

INSTRUMENTS

For Final MBBS Part I

Compiled by

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Acknowledgement

To prepare this PowerPoint presentation, I have used the following book as resource material:

Atlas of Instruments in Otolaryngology, Head and Neck Surgery
Vikram Bhatt k, MS, DNB, MNAMS, PhD
Manjunath D, MS

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Fig. Thudicum nasal speculum

- Held over the hooked index finger of the non-dominant hand. The blades are then closed by pressing between middle and ring finger.

Thudicum Nasal Speculum

- self-retaining nasal speculum

- **USES:**

- a. Diagnostic: Anterior rhinoscopy—nasal septum, Little's area, lateral wall of nose, nasal cavity
- b. Therapeutic: removal of foreign bodies, antral wash, nasal packing, surgical procedures inside the nose.



Fig. Killian short and long bladed nasal speculum

This is a self-retaining nasal speculum and is available with blades of different sizes. The distance between the blades can be adjusted and fixed with a screw.

Killian Long Bladed Nasal Speculum

Uses:

- Diagnostic: Anterior rhinoscopy—nasal septum, Little's area, lateral wall of nose, nasal cavity.
- Therapeutic: Removal of foreign bodies, antral wash, nasal packing, surgical procedures inside the nose like polypectomy, SMR, septoplasty, etc



St. Clair Thompson posterior rhinoscopy mirror

The mirror surface is either heated or dipped in savlon (or touched against oral mucosa) in order to prevent fogging during the procedure. The tongue is depressed gently with a tongue depressor and this mirror is introduced inside like a pen with the mirror facing upwards.

USES

- Posterior rhinoscopy
- to examine the postnasal space after adenoidectomy to look for remnants if any.

This instrument has a **bayonet shaped handle** (hence differs from indirect laryngoscopy mirror) so that the examiner's hand does not block his vision. The mirror is available in sizes of 0 to 5 and should be of an appropriate size so as to pass behind soft palate and reflect sufficient light for the image to be seen. **This is a plain mirror and does not magnify the image.**



Fig. : Indirect laryngoscopy mirror

This instrument has a handle, shaft and a plain mirror at an angle. The focal length of this mirror is at infinity. The mirror is available in various sizes ranging from 8 mm to 30 mm.

The tongue is held with a dry gauze piece with the left hand. The handle of the mirror is held like a pen. The patient is asked to breathe through the mouth. The patient is asked to phonate 'eee' for observing vocal cord adduction and is asked to breathe gently for observing vocal cord abduction.

Indirect laryngoscopy mirror

USES

- For examination of tongue base, valleculae, glossoepiglottic fold, pharyngoepiglottic fold, arytenoids, aryepiglottic folds, ventricular bands, vocal cords, interarytenoid region, pyriform fossae and posterior pharyngeal wall. These regions can be examined for any foreign body, inflammatory, noninflammatory, traumatic or neoplastic lesions.
- To remove small foreign bodies like fish bone.
- To remove tissue for histopathological examination.

Indirect laryngoscopy

Structures not seen in this procedure:

- ▶ Post-cricoid region
- ▶ Apex of pyriform fossa
- ▶ Ventricles
- ▶ Undersurface of vocal cords and adjoining subglottic region
- ▶ Laryngeal surface of epiglottis.

Pitfalls of indirect laryngoscopic examination:

- ▶ There is anterior and posterior reversal of structures in the mirror image
- ▶ Overhanging of epiglottis may obscure vision
- ▶ The anterior commissure is poorly visualized
- ▶ Depth perception is poor
- ▶ The procedure is difficult in children
- ▶ The tongue may rise on phonation and may obscure the view of larynx
- ▶ The procedure is difficult in a person with short neck
- ▶ The vocal cords appear short and flat in the mirror
- ▶ The vocal cords appear white due to the reflection of a greater amount of light to the mirror from the vocal cords than the rest of the larynx.



Fig. 1.1.1 Tilley antral harpoon

USES

1. Intranasal antrostomy for the drainage of chronic maxillary sinusitis
2. As an adjunct procedure during Caldwell–Luc surgery.

Tilley Antral harpoon

It is an instrument used to make an opening in the medial wall of the maxillary antrum. The puncture is made just below the genu of the inferior turbinate where the bone is thinnest. It is held like a dagger in one hand and the index and thumb of the other hand are used for an adequate fulcrum. It has one antegrade pointing tip and three retrograde pointing tips. While the instrument is removed, a piece of bone could come out thereby enlarging the antrostome.



Tilley Antral Bur

This instrument is used to smoothen the margins of the intranasal antrostoma.

Fig. Tilley antral bur

Myle nasoantral perforator

This instrument has an antegrade and retrograde cutting edge.

It is used to enlarge the antrostomy opening created by antral harpoon.

Widening the opening posteriorly is to be avoided to prevent bleeding from sphenopalatine artery and its branches.



Fig. Myle nasoantral perforator



Higginson Syringe

It has a bulb with red rubber tubing on either side. One end of the rubber tubing ends in a valve and the other ends in a nozzle.

The valve allows only inflow of water into the bulb. The valve end is kept in water and the nozzle end is connected to the antral wash cannula. The capacity of the bulb is about 50 ml and the syringe is made up of red rubber material.

Fig. Higginson syringe

USES

- a. Antral wash
- b. Nasal douching in atrophic rhinitis.



Fig. Tilley Lichwitz trocar and cannula

Parts—handle with long pointed end, cannula with connecting end for irrigation.

USES

- Diagnostic proof puncture: to obtain aspirate of the maxillary sinus for analysis.
- To drain pus in maxillary sinusitis.
- Instillation of medicine into maxillary antrum.
- Oro-antral fistula.

Tilley Lichwitz trocar and cannula

Procedure of antral puncture: The antral puncture is done in the inferior meatus 1 cm behind the anterior end of inferior turbinate. The trocar and cannula is directed towards the outer canthus of ipsilateral eye. The trocar is now withdrawn from the cannula. The valve end of the Higginson syringe is dipped in the warm water. The bulb is squeezed and the sinus is irrigated with water after connecting the syringe to the cannula. The patient is advised to breathe through the mouth.

Jansen Bone nibbler



Fig. Jansen bone nibbler

It is used to nibble bone spicules and fragments during maxillectomy, lateral rhinotomy and Caldwell–Luc operation.

Kerrison double-action bone nibbling forceps



Fig. 1.1 : Kerrison double action bone nibbling forceps

It is used to remove spicules of bone in surgeries like Caldwell–Luc operation, Lynch–Howarth operation, maxillectomy, etc.

Asch septal forceps



Fig. : Asch septal forceps

Walsham forceps



Fig. : Walsham forceps

Asch forceps

Angled blades
No rubber tube on the tip

Gap seen between prongs on approximation
Used to elevate and straighten the septum
Stout

Walsham forceps

Straight blades
Rubber tube on one tip to protect skin

No gap seen on approximation
Used to refracture and realign the nasal bones
Smaller in size



Heymann turbinectomy scissor

This instrument is bent obtusely at the centre and has narrow blades with blunt tip and works in the vertical plane.

Uses:

- a. Partial or total turbinectomy
- b. Can be used to cut the cartilage in septal surgeries.

Fig. : Heymann turbinectomy scissors

Nasal chisel

S. No	Chisel	Osteotome
1.	Beveling only on one side	Beveling on both sides
2.	Used for chiselling pieces of bone	Used for dividing bone
3.	Cannot cut deep into a bone	Can cut deep into a bone



Fig. : Nasal chisel

Used to make bony cuts during lateral rhinotomy, maxillectomy, mandibulotomy, etc.

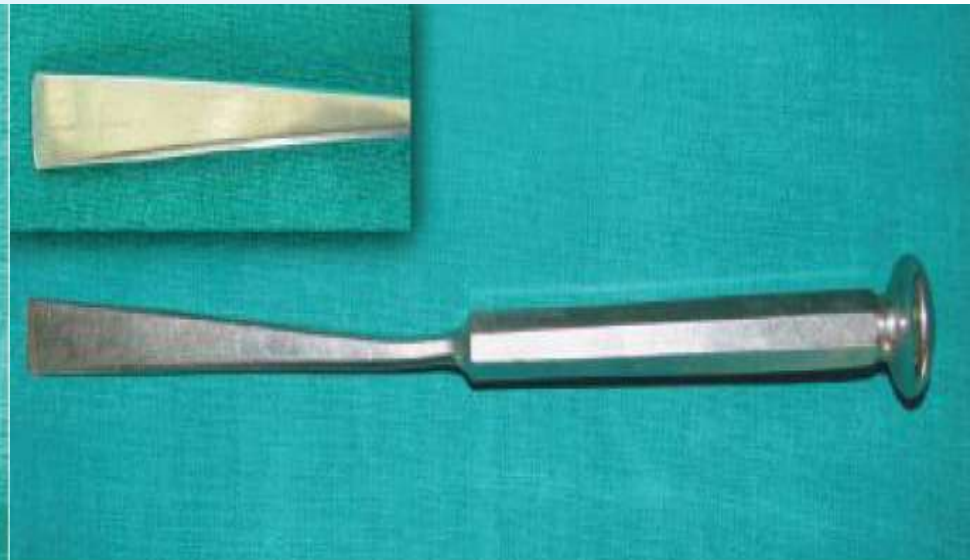


Fig. : Osteotome

Uses:

- For external osteotomy in rhinoplasty
- For osteotomy cuts in maxillectomy, mandibulectomy, etc.

Freer double ended mucoperichondrial elevator



Fig. : Freer double-ended mucoperichondrial elevator

USES

- a. To elevate mucoperichondrial and periosteal flap in septal surgeries
- b. For displacement of inferior turbinate in antrostomy operation
- c. For elevating canal skin and cartilage perichondrium in mastoid surgeries
- d. For elevation of mucosa in Caldwell–Luc operation
- e. To spread and tease temporalis fascia graft
- f. To perform uncinectomy.

Ballenger swivel knife

This is a knife that can rotate 360 degrees within its two prongs. Hence, it can be positioned without rotating the instrument and the direction can be changed. This instrument is used in submucous resection of septum and also to harvest cartilage for rhinoplasty and tympanoplasty.



Jenkin mastoid gouge

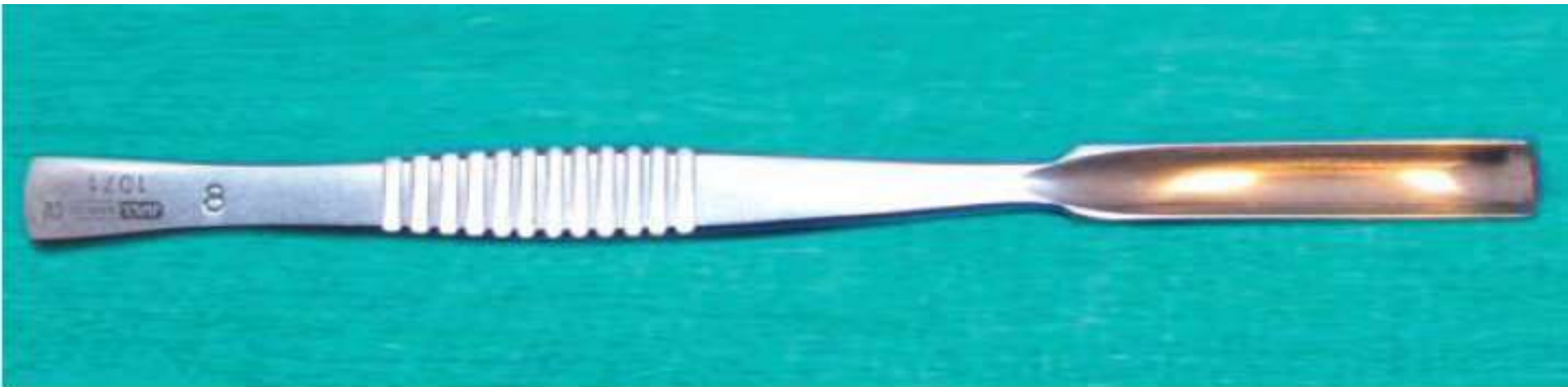


Fig. : Jenkin mastoid gouge

A gouge is an instrument with a curved rounded tip that has smooth beveling. Hence, it cuts bone in a circular pattern. It is held at an acute angle to the bone for cutting it and a mallet is used for hitting on it. The gouge has been replaced by the electrical drill in the present day.

USES

- a. Remove hard bone during mastoidectomy
- b. Caldwell–Luc operation
- c. Excision of exostosis in external auditory canal.

Heath mallet



Fig. : Heath mallet

This instrument appears like a hammer and is used along with a gouge, chisel or osteotome. The gouge is to be hit by a mallet with movement at the wrist during septal surgery.

Lempert mastoid curette



: Lempert mastoid curette

Used to curette chunks of bone from mastoid and ear canal during ear surgeries like tympanoplasty, mastoid exploration or stapedotomy. Can also be used to remove granulation tissue and cholesteatoma.

Aural speculum

Uses:

- ▶ Examination of the external ear canal and tympanic membrane
- ▶ Removal of wax, foreign body, otomycosis or ear discharge
- ▶ In operative procedures like myringotomy, myringoplasty, stapedotomy, stapedectomy
- ▶ For transcanal injections.

There are several **types of aural speculum**.

- Holmgren adjustable aural speculum This is a self-retaining adjustable aural speculum with a screw. Used for examination of ear and ear surgeries.
- Hartmann aural speculum: This is a funnel shaped speculum that has no slit on the body. The broader end is thickened for better grip.
- Rosen aural speculum This is an aural speculum with an incomplete slit on its body. The slit is useful for injections on the external canal wall with the speculum in place.
- Shea aural speculum: This aural speculum resembles Hartmann aural speculum. However, the narrow end of this speculum is beveled.
- Tumarkin aural speculum: This aural speculum has a complete split on its body to facilitate intra-aural injections into the external canal.



Fig. : Hartmann aural speculum

Fig. : Shea aural speculum

Fig. : Rosen aural speculum



Fig. : Holmgren self-retaining aural speculum

Fig. : Tumarkin aural speculum



Fig. : Hartmann tuning fork



Fig. : Gardiner tuning fork

Tuning fork

The tuning fork is struck at the junction of upper one-third and lower two-third of the prongs. The vibrating tuning fork with the prongs in the acoustic axis is placed at a distance of 2.5 cm from the auricle for air conduction. The vibrating tuning fork is then placed with the base touching the mastoid process for bone conduction. It is available in various frequencies—128, 256, 512 and 1024. **The 512 Hz tuning fork is commonly used for the following reasons.**

- It is present in the mid speech frequency range
- Overtones are minimal
- Sound is more auditory than tactile in nature
- Tone decay is optimal.

PARTS:

- Two prongs
- Shoulder
- Stem
- Base

USES

- To detect the type of hearing loss
- To make an approximate estimate of the degree of hearing loss.



Fig. : Eustachian tube catheter

Uses:

- a. To test the patency of Eustachian tube
- b. To inflate the middle ear
- c. To instill medications in the middle ear
- d. To remove foreign bodies from the nose
- e. As a suction cannula.

Eustachian tube catheter

It is a metallic catheter with a curved proximal end and a ring at its base. The opening of its curved proximal end is at its tip. This instrument is usually 12 to 15 cm long.

Ring on the proximal end indicates the direction of the tip of the catheter.

Other tests of Eustachian tube dysfunction:

- a. Valsalva maneuver
- b. Siegelization
- c. Politzerization
- d. Toynbee maneuver
- e. Frenzel maneuver
- f. Sonotubometry
- g. Impedance audiometry
- h. Radiological evaluation—X-ray, salphingography, CT scan, MRI.

Ear vectis with cerumen spud



This instrument is used to remove wax and foreign bodies from the ear. One end of this instrument has a ring vectis while the other end has a blunt curette.

Politzer myringotome

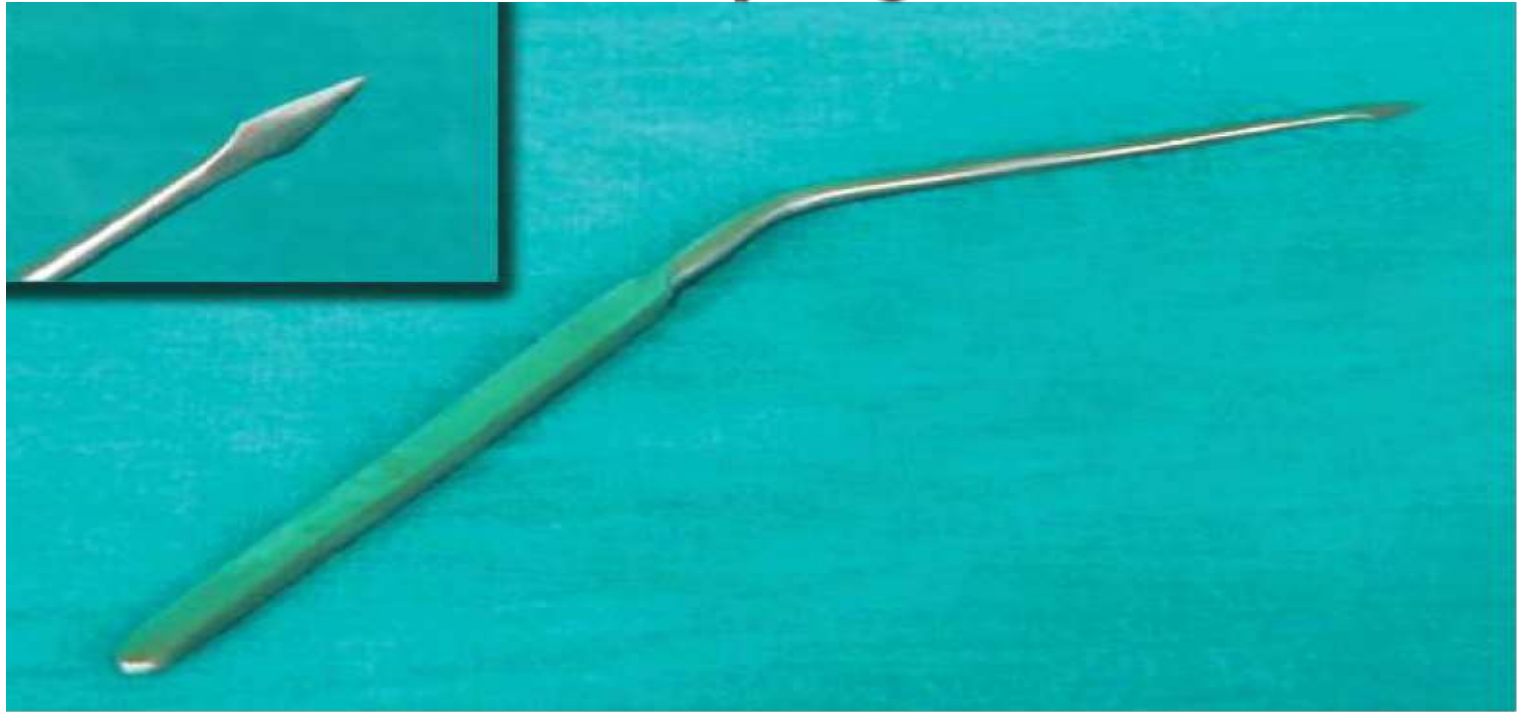


Fig. 1 : Politzer myringotome

It is an instrument used to make an incision on the tympanic membrane for serous otitis media or unresolved acute otitis media. The incision may be in the anteroinferior quadrant for serous otitis media or posteroinferior quadrant for acute otitis media. The incision is radial for serous otitis media and circumferential for acute otitis media. Ventilation tube may be inserted on this incision if required in serous otitis media.

Lucae micro-ear knife (myringotome)



Fig. 1.29: Lucae micro ear knife (Myringotome)

This is a bayonet shaped myringotome available in various sizes for adults and children.

Otoscope with pneumatic attachment



It is a hand-held battery operated instrument **used to visualize the external auditory canal, tympanic membrane and the middle ear through the tympanic perforation.** It has a **convex lens which gives a magnification of two times.** It has a fiberoptic light conveyance system for delivery of light to the aural speculum that is available in different sizes. Some of the otoscopes have a provision for attachment of pneumatic speculum for Seigelization.

Pneumatic attachment

Used for checking the mobility of the TM. Can also be used for fistula test.

Fig. : Pneumatic attachment for otoscope

Simpson's aural syringe



Fig. : Simpson aural syringe

It is a metallic syringe with a piston inside a cylindrical body and a handle.

Uses:

- a. To remove softened wax
- b. To remove non-hygroscopic foreign body and small hygroscopic foreign bodies.

Contraindications:

- a. Perforated tympanic membrane
- b. Otitis externa
- c. CSF otorrhea
- d. Large hygroscopic foreign body
- e. Atrophic or thinned out tympanic membrane.

Mollison self-retaining hemostatic mastoid retractor



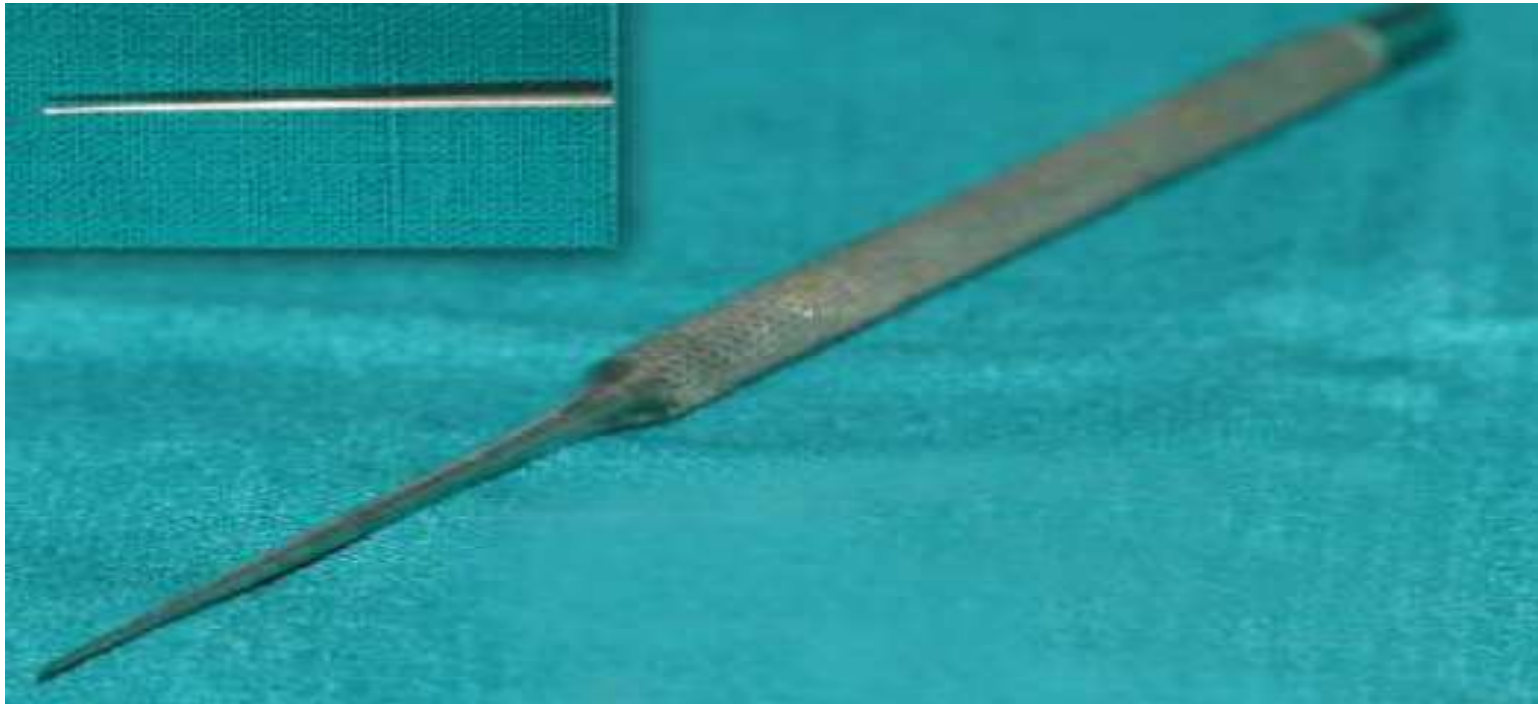
This is a self-retaining mastoid retractor with four prongs on either blade. Besides retracting the tissue and fascia from the field of operation it can also secure hemostasis by compressing the vessels.

- Mollison self-retaining 4×4 pronged mastoid retractor

Uses:

1. Harvesting temporalis fascia
2. Mastoidectomy, tympanoplasty
3. In head and neck surgeries like tracheostomy and laryngofissure.

Cawthorne micro-ear straight pick



This is a sharp straight instrument.

Uses:

- a. To clear granulation tissue and tympanosclerotic plaques in the mastoid and middle ear
- b. To spread the graft during the tympanoplasty
- c. To freshen the margins of tympanic perforation.

Plester flag knife

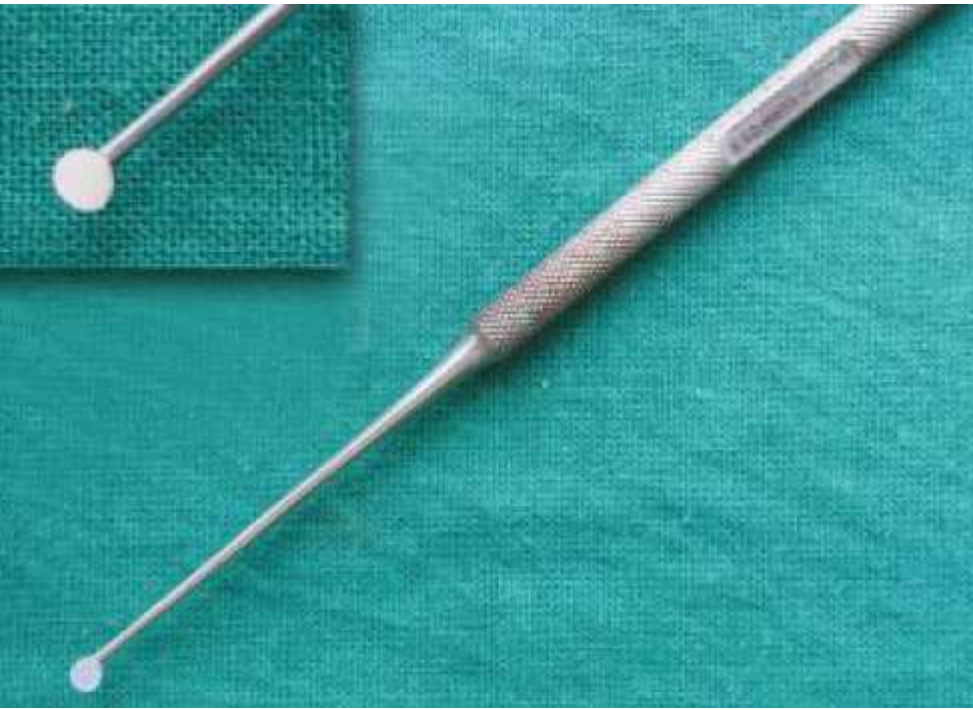


Fig. : Plester flag knife

This is a micro ear instrument used mainly to make a horizontal incision on the external canal wall skin during elevation of tympanomeatal flap.

It is also used to elevate tympanomeatal flap. Hence used in middle ear surgeries like myringoplasty, tympanoplasty and ossiculoplasty.

Rosen micro-ear round (circular) knife

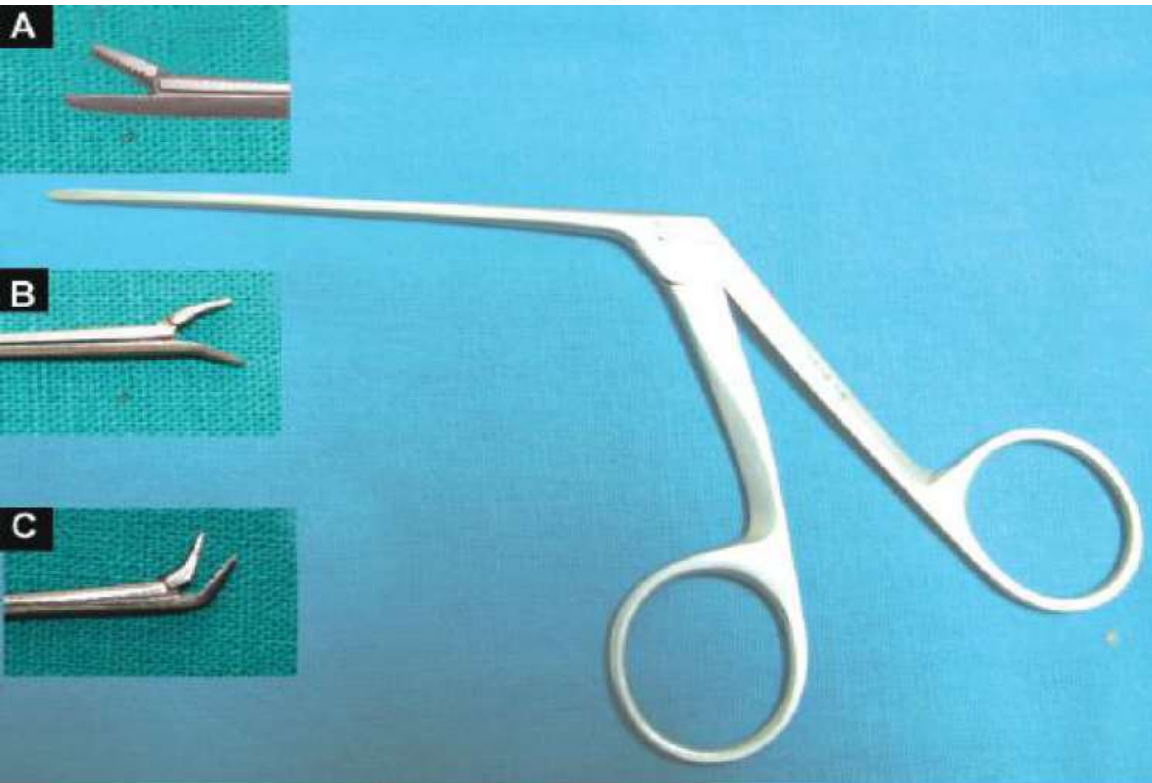


It is a micro-ear instrument that has a sharp spade like rounded tip. The upper surface of the spaded tip might be serrated for roughening the undersurface of the remnant tympanic membrane. This spaded tip might also have small vents to permit suction. The tip is bent at an angle of 120° to the shaft.

Uses:

- External canal skin tympanomeatal incision
- Elevation of tympanomeatal flap during myringoplasty, Tympanoplasty
- Freshening the margins and undersurface of the perforation during myringoplasty and tympanoplasty
- To break middle ear adhesions, especially between handle of malleus and promontory as in a case of atelectasis
- To clear granulation tissue and cholesteoma in certain hidden areas of the middle ear like facial recess and sinus tympani.

Alligator/ Crocodile forceps



Uses:

- a. To hold graft materials like temporalis fascia and transfer it from one place to another
- b. To hold and transfer gel foam and cotton pledgets
- c. To hold and transfer ossicles, teflon piston, grommet or TORP/PORP
- d. The upturned and downturned types are used to reach crevices and inaccessible areas in the middle ear and mastoid for the above purposes.
- e. FB removal, oral packing, nasal packing

This instrument is available as straight (A), downturned (B) or upturned (C) forceps. Also known as crocodile forceps.

If tip has cups, teeth or scissors then they are known as Wullstein cupped/toothed alligator forceps and micro-ear scissors respectively.

Doyen Mouth gag

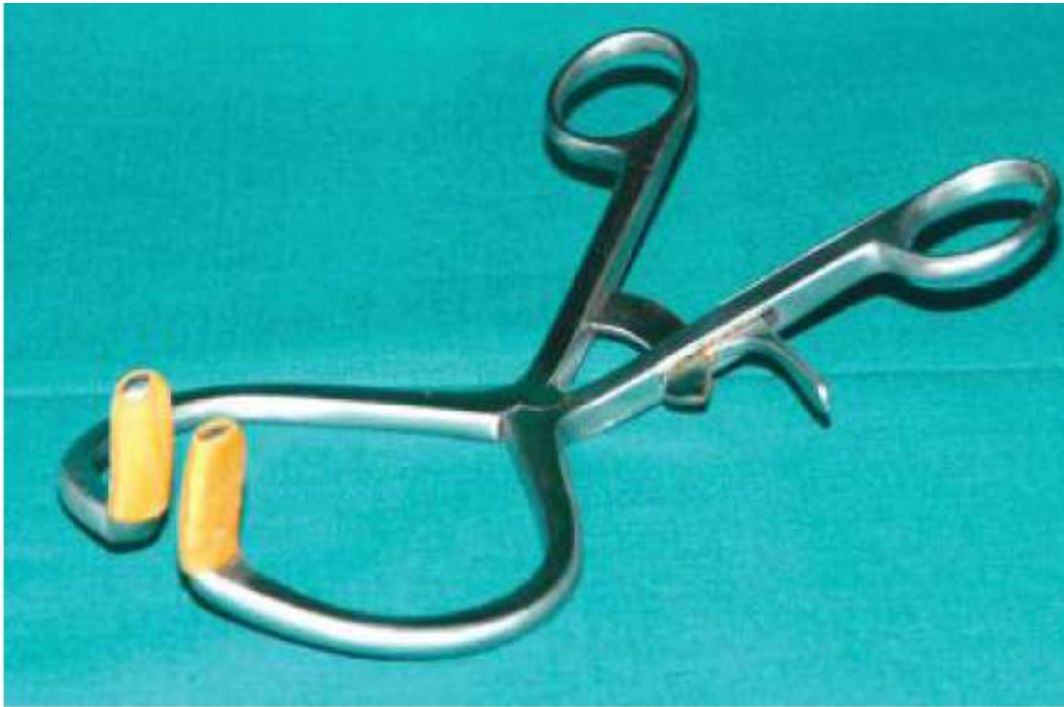


Fig. : Doyen mouth gag

It is a self-retaining mouth gag used to open the mouth by anchoring on the teeth

USES

- a. Glossectomy
- b. Soft palate and floor of the mouth surgery
- c. Tongue tie release
- d. Dental surgery.
- e. Excision of ranula, benign tumors, cysts and calculus
- f. In unconscious patients to open the mouth and prevent airway obstruction
- g. Caldwell Luc operation.

Ferguson Ackland mouth gag



Fig. : Ferguson Ackland mouth gag

This is a self-retaining mouth gag similar to Doyen mouth gag. However, the mechanism by which this gag remains open is different.

Use = same as Doyen mouth gag

Boyle Davis mouth gag with tongue blade



It has two components: Boyle blade and Davis gag that are used simultaneously. It helps to keep the mouth open and push the tongue up and away from the operation site. Upper tooth plate has small holes to which a rubber tube is sutured to prevent trauma to the incisor tooth. The mouth gag is introduced in the closed position after opening the mouth with the head extended. The mouth gag is gradually opened and the ratchet lock makes it self-retaining. The whole assembly can be lifted up and maintained in that position using Draffin bipods.

Indications:

- a. Tonsillectomy
- b. Adenoidectomy
- c. Surgeries of palate and nasopharynx
- d. Excision of choanal polyp.

Draffin bipods



Fig. : Draffin bipods

It consists of two rods with multiple rings in a row. Used to anchor and fix the Boyle Davis mouth gag for numerous oropharyngeal surgeries including adenotonsillectomy.

St. Clair Thompson adenoid curette with cage



This instrument is **used to curette the adenoids** by a blind technique. The curette is introduced behind the soft palate with the blade facing down. It is **held like a dagger** and the adenoid is curetted from the nasopharyngeal wall in the midline by sweeping movement. **The cage is used to prevent slipping of the excised tissue into the throat.** During the procedure, the neck of the patient should not be in too much extension as it might injure the atlanto-occipital joint.

Another variety without cage is called **Beckman adenoid curette.**

Colver tonsillar vulsellum forceps



This instrument is also used to hold the (upper pole of) tonsil to pull it medially prior to dissection. It is especially useful where the tonsil is friable and the grip cannot be changed repeatedly.

Mollison tonsillar blunt dissector and anterior pillar retractor



It has a blunt end used for initial non-traumatic dissection of the tonsil. The retracting end is used to retract the anterior pillar to look for bleeding points and tags of tonsillar tissue left behind.

Eve tonsillar snare



The snare has a stainless steel wire which is usually 3 inches long with a thickness of 28 gauge. It is used to snare the lower pole of the tonsil after dissection. The lower pole is crushed on snaring and thromboplastin is released which is a powerful vasoconstrictor.

(CUTTING AND CRUSHING ACTION)

Birkett straight first artery forceps

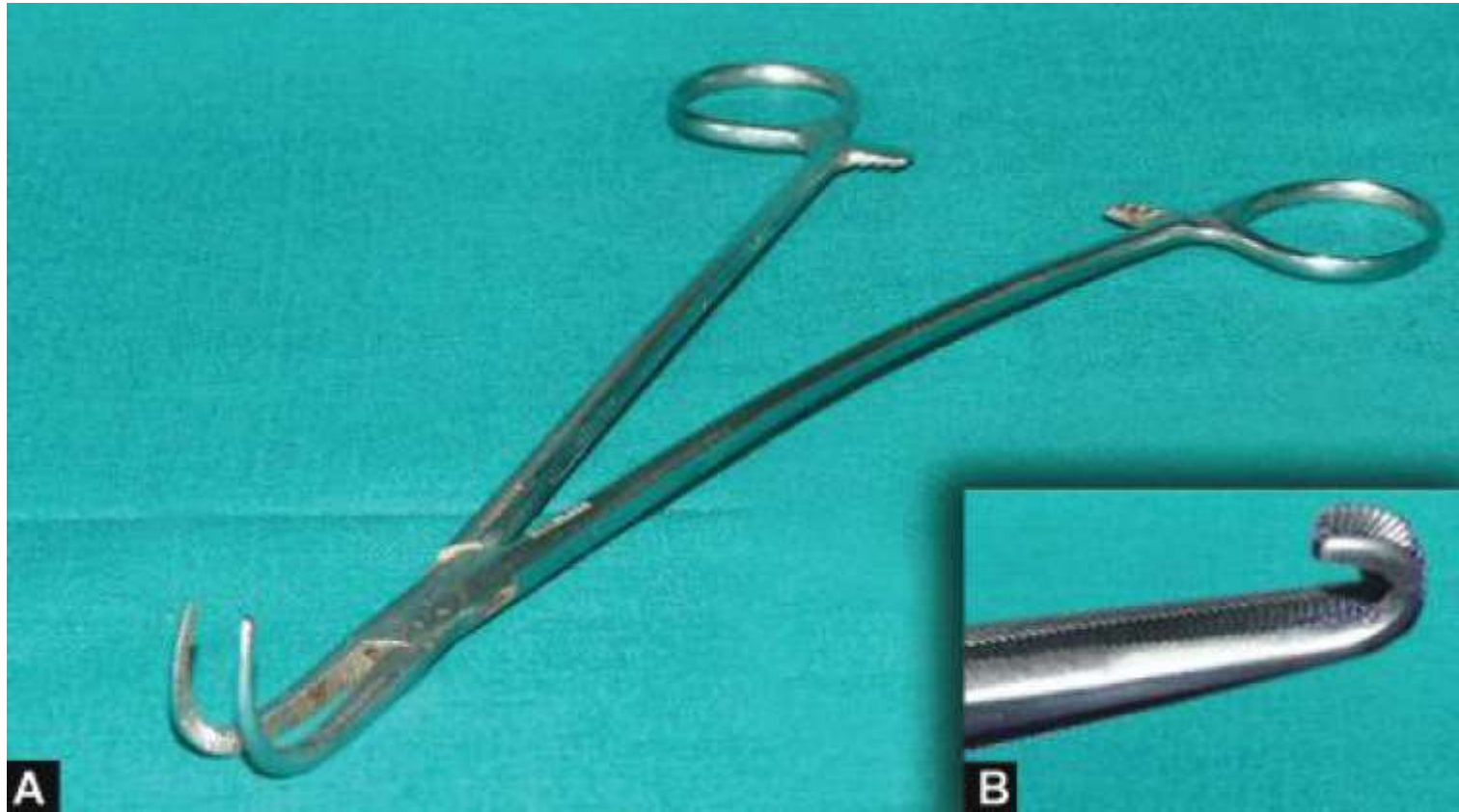


Fig. : Birkett straight first artery forceps

This is used to catch bleeding points in the tonsillar fossa after tonsillectomy. It is replaced by Negus second artery forceps underneath the first artery forceps before ligation.

TRANSVERSE SERRATIONS

Negus second curved artery forceps



It has a curved tip and is used after the first artery forceps for ligating blood vessels in a deep site.

Negus knot tier and ligature pusher/carrier



Fig. : Negus knot tier and ligature pusher

It is used to push the ligature loop on the Negus second artery forceps to ligate the bleeding point.

Waugh tenaculum forceps



It is used in tonsillectomy. The single tooth of the forceps is used to incise the anterior pillar. It can also be used for the dissection of tonsil from its bed and also as a swab holder. There is a stud in one of the arms that can be felt through a vent in the opposite arm. This is useful to note the pressure exerted at the tip.

Yankauer suction tube



Fig. : Yankauer suction tube

It is a long bent instrument with a stout handle. The tip of the tube has a rounded blunt cap with small holes. This prevents trauma to the dissection field. The bent tube enables the surgeon to visualize the dissection field better. The multiple openings in the tip of suction tube will facilitate suction even if the main opening is blocked.

This instrument is used for all oral and oropharyngeal surgeries including adenotonsillectomy besides maxillectomy, laryngectomy and other neck surgeries.

Needle holder



Fig. : Needle holder

It has two blades and a long handle with finger grip and a ratchet. The ratio of length of handle to blade is 4:1. The blade has **criss-cross serrations (or groove)** on the inner aspect to grip the needle.

Hemostatic artery forceps



This forceps is available in various sizes and may be straight or gently curved. The inner surface of the tip is transverse serrated for better grip. There is also a ratchet for locking.

Lister sinus forceps



It is a forceps resembling artery forceps but has no ratchet. The inner surfaces of the blades are serrated and the tip is blunt. It is mainly used for draining an abscess by breaking the loculi inside after making an incision.

Tilley aural forceps



Fig. 10.10: Tilley aural forceps

Serrations only at the tip of the blades. It can also be used in the nose.

Uses:

- a. For packing or unpacking the ear canal or mastoid cavity
- b. For delivery of medicated dressings into the ear canal
- c. For packing and unpacking the nose
- d. For introduction of medicated pledgets for local anesthesia in the nasal cavity
- e. Removal of foreign body/crusts/debris in the nose and ear.

Dennis brown tonsil holding forceps



Fig. 10.10 : Dennis Browne tonsil holding forceps

It is used to hold the tonsil and pull it medially during the process of dissection.

This instrument resembles Luc forceps but differs

from it in the following:

a. The edges of the jaw are blunt and do not cut tissue.

b. The upper jaw is smaller than the lower jaw.

c. The tip has a box mechanism.

Luc forceps



Fig. : Luc forceps

This forceps has a screw joint and has a fenestrated tip with sharp blades that grasp the tissue and cut it. Hence, this forceps is suitable for biopsy of various soft tissues and delicate bone.

Uses:

- a. SMR or septoplasty for removal of cartilage and bone
- b. Polypectomy and Caldwell–Luc operation
- c. Edge biopsy from oral cavity and oropharynx
- d. Turbinectomy.

Magill forceps

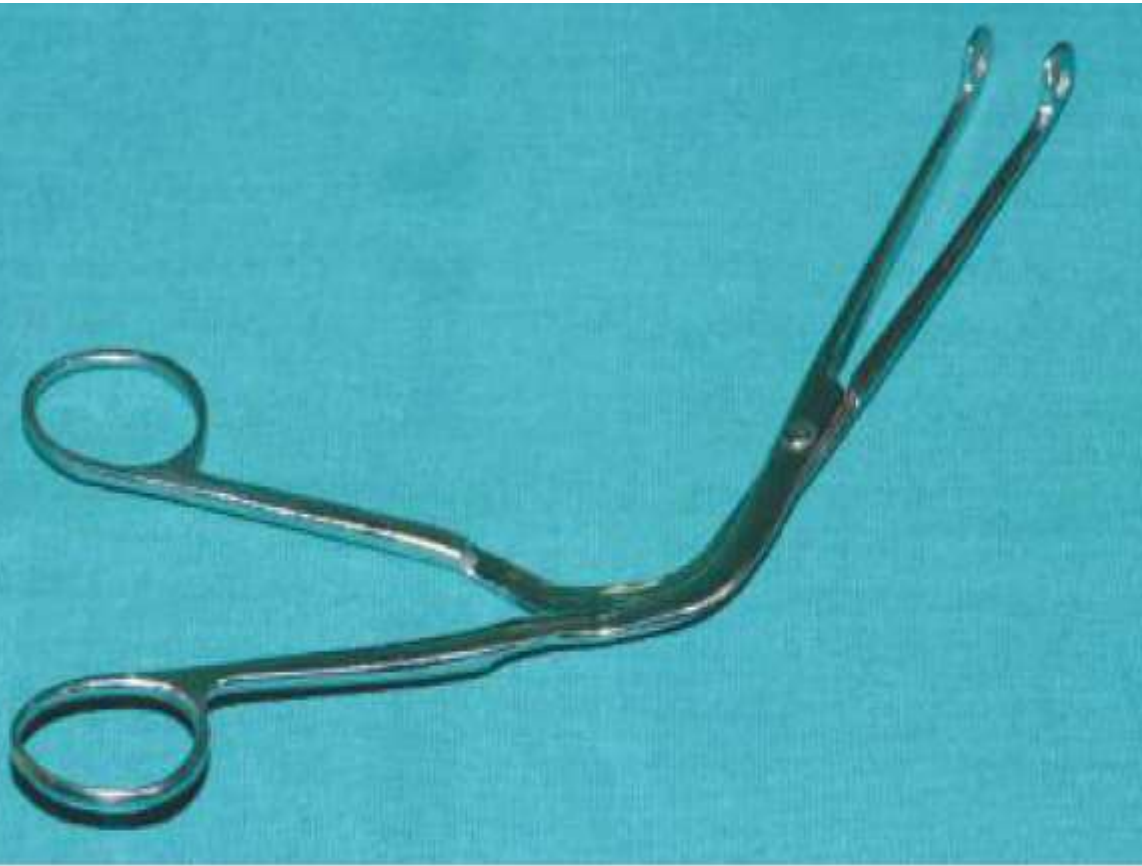


Fig. 1.1 : Magill forceps

*****DOES NOT LIE IN A PLANE**

Parts:

- a. Grip rings
- b. Stalk
- c. Fenestrated blades

Uses:

- a. To pass endotracheal tube
- b. For difficult cases of Ryle's tube insertion
- c. To remove foreign body from pharynx
- d. For throat packing.

This is an angulated forceps commonly used to orient and guide the endotracheal tube into the larynx. This angulation is done in order to prevent the obstruction to the view of the surgeon.

Lac tongue depressor



Fig. : Lac tongue depressor

It has a flat end and a slightly curved end. The flat end is placed over the anterior two-third of the tongue to depress it. The posterior one-third should not be touched in order to prevent gag reflex.

The following are its uses:

- a. Examination of oral cavity and oropharynx
- b. To retract lips and cheek
- c. To express pus out of the tonsil—septic squeeze test
- d. To test gag reflex
- e. For cold spatula test to check patency of nasal passage
- f. For posterior rhinoscopy
- g. For oral cavity procedures like injection of steroids, biopsy, excision of cysts, etc.

St. Clair Thompson quinsy forceps



Fig. : St. Clair Thompson quinsy forceps

It is bayonet shaped instrument with a sharp trocar tip. It has a guard at some distance from tip to prevent deep entry. For draining quinsy sharp tip is pierced with the forceps closed. The instrument is then opened like a sinus forceps to drain the abscess.

Collin tongue holding forceps

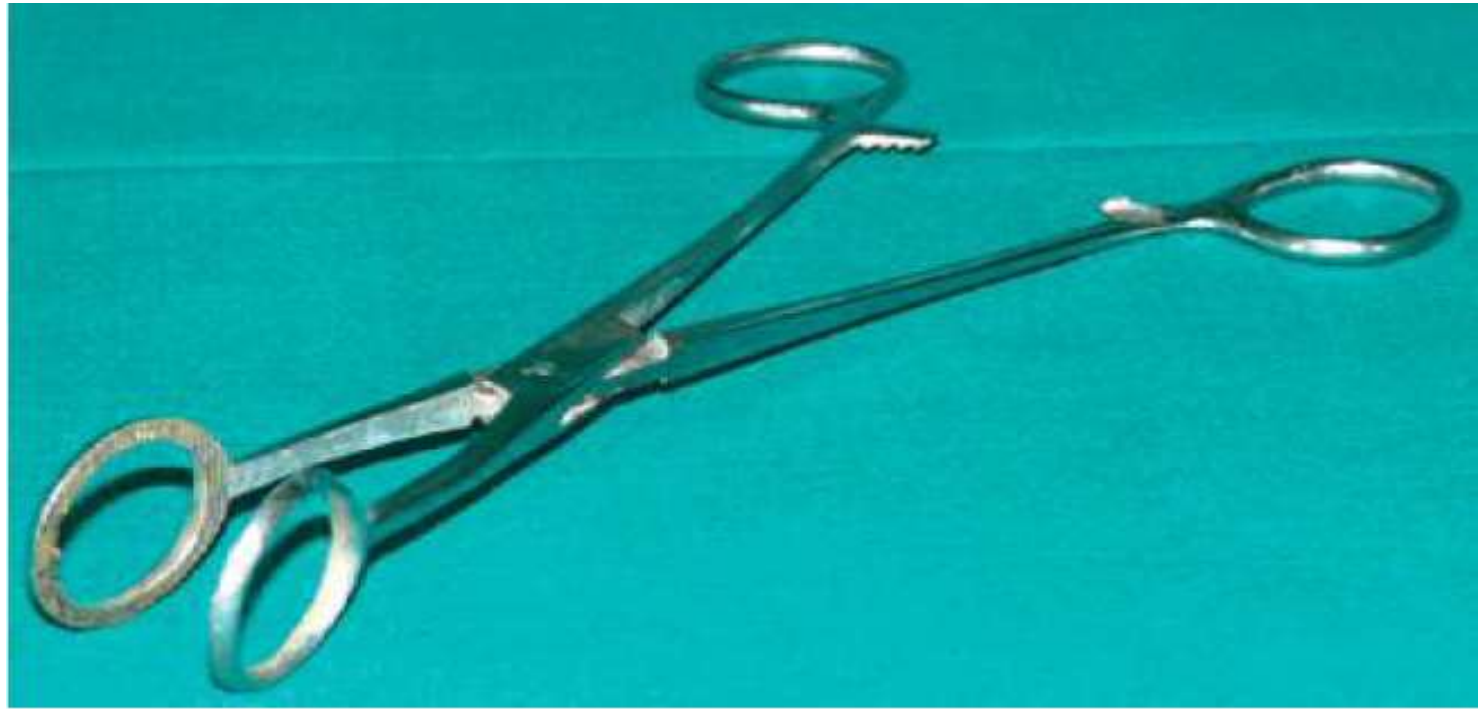


Fig. 1.1 : Collin tongue holding forceps

This is an instrument used to hold the tongue firmly without injuring it. It has a ratchet to lock and works like an artery forceps. It is used in surgeries on the tongue like hemiglossectomy, tongue tie release, excision of lingual thyroid, etc.

Yankauer nasopharyngoscope



Fig. : Yankauer nasopharyngoscope

This is an instrument used to examine the nasopharynx with the patient in the supine position and the head extended. The instrument is inserted under the soft palate and can be used to examine the nasopharynx as well as to take biopsies from the region.

This is a hollow rigid tube with a beveled end. The adult bronchoscope is about 40 to 45 cm long. It has **vents on the side** for ventilation of the other bronchus when they remain above the level of carina when inserted into the major bronchus and hence differs from esophagoscope.



Figs A to H: Bronchoscope and accessories: A. Main rigid pediatric bronchoscope; B. Fluvog adapter; C. Prismatic light deflector; D. Instrument guide for suction catheter; E. Sealing plug for respiration connector; F. Adapter for respirator; G. Glass window plug; H. Sealing cap

Rigid bronchoscope

Uses:

Diagnostic:

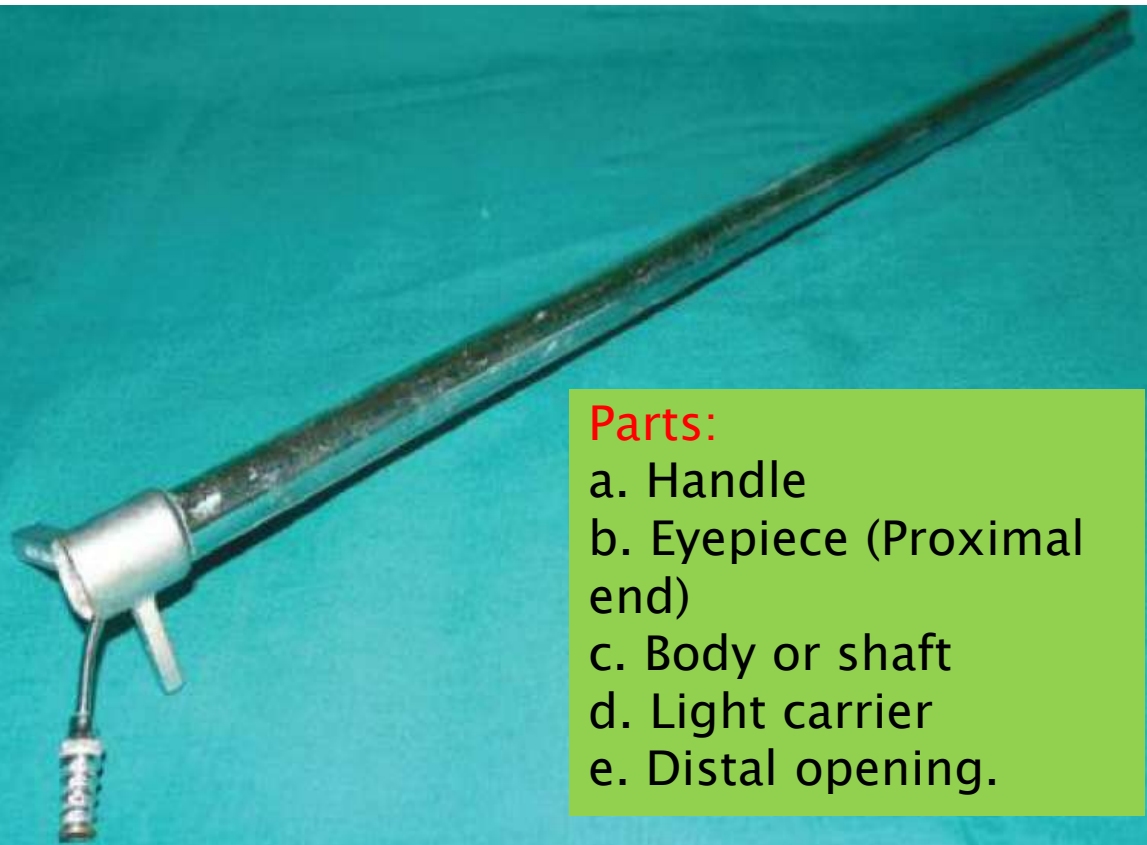
- For examination of tracheobronchial tree for pathology—growth, ulcer, stricture, etc.
- Biopsy from a suspicious growth or ulcer
- Bronchial lavage from secretions
- Bronchography
- Autofluorescence and photodynamic diagnosis.

Therapeutic:

- Foreign body removal
- Tracheobronchial stenting
- Aspiration of secretions
- Removal of tumors.

It is a long rigid hollow tube of 40 to 45 cm length and 16 to 20 mm diameter. It is available as Negus and Jackson type. The Negus type generally has double proximal illumination, tapers distally and has markings on it. The Jackson type has single distal illumination and has no markings and does not taper distally. In distal illumination, the light can get fogged due to its proximity to the distal end.

Adult rigid esophagoscope



Parts:

- a. Handle
- b. Eyepiece (Proximal end)
- c. Body or shaft
- d. Light carrier
- e. Distal opening.

Uses:

Diagnostic

- a. Malignancy
- b. Foreign body examination
- c. Cardiospasm
- d. Tracheoesophageal fistula
- e. Stricture.

Therapeutic

- a. Removal of foreign body
- b. To guide bougies through esophageal strictures
- c. Esophageal stenting
- d. Sclerosing agent injection into esophageal varices.

Direct laryngoscope

USES

- For examination of larynx, hypopharynx, cricopharynx and upper esophagus
- Removal of foreign bodies from the above regions
- For biopsy from tumors
- For excision of tumors or nodules from the glottis or supraglottis
- To assess the extent of laryngeal growth before laryngectomy.

Fig. : Direct laryngoscope

This is a 'U' shaped instrument made up of German silver. It uses a rigid fiber-optic light carrier for illumination. The position of the structures is not changed unlike indirect laryngoscopy and there is no magnification. Based on the type of illumination there are two types—Jackson and Negus.

S.No	Feature	Jackson	Negus
1.	Site of illumination	Distal	Proximal
2.	Number of illuminations	Single	Double
3.	Brightness	Less bright	More bright
4.	Fogging of light carrier	Possible	Unlikely
5.	Proximal size	Narrower	Broader

Trosseau tracheal dilator



It is an instrument used to dilate the tracheostoma during or after the tracheostomy to insert the tracheostomy tube. It allows easier introduction of the tracheostomy tube and prevents formation of a false passage.

Feature	Tracheal dilator	Artery forceps
Pressing the handle of the instrument	Opens the prongs	Closes the prongs
Ratchet	Absent	Present
Inner aspect serrations	Absent	Present

Fuller bivalved tracheostomy tube

This is a metallic tracheostomy tube and has an inner tube that is longer than the biflanged outer tube. This prevents the outer tube from getting blocked by secretions. The inner tube can easily be removed for cleaning. Also the posterior wall of the inner tube has an opening that permits the patient to breathe through the nose and phonate. The two flanges of the outer tube can be compressed for initial introduction into the trachea. Hence a pilot is not necessary for introduction. The compressed flanges of the outer tube hold the inner tube in place and prevent it from getting coughed out. Hence a lock system is not required in this tube.

Parts:

- a. Biflanged outer tube: collar present to tie ropes
- b. Inner tube: has two circular rings to grasp, remove and insert the tube.



Disadvantages:

- a. The tip of the flanges can injure the tracheal wall
- b. Flanges can break after long use and present as foreign bodies
- c. There is a risk of granulation tissue formation.



Jackson Tracheostomy tube

Parts:

- a. Inner tube
- b. Outer tube: Contains a collar and a locking mechanism
- c. Pilot obturator

Disadvantages:

- a. Phonation is not possible
- b. The patency of the natural air passage cannot be checked by blocking the tube
- c. There is a risk of granulation tissue formation.

There is a pilot for introducing the tube into the trachea so that injury is not caused to the posterior wall

The French gauge (FG or FR) is three times the outer diameter (millimeters) of the tube. This FG system is commonly followed for identifying the number of metal tracheostomy tube.

Feature	Fuller tracheostomy tube	Jackson tracheostomy tube
Outer tube	Biflanged	No flanges
Lock for inner tube	Absent	Present
Vent for breathing and phonation on inner tube	Present	Absent
Pilot for introduction	Absent	Present

Non-metallic portex tracheostomy tubes vs metallic ones:

Advantages of portex tubes:

- ▶ Made up of soft material, hence less damaging to the tracheal wall
- ▶ Since it has a cuff it is particularly useful for intensive care unit patients
- ▶ It is useful during radiotherapy
- ▶ It has a blue radiopaque line all along the tube for radiological detection of the site of the tube.

Disadvantages of portex tubes:

- ▶ Cleaning the tube is more difficult—requires removal
- ▶ Phonation not possible usually
- ▶ Checking the patency of natural air passage is not possible
- ▶ Cuff might injure the tracheal wall (tracheal necrosis) if overinflated and left for a longer period of time. Pressure should be preferably less than 30 mm of Hg.

Head mirror



It consists of a plastic headband to which is attached adjustable concave mirror with a central hole.

The diameter of the mirror is 9 cm while that of the central aperture is 2 cm and the focal length of the mirror is approximately 18 cm.

when parallel rays of light from the Bull's lamp impinge on the concave mirror, the light rays converge at the focal point of the mirror. The advantage of wearing this head mirror is that it keeps both hands free for procedures. However, the head has to be kept fixed and cannot be moved to any position like the headlight.

Bull's lamp



This consists of a metal box with vents within which is kept a 100 W bulb. The light rays come out through a central opening.

This opening has a biconvex lens of approximately 30 to 40 cm focal length. The lamp is placed 30 cm behind the left ear of the patient. The lamp can be adjusted to focus the rays on the head mirror.

Fig. : Bull lamp

Bard Parker handle



Fig. : Bard Parker handle

Used to attach blades of various numbers for surgical incisions.

Commonly used blades are No. 10,11,12,15. (No. 12 blade may be used for tonsillectomy)



THANK YOU!!!!!!