AL 1. Discuss the embryology of the external ear.

The otic placode is the first hint of a future ear and is present during the third week of intrauterine growth. The auricle emanates from the mesoderm of the first and second branchial arches; its growth occurs through the development of the six hillocks of His at week 6.22 The following six structures evolve from these hillocks: (1) the tragus, (2) the helical crus, (3) the helix, (4) the antihelix, (5) the antitragus, and (6) the lobule. By week 12, the hillocks have fused. When these fuse inappropriately, a preauricular sinus tract can result.

From the fifth week of gestation, three hillocks arise on the first branchial (mandibular) arch (hillocks 1, 2, and 3), and three arise on the second branchial (hyoid) arch (hillocks 4, 5, and 6) on either side of the first branchial cleft (Fig. 128.1).

Hillocks 1 and 6 are the first to be identifiable separately, but by the sixth week, all are distinct. The lobule also can be identified on the second arch. By the eighth week, the auricle has an identifiable structure, and the contributions of the hillocks to the adult form can be recognized: hillock 1, tragus; hillock 2, crus helicis; hillock 3, ascending helix; hillock 4, horizontal helix, upper portion of scapha, and antihelix; hillock 5, descending helix, middle portion of the scapha, and antihelix; and hillock 6, antitragus and inferior aspect of the helix.

Cartilage formation begins at week 7. The concha derives from the ectoderm of the first branchial groove. The upper portion forms the cymba concha, the middle portion forms the cavum concha, and the lowest portion forms the intertragal incisura. Malformation of the conchal bowl contributes to excessive protrusion of the pinna from the head. Additionally, the helical margin may develop separately from a skinfold caudal to hillocks 4 and 5,23 which then develops rapidly during weeks 8 through 12. Finally, the helix furls during the sixth month. The antihelix furls during weeks 12 through 16; it is the failure of it to do so that results in a protruding scapha.

There is a transient obstruction of the medial canal by proliferating epithelial cells to form a meatal plug that eventually dissolves, leaving a patent canal.
Figure 128.1 Development of the auricle. A: Six hillocks form on the first and second branchial arches. All can be identified at 6 weeks' gestation. B: Seven-week stage. C: By 18 weeks, the adult form is recognizable.

**AL2.** Bring in a diagram/picture of the external ear. Identify all the anatomical landmarks.
AL3. Discuss the vascular, lymphatic and nerve supply to the ear.

Sensory innervation is through cranial nerves V (the auriculotemporal nerve), VII (the facial nerve), X (Arnold’s nerve), as well as C2 and C3 (the cervical plexus). The main blood supply comes from the external carotid artery via the posterior auricular and the superficial temporal arteries with additional contributions from the occipital artery.

The auricle receives its blood supply from three arteries: the superficial temporal, the posterior auricular, and the occipital. The venous system involves the posterior auricular, external jugular, superficial temporal, and retromandibular veins. The lymphatics of the ear drain anteriorly to the parotid lymph nodes and posteriorly to the cervical lymph nodes. The innervation of the auricle is via cranial nerve VII, with the temporal branch supplying the anterior and supe-rior auricularis muscles, and the posterior auricular branch supplying the posterior auricularis muscles. The sensory innervation is primarily from the lesser occipital nerve, the mastoid branch of the lesser occipital nerve, the greater auricular nerve (C2, C3), and the auricular temporal nerve. The Arnold nerve, a branch of cranial nerve X, supplies the concha.

CB4. What is the normal position of the ear?

CB5. What is lop ear, cup ear, Stahl’s ear and cryptotic ear?

TT6. Otoplasty. Describe the Mustarde and Stenstrom techniques.
HH7. You are called to the ER. An ear is severed at the antihelical level. What are your options?

TT8. Your junior resident calls you at 1AM from the ER. He has a patient with a complete avulsion of the auricle from a knife fight. Give us 5 ways to manage this problem. *Plast Reconstr Surg* 1980;65:820.


HH10. What is the sequence of repair of anotia? When is middle ear surgery performed? Review Bert Brent’s article in *Plast Reconstr Surg* 1999;104:319-34.

CB11. Middle 1/3 defects. Describe Converse Tunnel procedure. Any other reconstructive options?

CB12. How do you treat a hematoma of the ear? What are the long-term complications?


TT14. How would you correct a split ear lobe? Any tips on avoiding notching? Any chance insurance will cover this?