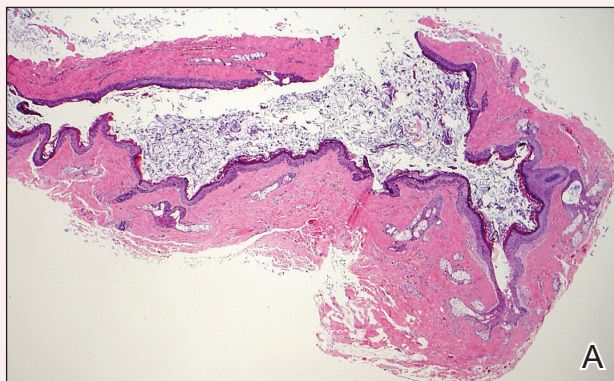
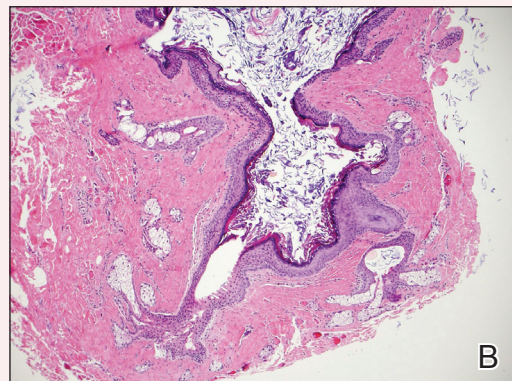


# Cyst on the Eyebrow

Audrey Green, MD; Tammie Ferringer, MD



H&E, original magnification  $\times 40$ .



H&E, original magnification  $\times 100$ .

The best diagnosis is:

- a. bronchogenic cyst
- b. dermoid cyst
- c. epidermal inclusion cyst
- d. hidrocystoma
- e. steatocystoma

PLEASE TURN TO PAGE 277 FOR DERMATOPATHOLOGY DIAGNOSIS DISCUSSION

From the Department of Dermatology, Geisinger Medical Center, Danville, Pennsylvania. Dr. Ferringer also is from the Department of Laboratory Medicine.

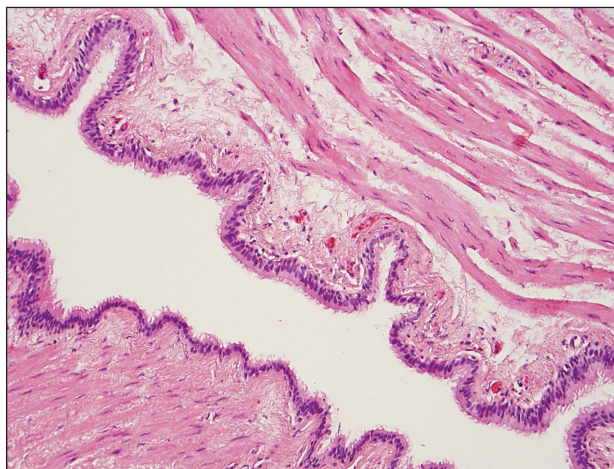
The authors report no conflict of interest.

Correspondence: Audrey Green, MD, Department of Dermatology, Geisinger Medical Center, 115 Woodbine Ln, Danville, PA 17822 (angreen@geisinger.edu).

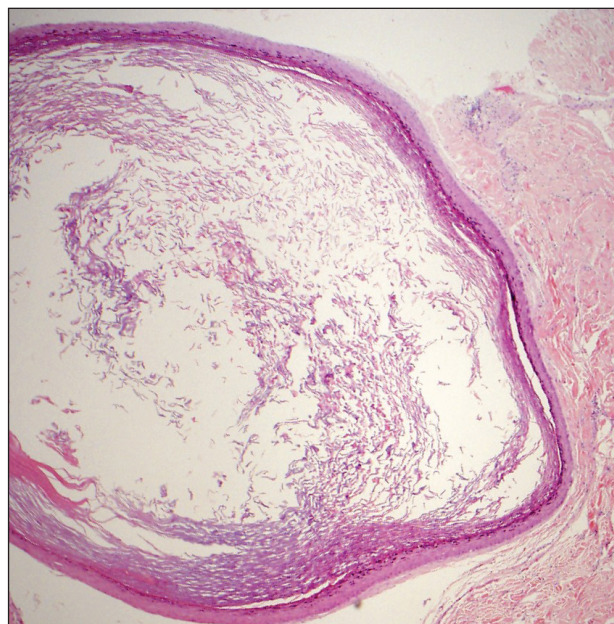
## Dermoid Cyst

**D**ermoid cysts often present clinically as firm subcutaneous nodules on the head or neck in young children. They tend to arise along the lateral aspect of the eyebrow but also can occur on the nose, forehead, neck, chest, or scalp.<sup>1</sup> Dermoid cysts are thought to arise from the sequestration of ectodermal tissues along the embryonic fusion planes during development.<sup>2</sup> As such, they represent congenital defects and often are identified at birth; however, some are not noticed until much later when they enlarge or become inflamed or infected. Midline dermoid cysts may be associated with underlying dysraphism or intracranial extension.<sup>3,4</sup> Thus, any midline lesion warrants evaluation that incorporates imaging with computed tomography or magnetic resonance imaging.<sup>4,5</sup> Histologically, dermoid cysts are lined by a keratinizing stratified squamous epithelium (quiz image A), but the lining may be brightly eosinophilic and wavy resembling shark teeth.<sup>1,3</sup> The wall of a dermoid cyst commonly contains mature adnexal structures such as terminal hair follicles, sebaceous glands, apocrine glands, and/or eccrine glands (quiz image B).<sup>1</sup> Smooth muscle also may be seen within the lining; however, bone and cartilage are not commonly reported in dermoid cysts.<sup>2</sup> Lamellar keratin is typical of the cyst contents, and terminal hair shafts also are sometimes noted within the cystic space (quiz image B).<sup>1,2</sup> Treatment options include excision at the time of diagnosis or close clinical monitoring with subsequent excision if the lesion grows or becomes symptomatic.<sup>4,5</sup> Many practitioners opt to excise these cysts at diagnosis, as untreated lesions are at risk for infection and/or inflammation or may be cosmetically deforming.<sup>6,7</sup> Surgical resection, including removal of the wall of the cyst, is curative and recurrence is rare.<sup>5</sup>

Bronchogenic cysts demonstrate an epithelial lining that often is pseudostratified cuboidal or columnar as well as ciliated (Figure 1). Goblet cells are present in the lining in approximately 50% of cases. Smooth muscle may be seen circumferentially surrounding the cyst lining, and rare cases also contain cartilage.<sup>1</sup> In contrast to dermoid cysts, other types of adnexal structures are not found within the lining. Bronchogenic cysts that arise in the skin are extremely rare.<sup>2</sup> These cysts are thought to arise from respiratory epithelium that has been sequestered during embryologic formation of the tracheobronchial tree. They often are seen overlying the suprasternal notch and occasionally are found on



**Figure 1.** Bronchogenic cyst demonstrating a ciliated pseudostratified epithelial lining encircled by smooth muscle (H&E, original magnification  $\times 200$ ).



**Figure 2.** Epidermal inclusion cyst containing loose lamellar keratin and a lining that closely resembles the surface epidermis (H&E, original magnification  $\times 40$ ).

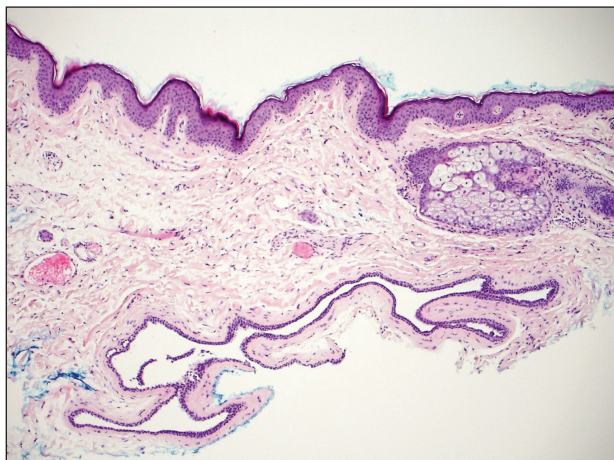
the anterior aspect of the neck or chin. These cysts also are present at birth, similar to dermoid cysts.<sup>3</sup>

Epidermal inclusion cysts have a lining that histologically bears close resemblance to the surface epidermis. These cysts contain loose lamellar keratin,

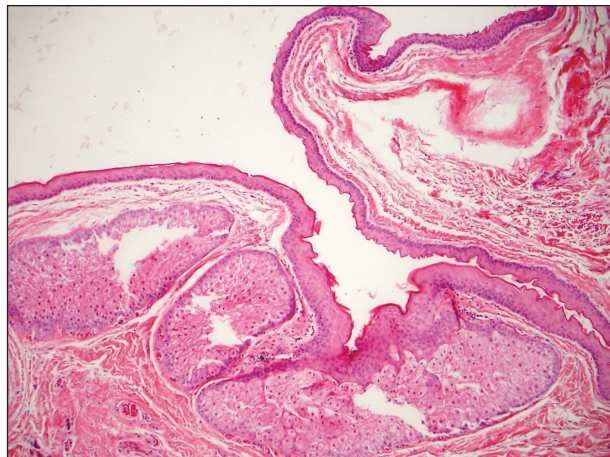
similar to a dermoid cyst. In contrast, the lining of an epidermal inclusion cyst will lack adnexal structures (Figure 2).<sup>1</sup> Clinically, epidermal inclusion cysts often present as smooth, dome-shaped papules and nodules with a central punctum. They are classically found on the face, neck, and trunk. These cysts are thought to arise after a traumatic insult to the pilosebaceous unit.<sup>2</sup>

Hidrocystomas can be apocrine or eccrine.<sup>3</sup> Eccrine hidrocystomas are unilocular cysts that are lined by 2 layers of flattened to cuboidal epithelial cells (Figure 3). The cysts are filled with clear fluid and often are found adjacent to normal eccrine glands.<sup>1</sup> Apocrine hidrocystomas are unilocular or multilocular cysts that are lined by 1 to several layers of epithelial cells. The lining of an apocrine hidrocystoma will often exhibit luminal decapitation secretion.<sup>3</sup> Apocrine and eccrine hidrocystomas are clinically identical and appear as blue translucent papules on the cheeks or eyelids of adults.<sup>1,3</sup> They usually occur periorbitally but also can be seen on the trunk, popliteal fossa, external ears, or vulva. Eccrine hidrocystomas can wax and wane in accordance with the amount of sweat produced; thus, they often expand in size during the summer months.<sup>2</sup>

Steatocystomas, or simple sebaceous duct cysts, histologically demonstrate a characteristically wavy and eosinophilic cuticle resembling shark teeth (Figure 4) similar to the lining of the sebaceous duct where it enters the follicle.<sup>1</sup> Sebaceous glands are an almost invariable feature, either present within the lining of the cyst (Figure 4) or in the adjacent tissue.<sup>2</sup> In comparison, dermoid cysts may have a red wavy cuticle but also will usually have terminal hair



**Figure 3.** Eccrine hidrocystoma with clear contents and lined by 2 layers of cuboidal epithelial cells (H&E, original magnification  $\times 100$ ).



**Figure 4.** Steatocystoma with a red wavy cuticle, sparse sebaceous contents, and sebaceous glands within the lining (H&E, original magnification  $\times 100$ ).

follicles or eccrine or apocrine glands within the wall of the cyst. Steatocystomas typically are collapsed and empty or only contain sebaceous debris (Figure 4) rather than the lamellar keratin seen in dermoid and epidermoid inclusion cysts. Steatocystomas can occur as solitary (steatocystoma simplex) or multiple (steatocystoma multiplex) lesions.<sup>1,3</sup> They are clinically comprised of small dome-shaped papules that often are translucent and yellow. These cysts are commonly found on the sternum of males and the axillae or groin of females.<sup>2</sup>

## REFERENCES

1. Elston DM, Ferringer TC, Ko C, et al. *Dermatopathology: Requisites in Dermatology*. 2nd ed. Philadelphia, PA: Saunders Elsevier; 2014.
2. Calonje JE, Brenn T, Lazar AJ, et al. *McKee's Pathology of the Skin*. 4th ed. St Louis, MO: Elsevier/Saunders; 2012.
3. Bologna JL, Jorizzo JL, Shaffer JV. *Dermatology*. 3rd ed. Philadelphia, PA: Elsevier/Saunders; 2012.
4. Orozco-Covarrubias L, Lara-Carpio R, Saez-De-Ocariz M, et al. Dermoid cysts: a report of 75 pediatric patients. *Pediatr Dermatol*. 2013;30:706-711.
5. Sorenson EP, Powel JE, Rozzelle CJ, et al. Scalp dermoids: a review of their anatomy, diagnosis, and treatment. *Childs Nerv Syst*. 2013;29:375-380.
6. Pryor SG, Lewis JE, Weaver AL, et al. Pediatric dermoid cysts of the head and neck. *Otolaryngol Head Neck Surg*. 2005;132:938-942.
7. Abou-Rayyah Y, Rose GE, Konrad H, et al. Clinical, radiological and pathological examination of periorcular dermoid cysts: evidence of inflammation from an early age. *Eye (Lond)*. 2002;16:507-512.