COMMONLY USED INSTRUMENTS AND PROCEDURES IN O&G

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 investigations 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.

A/P Dr. Soe Lwin

A/P Dr. Tin Moe Nwe

Dr. Soe Lwin is a medical lecturer and specialist in Obstetrics and Gynecology and Dr. Tin Moe Nwe is a medical lecturer in Anatomical discipline at Faculty of Medicine and Health Sciences (FMHS). All are well experienced lecturers in their respective fields and their teaching experience is more than 15 years. They involve in teaching and learning activity of undergraduate medical and nursing programme in FMHS, UNIMAS.

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COMMONLY USED INSTRUMENTS AND PROCEDURES IN O&G

Second Edition

SOE LWIN

TIN MOE NWE

HADIAH

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SOE LWIN
TIN MOE NWE

UNIVERSITI MALAYSIA SARAWAK

COMMONLY
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AND
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O&G
Second Edition

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CONTENT

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 graduates during their study in medical school are well equipped to handle common instruments and procedures in Obstetrics and Gynaecology. The authors have prepared the book as a user - friendly handy and is mostly illustrated for the reader to understand the commonly used instruments and procedures in the field of basic Obstetrics and Gynaecology (O&G).

I would also like to congratulate the authors for their commitment in coming up with this first edition.

I hope medicine and nursing students will benefit and find the book useful during their Obstetrics and Gynaecology posting not only for the preparation for the O&G clinical examination but also for future practice as a 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 the 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. Not only will it serve them in medical school but it will also be of great value during their house staff training.

During their course of study, medical students rarely have the chance to observe surgeries being performed. Even when the chance presents itself, most surgeons and nurses do not have much time to explain and describe 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 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 Obstetrics and Gynaecology (O&G) in the hopes of preparing them for their surgical careers.

In this book, the detailed history 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.

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 have 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.

Associate Professor Dr. Soe Lwin
M.B.B.S (Yangon), M.Med.Sc (O & G) (Yangon)

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

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	-	Stabilising 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
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** under these conditions: -

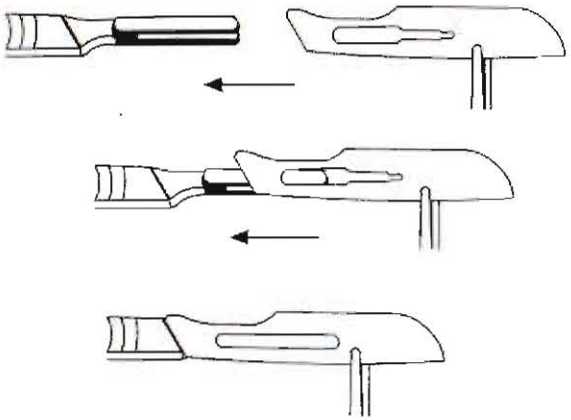
1. Prior to the start of the procedure
2. Before closure of a cavity
3. Before wound closure; and
4. At skin closure or the end of the procedure.

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: skin incision.

BLADE HOLDER

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

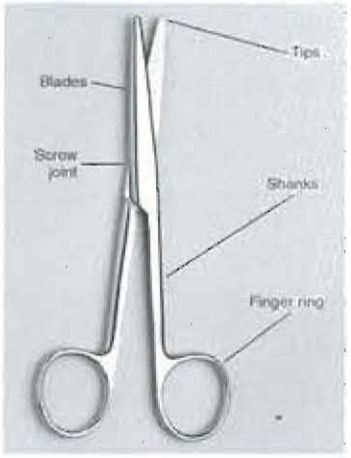


- Above diagram shows the correct way and safe to assemble the blade to the blade holder.
- There are many sizes of blade holder.
- Scalp is a sharp knife.

- 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 used 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

1. **Utility** - Cut material that may dull the blade.
2. **Suture** - Remove suture material.
3. **Surgical** - Cut soft tissue, different sizes, blades can be straight, curved, blunted or pointed.
4. **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 1/3 of instrument length.

Metzenbaum scissors

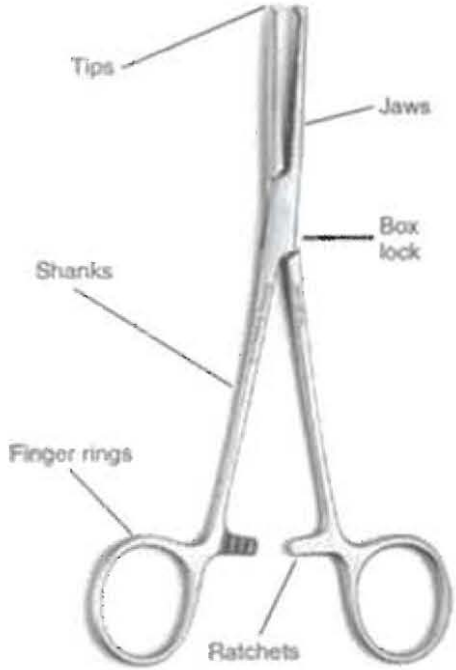
- Scissors are used to cut the delicate tissues, such as peritoneum, intestine.
- Blades are thin, delicate, and 1/4 of the overall length.
- Blades can be straight or curved.

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 bleeding 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 trauma to the tissue or organs.

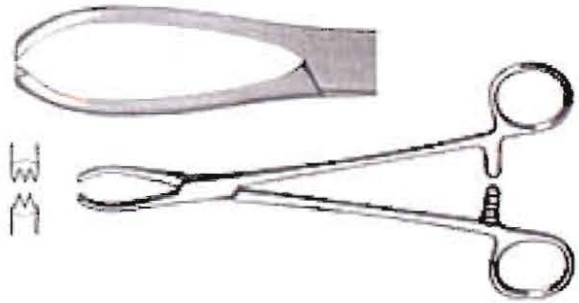
Kocher tissue holding forceps

- 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 heavyweight 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.

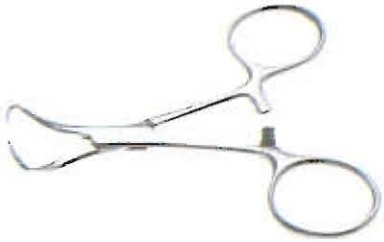
Sponges forceps

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

Cervical punch biopsy forceps

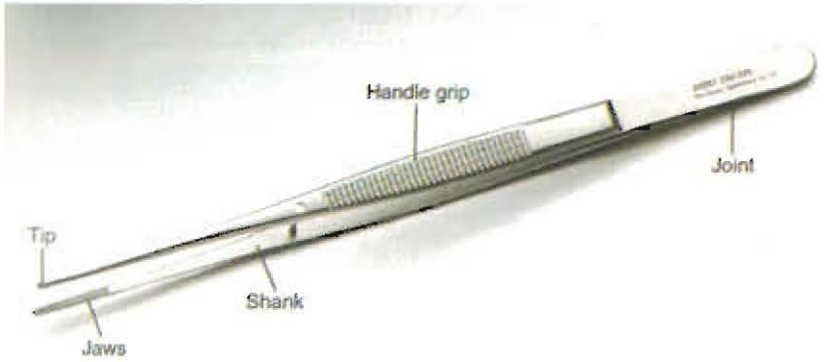
- This is a cervical punch biopsy forceps to take cervical biopsy during colposcopy.
- The bleeding at the site of biopsy should be stopped by application of silver nitrate or Monsel's paste.

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 ½" or 5 ½" size.

Dressing forceps (Non - tooth forceps)



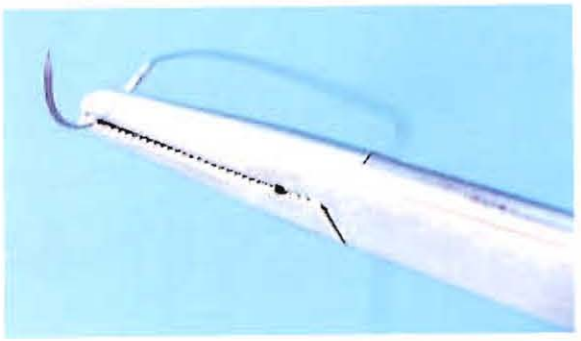
- To grasp delicate tissue while they are being sutured, dissected or excised.
- To compress the vessels during diathermy for haemostasis.
- Short smooth pick-ups are used to grasp delicate tissue like intestine.

Tissue forceps (Tooth forceps)

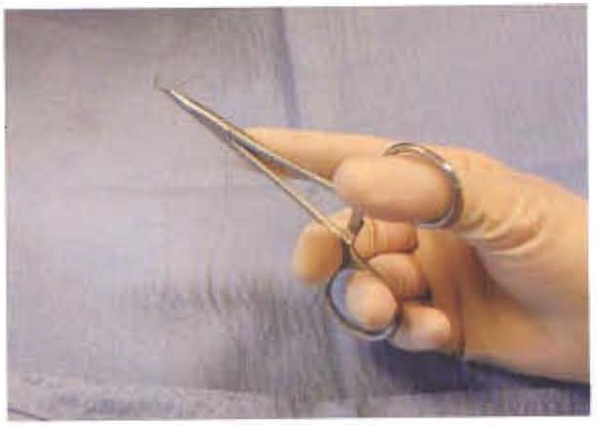
- To grasp very delicate tissue, muscle, skin, nerve or blood vessels for dissecting, suturing or excising.
- Single toothed on one side; fits between two teeth on the other side.
- Available as 1x2 or 2x3 or 3x4.

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.



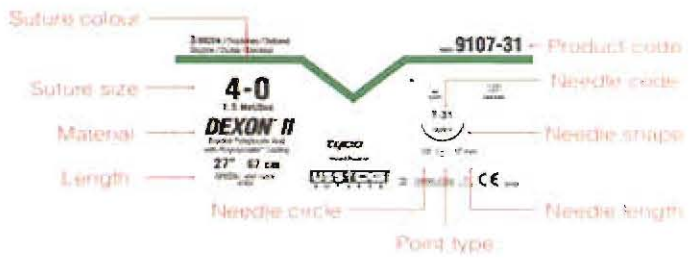
The needle must be held with needle holder at 1/3 of the needle length with 1/3 of the needle holder tip. Above photo shows how to hold the suturing needle with needle holder.

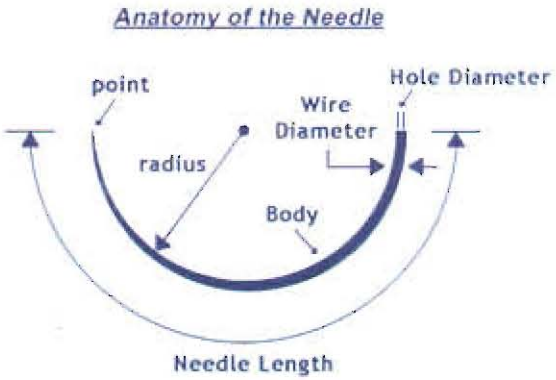


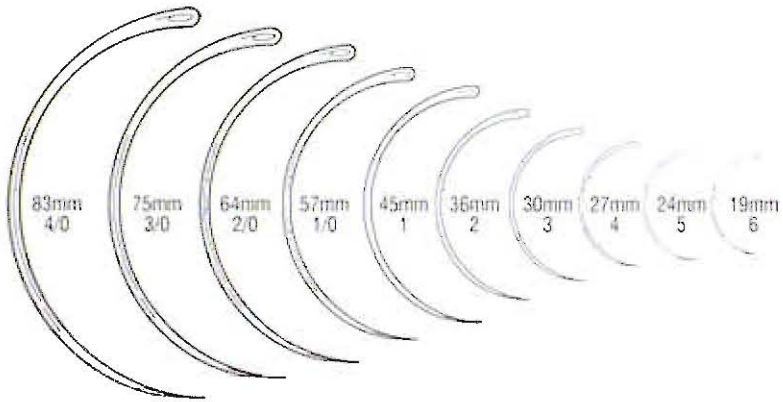
Above photo shows how to handle the needle with needle holder.

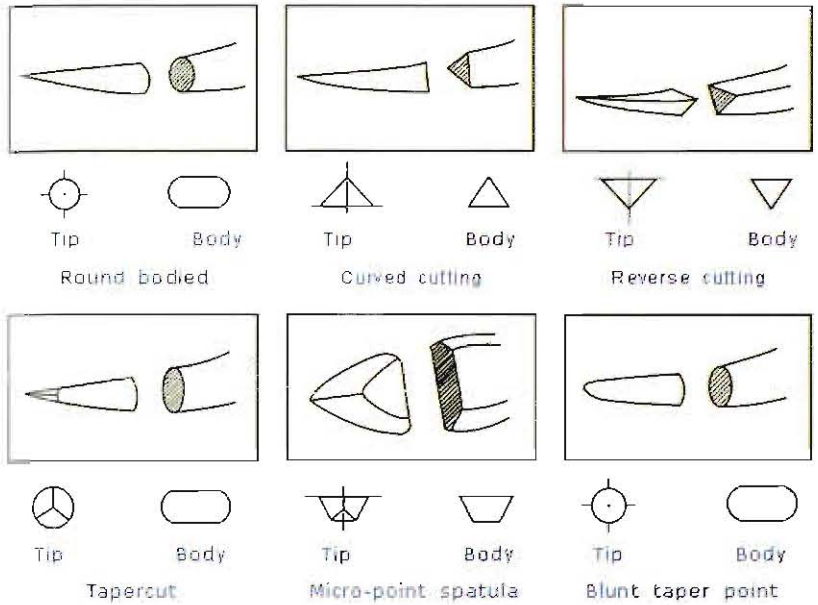
SURGICAL SUTURES

Suture packing









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 – ½ circle, 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 threads. 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
9-0	0.04
8-0	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 1: USP size

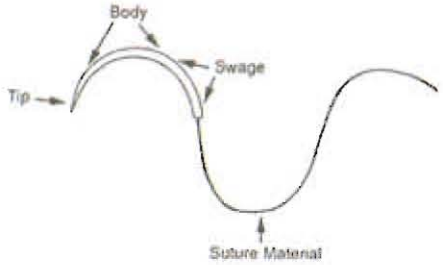
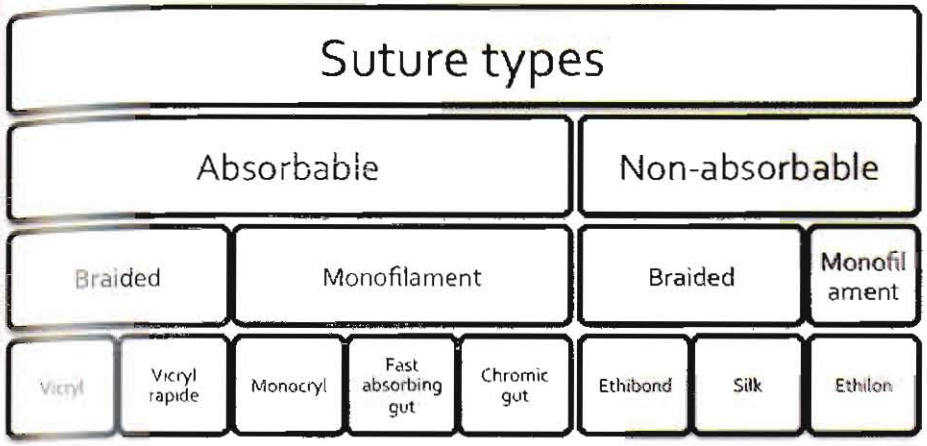


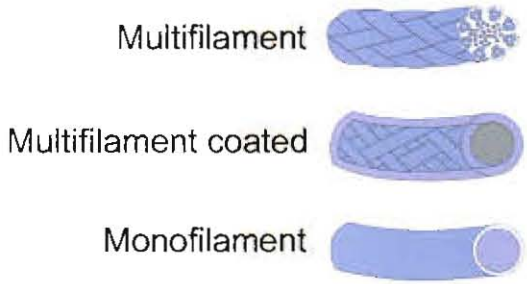
Figure 2: Anatomy of suturing needles

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





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.

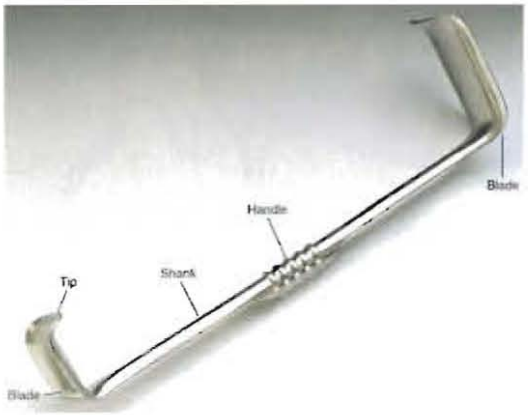
Deaver's Retractor

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

Morris retractor

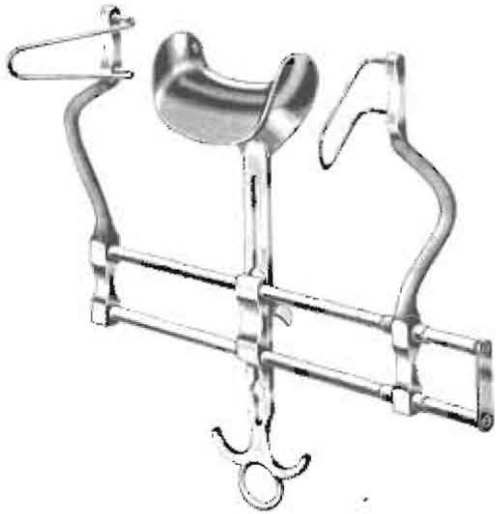
To retract abdominal wall or organs.

Farabeuf retractor



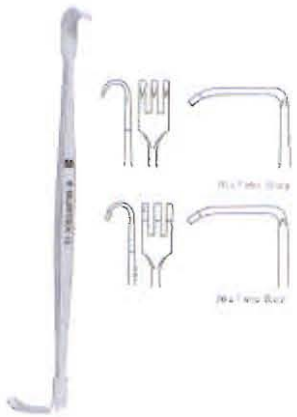
Farabeuf Double-Ended Retractor is a versatile handheld retractor that is used in many procedures. It may be used in dentistry, in wrist and hand procedures, or in hernia repair operation. The instrument is a solid piece of stainless steel with one angled blade at each end. Each blade is smooth, blunt,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



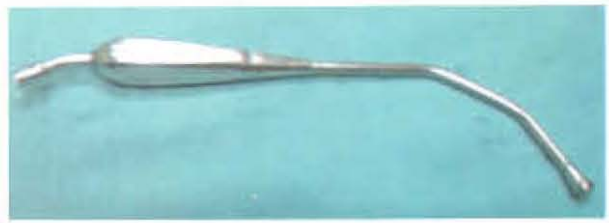
Senn-Miller Retractor is a multipurpose surgical device that allows surgeons to pull back and hold tissues away from the operating site during general surgery.

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

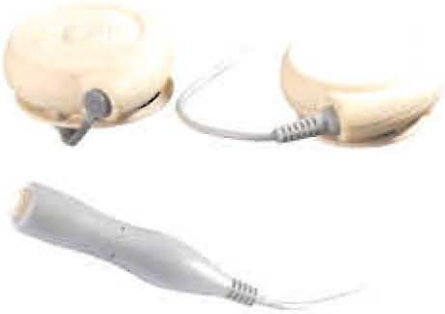
To listen the fetal heart sound and count the fetal heart rate.

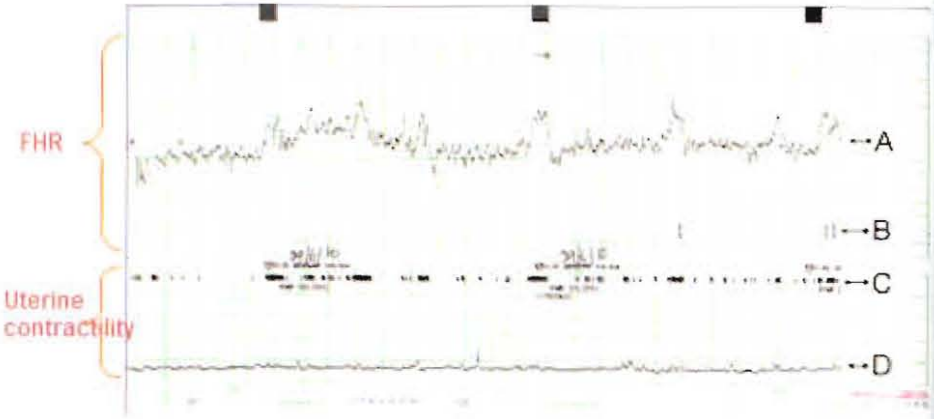
Procedure:

- Identify the anterior shoulder of the fetus.
- Apply the earpiece of the Pinard to right/left ear.
- 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 and contraction can be monitored and 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	ACCELARATION
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.