenta into the fetal circulation. When umbilical cord perfusion is decreased due to mechanical compression, the thin-walled vein becomes occluded first. Blood no longer can return from the placenta to the fetal circulation but still can exit the fetus via the unimpeded umbilical arteries. The decreased venous return to the heart may fall the blood pressure to stimulate the baroreceptors to response affected by the autonomic nervous system a transient reflex tachycardia that is seen as the initial, anterior shoulder in the classic variable deceleration.

If the pressure on the cord becomes greater, the small, thick-walled umbilical arteries also become compressed. The result of this arterial compression is a rapid increase in fetal blood pressure that activates a fetal baroreceptor-reflex response. Vagal stimulation occurs, and the FHR decreases abruptly. Once compression of the umbilical cord is relieved, the higher elastic arteries open first, but the umbilical vein still may be compressed. A transient tachycardia (posterior shoulder) may occur.

As perfusion in the umbilical vein resumes, the blood pressure normalizes and the FHR returns to baseline.

Factors those are associated with variable deceleration

- Nuchal cord.
- Cord malposition or body entanglement.
- Occult or obvious prolapsed cord.
- Rapid descent of the fetus in short umbilical cord
- Decreased amniotic fluid volume.
- Knot in the cord.
- Decreased Wharton's jelly.
- Congenital abnormalities of heart
- Hydrocephalus
- Gastroschisis

Sinusoidal pattern

- There is regular oscillation of the baseline with absent variability.
- The pattern lasts at least 10min and has amplitude of 5 -15bpm above and below the baseline.

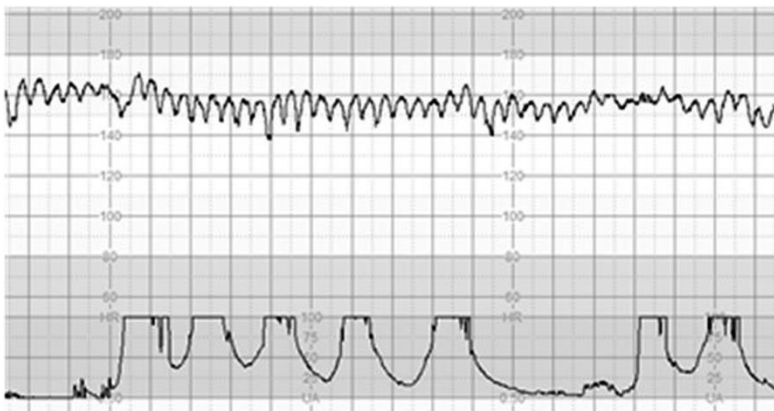


Figure: Sinusoidal pattern

Causes of Sinusoidal pattern

- Fetal anaemia
- Ante-partum haemorrhage

Overall comment

Features	Baseline (bpm)	Variability (bpm)	Decelerations	Acceleration
Reassuring	110-160	≥5	None present	Present
Non-reassuring	100-109 161-180	<5 for >40min <90min	Early deceleration. Variable deceleration. Single prolonged deceleration up to 3 min	None present
Pathology	<100 >180 Sinusoidal pattern for ≥10min	<5 for ≥90min	Late decelerations Single prolonged deceleration >3min	None present

Classification

- **Reassurance:** all 4 features fall into the reassuring category.
- **Non-reassurance:** one feature is abnormal; the others are normal.
- **Pathological:** 2/> features are non-reassuring, or >1 is abnormal.

Abnormal CTG are:

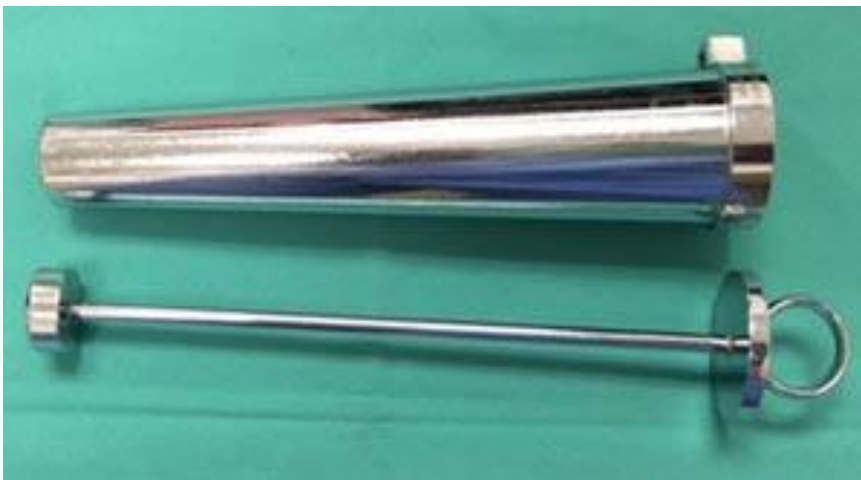
- Baseline bradycardia
- Baseline tachycardia
- Increase variability - initial response to acute hypoxia, fetal movement

- Decrease variability - less than 5bpm or absent e.g., severe hypoxia, fetal sleeping, maternal sedation, congenital malformation
- Sinusoidal - smooth, sine-wave like baseline, absent beat to beat variability e.g., severe hypoxia, anemic fetus, abruption of placenta
- Late deceleration
- Variable deceleration
- Prolonged deceleration

CTG ALERT SYSTEM

Score each tick	0	1	4
BASELINE	110 - 160 <input type="checkbox"/>	161 - 180 <input type="checkbox"/> 100 - 109 <input type="checkbox"/>	<100 <input type="checkbox"/> >180 <input type="checkbox"/>
DECELERATION	NONE <input type="checkbox"/>	Coincides contraction <input type="checkbox"/> V shape <input type="checkbox"/>	> 60 bpm drop <input type="checkbox"/> > 60 sec duration <input type="checkbox"/> "U" shape <input type="checkbox"/> After contraction <input type="checkbox"/> No shouldering <input type="checkbox"/>
ACCELERATION	PRESENT <input type="checkbox"/>	ABSENT <input type="checkbox"/> (Antenatal)	
VARIABILITY	5 - 15	< 5 bpm <input type="checkbox"/> 15 - 25 bpm <input type="checkbox"/>	Sinusoidal <input type="checkbox"/> >25 bpm <input type="checkbox"/>
CONTRACTION			>5:10 <input type="checkbox"/> Severe pain <input type="checkbox"/>
Total score			
Action	<p>0 = Continue care plan <input type="checkbox"/> 1 - 3 = Inform MO ASAP <input type="checkbox"/></p> <p>>4 = Inform Registrar: / Spec urgently (EMERGENCY) <input type="checkbox"/></p>		
<p>All CTG must be reviewed within 20 minutes of starting Do not wait for 20 minutes for CTG scores 4 and above Inform Registrar / Specialist urgently (EMERGENCY)</p>			
Time / Date / Signature			

Fetal scalp blood sampling



Blade and blade holder



Amnioscope and torcher

- This procedure is done in case of changes in cardiotocogram (CTG) to support the diagnosis of fetal compromise at active phase of labour.

Procedure:

- Clean the perineal area
- Drape with sterilized towel
- Insert the amnioscope to see the fetal scalp through cervical os
- To clean the fetal scalp area with 0.05% chlorohexidine solution and apply the white soft paraffin
- Make the small shallow incision at the fetal scalp using the blade and collect the blood with heparinized capillary tube
- Send the blood immediately for arterio-venous gas analysis to assess the fetal blood gas condition or hypoxia

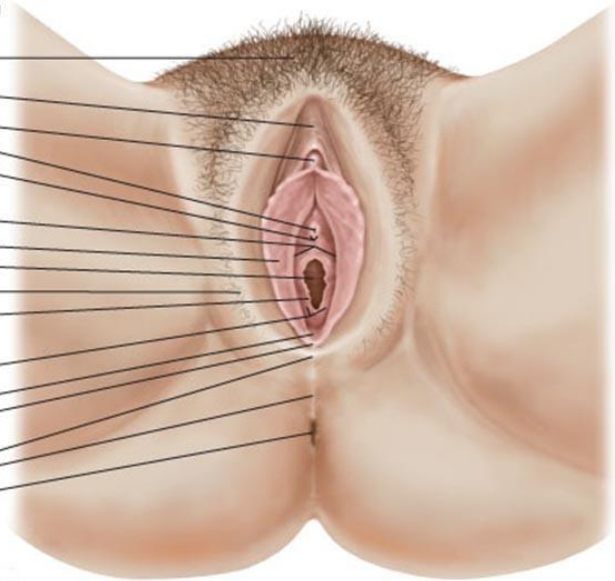
Reference ranges

Interpretation	pH	Lactate		Sample
Normal	>7.25	≤4.1 mmol/l	<38mg/dl	Repeat in <1 hr or sooner
Pre-acidemia	7.21 – 7.24	4.2-4.8 mmol/l	38-43 mg/dl	Repeat in <30min or sooner if additional non-reassuring or abnormal feature
Acidemia	<7.2	≥4.9 mmol/l	>43mg/dl	Expedite birth

Female external genitalia

Female external genitalia

mons pubis
 prepuce of clitoris
 glans of clitoris
 urethral opening (meatus)
 openings of paraurethral (Skene) ducts
 vestibule of vagina
 labium minus
 vaginal opening
 labium majus
 hymenal caruncle
 opening of greater vestibular (Bartholin) gland
 vestibular (navicular) fossa
 frenulum of labium
 posterior labial commissure
 perineal raphe
 anus



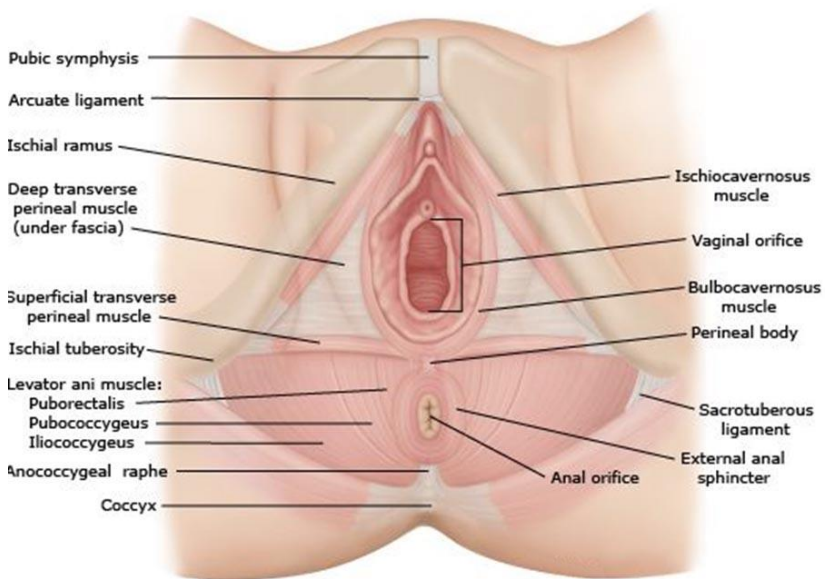
(Source: www.allposter.com)

Perineal body - is a pyramidal fibromuscular mass in the middle line of the **perineum** at the junction between the urogenital triangle and the anal triangle.

Perineal body is formed by following muscles (BLESSD)

- Bulbospongiosus
- Levator ani
- External anal sphincter
- Superficial transverse perinei
- Sphincter urethra
- Deep transverse perinei

Perineal muscle



External Cephalic Version (ECV)

External cephalic version is a procedure used to **turn** a fetus from a breech position or side-lying (**transverse**) position into a head-down (**vertex**) position before labour begins or early in labour before ruptured of membranes. When successful, version makes it possible for you to try a vaginal delivery. This procedure is performed at or after completed 37 weeks of gestation by experienced obstetrician at hospital with operative facility.

Contraindications to ECV

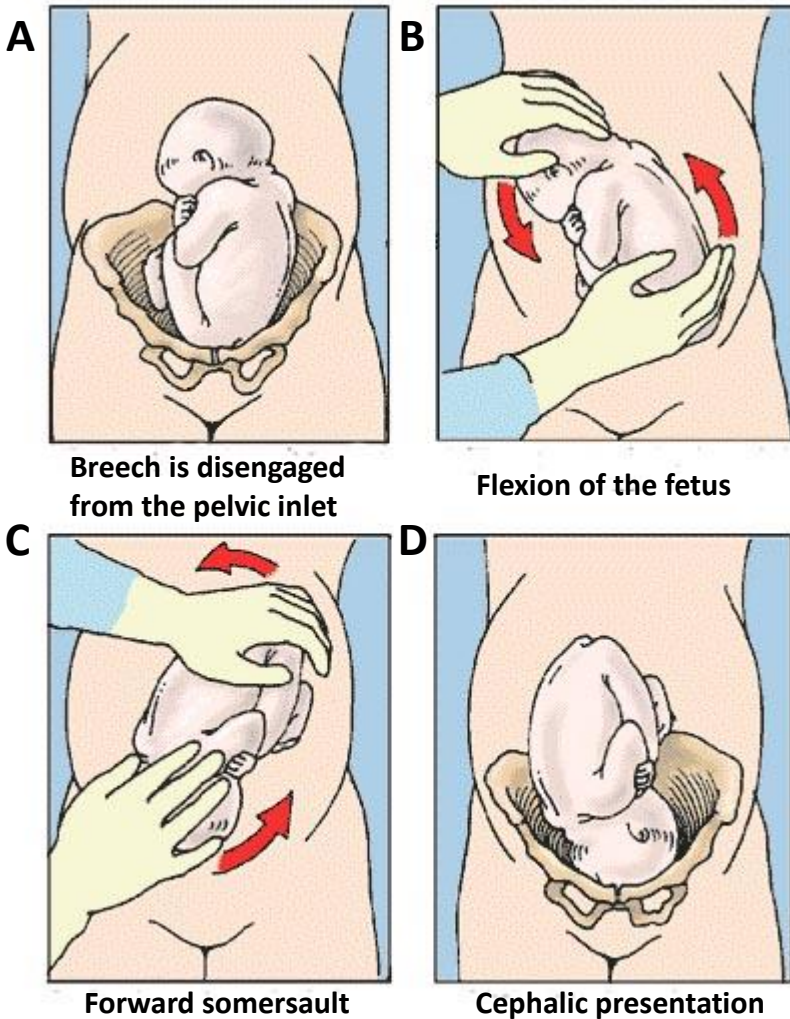
- Fetal abnormality (e.g. hydrocephalus)
- Placenta praevia
- Oligohydramnios or polyhydramnios
- History of antepartum haemorrhage
- Previous caesarean or myomectomy scar on the uterus
- Multiple gestation
- Pre-eclampsia or hypertension
- Plan to deliver by caesarean section anyway

Pre-requisites of ECV

- To exclude contraindications
- To fasting the patient for 8 hours
- To check the presenting part with ultrasound
- To check the cardiotocogram for fetal heart activity
- To set the cannula and take the blood for group and save the blood
- To empty the bladder
- To use tocolytic drugs
- To do this procedure at labour ward
- The woman is laid flat with a left lateral tilt and ultrasound guidance, the breech is elevated from the pelvis and one hand is used to manipulate this upward in the direction of a forward role whilst the other hand applies gentle pressure to flex the fetal head and bring it down to the maternal pelvis.

- It is important to administer anti-D if the woman is rhesus negative.
- To check the cardiotocogram after the procedure

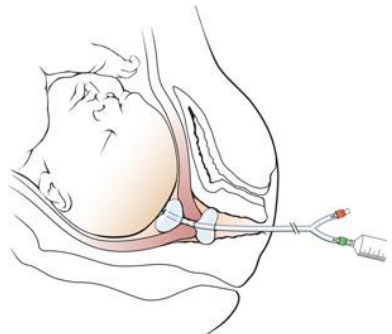
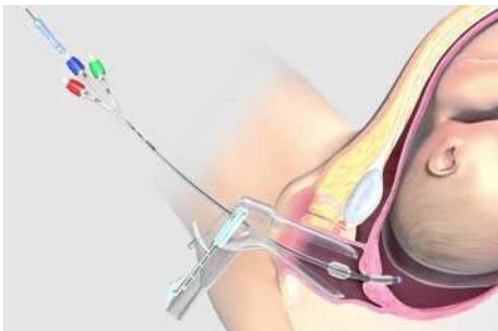
External Cephalic Version



Complications of ECV

- Placenta abruption, transplacental haemorrhage
- Premature rupture of the membranes
- Cord accident
- Fetal bradycardia, fetal distress
- Early in labour
- Failed ECV
- Uterine rupture

Cook cervical ripening balloon with stylet



Procedure

Insert the balloon with stylet guide through the cervical canal gently. The first of two balloons is inflated on the uterine side of the cervix; the second is then inflated in the vaginal side of the cervix. The two balloons adapt to the contour of the cervical canal minimizing discomfort for the patient. When the catheter is removed, cervical conditions would have improved to a favourable state to allow for augmentation of labour and active labour management. The Cook Cervical Ripening Balloon is engineered to naturally and gradually dilate the cervix and facilitate the labour induction. Ripening and dilatation is accomplished by the balloon's gentle and constant pressure at the level of the cervix without pharmaceuticals.

- Safely ripens and dilates the cervix without pharmaceuticals and appropriate in induction of patient with previous lower segment caesarean section.
- Eliminates the potential side effects of pharmacological induction.
- Silicone balloons adapt to the contour of the cervical canal.
- Able to be easily placed and removed.

- After 12 - 18 hours or it will drop itself when cervical os is appropriately dilated.

Prostin (Prostaglandin E2)



- This drug is used for induction of labour.
- This drug is inserted to the posterior fornix of the vagina after Bishop's score is not favourable.
- The **indications** for induction with prostin are:
Post-date/Pre-labour rupture of membrane/Foetal Growth Restriction/Preeclampsia/Gestational Diabetes Mellitus and Social reason.
- **Relative contraindication** for usage of prostin are:
Grand multiparity previous one scar/ bronchial asthma.
- The **possible complications** for using prostin are:

More pain/Cord prolapse/hyper-stimulation/failed induction of labour/ Foetal distress/uterine rupture/increased Emergency LSCS& instrumental delivery rate.

Laminaria cervical dilator



- MedGyn Laminaria cervical dilator consist of a dried stem of sea grown plant which is subjected to Ethylene Oxide process.
- The action of Laminaria is as Osmotic dilator.
- Laminaria is used in following **procedures**:
 - Endometrial biopsy
 - Cervical stenosis related to dysmenorrhea or resulting from cauterization
 - Placement or removal of intrauterine devices
 - Induction of labour
 - Curettage and drainage of uterine cavity
 - Suction cannula aspiration
 - Placement of radium for cancer treatment

- The **possible side effect** of Laminaria are:
 - Infection (a suitable broad-spectrum antibiotic must be administered with each Laminaria insertion)
 - Ruptured of cervix
 - Infant death
- The **contraindications** for usage of Laminaria are:
 - Patients with any cervical infections, acute cervicitis or gonococcal infection.
 - Patients where pregnancy is suspected unless a termination of pregnancy is to be carried out.
 - Patients with or recently recovered from pelvic inflammatory disease.
 - Patients running a fever.
- The **adverse reactions** of Laminaria are:
 - Persons with an allergy to sea food
 - Any cervical manipulation may cause a vasovagal reaction. (Pallor, nausea, vertigo or weakness)

Amniotic hook (Amniotic membrane perforator)



- It is commonly used instrument in Obstetric procedure. It is used in case of artificial ruptured of amniotic membranes, during induction of labour or augmentation of labour.

Procedure of artificial rupture of membranes

- Clean the hand and wear the sterilized glove
- Clean the perineal region and vagina with hibitane solution
- Drape with sterilized towel at perineal region
- Perform vaginal examination and assess the condition of cervix, dilatation of os, presentation of fetus, station and membranes.
- Index and middle fingers are placed between the vaginal wall and presenting part of the fetal head.
- Hold the amniotic hook with another hand guide the tip of the hook to the fetal head with the finger to rupture the membranes.
- Slowly release the amniotic fluid to prevent cord prolapse
- Assess the liquor volume and colour

Complications of artificial rupture of membrane:

- Cord prolapse
- Placental abruption
- Injury to the maternal vaginal wall
- Injury to the fetal presenting part
- Antepartum haemorrhage in case of vasa praevia

Episiotomy scissors (Braun episiotomy scissors)

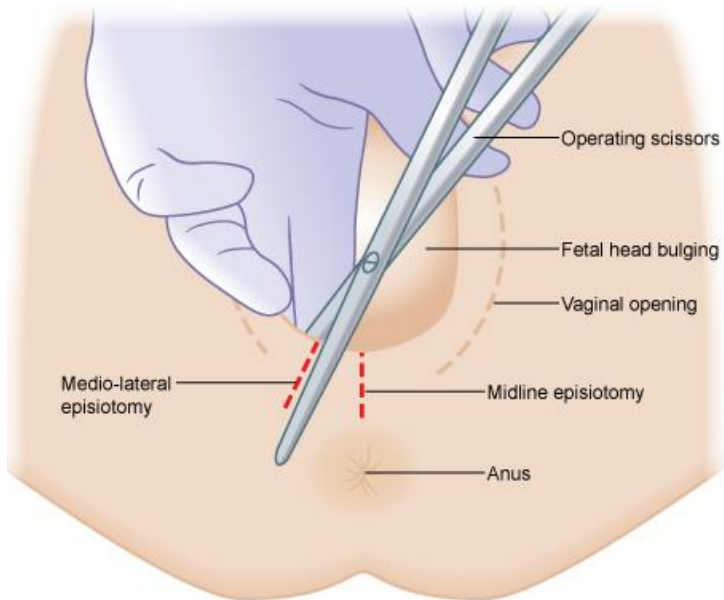


- The characteristics of the episiotomy scissors is blunt end of the tips which prevents the injuries to the fetal head.

Episiotomy is the surgical procedure to widening the out let of the birth canal to delivery of the fetal presenting part.

Types of the episiotomy:

- Mid line
- Medio-lateral (recommanded)
- J shape



Timing of episiotomy:

- Crowning of fetal presented part at the second stage of labour

Procedure of episiotomy:

- Clean the perineum area with hibitane solution
- Drape with sterilized towels
- Give local analgesia 1% lignocaine 5 – 10 ml at the site of episiotomy area or bilateral pudendal block
- Place the index and middle fingers into the vagina between the fetal presenting part and perineum
- Make incision at the perineum with episiotomy, blunt end inside the vaginal cavity during uterine contraction (crowning stage)

Degree of the perineal tear:

- 1st degree – include vaginal mucosa and perineal skin
- 2nd degree – involvement of perineal muscles
- 3rd degree – involvement of anal sphincters and divided into
 - A – Less than half of the external anal sphincter
 - B – More than half of the external anal sphincter
 - C – Involvement of the internal anal sphincter
- 4th degree – involvement of the anal mucosa

Repair of the episiotomy wound:

- Good lighting
- Adequate analgesia
- Suture with absorbable material, preferable size 2/0
- Continuous suturing of the vaginal mucosa
- Interrupted suturing of the perineal muscles to obliterate the dead space and secured the bleeding points
- Interrupted or continuous subcuticular stitch for perineal skin

In case of **3rd and 4th degree perineal tear**, the experience person or specialist may need to repair and give appropriate post-operative treatment.

Postoperative care

- antibiotics
- laxatives such as fybogel and lactulose
- check the anal sphincter tone
- pelvic floor exercise after the puerperium
- follow-up at gynaecological clinic

The **advantages** of the mid line episiotomy are less bleeding and dyspareunia. But it can extend to 3rd or 4th degree perineal tear, therefore usually not recommended.

The **advantage** of medio-lateral is less extended tear and injury to anus but more likely to bleed and result in dyspareunia.

Complications of episiotomy

- third / fourth – degree tear to the anal sphincter / mucosa
- increase blood loss
- damage to the Bartholin's gland
- infection
- vaginal haematoma
- unsatisfactory anatomical results
- perineal pain
- dyspareunia
- wound gapping
- fistula formation

Vacuum





Silicon rubber cups



Vacuum pump machine



MityOne Vacuum

- There are many types of vacuum cups such as kiwi cup, silicon rubber cup, and metal cup and MityOne vacuum pump.

Indications:

Maternal: Maternal distress at second stage

- Poor maternal effort at second stage such as on epidural analgesia
- Medical conditions which need to shorten the second stage

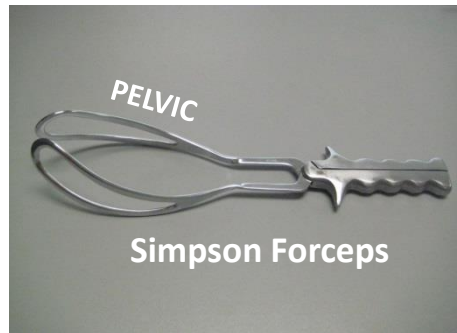
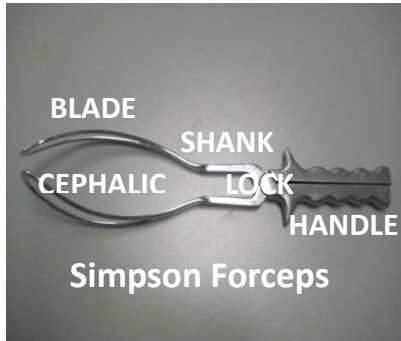
Fetus: Fetal distress at second stage

- Prolonged second stage

Complications: Mother: - extended perineal tear/cervical tear

Fetus: - Chignon/Scalp necrosis/Cephalhaematoma/Intracranial haemorrhage

Obstetric Forceps



- There are so many types of forceps for delivery of the baby. Among them the commonly used forceps are Simpson and Wrigley forceps.

The **characteristics** of the obstetric forceps are:

- Blade (consist of pelvic curve and cephalic curve)
- Shank
- Lock and
- Handle
- The **indications** for obstetric forceps delivery are similar with vacuum delivery. But obstetric forceps can be used in acute fetal distress and after coming head of breech delivery.
- The **Fetal complications**
 - Forceps delivery cause forceps marks, facial laceration, facial nerve palsy and skull fracture
 - Vacuum delivery cause chignon and scalp necrosis
 - The rest complications are same such as cephalohematoma, subaponeurotic haemorrhage and intra-cranial haemorrhage.
- The **maternal** complications
 - Injuries to the genital tract (vaginal, cervix and uterus)
 - Injuries to the urinary tract (urethral)
 - Extended episiotomy tear

The **pre-requisites** for instrument delivery are;

F - Os fully dilated

O – Occipito-anterior or Occipito-posterior (for vacuum, any position can be used)

R – Ruptured membranes

C – Uterine contraction must be present, patient’s consent

E – Episiotomy and Empty the bladder

P – Paediatrician must be standby, pain relief for episiotomy

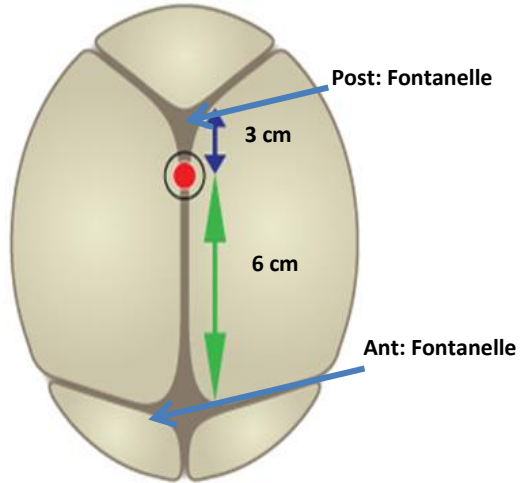
S – Sterile method and skill person

- If head is not in the direct Occipito-anterior or posterior position, only use metal vacuum cup or Kiwi cup for rotation of the fetal head.
- If the caput is big, use forceps delivery instead of vacuum delivery.
- Do not try more than **two attempts** during uterine contractions.
- When **failed** in one type of instrument delivery, do not try other types of instrumental delivery and recourse to Caesarean section.

Flexion point

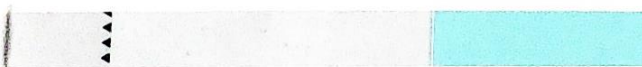
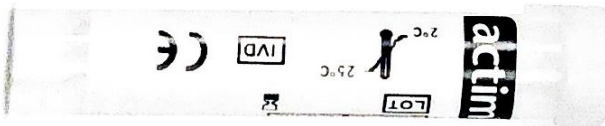
In obstetrics, the term flexion point refers to a spot on the fetal head on which the cup of a ventouse should to be placed for extraction of the fetus to be most effective vacuum assisted delivery. The flexion point is located on the sagittal

suture 3 cm in front of the posterior fontanelle and 6 cm posterior to the anterior fontanelle.



Alere Actim PROM test

Test procedure and results



Structure of dipstick



Structure of dipstick

1. Dip area
2. Result area
3. Text line
4. Control line

Intended use

The Alere Actim PROM test is a visually interpreted, qualitative immunochromatographic dipstick test for detection of amniotic fluid in the vaginal secretions during pregnancy. Alere Actim PROM detects Insulin-like growth factor-binding protein 1 (IGFBP-1) which is a major protein in the amniotic fluid and a marker of the amniotic fluid in the vaginal sample. The test is intended for professional use to help the diagnose a rupture of fetal membranes (ROM) in the pregnant women.

Specimen collection

The specimen is vaginal secretion that is extracted into the Specimen Extraction Solution provided. A sample is obtained using a sterile polyester swab (provided in the kit). The specimen should be collected from the posterior vaginal fornix during performing speculum examination. Take care not to touch anything with the swab before taking the sample. The swab should be left in the vagina for 10 – 15 seconds to allow it to absorb the vaginal secretion.

Open the Specimen Extraction Solution tube and put it in a vertical position. The specimen is extracted immediately from the swab by swirling the swab vigorously in the extraction solution for 10–15 seconds. Press the swab against the wall of the Specimen Extraction Solution tube to remove any remaining liquid from the swab. Discard the swab. NOTE do not leave the swab to the tube.

Specimen should be tested as soon as possible after extraction but in any case no more than four hours after specimen collection and extraction. If a specimen cannot be tested within this time, it should be frozen. After thawing, the specimen should be mixed and tested as described below.

Test procedure and interpretation of the results

1. It stored refrigerated, allow the aluminum foil pouch and the Extraction Solution tube to reach room temperature. Open the foil pouch containing the dipstick by tearing. Do not touch the yellow dip area at the lower part of the dipstick. Identifying marks may be written on the upper turquoise part of the dipstick. The dipstick must be used shortly after its removal from the foil pouch.
2. Place the yellow dip area into the extracted sample and hold it there **until you see the liquid front enter the result area**. Remove the dipstick from the solution and place it in a horizontal position.
3. The result can be interpreted as positive as soon as two blue lines become visible in the result area. Negative result should be read at **5 minutes. Do not pay attention to any lines appearing later than 5 minutes.**
4. It **two blue lines, the test line and the control line** appear, the test result is **positive**.

If **one blue line, the control line** appears, the test result is **negative**.

If **the control line does not appear**, the test is **invalid**.

Limitations of the test

- The test is intended for in vitro diagnostic use only.
- If rupture of foetal membranes has occurred but the leakage of amniotic fluid has ceased more than 12 hours before the specimen is taken, IGFBP-1 may have been degraded by proteases in the vagina and the test may give a negative result.
- A negative test result is an indication on the present condition and cannot be used to predict the forthcoming.

Lower segment Caesarean Section



Green Armytage



- It is haemostasis non-traumatizing forceps used in Caesarean Section.
- Its tip has blunt grip to control the bleeding with non-traumatized the tissue.
- At least four Green Armytage forceps are used in operation.
- It is used to hold the angles of the uterine incision.

Doyen abdominal wall retractor





- It is mainly used in Caesarean section and total abdominal hysterectomy and bilateral salpingo-oophorectomy to hold back the underlying organ and tissues.
- It is also used in other operative procedures like myomectomy, cystectomy and surgical operations.
- It is specifically used to retract the bladder during Caesarean section.

Caesarean Section (Pfannenstiel incision)

- The skin and subcutaneous tissues are incised using a transverse curvilinear incision two finger breadths above the symphysis pubis extending from and to points lateral to the lateral margins of the abdominal rectus muscles.

- Subcutaneous tissues are separated by blunt dissection and the rectus sheath is incised transversely along the middle 2 cm.
- This incision is then extended with scissors before the fascial sheath is separated from the underlying muscle by further blunt dissection.
- Separations performed cephalad in longitudinal plane.
- The recti are separated, the peritoneum incised and the abdominal cavity entered.
- The transverse Pfannenstiel incision has the advantages of improved cosmetic results, decreased analgesic requirements and superior wound strength.

Bakri intrauterine balloon

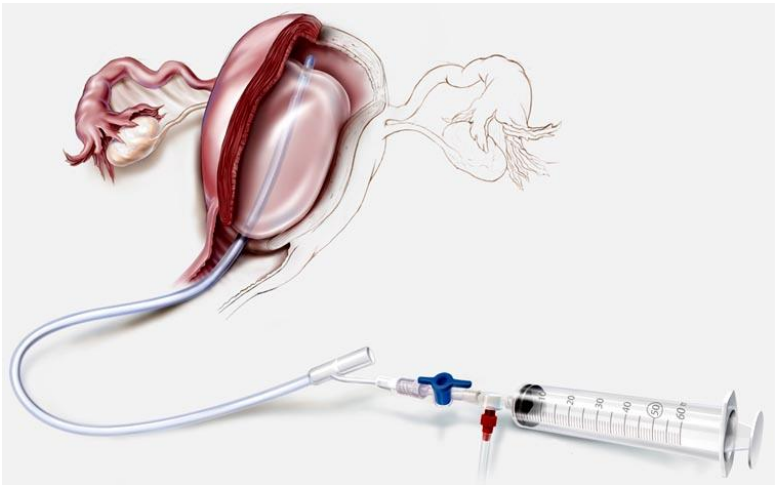


The 2006 ACOG practice bulletin on postpartum hemorrhage by the American College of Obstetricians and Gynecologists states the following:

“When uterotonics fail to cause sustained uterine contractions and satisfactory control of hemorrhage after vaginal delivery, tamponade of the uterus can be effective in decreasing hemorrhage secondary to uterine atony. Such approaches can be particularly useful as a temporizing measure, but if a prompt response is not seen, preparations should be made for exploratory laparotomy.”

Therefore, indications for Bakri balloon are:

- Use for temporary or reduction of postpartum haemorrhage when conservative management of uterine bleeding.
- Uterotonics fail to cause sustained uterine contraction and satisfactory control of haemorrhage after vaginal delivery.
- Use as a temporary measure to decrease haemorrhage while waiting and preparing for other definite treatment, such as open abdominal surgery (i.e., uterine artery ligation, uterine compression suture, hysterectomy) or uterine artery embolization, or while the patient is being transferred to another unit with more experience and resources.



After vaginal delivery

For transvaginal placement after vaginal delivery, the following steps should be considered:

- Before insertion the balloon, ensure that the bladder is empty by placing a Foley catheter.
- Ultrasound examination of the uterine cavity. It should be made to ascertain that the uterine cavity is clear of placental fragments.
- Placenta and membranes must be checked for completeness.
- The cervix and vagina should be cleansed with an antiseptic solution, such as chlorhexidine.
- Grasp the cervix with Green Armytage forceps. Insert the balloon into the cavity of the uterus under ultrasound guidance, making sure that the entire portion of the balloon passes the cervical canal above the internal cervical os.
- Once the correct placement is confirmed, inflate the balloon with sterile saline using the enclosed syringe. The recommended maximum capacity of the balloon is 500 ml.
- In order to maximize the effect of tamponade most notable to the lower uterine segment, apply gentle traction to the shaft of the balloon. This can be achieved and maintained by securing the balloon shaft to the patient's leg or attaching to a weight, not to exceed 500 grams.

- Connect the drainage port to a fluid collecting bag to monitor hemostasis.
- Monitor patient continuously for signs of increased bleeding and uterine cramping.

After Cesarean section

At laparotomy following a Cesarean section, the following specific steps should be considered:

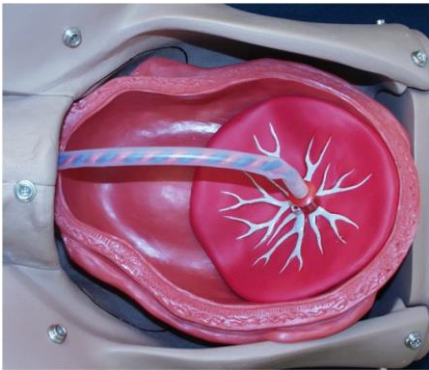
- Insert the end of the catheter through the open uterine incision to the cervix and then into the vagina.
- Close the uterine incision while taking special care not to damage the balloon by the suturing needle.
- Insufflate the balloon under direct visualization.

This may potentially result in balloon failure secondary to inadvertent puncture of the balloon by the needle. An alternative approach is to close the uterus first and then insert the balloon from the vagina and inflate it while the surgeon observes from above.

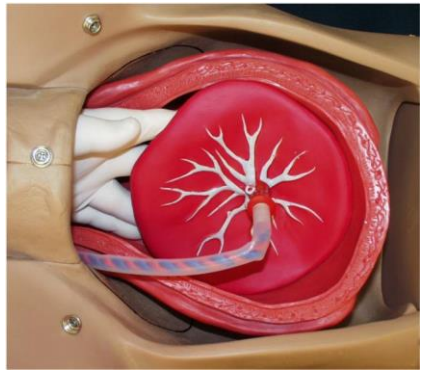
Manual removal of placenta



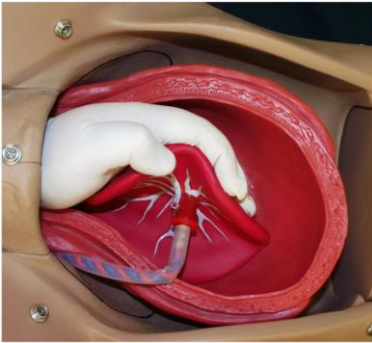
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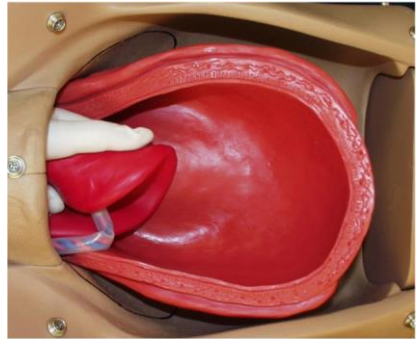
2



3



4



The procedure of manual removal of placenta at operation theatre:

After the spinal or general anesthesia:

- Patient in the lithotomy position
- Clean the operation area with antiseptic solution
- Drape the operation area with sterile towels
- Empty the bladder
- Follow the umbilical cord into the uterine cavity
- Identify the edge of the placenta
- Stabilize the uterus with abdominal hand
- Separate the placenta by using “see-saw” method
- Separate whole placenta before removal of placenta
- Check placenta and membrane for completeness
- If not complete, re-explore the uterus (Digital curettage)
- Check for other injuries
- Maintain I/V oxytocin 40 units in drip with 125mls/hr.
- Pad chart, watch out for further PV bleeding

Caution during 3rd stage of delivery:

- If cord snapped during 3rd stage, this means excessive pulling of the umbilical cord in the attempt to deliver the placenta.
- Umbilical cord should not snap unless unhealthy cord or Intrauterine Growth Restriction (IUGR)/premature baby with small cord.

Gynaecological procedures**Pap smear**

- It is a screening method.
- It is cytological study.
- It is the study of the cells from the transformation zone of the cervix to detect the premalignant lesion of the cervix.

Ayre's spatula

- It is made by wood or plastic.

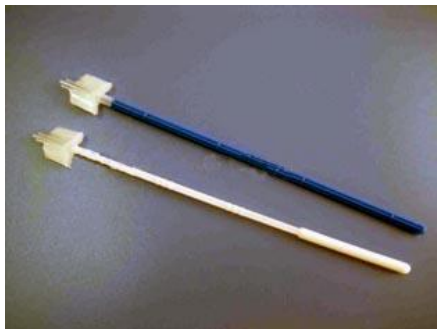
- It has two ends, broad end for vaginal sample collection and narrow end for taking samples from the cervix.
- It is disposable and for single use only.

Cytobrush



- To sample the endocervical canal, the inside of the opening leading into the uterine cavity.
-

Cervical brush



- To collect the sample of the endocervix. It requires insertion of the endocervical brush into the endocervical canal.

The **procedure of the Pap smear** is:

Position the Patient

- Usually dorsal position.
- Position the patient with her buttocks just at the edge or just over the edge of the examination table.
- Appropriate draping should be used.
- Good lighting is important and is often accomplished with a goose-neck lamp.

Inspect the Vulva

- gently spread the labia apart and inspect the vulva, looking for:
 - Skin lesions
 - Masses
 - Discharge
 - Discolorations of the skin
 - Signs of trauma
 - Pubic hair distribution (triangular = normal)
 - Insect movement (pubic lice) within the pubic hair
- Explain what you are doing to the patient to keep her relaxed.

Warm the Speculum

Warm the vaginal speculum with your hands.

Insert the Speculum

- After warming the speculum, separate the labia and keep them apart.
- The speculum is inserted with blades closed and parallel to the labia.
- Once the speculum has been inserted into the vagina it is rotated ratchet at upward and then open.
- Usually, the cervix is immediately visible.
- The cervix should come into view as the speculum blades are opened
- If the cervix is not seen, then some gentle adjustment of the position of the speculum may reveal the cervix.
- If the cervix is not seen, then a little bit withdraws the speculum.
- Lock the blades in the open position, wide enough apart to allow complete visualization the transformation zone or Squamo-Columnar Junction of the cervix.

Start with the Spatula

- The Ayer spatula is specially designed for obtaining Pap smears. The concave end (curving inward) fits against the cervix, while the convex end (curving outward) is used to rotate 360° for scraping vaginal lesions or sampling the "vaginal pool," the collection of vaginal secretion at the posterior fornix just below the cervix.

Make a Thin Smear

- Spread the taken sample on a glass slide.
- Try to make the smear as thin as possible since this makes it easier for the pathologist to read.
- Make sure the slide is labeled (using pencil on the frosted end).

Spray Immediately

- Immediately spray the glass slide with cytological fixative or fix with 95% ethyl alcohol.

Next Use a Brush

- Next, use a "Cytobrush" to sample the endocervical canal, the inside of the opening leading into the uterine cavity.

- These soft brushes are designed to be inserted into the canal without causing damage.
- Push the cytobrush into the canal, not deeper than the length of the brush (1.5 cm - 2.0 cm).
- Rotate the brush 180 degrees (half a circle) and pull the cytobrush straight out.
- Smear the sample on another slide, spreading the material evenly over the slide.
- Spray with fixative immediately.
- Allow the slides to dry completely before placing them in the Pap smear container.
- Once dry and packaged, it is best to send them out promptly for interpretation.
- Use a broom for liquid-based media.
- Liquid-based media offer some advantages over traditional glass slide media for Pap smears.
- They tend to be somewhat easier to read, somewhat more forgiving of contamination with red cells and white cells, and accuracy that is at

least as good as and probably better than traditional glass slide preparations.

- An additional advantage is that Human Papilloma Virus (HPV) testing can be done in the event of an abnormal result.
- The sensitivity is 76% and specificity is 86% in liquid-base test.
- But that method is more expensive than traditional method.



Position of the patient



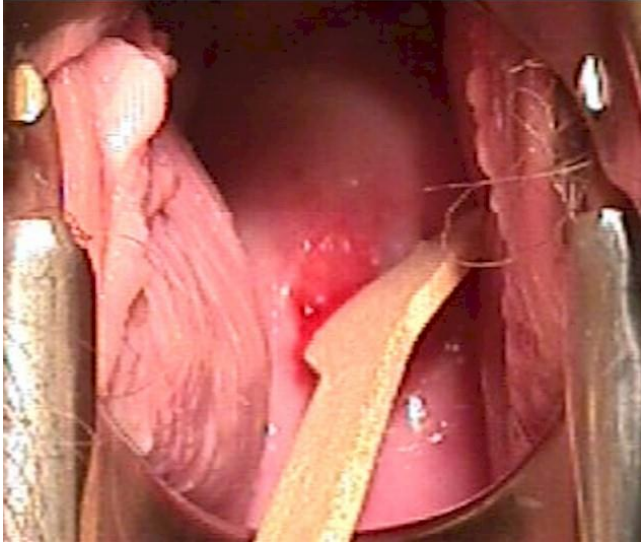
Pad the Stirrups



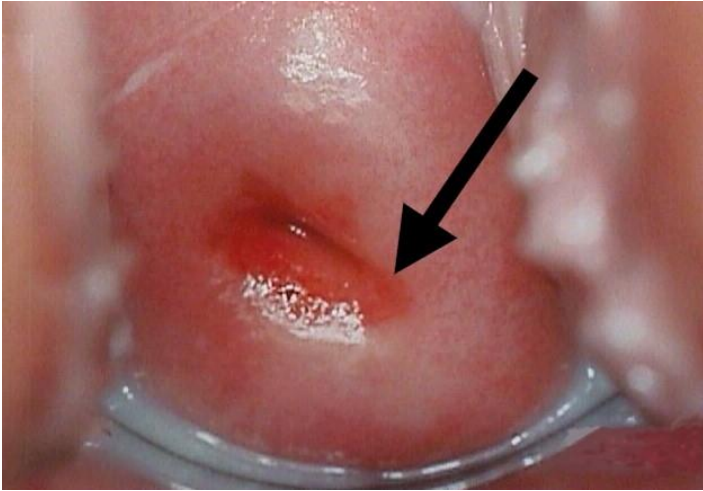
Inspect the Vulva



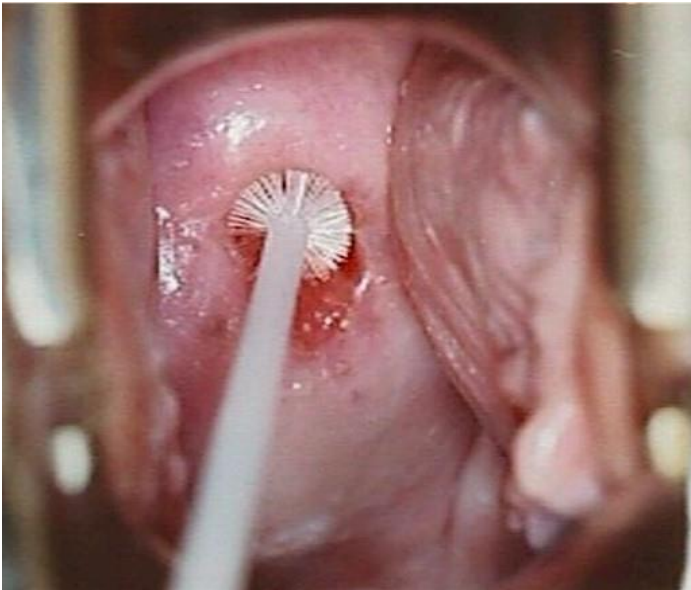
Insert the Speculum



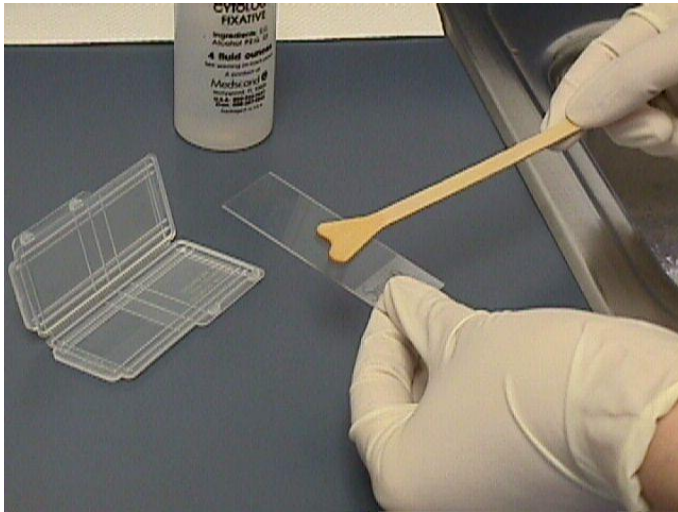
Use with the Spatula



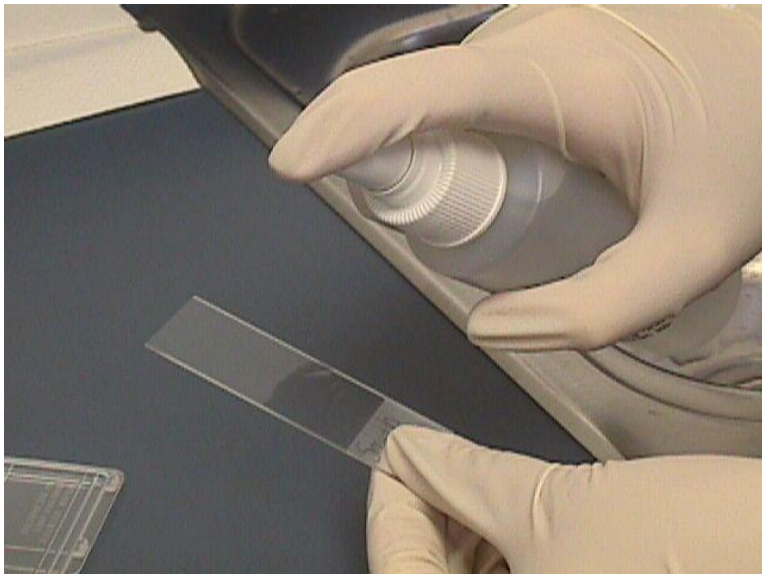
Transformation zone



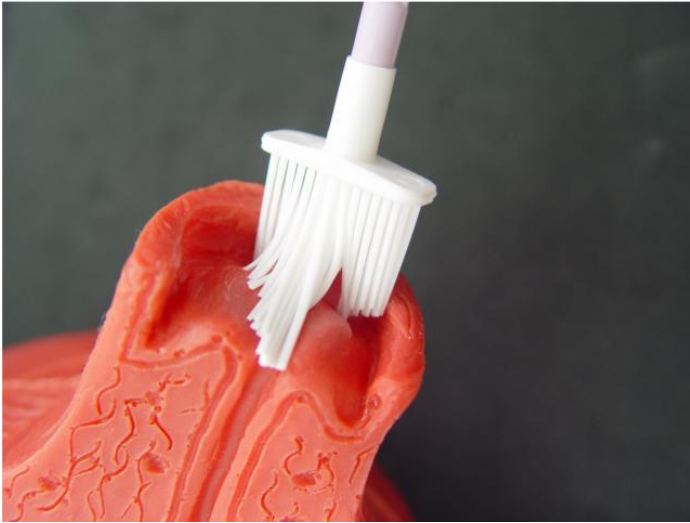
Use with cytobrush



Thin smear on the slide after label



Fixation with alcohol spray

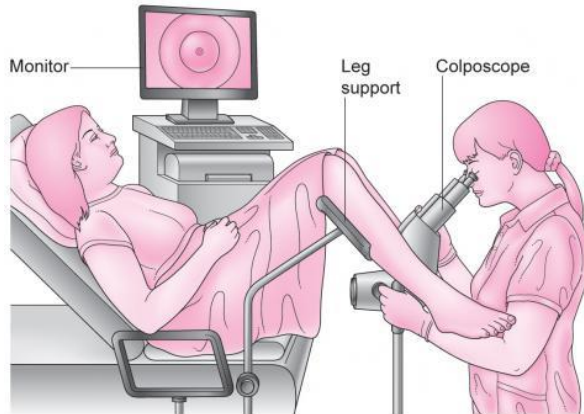


Use with cervical brush



Liquid base method

Colposcopy

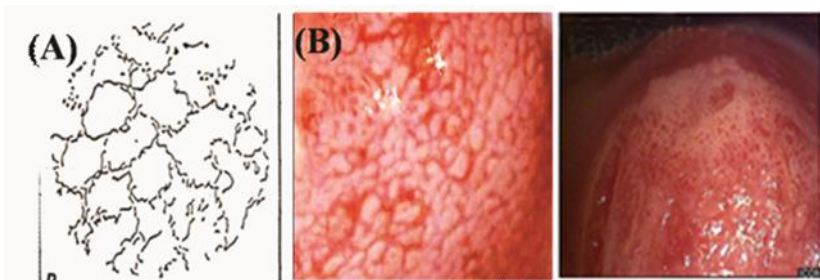


- **Colposcopy** is the outpatient examination of the magnified cervix using a light source.
- It is used for both diagnosis and treatment

The **steps** of the colposcopic procedure are:

- After a history and counselling, place her legs in the semi-lithotomy position and exposed the examination parts
- A speculum is passed and the cervix examined with the light source under magnification (5 to 20X).
- In case of Cervical Intraepithelia Neoplasia (CIN) the process of angiogenesis is present mosaic or punctation pattern.
- Usually 5% acetic acid to apply on the cervix.

- Acetic acid causes nucleoproteins within cells to coagulate temporarily to appear white (aceto-white) area.
- When apply iodine to the cervix, as the area of CIN lack the presence of intracellular glycogen and stain yellow.
- In normal squamous epithelium which will stain brown when iodine is applied.
- The biopsy will be taken when necessary from abnormal area.
- The colposcopist has to assess whether the appearances are low or high grade.
- In high grade, she must be treated in the clinic on the same visit.
- If low grade, monitor with a subsequent colposcopy and cytology six months later.



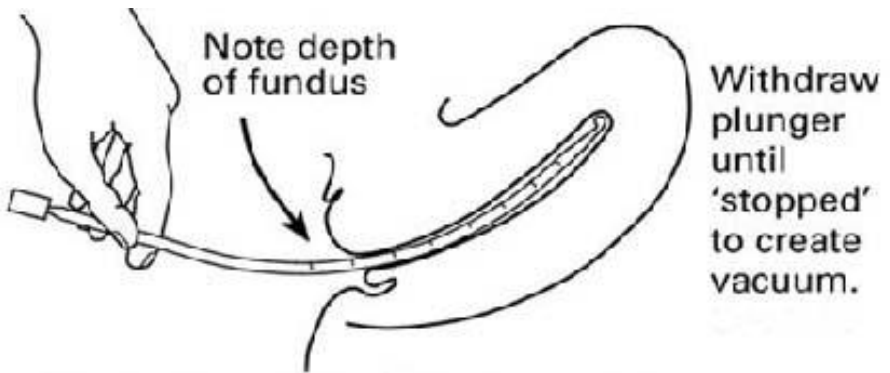
Mosaic pattern

Punctation

Pipelle Sampler



- It is **used** for Pipelle endometrial sampling.



The **indications** of the endometrial biopsy are:

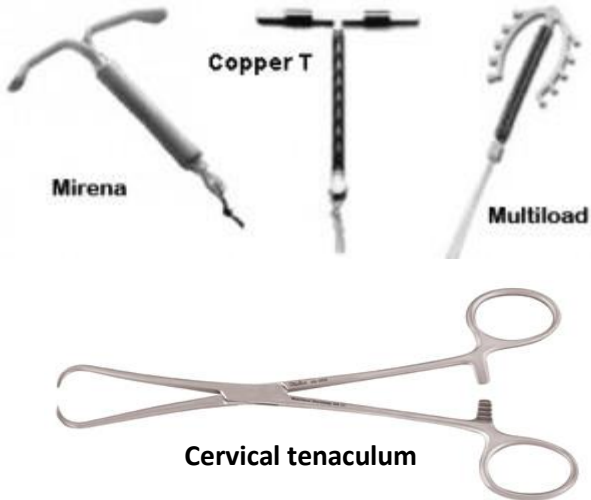
- Aged 40 years and above with irregular or intermenstrual bleeding
- Drugs therapy has failed
- Endometrial hyperplasia

The **steps** of Pipelle sampling are:

- A patient in dorsal position

- Clean the vulva area and vagina with 0.05% chlorhexidine solution to prevent ascending infection.
- A speculum examination is carried out and the cervix is completely visualized.
- A vulsellum instrument may be required to grasp the cervix and provide gentle traction, thereby straightening the endocervical canal.
- The Pipelle sampler is carefully inserted through the cervical os until it reaches the fundus of the uterus.
- The length of the uterus is noted.
- The inner part of the Pipelle is withdrawn to create a vacuum and the device is gently removed in and out to obtain a sample of endometrial tissue.
- The Pipelle sampler is removed and the tissue is expelled into a formalin-filled container for histopathological examination.

Intrauterine device (IUD)



Intrauterine methods of contraception include the copper intrauterine device Cu-IUD, multiload and mirena (levonorgestrel intrauterine system) LNGIUS.

IUDs stimulate an inflammatory reaction in the uterus. The concentration of macrophages and leucocytes, prostaglandins and various enzymes in both uterine and tubal fluid increase significantly. It is thought that these effects are toxic to both sperm and egg and interfere with sperm transport. If a healthy fertilized egg reaches the uterine cavity, implantation is inhibited.

The copper-releasing IUD is a T-shaped polyethylene device with exposed surface area of copper on its arms and stem. The released copper ions interfere with sperm mobility and incite a foreign-body reaction that results in a spermicidal environment. Barium sulfate has been added to the polyethylene

substrate to make the device radiopaque. This type of IUD can remain in place for up to 3 – 10 years.

The mirena LNGIUS device is a radiopaque T-shaped with 52 mg of levonorgestrel on its arms and stem. The progestin is released at a rate of 20mcg a day. Levonorgestrel is thought to thicken cervical mucus, creating a barrier to sperm penetration through the cervix, and it may stop ovulation and thin the uterus lining. LNGIUS can remain in place for up to 5 years.

Equipment for IUD Insertion

- Cervical tenaculum
- Cotton balls moistened with antiseptic solution or povidone-iodine (Betadine) swabs
- Long suture scissors
- Sponge forceps
- Sterile and nonsterile examination gloves
- Sterile IUD package with IUD
- Sterile tray for the procedure
- Sterile Cusco's bivalve self-retaining vaginal speculum
- Uterine sound

IUD insertion procedure

The arms of the IUD are to be folded into the insertion tube far enough to retain them. This can be done before the start of the procedure, working through the sterile package. (Figure 2)

- To clean the perineum, cervix and vaginal fornices with antiseptic solution (Use sterile method)
- To insert the Cusco's bivalve self-retaining vaginal speculum
- To stabilize the cervix with tenaculum
- To use the uterine sound to measure the depth of the uterine cavity
- To use the sterile gloves to remove the IUD from the package
- To fold the arms of IUD into the insertion tube
- To insert the IUD into the uterus until the flange is against the cervical os
- To pull back the inserter tube on the insertion rod approximately 2 cm (the arms can spread to the "T" position) (Figure 4)
- To remove the insertion rod by holding the insertion tube in place
- To remove the insertion tube and cervical tenaculum
- To cut the thread emerging from the cervical os length about 3 cm
- To examine the thread by the patient noted or not

Figure 1:

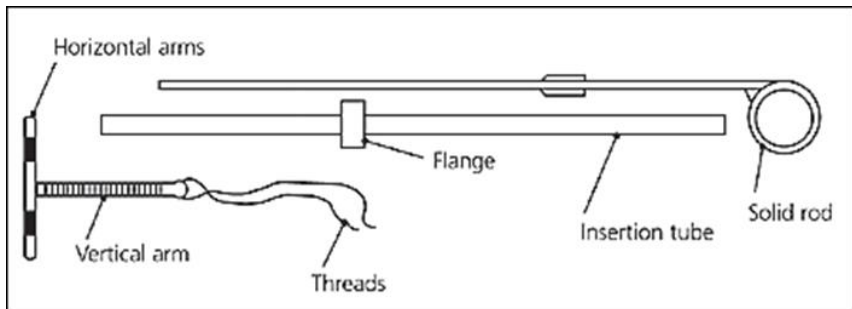


Figure 2:

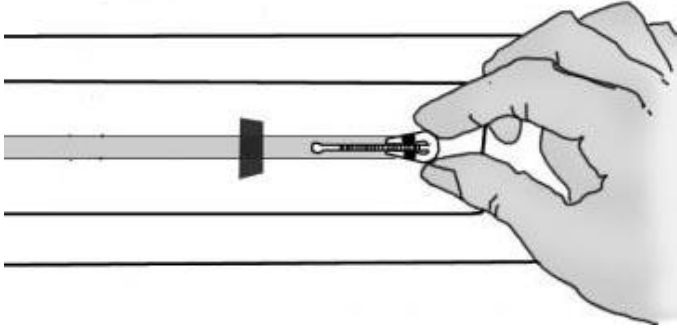


Figure 3:

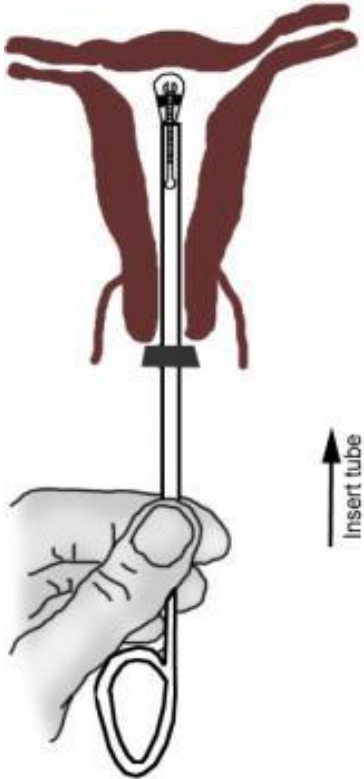


Figure 4:

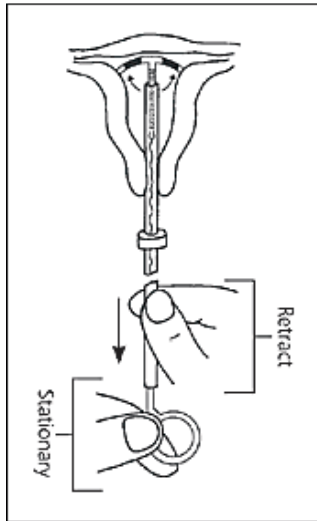
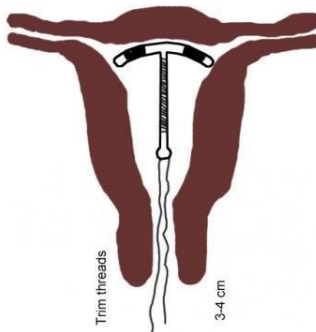


Figure 5:



Complication of IUD insertion

- Cramping
- Expulsion
- Migration of IUD
- Pelvic infection
- vasovagal reaction
- ectopic pregnancy
- bleeding
- uterine perforation

Evacuation of the retained product of conception

After the spinal or general anesthesia:

- Patient in the lithotomy position
- Clean the operation area with antiseptic solution
- Drape the operation area with sterile towels
- Empty the bladder with metal catheter
- Bimanual examination of the cervix and uterine size and position
- Use Sim's posterior vaginal wall retractor to see the cervix
- Grasp the anterior lip of the cervix with Vulsellum forceps
- Use uterine sound to measure the length of the uterine cavity
- Dilatation of the cervix with cervical dilator
- Evacuation of the product of conception with sponge forceps
- Empty the uterine cavity with curette until gritty sensation
- Check the bleeding
- Send the tissue for histopathological examination

Uterine sound



- A slender flexible sound with a small projection about 7 cm from its tip, used to estimate the length of the uterine cavity.
- It is used in most of the gynaecological procedures.

Complication:

- Perforation of the uterus

Cervical dilators



- Hegar dilators have two rounded ends, are fairly short, and are mildly curved in shape.
- Stainless steel Hegar dilators provide the option of double-ended dilators in even-millimeter increments, or from 3 to 18 for a greater diameter range over the entire set.

It is used in dilatation of the cervix in the following gynaecological procedures:

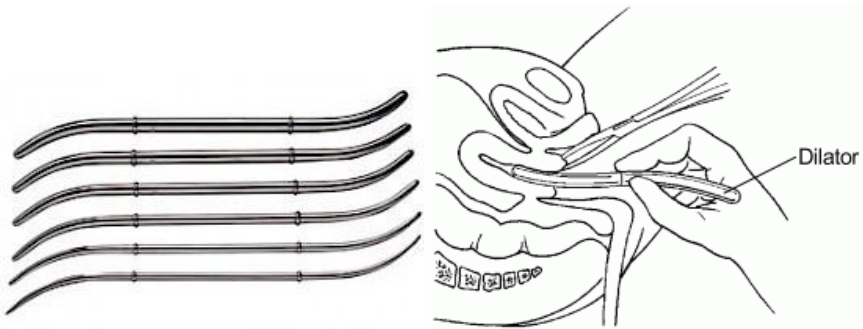
- Diagnostic dilatation and curettage
- Suction and curettage
- Tubal insufflation test
- Hysteroscopy

- Removal of retained intrauterine contraceptive device
- Miscarriage
- Primary dysmenorrhea due to cervical stenosis

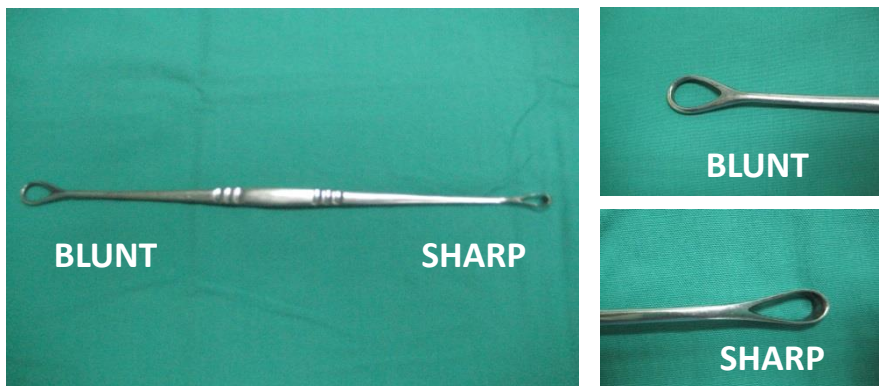
Complications:

- Uterine perforation
- Cervical incompetence

(The other name of the cervical dilator is Booney's cervical dilators)



Uterine curette



- **Blake uterine curette** is double ended, sharp and blunt.
- **Recamier uterine curette** is only one ended.

It is used for curettage the uterine cavity in following conditions:

- For diagnostic purpose in case of uterine pathology
- Missed miscarriage
- Incomplete miscarriage
- Endometrial polyp

Complications:

- Uterine perforation
- Asherman's syndrome
- Bleeding
- Infection

Vulsellum forceps



- It is a long forceps, used primarily in gynaecologic procedures to grasp (slippery) tissue and provide traction or torsion. Each tip of the forceps has hooks.

It is used in the following procedures:

- Diagnostic dilatation and curettage
- Suction and curettage
- Tubal insufflation test
- Polypectomy
- Myomectomy
- Hysteroscopy
- Vaginal hysterectomy
- Insertion of the intrauterine contraceptive device

Complications:

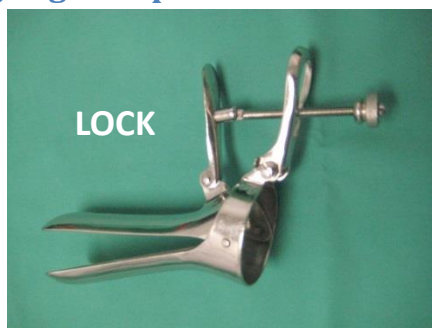
- Trauma to the cervical lip
- Bleeding

Sims' posterior vaginal wall retractor (Sims' speculum)

- The Sims vaginal speculum is a commonly used instrument in Obstetric and Gynaecological conditions; it is inserted into a woman's vagina so that the gynaecologist can get a proper visualization of the vaginal cavity to aid the diagnosis and management.
- It is also used in the left lateral position.
- It is particularly useful for examination of prolapse as it allows inspection of the vaginal walls.

It is used in following conditions:

- Extended vaginal tear
- Cervical tear or laceration
- Cervical cerclage suturing
- Dilatation and curettage
- Diagnosis for enterocele
- Hysteroscopy
- Miscarriage such as incomplete, missed, septic, etc.
- Perineal repair in case of utero-vaginal prolapse
- Tubal insufflation
- Suction and curettage
- Vaginal hysterectomy

Cusco's bivalve self-retaining vaginal speculum

A Cusco's speculum is a bi-valve speculum and which holds back the anterior and posterior walls of the vagina and allow visualization of the cervix when opened.

It has a retaining screw that can be tightened to allow the speculum to stay in place while a procedure or sample is taken from the vagina, cervix, or uterus e.g., smear or swab, endometrial sampling

The **method** of insertion of the Cusco's speculum

- Please choose the proper size of speculum for patient.
- After warming the speculum, apply lubricant, then separate the labia and keep them apart with your left hand.
- Insert the speculum is inserted with blades closed and parallel to the labia.
- Once the speculum has been inserted into the vagina it is rotated ratchet at upward and then opens.
- Usually, the cervix is immediately visible.
- The cervix should come into view as the speculum blades are opened.
- If the cervix is not seen, then some gentle adjustment of the position of the speculum may reveal the cervix.
- If the cervix is not seen, then withdraw the speculum slightly.
- Lock the blades in the open position, wide enough apart to allow complete visualization of the cervix.

- After the examination, slightly and gently withdraw the speculum to avoid entrapment of the cervix.
- Release the screw to close the blades and parallel to the labia.
- Then remove the speculum from the vagina.
- Its advantage over Sim's speculum is that no assistance is required to hold it in place.

It is used in the following conditions:

Obstetrics conditions:

- Preterm pre-labour ruptured of membrane
- Pre-labour ruptured of membrane
- Ante-partum haemorrhage
- Vaginal discharge during pregnancy

Gynaecological conditions:

- Vaginal infections
- Bleeding per-vagina
- Pap smear procedure
- Pipelle endometrial sampling
- Intrauterine contraceptive device insertion
- Carcinoma of the cervix (examination and biopsy of cervical and/or vaginal lesion)

Auvard weighed posterior vaginal wall retractor



- Auvard weighed posterior vaginal wall retractor or speculum is designed to keep the vaginal canal open and free the surgeon's hands for other procedures. It features a half-tube bent at a right angle with a spherical weight on the handle. The instruments are available in various weights and blade sizes to accommodate a wide range of cases.

Metal urethral catheter



- The metal urethral catheter is used to empty the bladder for in-out procedure before the minor gynaecological procedure.

Karman's curette



- The Karman's curette is used in suction and curettage. It is flexible and made by plastic material. It has various in size 4 mm – 12 mm. It has low risk for uterine perforation because of blunt tip.

The procedure of Dilatation and Curettage/Suction and Curettage

- Take the consent
- Counsel the patient regarding procedure and complications
- Spinal/epidural or general anesthesia
- Lithotomy position
- Clean the perineal region with 1% Cetrimide solution or 2% hibitane solution with 70% alcohol
- Drape with sterilized towel at perineal area

- Empty the bladder with metal catheter
- Bimanual examination to assess uterine position and size
- Insert the Sims speculum and visualize the cervix
- Grasp the anterior lip of the cervix with Vulsellum
- Insert the uterine sound to assess the position and length of the uterine cavity
- Dilate the cervical canal with Hegar dilators
- Curette the uterine cavity with blunt curette/ Karman's curette with suction machine
- Use the sharp end of the curette until gritty sensation
- Tissue send tissue for histopathological examination
- Note the blood loss
- Note the vital signs

Advantages of suction curettage

- Less bleeding
- Less perforation
- Less infection
- Less tissue embolization

Caution

- Avoid overzealous dilation of cervix
- Avoid overzealous curetting the uterine cavity

Myomectomy screw (Myoma screw)

- To stabilize and manipulate non-degenerating myomas, fibroids, or other tissues intended for removal during myomectomy operative procedure.

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Obstetrics: is the branch of medical science concerned with the care of women during pregnancy, childbirth, and the period of about six weeks following the birth, when the reproductive organs are recovering.

Gynecology: is the study of diseases of women and girls, particularly those affecting the female reproductive system.

Obstetrics and Gynaecological medicine has many investigation and operative procedures which are commonly used in the clinic, ward and operation theatre. The procedure of using these instruments in operations is very important for undergraduate medical and nursing students. It is also essential in daily medical life during management of the patients. This book “**Commonly used instruments and procedures in O & G**” focuses especially on the sequence and steps to be followed in the investigations and operations of Obstetric & Gynaecological cases. It contains pictures of the instruments and the steps of procedures which are very useful in daily clinical practices, viva voce and Objective Structured Clinical Examination (OSCE) examinations.

COMMONLY USED INSTRUMENTS AND

PROCEDURES IN *O&G*



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