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Summary: **EAR SURGERY**

EAR SURGERY

The **ear** is the organ of hearing and balance. It is divided into three (3) parts: -

A. Outer ear consists of: -

1) Pinna (auricle) catches and direct sound wave to middle ear. Pinna consists of cartilaginous flap covered on both sides with skin,ventrally the cartilage into a tube that supports the superficial part of the external acoustic meatus.
2) External auditory meatus: - the passage way from pinna to middle ear, consist of both cartilaginous, osseous tissue and have vertical with horizontal canals.
3) The auricular cartilage is the elastic type ,the free edge of the cartilage is called helix,it is divided into medial and lateral parts that unite at the apex. The anthelix is a low horizontal ridge,with a prominent tubercle ,located on the medial wall of the entrance into the ear canal.Opposite the anthelix and forming the lateral wall of the entrance is a plate of dense cartilage called tragus .the antitragus is a thin cartilaginous plate caudal to the tragus and separated from it by the intertragic notch.

B. Middle ear (tympanic cavity) consists of:

1) Tympanic membrane: - thin membrane that is vibrated by sound waves.
2) Auditory ossicles: - three (3) small bones (stapes, incus and malleus) are extending from tympanic membrane to oval window of cochlea; they transmit and amplify vibrations of tympanic membrane and connects to the pharynx via auditory tube (Eustachian tube).

C. Inner ear responsible for hearing and body balance. It is consists of:-

1) Bony labyrinth: - series of cavities includes vestibule, cochlea and semicircular canals that contain perilymph.
2) Membranous labyrinth: - series of tubes and sacs is containing endolymph responsible for equilibrium.

BLOOD SUPPLY:

The medial ,intermediate and lateral branches of the caudal auricular artery and vein supply and drain the auricle . these are branches of external carotid artery and internal maxillary .The distal portion of these vessels lie in the loose subcutaneous tissue on the convex surface of the ear flap is more firmly attached to the auricular cartilage .when injured ,small vessels between the skin and cartilage may be ruptured and hematoma can result.

NERVE SUPPLY :

1.Second cervical nerve innervate convex surface.
2.Auriculotemporal branches of trigeminal nerve innervate concave surface.

-The helix bordred scapha on three sides .
-Anthelix bordered scapha on the fourth sides by a ridge and prominent tubercles(anthelix).
-funnel shaped cavun conchae forms the vertical canal and long with trageal ,antitrageal and antihelix it forming the external auditory meatus.

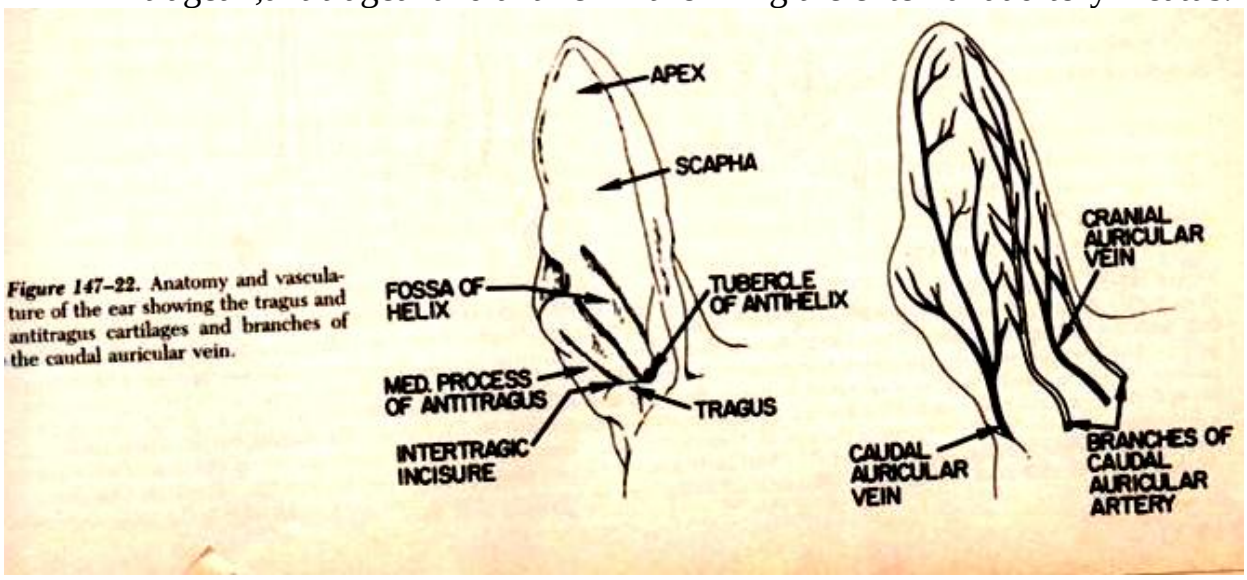
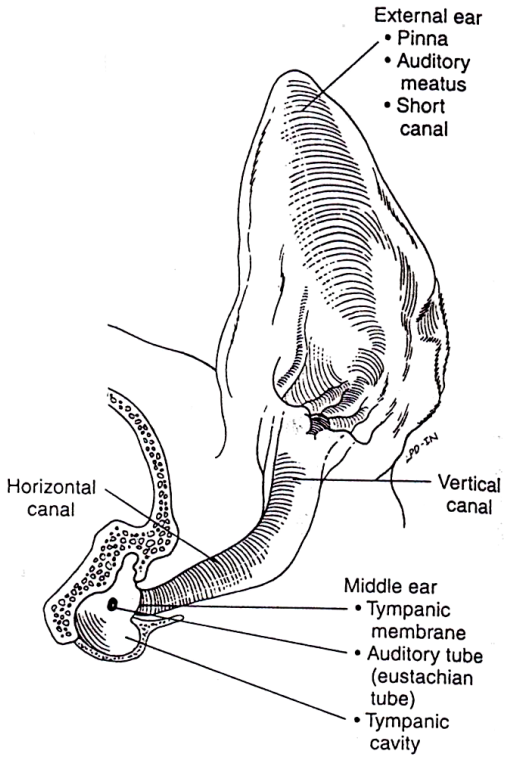
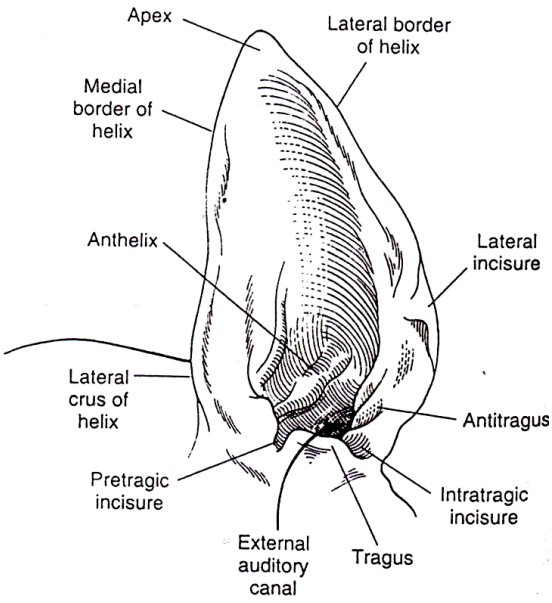
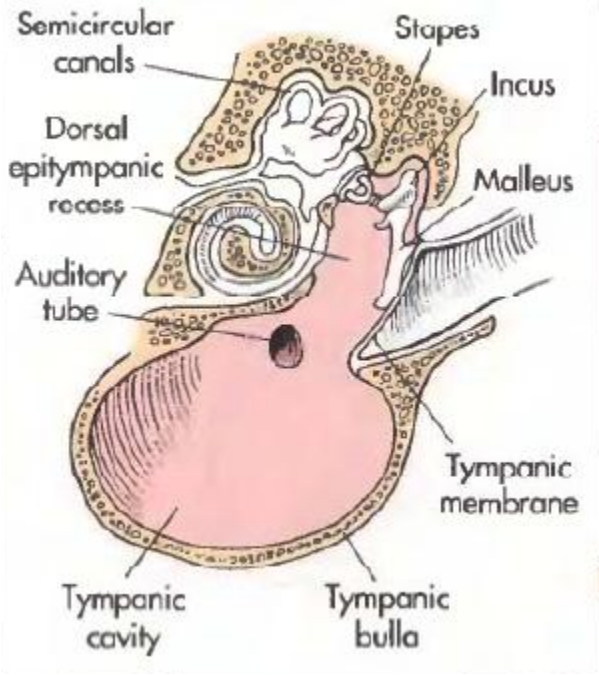


Figure 147–22. Anatomy and vasculature of the ear showing the tragus and antitragus cartilages and branches of the caudal auricular vein.


External ear
• Pinna
• Auditory meatus
• Short canal
Horizontal canal
Vertical canal
Middle ear
• Tympanic membrane
• Auditory tube (eustachian tube)
• Tympanic cavity


Apex
Lateral border of helix
Medial border of helix
Anthelix
Lateral incisure
Lateral crus of helix
Antitragus
Pretragic incisure
Intratragic incisure
External auditory canal
Tragus



EAR AFFECTIONS

Usually ear affections can be divided into two categories according to their origins:

1. Congenital affections.
2. Acquired affections.

Congenital affections of ear: -

1. Microtia……. Abnormally small ear.
2. Macrotia …….abnormally large ear.
3. Anotia …….complete absence of ear flap and some times external auditory meatus, mostly accompanied with anophthalmia.
4. Occlusion of external ear canal by membrane: the presence of this membrane is normal until 14-17 days of age but over of his period may cause problems. Complete occlusion lead to deafness while partial occlusion may lead to loss of hearing and more susceptible to otitis externa.
5. Abnormal position, size, shape of ear flap(erect, semierect, or pendulous).
6. Dentigerous cyst (temporal odontoma) means ectopic, incomplete develop tooth within the cyst near mastoid process

of temporal bone, this cyst is recognize by presence of a sinus tract at the base of ear.

7. Treatment: make incision over the tract followed by blunt dissection and removal of cyst then suture.
8. Deafness either congenital or acquire causes:
   The acquired causes such as Canine distemper, prolonged use of some drugs eg. Salicylates, streptomycin and inflammation of tonsils and pharynx leading to otitis media.

Acquired affections of ear:

The most acquired affections include:

1. Wounds, avulsion, laceration and traumatic lesions of ear flap.
2. Aural haematoma.
3. Neoplasm.
4. Inflammatory polyps.
5. Otitis (externa, media and interna)

Causes of ear disease

The most common causes of ear disease include the following:

1. allergies eg food allergy, it is a fact that ear problem may be the first signs of allergy so we have to treat the allergy first then ear.
2. Parasites: including ear mite Otodectes cynotis. The most common leading to itching and scratching ear causing trauma to ear.
3. Bacteria and yeast: causing ear infection. The normal, healthy ear has good defense against these organisms but if ear environmental changes due to allergies, hormone abnormalities, or moisture, the bacteria and yeast multiply and break down this defense
4. Foreign bodies eg. plant awns, when enter to ear canal causes irritation so the animal scratches and affect it is ear.
5. Trauma: self inflected trauma due to scratching can exaggerate ear problem.
6. Hormonal abnormalities: deficiencies or excess various hormones can lead to skin ear problems, eg. Thyroid hormone, glucocorticoids and sex hormones.
7. Ear environment: changing in worm, darkness, moisture of ear canal result in bacteria and yeas multiplication eg excess moisture lead to ear problem.
8. Hereditary, immune conditions and tumors: various diseases including dermatomycositis, squamous cell carcinoma, and melanoma can lead to ear problems.

Acquired Affections

1. Wounds, avulsions, lacerations and other traumatic lesions of ear flap:

These affections of ear is usually due to fighting or other trauma; these wounds may be superficial, involving the skin on one surface of ear only, or may perforate the cartilage and involve both skin surface (laceration)

Superficial and lacerative wounds:

Treated by: 1- Cleaning, debridement, suturing and bandaging.

2- Left to heal by secondary intention.

Aural haematoma:

Aural haematoma is a collection of blood within the cartilage plate of ear characterized as a thick, fluctuant, fluid-filled swellings with demarcated edges on concave surface of the pinna and may extend to convex surface. In chronic case the ear becomes thickened, deformed and cauliflower shaped. The blood collected as a result of scratching and head shaking due to pain or irritation in ear due to inflammation, mites, foreign body. This scratching will lead to injury of auricular artery and collection of blood. Haematoma may be also associated with increased capillary fragility.

Treatment of aural haematoma:

First we have to identify the cause of irritation and pain in order to prevent the recurrence.

Treatment options include:

a- Needle aspiration and bandage: used with acute small haematoma performed by using a syringe to remove the contents of haematoma then bandage.

1.The area is shaved and cleaned ,an antiseptic is applied.

2.A sterile 15-18 gauge needle is inserted into the hematoma and the contents is removed.

3.Aspiration is repeated as often as necessary (2-3 times) weekly until serum no longer accumulates.

4.Aprotective bandage should be applied with pressure exerted over the area of the hematoma.

Such treatment avoids because severe scarring of the ear flap and is time consuming and likely to fail.

b-Tube or cannula drainage: placing a tube or cannula in to the haematoma to provide drainage of contents for several weeks

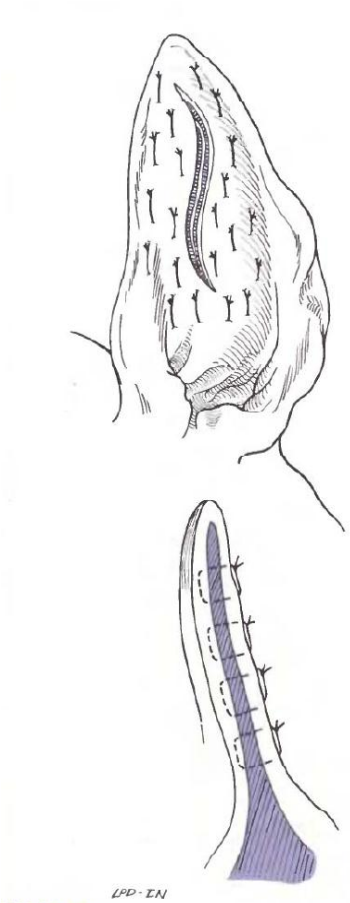


FIG. 14-19
Sutures should be placed vertically rather than horizontally for aural hematoma repair. They may be placed through the cartilage without incorporating the skin on the convex surface of the ear, or they may be full-thickness.

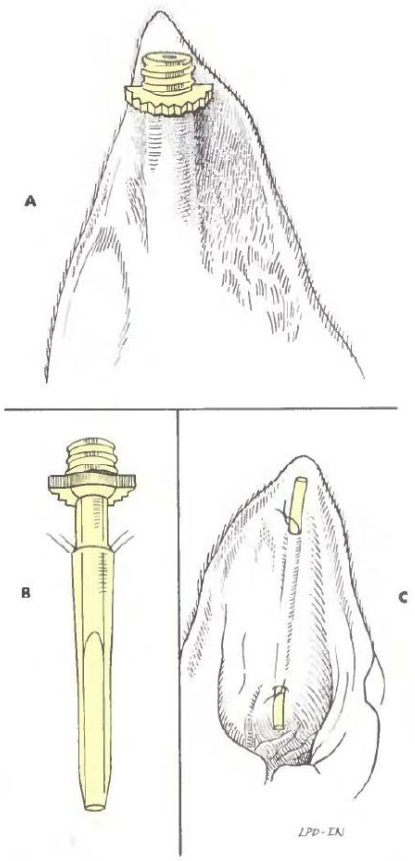


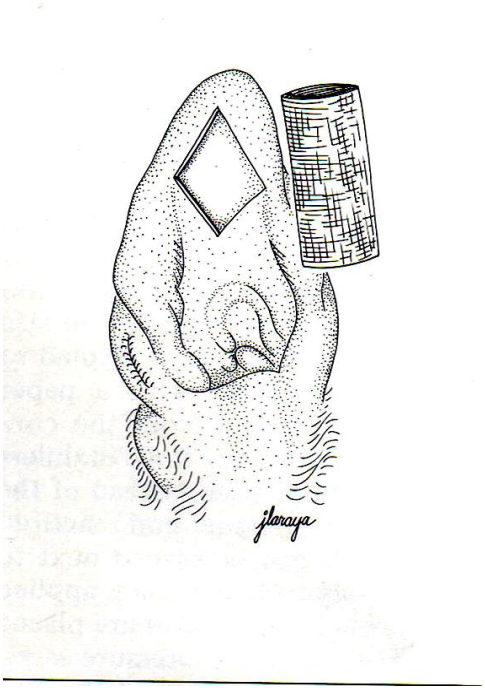
FIG. 14-20
A, If there is minimal fibrin present a teat cannula can be used for aural hematoma repair. **B,** Trim half of the collar of the cannula to allow the tube to rest comfortably against the ear. **C,** Alternatively, a ¼-inch fenestrated latex drain can be used.

C. Surgical technique:

The surgical treatment involves incision the skin ,removing the blood clot ,providing for continued drainage and applying enough pressure to keep the tissue in apposition so that scarring will be minimal and the best results are obtained if surgery is performed 10-14 days after formation of the hematoma.there usually is less hemorrhage at this time and less chance of recurrence.

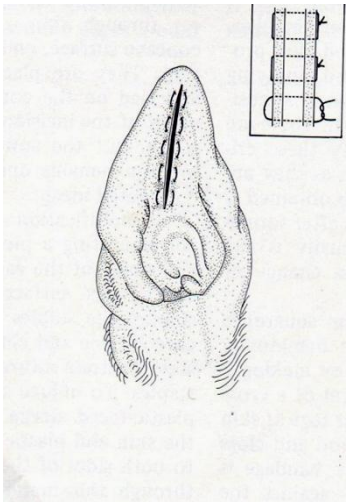
A.Cross incision:

Asection of skin (1-1.5cm) square is removed from the area over the hematoma. This accomplished most easily by macking 2 incision (1-1.5cm)in the form of a cross and cutting the triangular tags of skin thus formed with scissors .the blood and clots are then removed and pressure bandage is applied to hold the skin firmly against the cartilage .



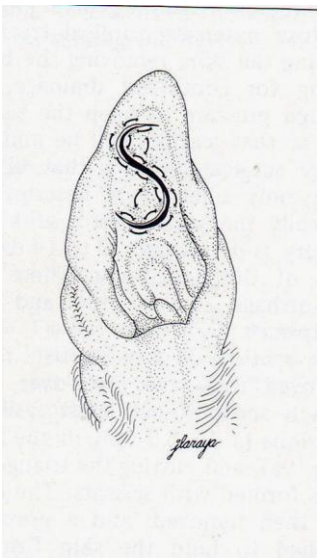
B.longitudinal incision:

The better method is to make a longitudinal incision on the concave surface of the ear flap over the full length of the hematoma and the incision is widened to form an ellipse by trimming the skin on each side of the incision for a distance of at least 2mm .the contents of the hematoma are then removed .the wound is not sutured ,but a firm pressure –pack with gauze is applied ,through and through mattres suture are inserted .the suture should extend from the convex surface of the ear through skin ,cartilage and skin on the concave surface ,emerging 8mm from the incision,they are placed parallel to the incision and tied on the convex surface .the edges of the incision are brought into apposition ,but the suture are placed so that the incision remains open.



C. Modified method (macking s-shape):

Incision is closed with through and through mattress suture using stainless steel wire.



<u>Postoperative care:</u>

1.Changing the dressings as needed usually every 3 days.
2.Suture should be removed on the 7-10 postoperative day.
d-Laser treatment: by using carbon dioxide laser