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Cutaneous cysts classified by epithelium

By Alexandra Stroia, DO, and Stephen Olsen, MD

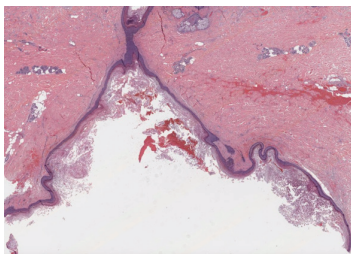
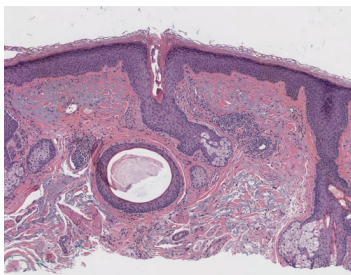
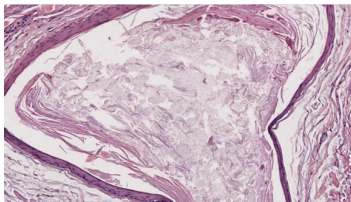
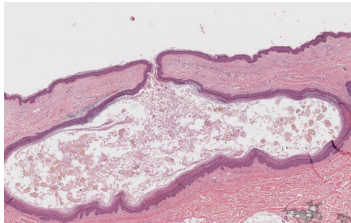


Alexandra Stroia, DO, is a PGY-4 dermatology resident at Trinity Health Livingston (formerly St. Joseph Mercy) in Michigan.



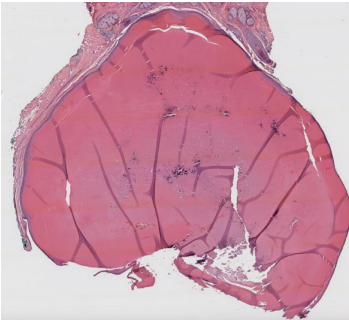
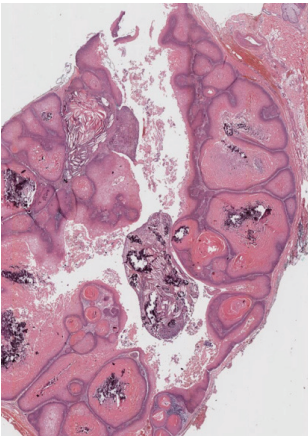
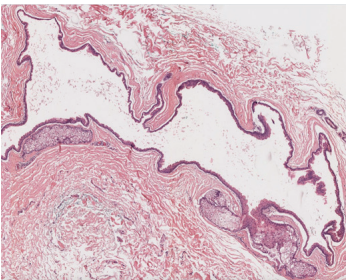
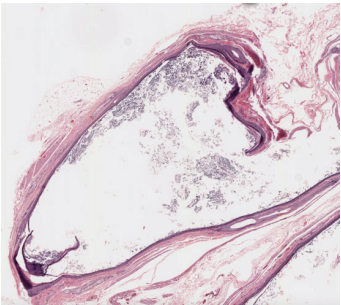
Stephen Olsen, MD, is a board-certified dermatopathologist at Trinity Health Livingston in Michigan.

Histology slides courtesy of Stephen Olsen, MD.

Stratified squamous epithelium				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Epidermoid cyst (epidermal inclusion cyst)	Infundibulum	Wall lined by <i>stratified squamous epithelium</i> with a granular layer; filled with flaky laminated keratin .	Common on face and upper trunk; associated with Gardner syndrome - AD, colorectal adenocarcinoma.	
Milium	Infundibulum	Small keratin-filled cysts with a thin epithelial lining and granular layer. Commonly set within scar/fibrosis.	Neonatal milia, secondary to skin trauma or blistering disorders; common on face.	
Vellus hair cyst	Infundibulum	Thin wall lined by <i>squamous epithelium</i> ; contains multiple small vellus hairs .	Common on trunk; associated with steatocystoma multiplex - AD, KRT17 mutation, <i>Pachyonychia congenita type 2</i> , fingernail and toenail thickening and painful palmoplantar keratoderma.	
Pigmented follicular cyst		Lined with squamous epithelium; retained granular layer. Multiple terminal sized hairs with pigment .		

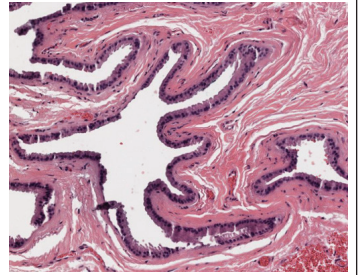
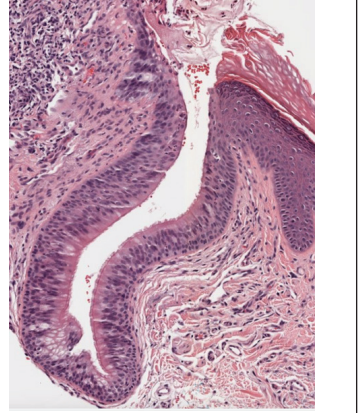
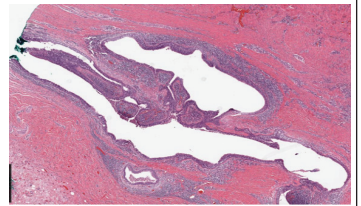
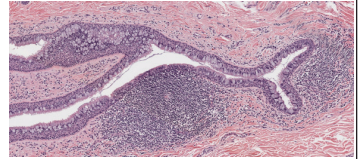
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Stratified squamous epithelium				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Pilar cyst (trichilemmal cyst)	Isthmus (outer root sheath)	Lined by <i>stratified squamous epithelium without</i> a granular layer; compact deep eosinophilic keratin with abrupt keratinization.	Often familial; common on the scalp.	
Proliferating pilar (trichilemmal) cyst	Infundibulum	Well-circumscribed nodules of squamous epithelium in the dermis; forms multiple cystic structures with abrupt keratinization.	Common in scalp, anogenital region; can be associated with KID syndrome - GJB2 mutation, PPK, deafness, and blindness.	
Steatocystoma	Sebaceous duct	Thin <i>stratified squamous</i> lining with sebaceous gland lobules in the wall AND eosinophilic "shark-tooth" cuticle ; contains oily material and vellus hairs.	Trunk, axillae, groin common; associated with steatocystoma multiplex - AD, KRT17 mutation, in <i>Pachyonychia congenita</i> type 2.	
Dermoid cyst	Variable - infundibulum or isthmus	Wall lined by <i>stratified squamous epithelium</i> ; may contain multiple adnexal structures within the wall (sebaceous glands, sweat glands, and hair follicles); can have eosinophilic "shark-tooth" cuticle .	Congenital, associated with developmental anomalies; common along embryonic fusion plates, i.e., lateral eyebrow.	

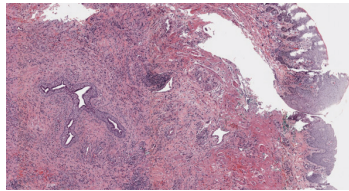
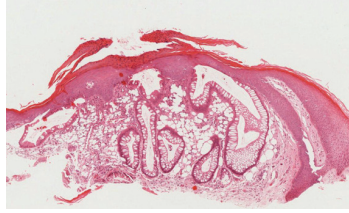
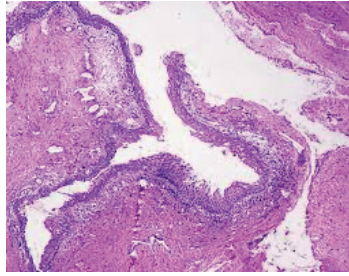
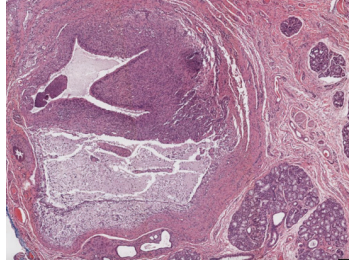
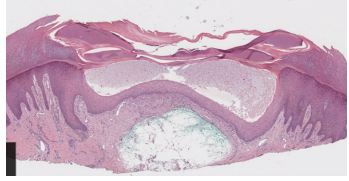
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Non-stratified squamous epithelium				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Hidrocystoma	Face (eyelid margin, cheek)	Simple cyst lined by two layers of epithelium with <i>inner cuboidal or columnar cells and outer myo-epithelial cells</i> ; decapitation secretion may be noted.	Associated with ectodermal dysplasia, including Schöpf–Schulz–Passarge syndrome - syringofibroadenoma, PPK, hypodontia, onychodystrophy and hypotrichosis.	
Bronchogenic cyst	Suprasternal notch	<i>Ciliated pseudostratified columnar epithelium</i> ; goblet cells; may have circumferential smooth muscle around cyst; may have cartilage .	Commonly found in the midline.	
Thyroglossal duct cyst	Midline anterior neck	Typically lined by <i>respiratory-type epithelium</i> or may be lined by <i>squamous epithelium</i> ; surrounding thyroid follicles and lymphoid aggregates may be present.	Rarely, thyroid carcinoma may develop.	
Branchial cleft cyst	Lateral jaw or neck	<i>Epidermoid or pseudostratified columnar epithelium</i> ; surrounded by lymphoid tissue with germinal centers (lymphoepithelial structures) ; cyst usually appears empty.	Infection is a frequent cause of presentation.	

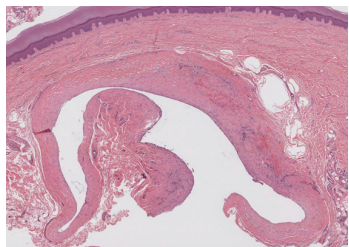
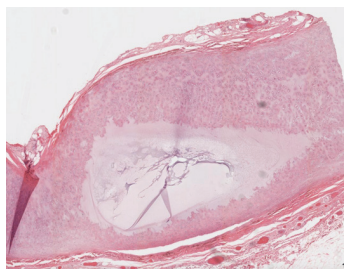
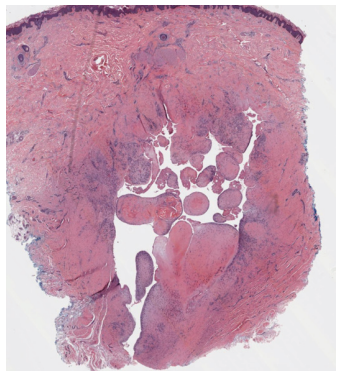
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Non-stratified squamous epithelium				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Median raphe cyst	Ventral glans and penile shaft	Debris-filled cyst ; <i>stratified columnar epithelium</i> ; surrounding skin has characteristics of genital skin.		
Omphalo-mesenteric (vitelline) duct cyst	Umbilical or periumbilical	Ectopic <i>gastrointestinal mucosa</i> .	Defects due to duct remnant between mid-gut and yolk sac.	
Urachal cyst	Umbilical	Urothelial lining of cuboidal or columnar cells.	Urine leakage	
Absence of epithelium (pseudocysts)				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Mucocele	Oral mucosa	<i>Pseudocystic space</i> containing mucin; muciphages and granulation tissue surround the space.	Can develop in graft-versus-host disease .	
Digital mucous cyst	Dorsal surface of the distal phalanx of the finger	Clefts in the dermis ; with increased mucin; +/- thick fibrous wall and an <i>absent epithelial lining</i> ; commonly thinned epidermis.	Nail plate depressions may be seen.	

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Absence of epithelium (pseudocysts)				
Diagnosis	Location	Histopathologic features	Associations	Histology image
Ganglion/synovial cyst	Dorsal aspect of the wrist	Myxoid change forming cystic space surrounded by thick fibrous tissue and no epithelial lining.		
Pseudocyst of the auricle	Scaphoid fossa of the ear	Cavity within the auricular cartilage; proteinaceous or mucinous material within the cavity; degenerated cartilage.	Trauma or due to developmental defect.	
Metaplastic synovial cyst	Around the joints	Dense fibrosis around cystic space with papillary projections and no epithelium.	Trauma or due to joint surgery.	

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