University of Mosul
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Date:
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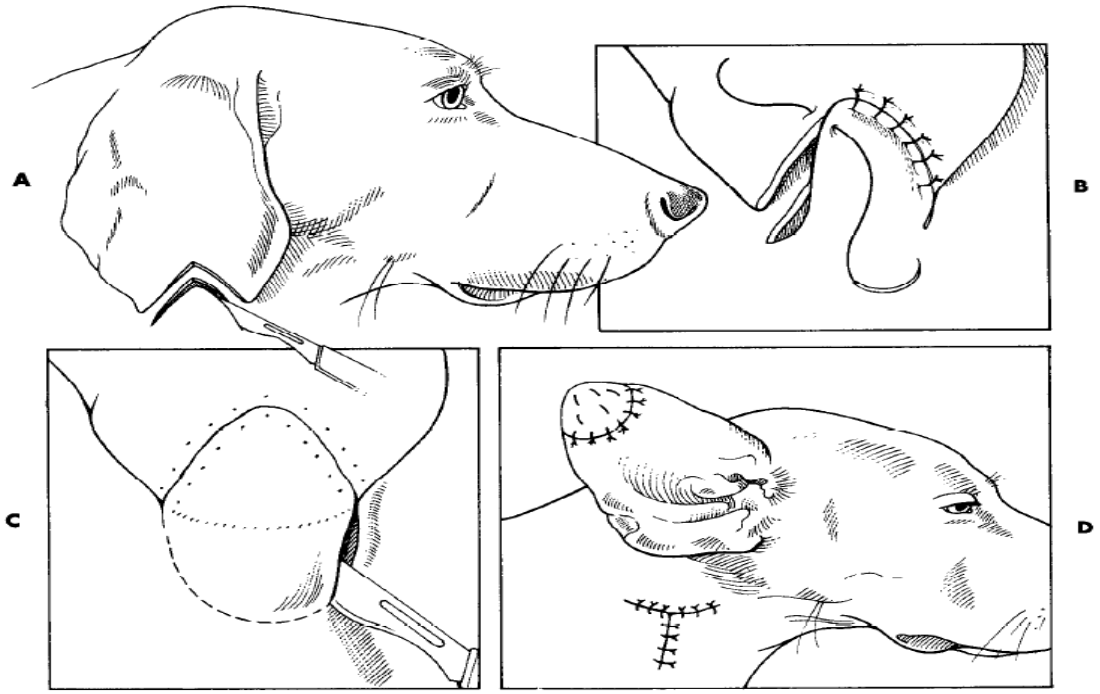
Summary: **EAR SURGERY**

Avulsion wounds of the ear margin:

These wounds that lead to lose a small piece of ear margin: Treated by resects surrounding tissues to restore a normal ear shape while the large defects may repaired by using pedicle flap obtained from either the side of neck or dorsum of the head.



A, To repair defects on the pinna place the ear on the donor site and incise the skir ing the limbs 0.5 to 1 cm longer than the defect. **B,** Suture the flap to the skin on th surface of the ear. **C,** After 10 to 14 days sever the flap from the donor site in the s the defect on the concave side of the ear. **D,** Gently fold the flap over the ear marg suture it to skin.

3. Neoplasm:

Usually the tumors of pinna and external ear canal are more common than these of internal or middle ear. Most common types include: adenocarcinoma, squamous cell carcinoma. Diagnosis by take biopsy to differentiated from polyps. Treatment: include: - A- Cryotherapy. B- Radiation. C- Surgical removal of tumor (may need to removal of pinna or ear canal).

4. Inflammatory polyps:

Polyps are benign, fibrous, pedunculated masses that may be found in oropharynx, middle or external ear canal. Treatment: Surgical removal rather than concurrent infection.

LACERATIONS:

1.Lacerations of the ear may occur as a result of fighting or other trauma.
2.These wounds may be superficial involving the skin on one surface of the ear only or may perforate the cartilage and involve both skin surfaces.
3. Depending on the severity of the wounds ,some may be left to heal by second intention while others have a more cosmetic appearance if sutures are placed.
4.Rarely a portion of the ear may be avulsed and cause an unacceptable cosmetic deformity.

Surgical techniques :

1.Laceration that penetrate the entire flap or tear the cartilage require special attention.
2.The entire area should be clipped ,washed, coated with antiseptic, draped, and debrided.
3.The flap should be examined to determine whether the edges of the wound can be brought into apposition without undue tention. if not enlargement of the wound may prevent distortion of the flap.
4.There is disagreement as to whether sutures should penetrate the cartilage or not.

5. No harm is produced by suturing through the cartilage .
6.Mattress sutures of fine steel or monofilament nylon should be inserted ,when suturing through cartilage ,it is important to avoid pulling a large knot of suture material through the tissue.
7.The suture line is started on the concave surface of the ear flap approximately 3mm from the edge of the wound ,the needle is passed through the skin of the concave surface ,the cartilage and skin on the convex surface .
8.Protective bandaging is recommended for a week.
9.Sutures are removed on the 10-14th day.

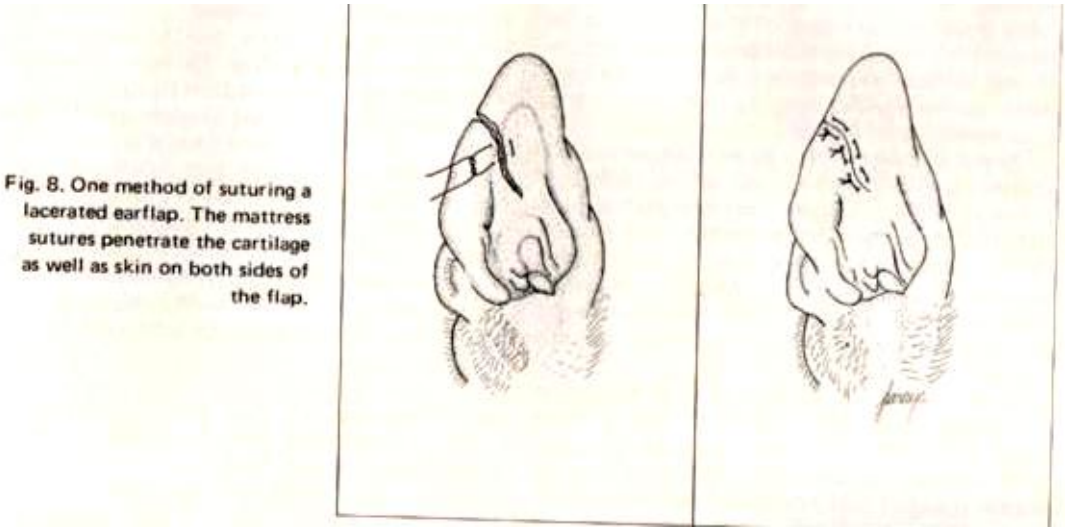


Fig. 8. One method of suturing a lacerated earflap. The mattress sutures penetrate the cartilage as well as skin on both sides of the flap.

5. Otitis (inflammation of ear):

Otitis can be classified into three types:

a- Otitis externa: More common than other types. It is mean an inflammation of the epithelium of the horizontal and vertical ear canals with surrounding structures(external auditory meatus and pinna).

b- Otitis media: inflammation of tympanic cavity and membrane.
c- Otitis interna: inflammation of inner ear.

Causes of otitis: divided in to: -

A- Predisposing factors including presence of hair in external ear canal, moisture of ear canal.

B- Other causes: include the previously mentioned. (8 causes mentioned above).

Clinical signs of otitis: 1- Bad odor. 2- Scratching or rubbing of ears and head. 3- Ears Discharge. 4- Redness or swelling of ear flap or canal. 5- Shaking of head or tilting it to one side. 6- Pain around ears. 7-Circling, falling and rolling to affected side (especially in otitis interna). 8- Changes in behavior such as depression or irritability.

Treatment:

Otitis externa: -

A- Medical treatment: Topical medication include: 1. Cleaning, flushing of ear canal then drying. 2. Application of appropriate otic preparations topically such as tris EDTA, Silver sufadiazin or nitrofurazone.

B- Surgical treatment: Usually used only when: - 1. Medical treatment fails. 2. Recurrent cases. 3. Proliferated growths or stenotic canal.

Surgical procedures include the following:

1. Resection of lateral wall of vertical canal.
   a- Zepp's method.
   b- Formston method.
   c- Lacroix method.
2. Total resection (ablation) of vertical ear canal.It can be performed when the entire vertical canal is diseased but the horizontal canal is normal.

Indications :

1.Neoplasm of the vertical canal.
2.chronic otitis externa.
3. To restore patency in cases of canal stenosis or trauma to the ear cartilages

Technique:

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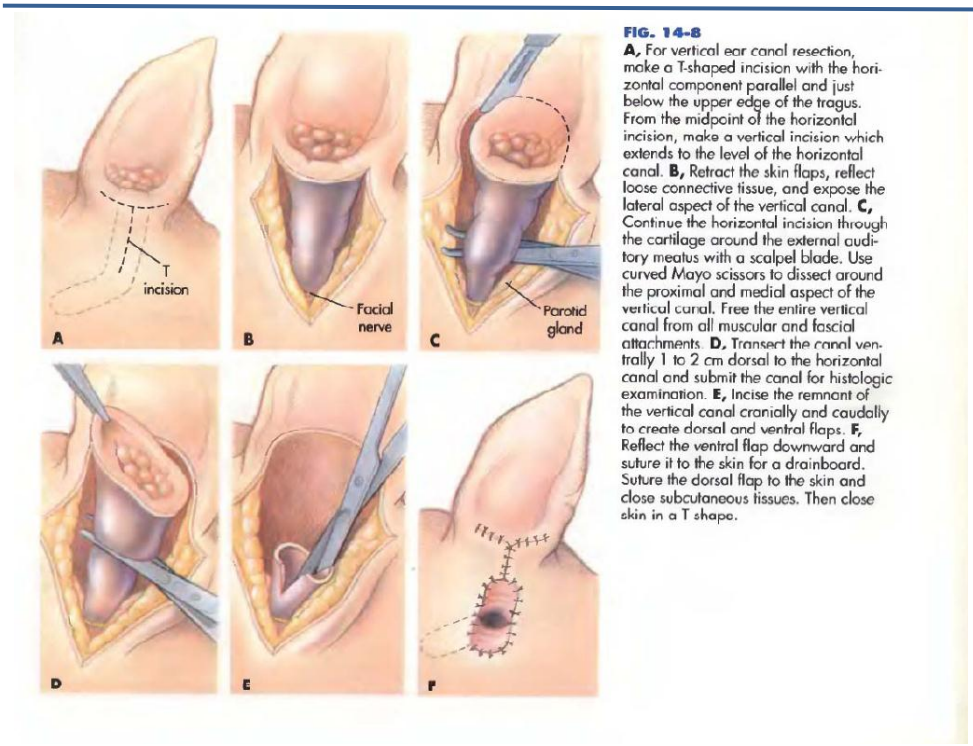
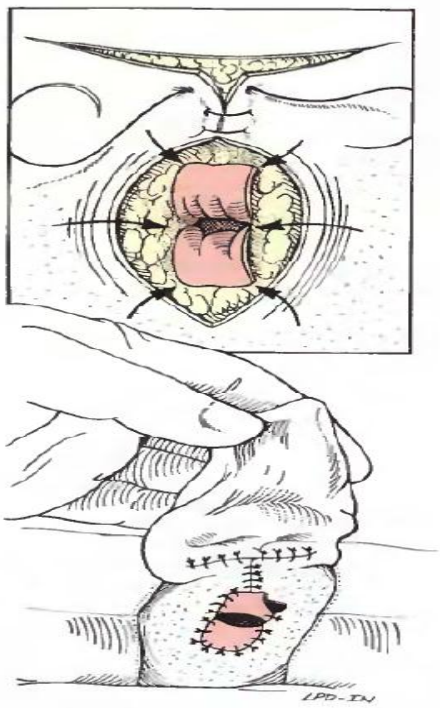
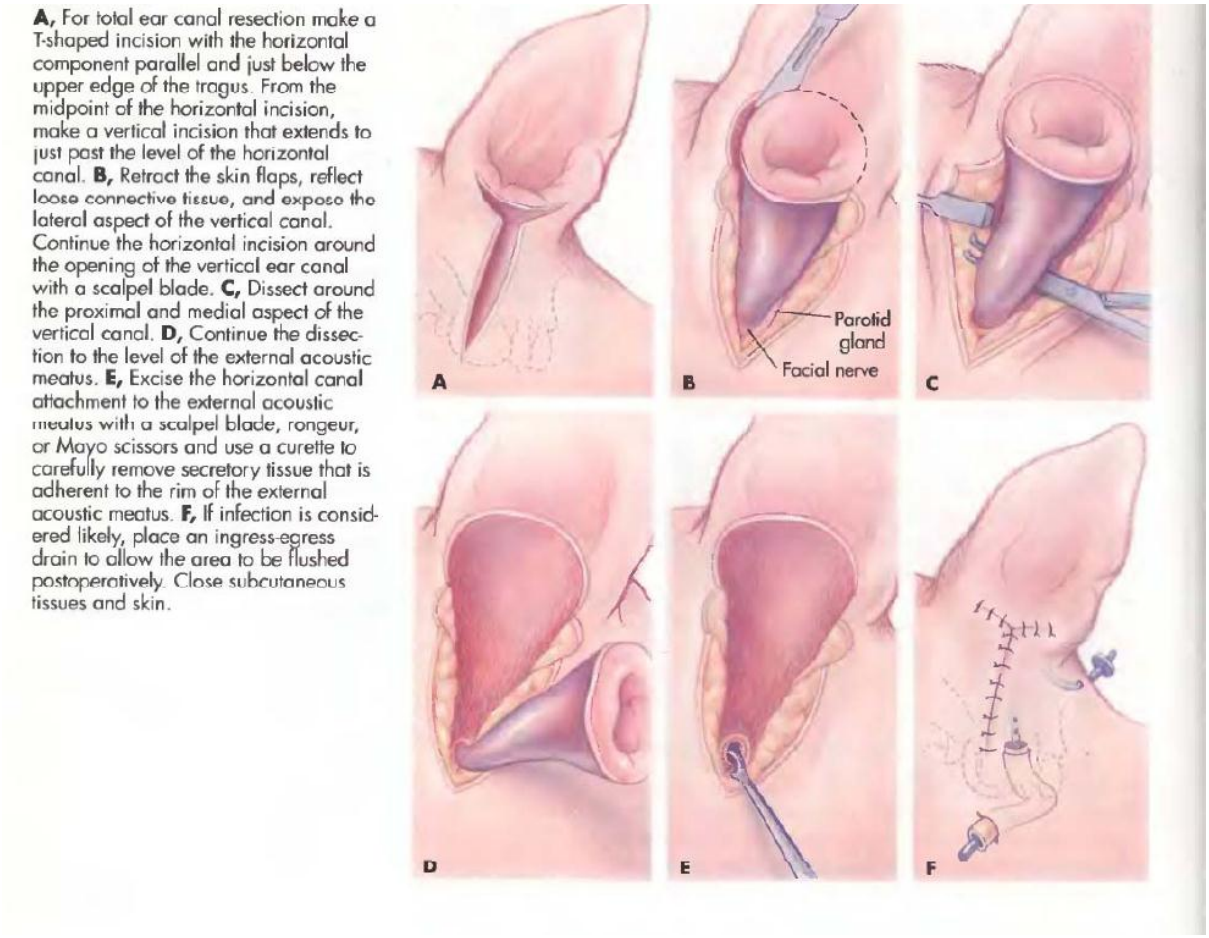


FIG. 14-8
A, For vertical ear canal resection, make a T-shaped incision with the horizontal component parallel and just below the upper edge of the tragus. From the midpoint of the horizontal incision, make a vertical incision which extends to the level of the horizontal canal. **B,** Retract the skin flaps, reflect loose connective tissue, and expose the lateral aspect of the vertical canal. **C,** Continue the horizontal incision through the cartilage around the external auditory meatus with a scalpel blade. Use curved Mayo scissors to dissect around the proximal and medial aspect of the vertical canal. Free the entire vertical canal from all muscular and fascial attachments. **D,** Transect the canal ventrally 1 to 2 cm dorsal to the horizontal canal and submit the canal for histologic examination. **E,** Incise the remnant of the vertical canal cranially and caudally to create dorsal and ventral flaps. **F,** Reflect the ventral flap downward and suture it to the skin for a drainboard. Suture the dorsal flap to the skin and close subcutaneous tissues. Then close skin in a T shape.



3. Total ablation of external ear canal.



A, For total ear canal resection make a T-shaped incision with the horizontal component parallel and just below the upper edge of the tragus. From the midpoint of the horizontal incision, make a vertical incision that extends to just past the level of the horizontal canal. **B,** Retract the skin flaps, reflect loose connective tissue, and expose the lateral aspect of the vertical canal. Continue the horizontal incision around the opening of the vertical ear canal with a scalpel blade. **C,** Dissect around the proximal and medial aspect of the vertical canal. **D,** Continue the dissection to the level of the external acoustic meatus. **E,** Excise the horizontal canal attachment to the external acoustic meatus with a scalpel blade, rongeur, or Mayo scissors and use a curette to carefully remove secretory tissue that is adherent to the rim of the external acoustic meatus. **F,** If infection is considered likely, place an ingress-egress drain to allow the area to be flushed postoperatively. Close subcutaneous tissues and skin.

Indications:

1.Chronic otitis externa in which appropriate medical management has failed.
2.Sever calcifications and ossifications of ear cartilage is present.
3.Sever epithelial hyperplasia beyond the pinna and vertical ear canal.
4.Neoplasm of horizontal ear canal.

Aim of resection of ear canal: 1- Provide drainage. 2- Improve ventilation of ear canal. 3- Facilitate placement of topical medication into the horizontal canal.

EAR RESECTION (LATERAL RESECTION):

INDICATION:

1.Provide drainage and easier access to its deeper portion in case of otitis externa that resist medical treatment.
2.Small ,slowly neoplasm granulomas deep within canal.
3.Otitis media.

SURGICAL TECHNIQUES

A.Formston method:

1.Drainge of external ear canal is established by removing a U-shape segment from the lateral wall.
2.Two curved hemostatic forceps into ear canal in such manner as to demarcate U-shaped area.
3.Tissue between two forceps is excised with scalpel removing the entire lateral wall of ventral portion of ear canal.
4.Remove forceps and blood vessels is ligated .
5.skin sutured with non absorbable suture material by interrupted technique.

B. Modified of lateral resection (Zepp method):

Deflecting part of lateral cartilage (Zepp method) prevents formation granulation tissue and growth of hair that would block canal ,it also serve as drain –board for discharge.
1.Introduce probe to detect direction.
2. The skin over the Lateral surface of the external ear canal is excised to exposed
the cartilaginous wall.
3.The lateral cartilaginous wall is incised caudally and rosterally with a scissors.

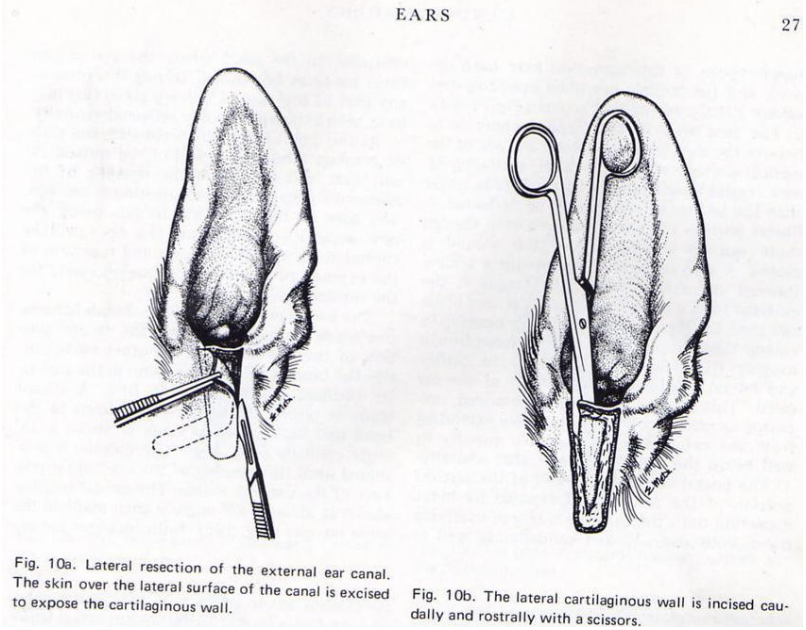


Fig. 10a. Lateral resection of the external ear canal. The skin over the lateral surface of the canal is excised to expose the cartilaginous wall.

Fig. 10b. The lateral cartilaginous wall is incised caudally and rostrally with a scissors.

4.The lateral wall is reflected ventrally and the excess is excised.
5.The tubercle of the anthelix is removed to prevent its acting as a valve over the new orifice of the ear canal .

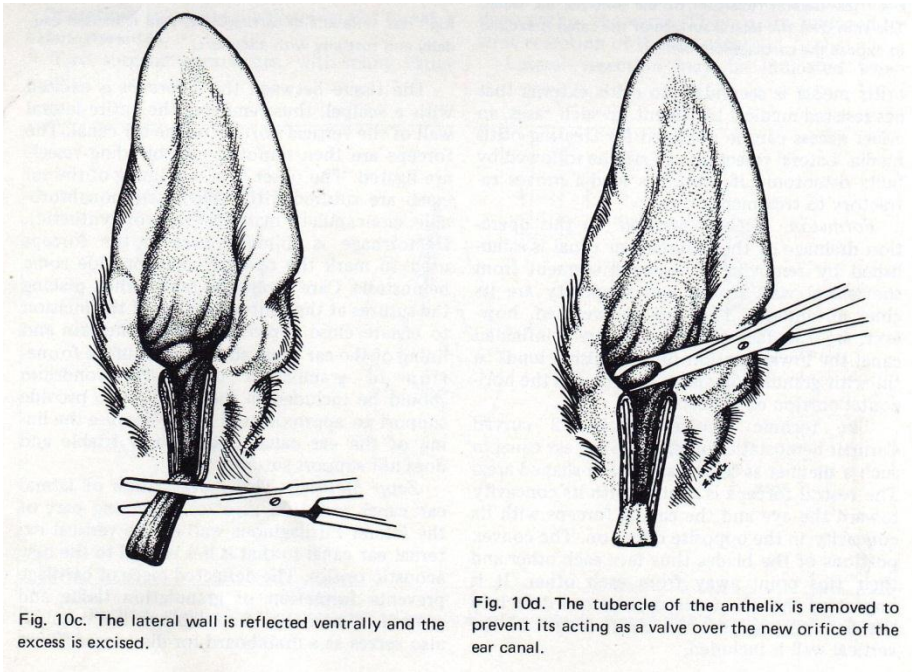


Fig. 10c. The lateral wall is reflected ventrally and the excess is excised.

Fig. 10d. The tubercle of the anthelix is removed to prevent its acting as a valve over the new orifice of the ear canal.

6.The plate of cartilage is sutured to the incised edges of the skin.
7.The plate of cartilage has been sutured and the skin edge closed.

Fig. 10e. The "baffle plate" of cartilage is sutured to the incised edges of skin.

Fig. 10f. The plate of cartilage has been sutured, and the skin edges closed.

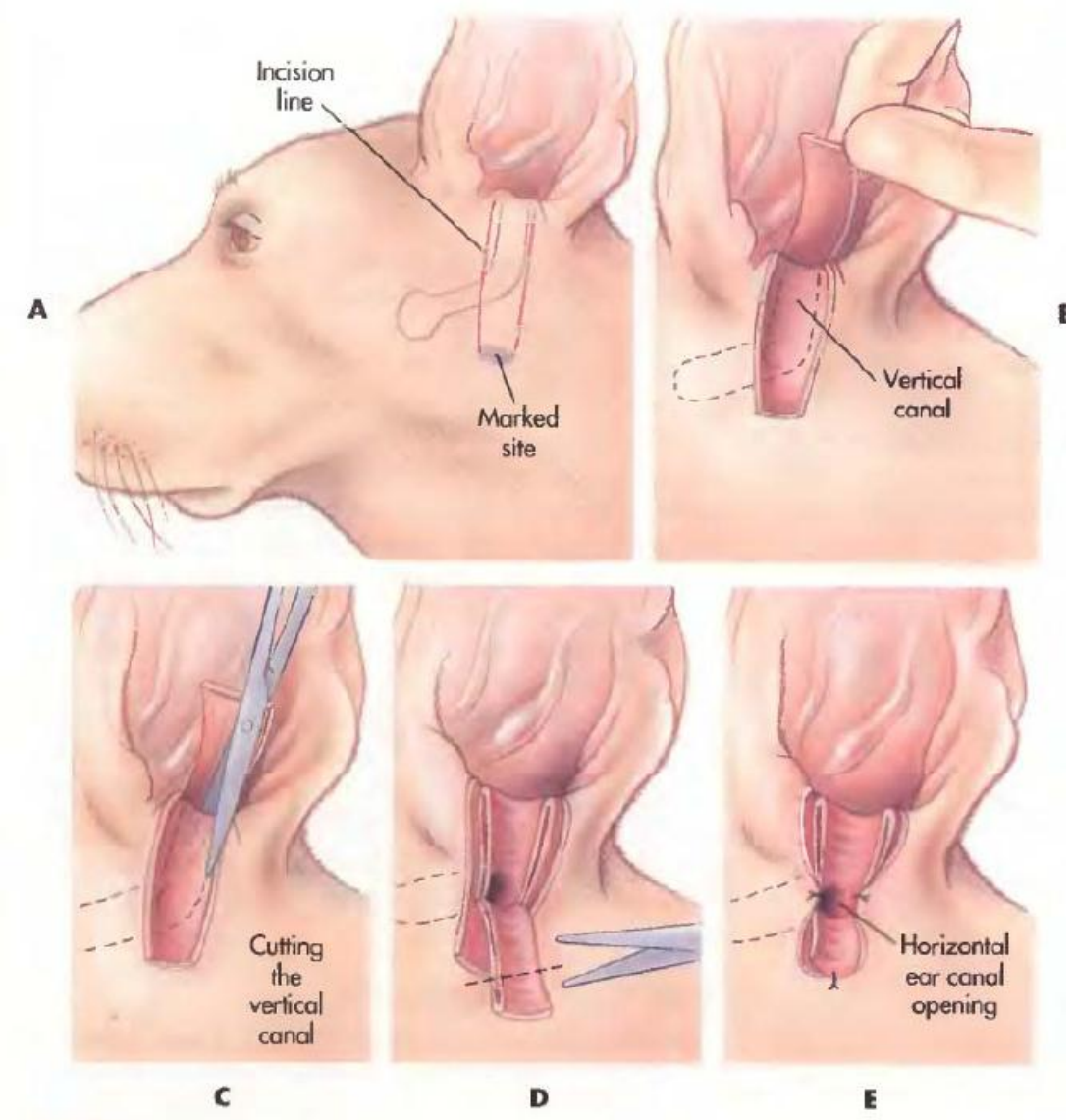


FIG. 14-6
A, For a lateral ear canal resection, mark a site that is one half the length of the vertical ear canal below the horizontal ear canal. **B,** Lateral to the vertical ear canal make two parallel incisions that extend from the tragus ventrally to the marked site. **C,** Connect the skin incisions ventrally and reflect the skin flap dorsally exposing the lateral cartilaginous wall of the vertical ear canal. Use Mayo scissors to cut the vertical canal. **D,** Reflect the cartilage flap distally and inspect the opening of the horizontal canal. Resect the distal one half of the cartilage flap to make the drainboard and remove the skin flap. **E,** Place sutures from the epithelial tissues to skin. Begin suturing at the opening of the horizontal canal, then suture the drainboard.