

Oral Pathology module

Developmental Disturbances of the Oral Region

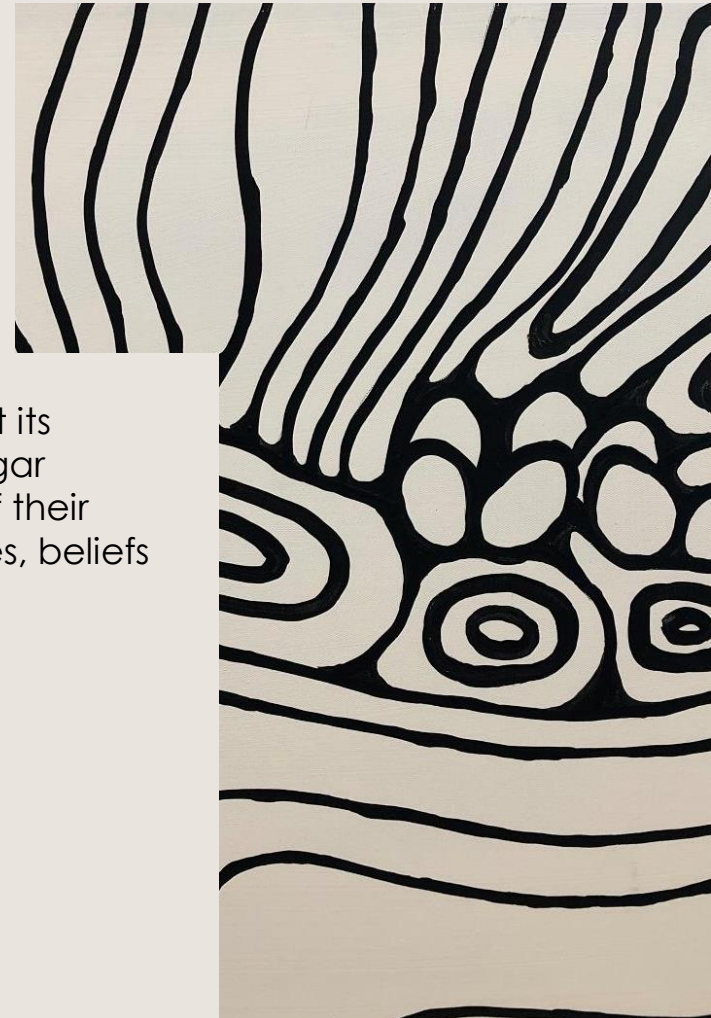
A/Prof Omar Kujan

DENT4217

DDS DipOPath MDS Sc MFDS RCPS FHEA FRCPath PhD

Acknowledgement of country

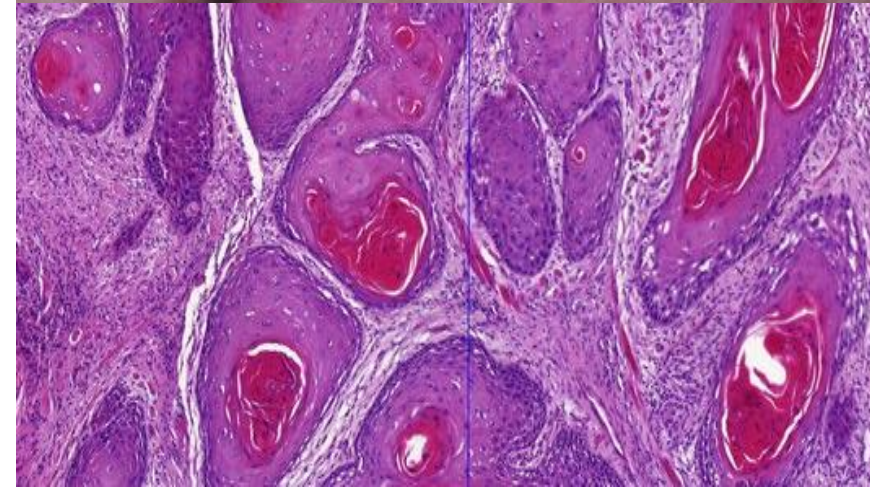
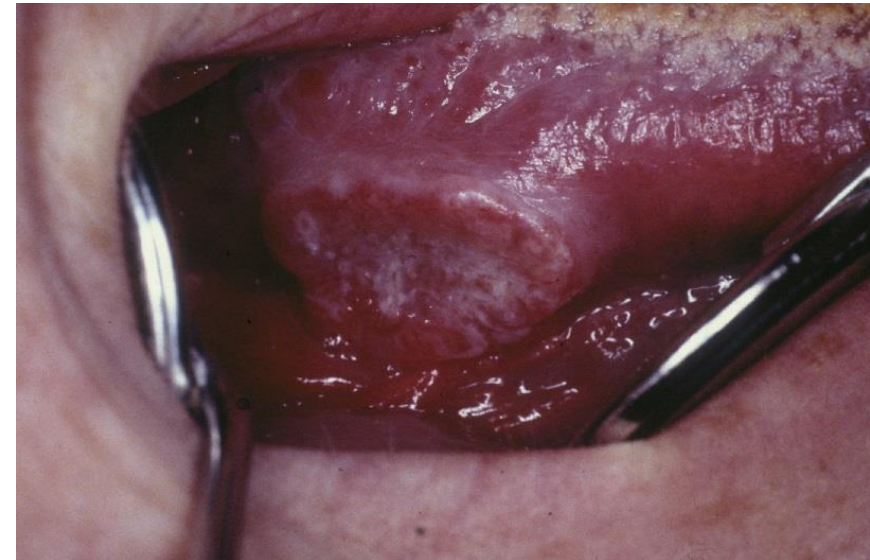
The University of Western Australia acknowledges that its campus is situated on Noongar land, and that Noongar people remain the spiritual and cultural custodians of their land, and continue to practise their values, languages, beliefs and knowledge.



Artist: Dr Richard Barry Walley OAM

Oral Pathology module

A/Prof Omar Kujan
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- **15 Lectures**
- **6 Practical histopathological sessions**

- **Assessment items**

Assessment type	Date	Venue	Duration	Weight	Failed component
MCQ	21/10/2024	VLC103	1 hour	10%	Yes
OSCE	21/10/2024	VLC103	1 hour	15%	Yes

Recommended textbook

Cawson's Essentials of Oral Pathology and Oral Medicine

AUTHOR

Edward W. Odell

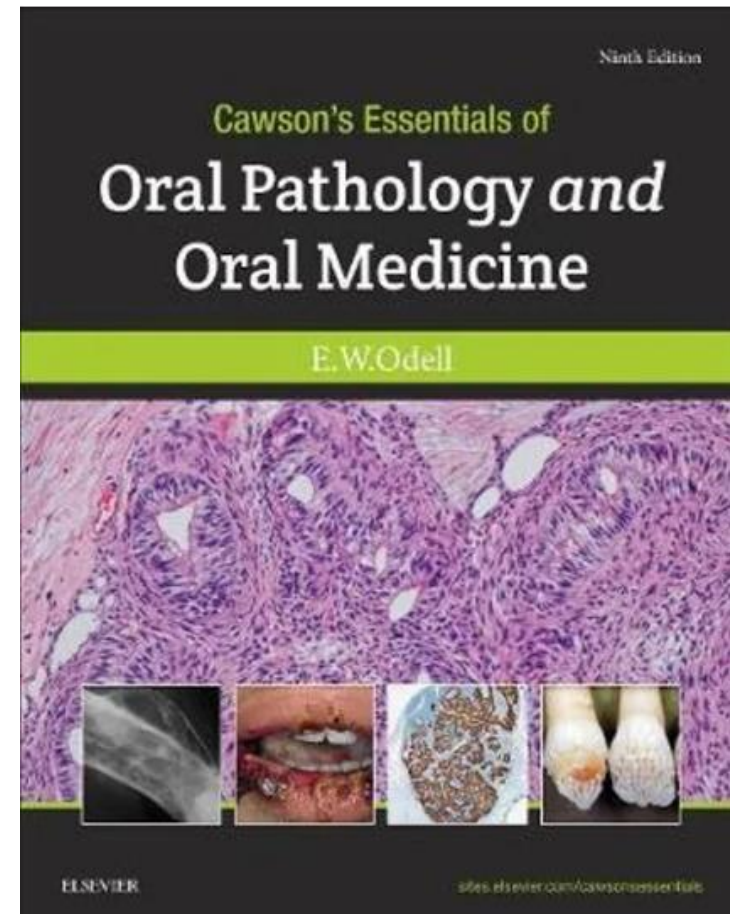
PUBLISHER

Elsevier

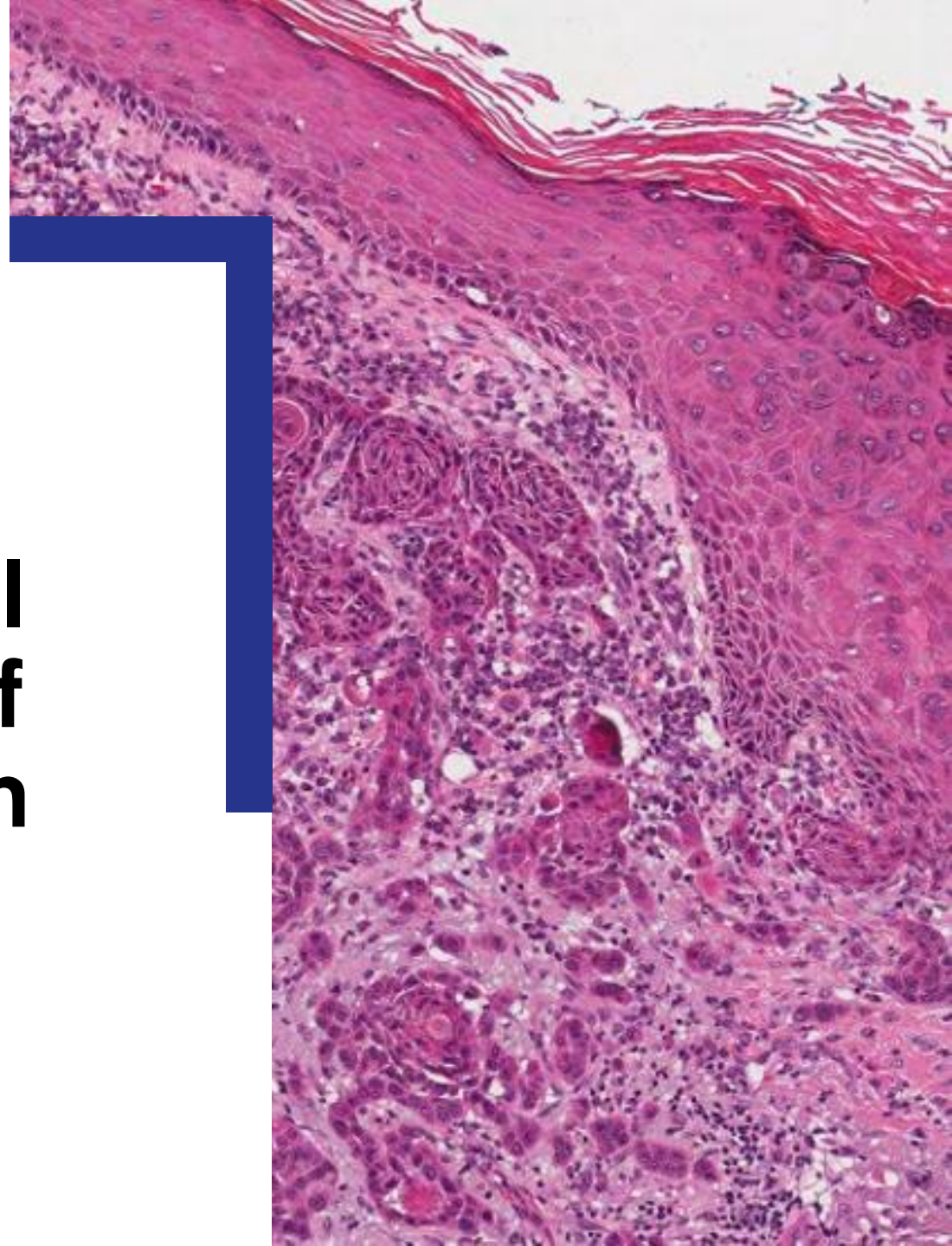
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Developmental Disturbances of the Oral Region



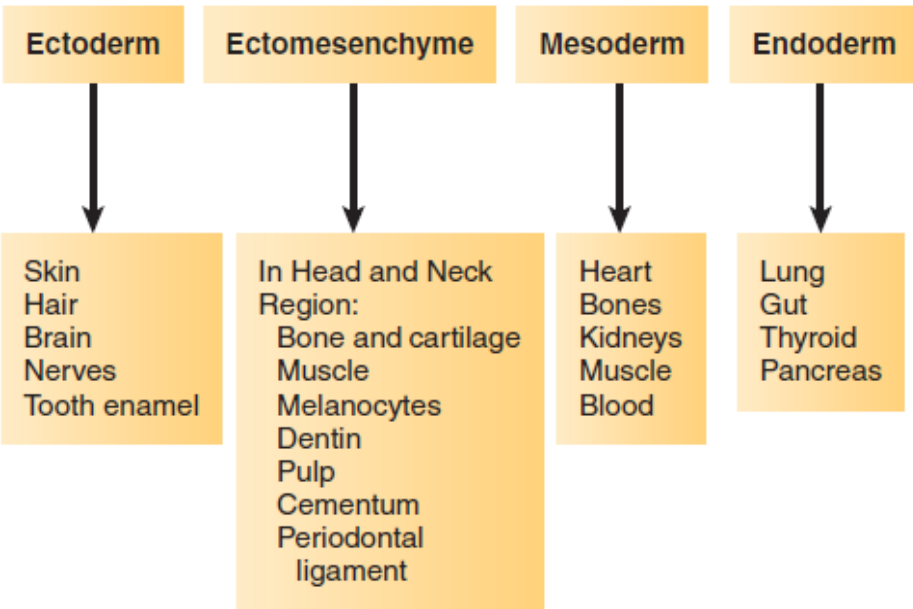
Learning outcomes

1. Discuss how disturbances during orofacial embryological development contribute to abnormalities of the head, neck and oral cavity.
2. Explain the etiology of developmental abnormalities of the teeth.
3. Explain how disturbances in tooth development affect oral health.

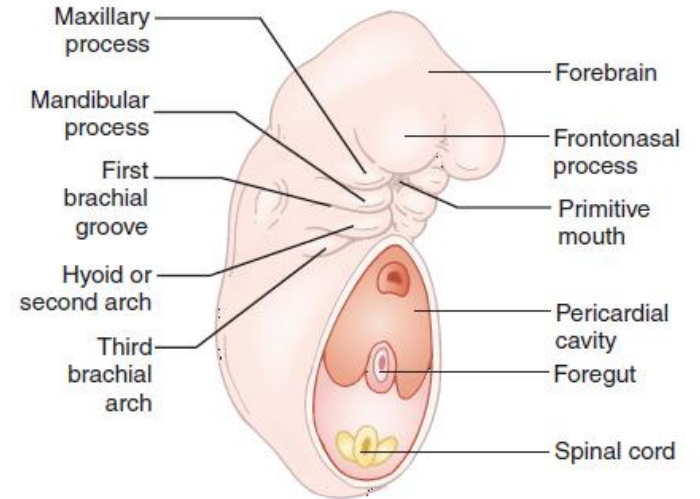
Definitions

- **Embryology** is fundamental in understanding developmental anomalies of the face and oral cavity.
- **Developmental disorders** are defined as those that occur during development of a part or organ.
- **Choristoma**: An overgrowth of mature tissues found in an area where such tissue is not usually present, such as an osseous or cartilaginous choristoma of the tongue.
- **Hamartoma**: An overgrowth of mature tissue that is normally found in that area, such as a leiomyomatous hamartoma.
- **Nevus**: An overgrowth of tissue that is normally found in the skin or oral mucosa, such as melanocytic, epidermal, or vascular nevus.

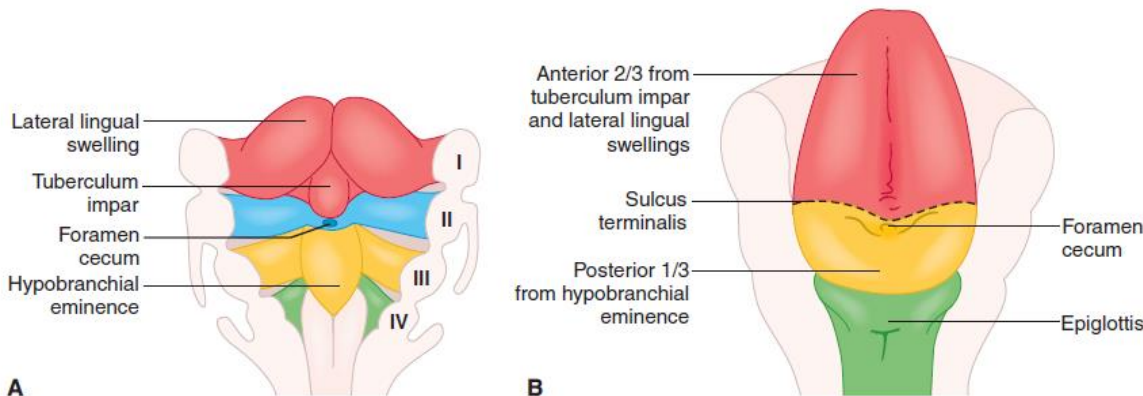
Craniofacial development



Pharyngeal arches

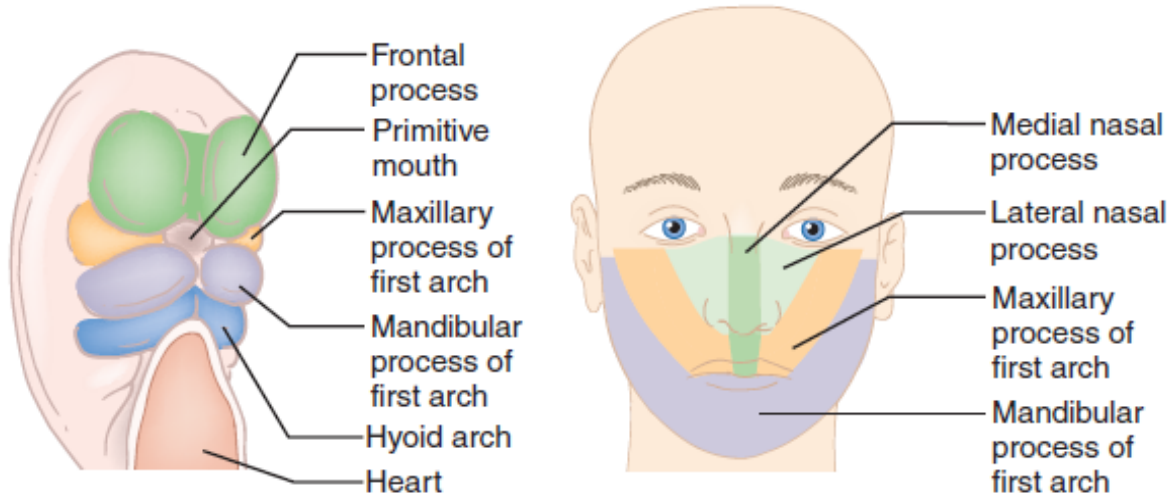


Tongue development

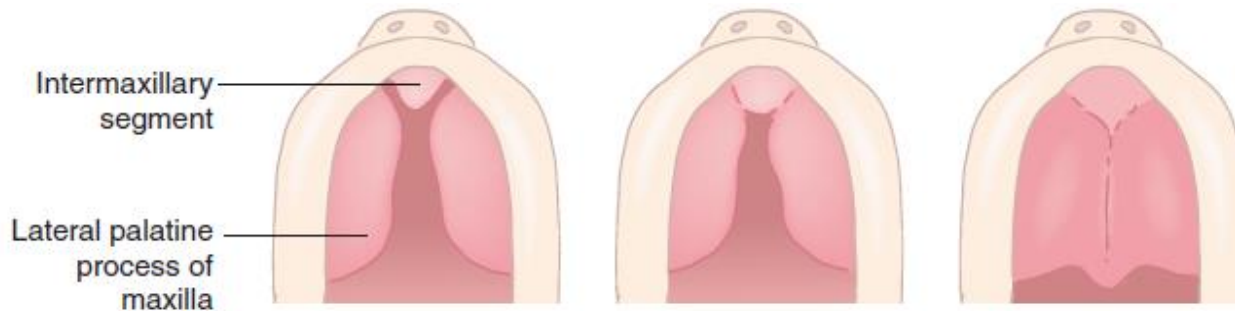


Craniofacial development

Formation of Face



Palate development



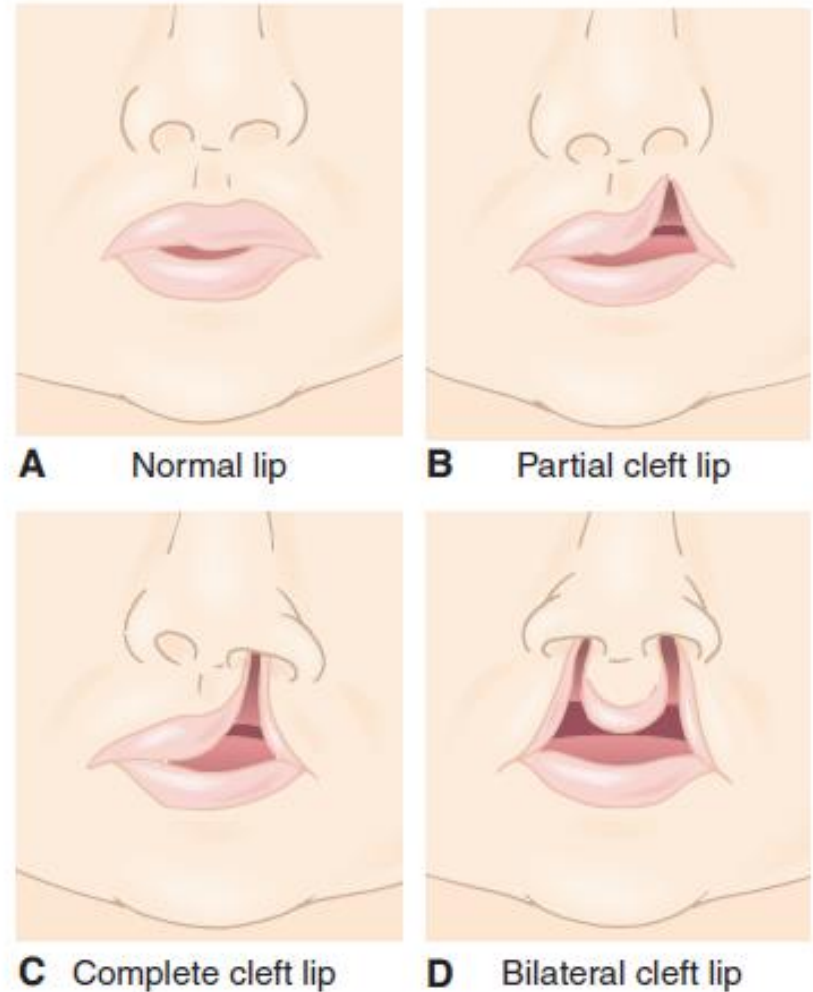
- **Congenital abnormalities:** defects present at birth or shortly after birth.
- **Teratology** can broadly be the study of congenital and developing developmental abnormalities after birth.
- Inherited mechanisms and/or agents called **teratogens** interfere with embryonic development, resulting in developmental malfunctions or defects.
- Causes of many developmental defects are unknown.
- Some well-known environmental teratogens include drugs (thalidomide, alcohol), radiation (x-rays), and microorganisms (rubella, syphilis).

Cleft Lip and Cleft Palate

- **Clefts:** most common developmental facial abnormality.
- Clefts are failures of fusion of adjacent embryological processes that normally fuse to form one continuous structure.
- Cleft lip and cleft lip with cleft palate are more common in males, while cleft palate alone is more common in females.
- 1/700 birth among Caucasians, 4/700 Native Americans, 2/700 Japanese, 0.3/700 African Americans
- Inheritance and environmental factors (drug and alcohol abuse, cigarette smoke, chemicals such as insecticides, and microorganisms such as *treponema pallidum* and cytomegalovirus)

Cleft Lip and Cleft Palate

- Cleft lip can be unilateral or bilateral, partial or complete. Complete cleft lip involves the lower portion of the nose.
- Clefts may present as openings between the oral cavity and nasal passages, resulting in feeding and speech problems. This creates disordered dental development and malpositioned teeth, requiring surgical and orthodontic interventions.
- Facial clefts are most often treated with surgery.



Cleft Palate



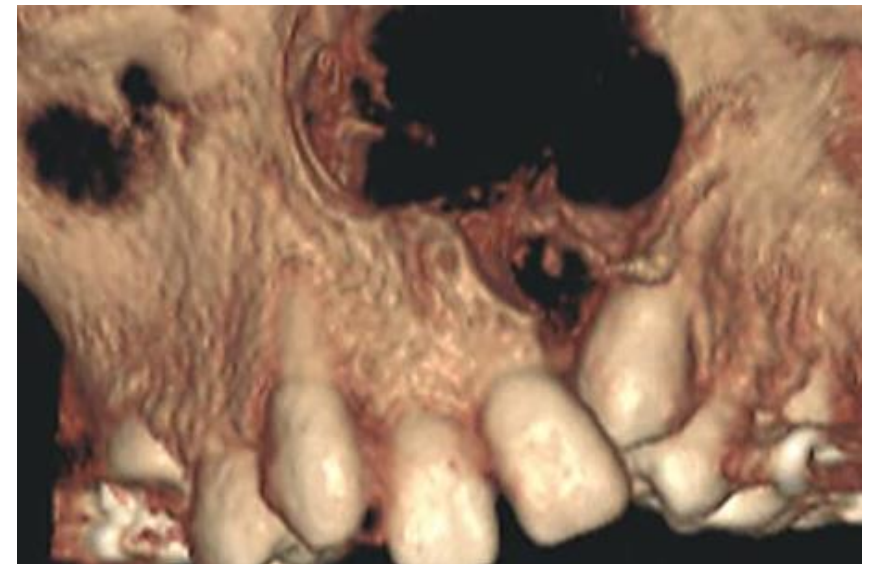
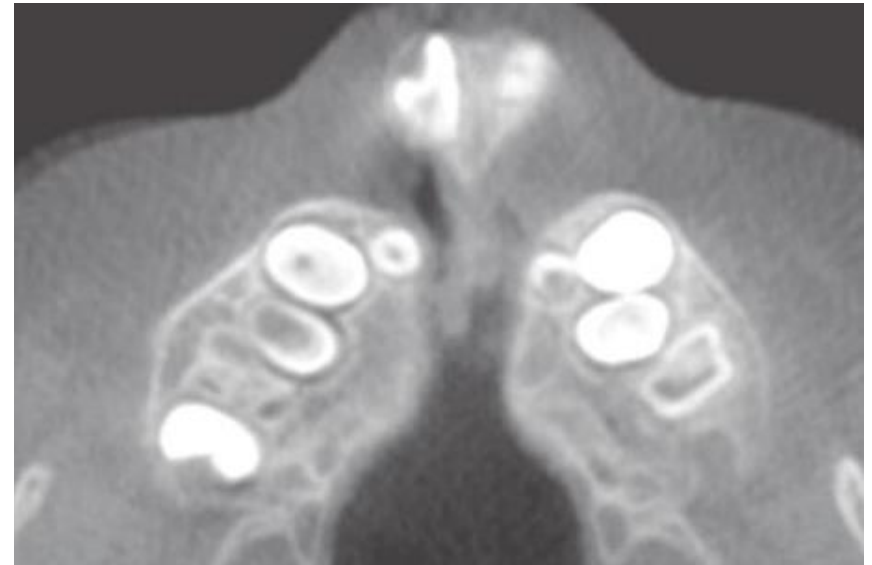
A Bilateral cleft palate
with lip involvement



B Unilateral cleft palate
with lip involvement



C Late failure of fusion
with partial cleft palate;
lip is not affected



Bifid Uvula and Bifid Tongue

- **Bifid** uvula and bifid tongue are often incidental findings.
- A uvula or tongue that appears to be splitting into two parts is described as bifid.
- Both bifid uvula and bifid tongue occur due to incomplete fusion of the embryonic processes that form them.
- Defective or incomplete fusion of the palatal processes
- Infants born to diabetic mothers are well documented to have a higher rate of congenital malformations



[nature](#) > [british dental journal](#) > [practice](#) > [article](#)

Practice | Published: 12 March 2005

Bifid tongue — a complication of tongue piercing

[P S Fleming](#)  & [T R Flood](#)

British Dental Journal **198**, 265–266 (2005) | [Cite this article](#)

2922 Accesses | **14** Citations | **7** Altmetric | [Metrics](#)

Key Points

- Tongue ornaments are seen with increasing frequency in the dental practice.
- Complications of tongue ornaments can manifest themselves even after their removal.
- Anatomic malformations may follow innaccurate placement of tongue ornaments.
- Complications of tongue piercing may have psychiatric implications.

Lip Pits

- Lip pits are small, congenital, sac-like invaginations of lip mucosa on the vermillion border with a depth ranging from 1 to 4 mm.
- In most instances, lip pits are not symptomatic and are an incidental finding.



Double Lip

- Lip pits are small, congenital, sac-like invaginations of lip mucosa on the vermillion border with a depth ranging from 1 to 4 mm.
- In most instances, lip pits are not symptomatic and are an incidental finding.



Aglossia and Ankyloglossia

- *Aglossia*: partial formation or complete absence of the tongue.
- Cause: failure of fusion of the components of the branchial arches responsible for tongue formation or result from the surgical treatment of disease.

- *Ankyloglossia*: attachment of the anterior tongue to the floor of the mouth, usually by a tight cord of tissue or frenum (tongue tie) causing significant speech and swallowing.



Macroglossia and Microglossia

- *Macroglossia*: abnormal increase in size of the tongue. It may be congenital, as in Down syndrome, or occur as a result of neoplasia.
- *Microglossia*: a rare, congenital disorder of abnormally small tongue due to lack of development of the tuberculum impar and other structures involved in tongue development.
- An excessively large or small tongue can significantly affect speech and impact feeding or swallowing.
- Normal growth and development of the mandibular alveolar processes may be altered by lack of tongue forces, resulting in malocclusion.



Fissured Tongue

- *Fissure tongue*: deep grooves are present on the dorsum of the tongue
- Fissured tongue may be seen in both children and adults, and its prevalence 5%.
- Fissured tongue has been associated with geographic tongue, with many patients having both conditions.
- Food particles and oral debris may be trapped in the deep crevices of a fissured tongue, creating an oral hygiene problem.
- Oral health-care procedures: cleaning the tongue by brushing and rinsing



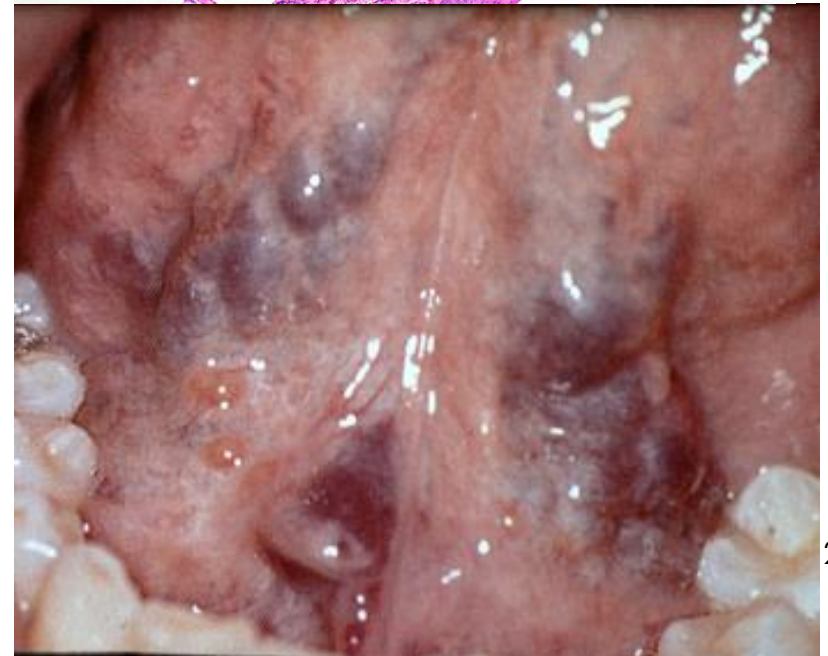
Lingual Thyroid (Ectopic Thyroid)

- *Lingual thyroid*: normal thyroid tissue remains at the **foramen caecum**, the initial site of thyroid gland formation on the dorsum of the tongue.
- It is called **ectopic**, meaning out of normal position. Mucosal-coloured round nodule, reaching up to 4 cm in diameter, located at or near the terminal sulcus.
- Ectopic thyroid tissue can remain anywhere along the thyroglossal tract, the route of thyroid gland migration to its final site in the neck.

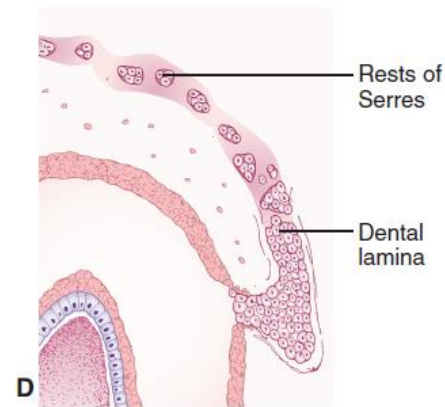
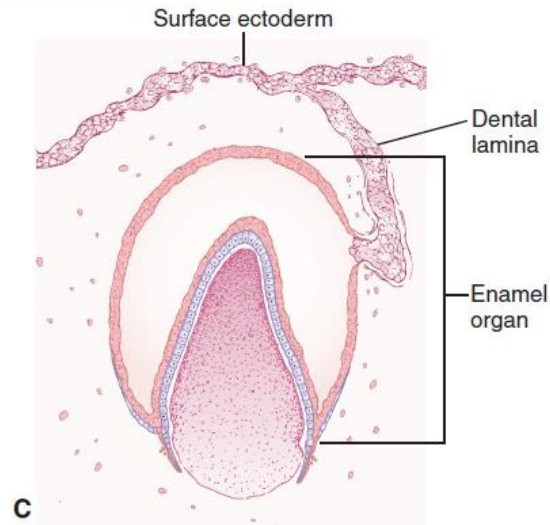
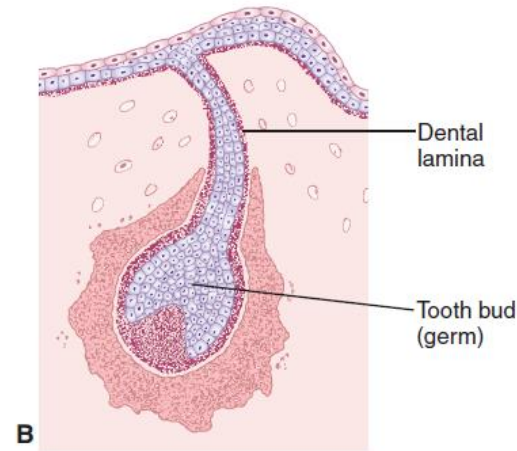
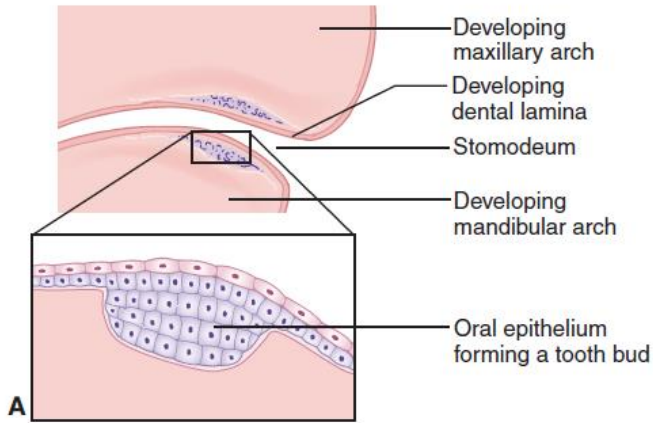


Lingual Varicosities

- *Varices*: swollen, twisted, and sometimes painful veins that have filled with an abnormal collection of blood.
- They present nonpainful, large, dilated, blue masses on the ventral surface of the tongue and are more common in older individuals, with few if any seen in children and adolescents.



Teeth development



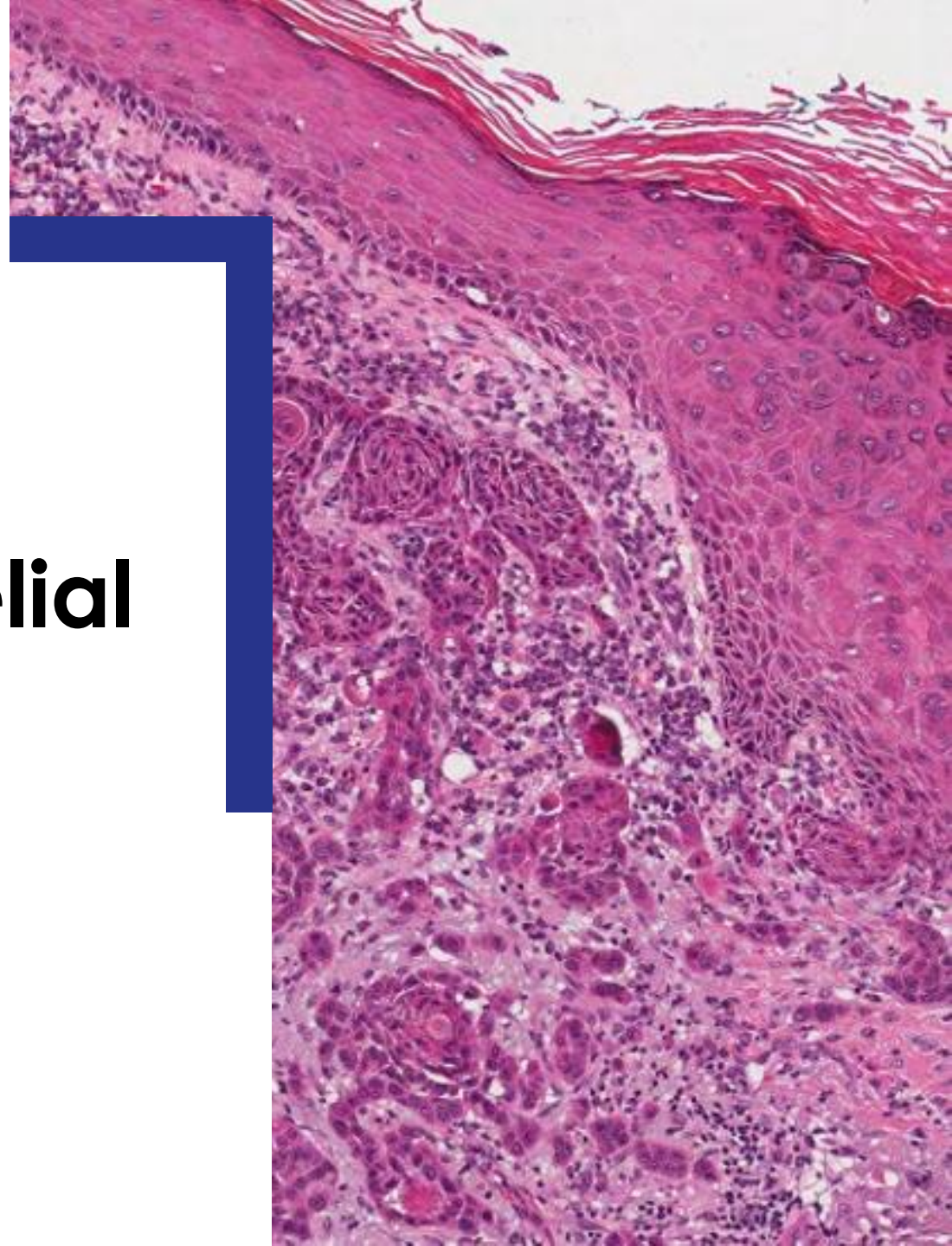
Teeth developmental disorders





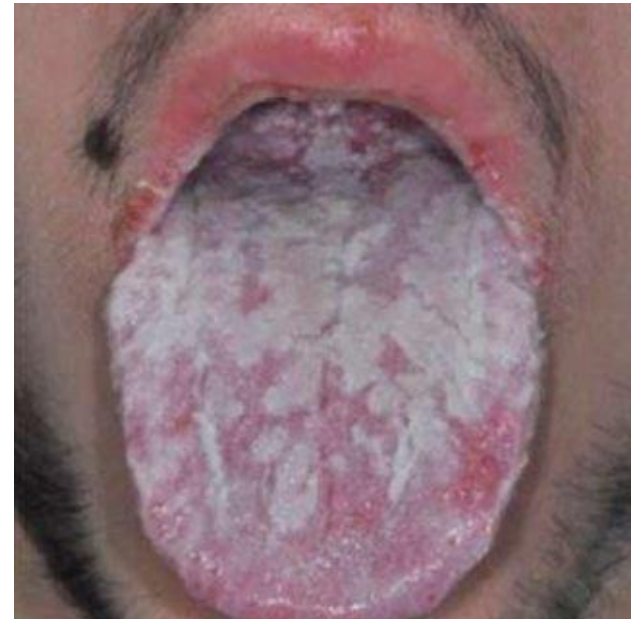
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Macular Epithelial Lesions



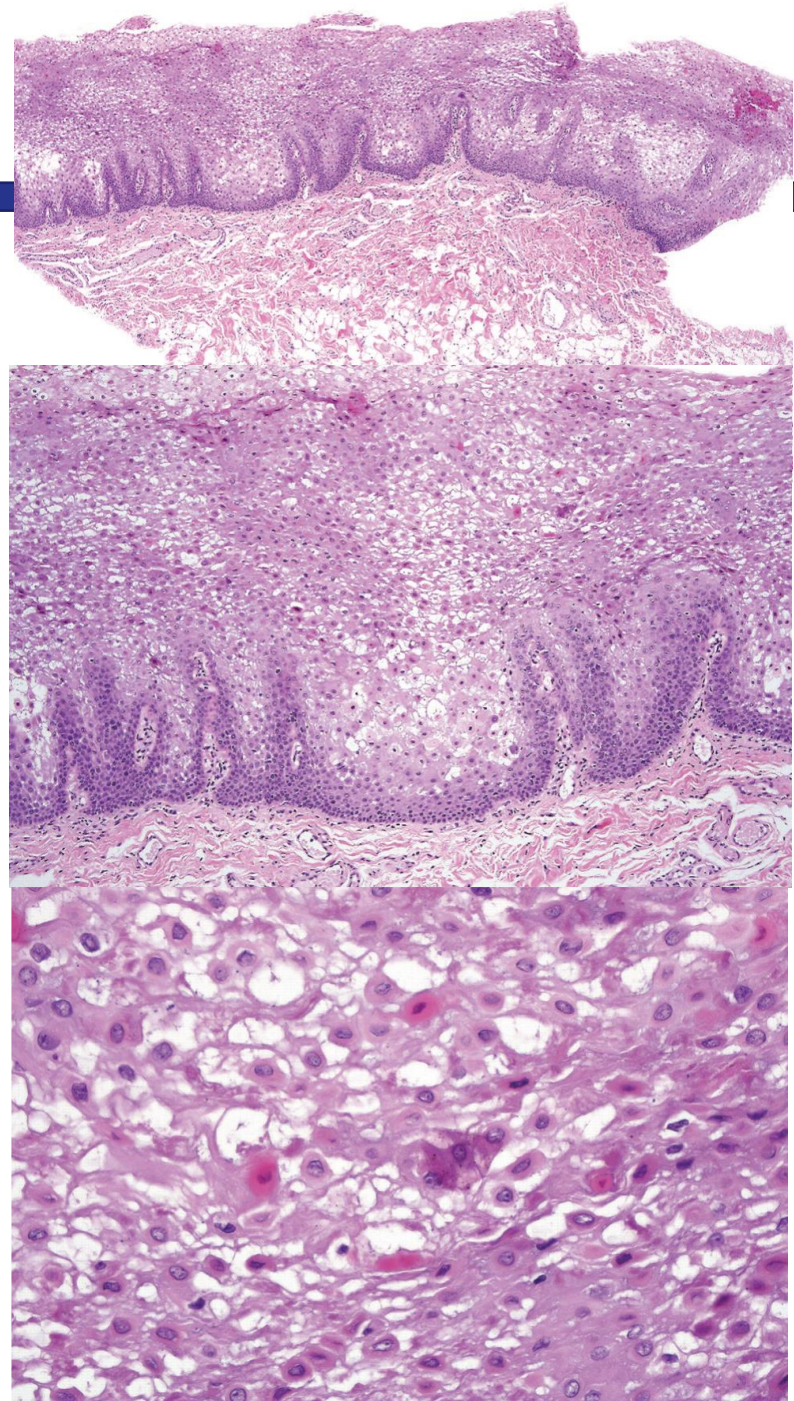
WHITE SPONGE NEVUS

- Lesions are noted in the first two decades of life and persist throughout life. The skin is not involved, although there may be oesophageal, upper airway, and genital involvement.
- The buccal mucosa appears diffusely white to grey, thickened, non-tender, edematous, and spongy. The tongue, lip mucosa, and floor of the mouth may also be involved



WHITE SPONGE NEVUS

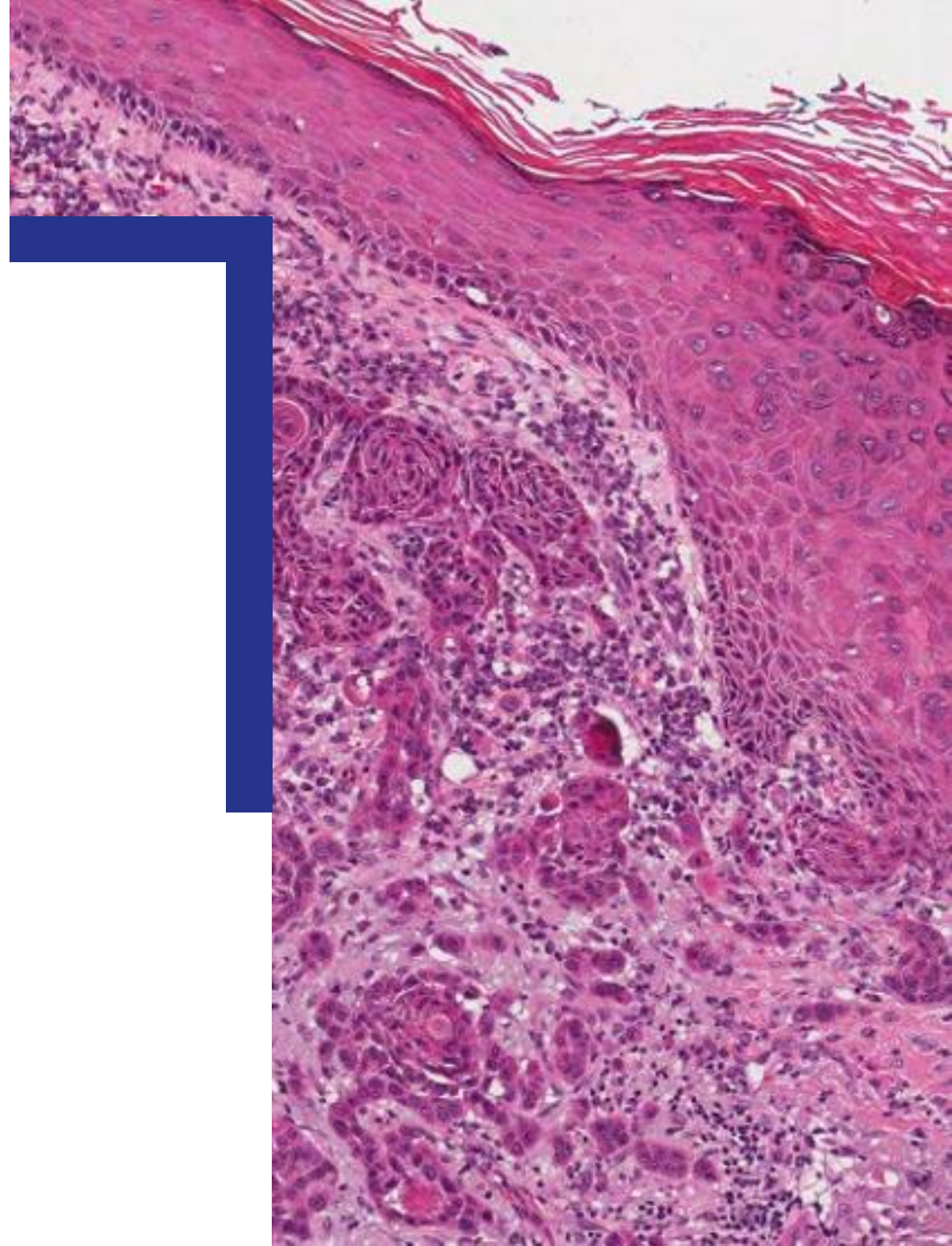
- The epithelium exhibits acanthosis with a pale “spongy” appearance.
- The pale epithelium is caused by intracellular vacuolation and dyskeratosis that spares the basal cells.
- There are perinuclear eosinophilic condensations and intracytoplasmic vacuolation (not spongiosis).



Macular Epithelial Lesions

- HEREDITARY MUCOEPITHELIAL DYSPLASIA
- KERATOSIS FOLLICULARIS (DARIER DISEASE, DARIER-WHITE DISEASE)
- HEREDITARY BENIGN INTRAEPITHELIAL DYSKERATOSIS
- ORAL LINEAR EPIDERMAL NEVUS
- EPIDERMAL NEVUS (EPIDERMAL CHORISTOMA)
- FOCAL PALMOPLANTAR AND GINGIVAL HYPERKERATOSIS SYNDROME

Nodular or Tumor-Like Lesions



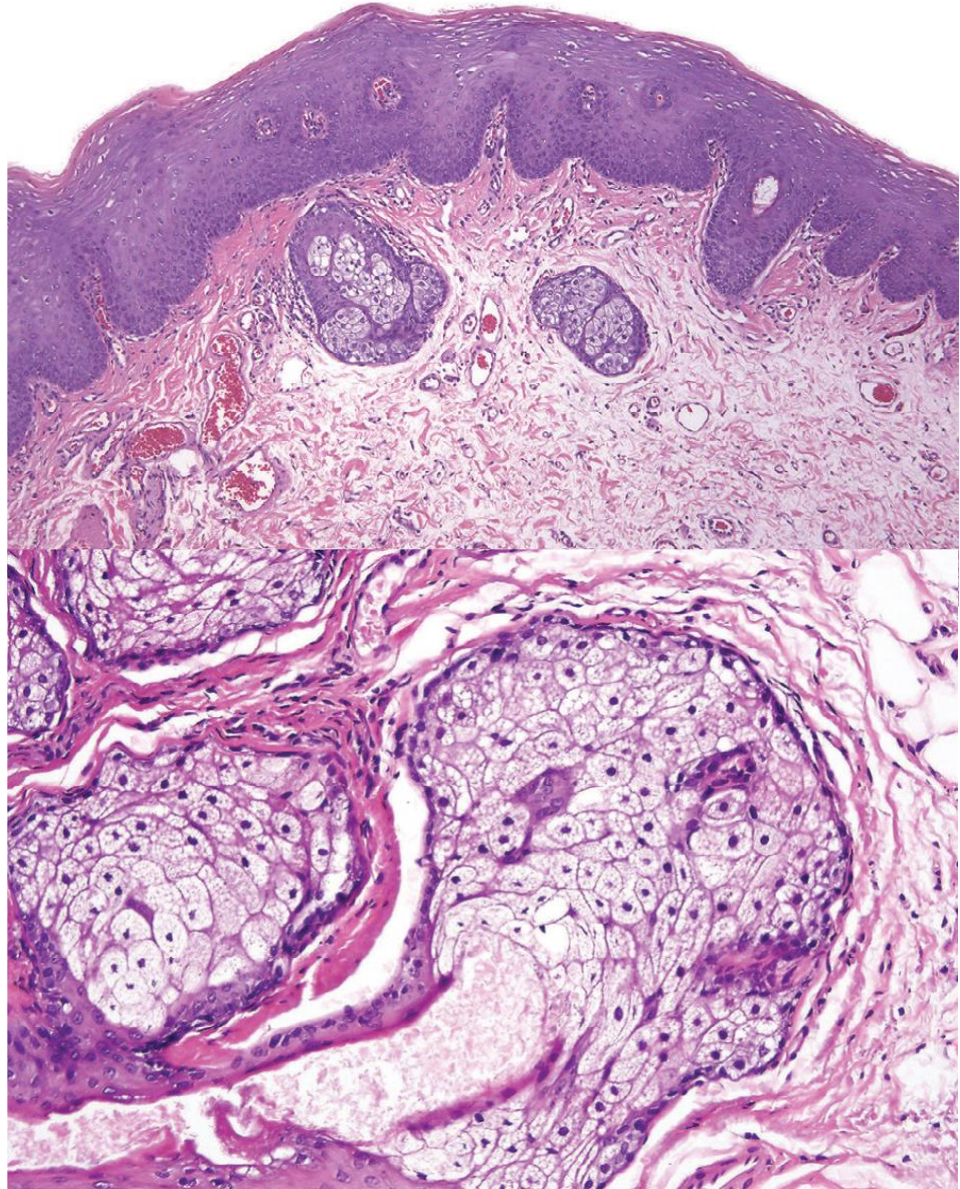
FORDYCE GRANULES (SEBACEOUS HYPERPLASIA)

- *Fordyce granules*: noted in adults, present in 60% to 80% of the population, and appear as 1- to 3-mm yellowish papules, frequently located on the posterior buccal mucosa and vermilion of the lips. They are usually bilateral and symmetric
- Fordyce granules are considered normal structures in the mouth that can become hyperplastic and adenomatous.



FORDYCE GRANULES (SEBACEOUS HYPERPLASIA)

- Mature sebaceous glands with a single germinative layer may or may not open onto the mucosa via a duct lined by squamous epithelium.
- Sebocytes have central nuclei and vacuolated cytoplasm. Hair.
- Sebaceous hyperplasia: This consists of at least 15 sebaceous lobules opening into a central duct lined by squamous epithelium.
- Sebaceous adenoma: This consists of many sebaceous lobules with proliferation of germinative basaloid cells at the periphery of the lobules.

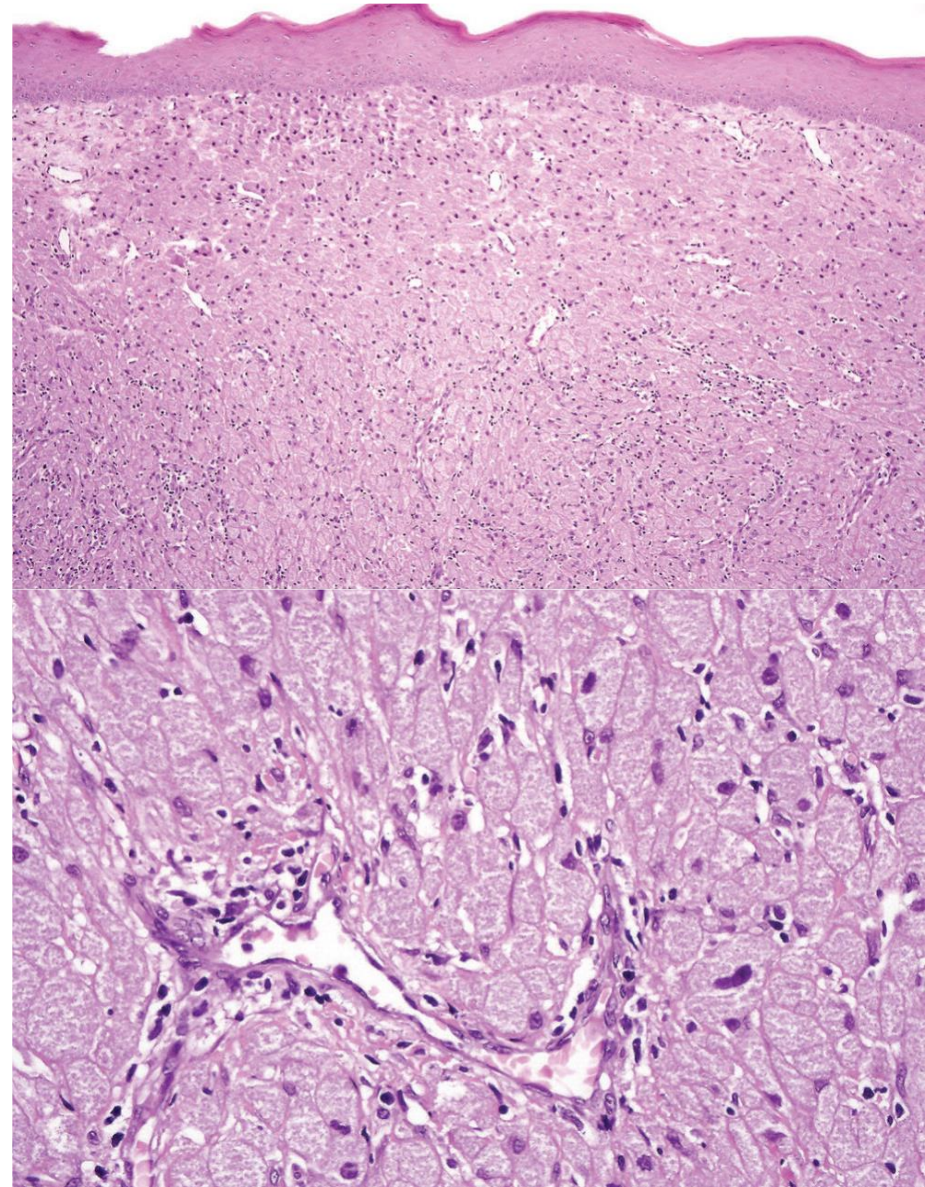


- *This tumour occurs in the newborn and has a strong 8–10:1 female predilection.*
- mesenchymal tumour of uncertain etiopathogenesis.



CONGENITAL GRANULAR CELL TUMOR (EPULIS)

- Sheets of cells with well-defined cell borders; pale, granular cytoplasm; and nuclei with dispersed chromatin and small nucleoli.
- There are prominent arborizing vessels, and the epithelium is atrophic with no pseudoepitheliomatous hyperplasia



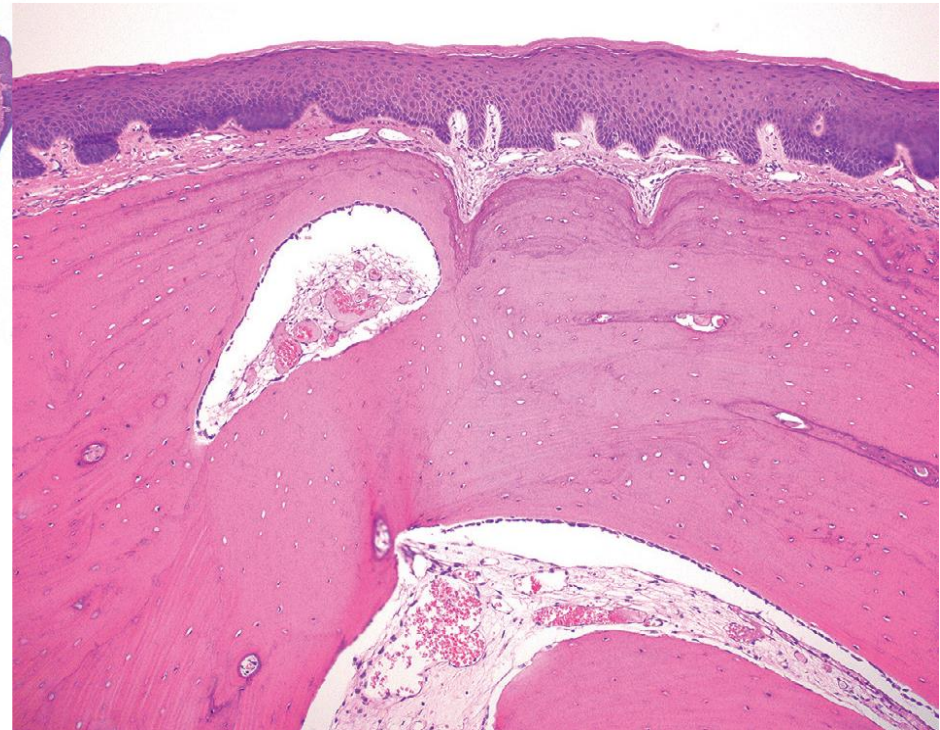
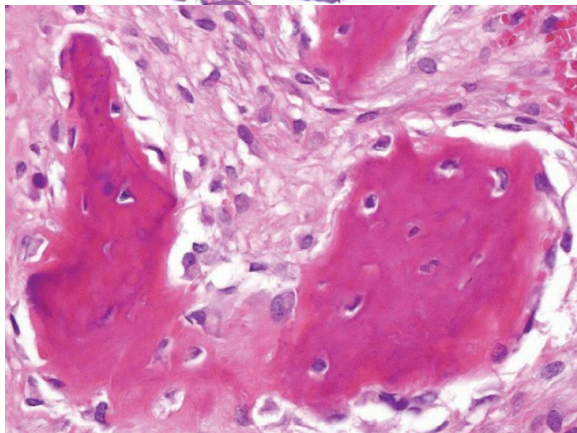
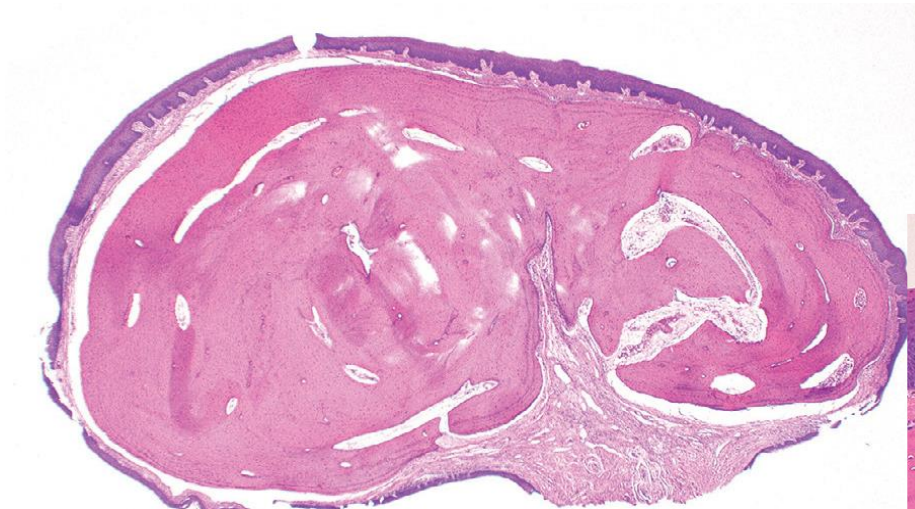
OSSEOUS, CARTILAGINOUS, AND OSTEOCHONDROMATOUS CHORISTOMA

- Seen in young adults in the second to fourth decade, and it has a 2:1 female predilection.
- Globus sensation or dysphagia, and the presence of a lump.
- More than 90% present as a mass or nodule, usually on the dorsum of the tongue



OSSEOUS, CARTILAGINOUS, AND OSTEOCHONDROMATOUS CHORISTOMA

- Mass of mature lamellar bone filling the superficial and deep lamina propria.
- Lamellar bone with widely spaced osteocytes and osteoblastic rimming.
- Cellular fibrous tissue containing many plump fibroblasts and woven bone.



- First year of life and presents as a soft, painless polypoid mass, usually on the tongue and anterior maxillary/palatal mucosa in the area of the nasopalatine foramen



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Short communication

Leiomyomatous hamartoma presenting as a congenital epulis

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Case Report

Lingual Leiomyomatous Hamartoma in an Adult Male

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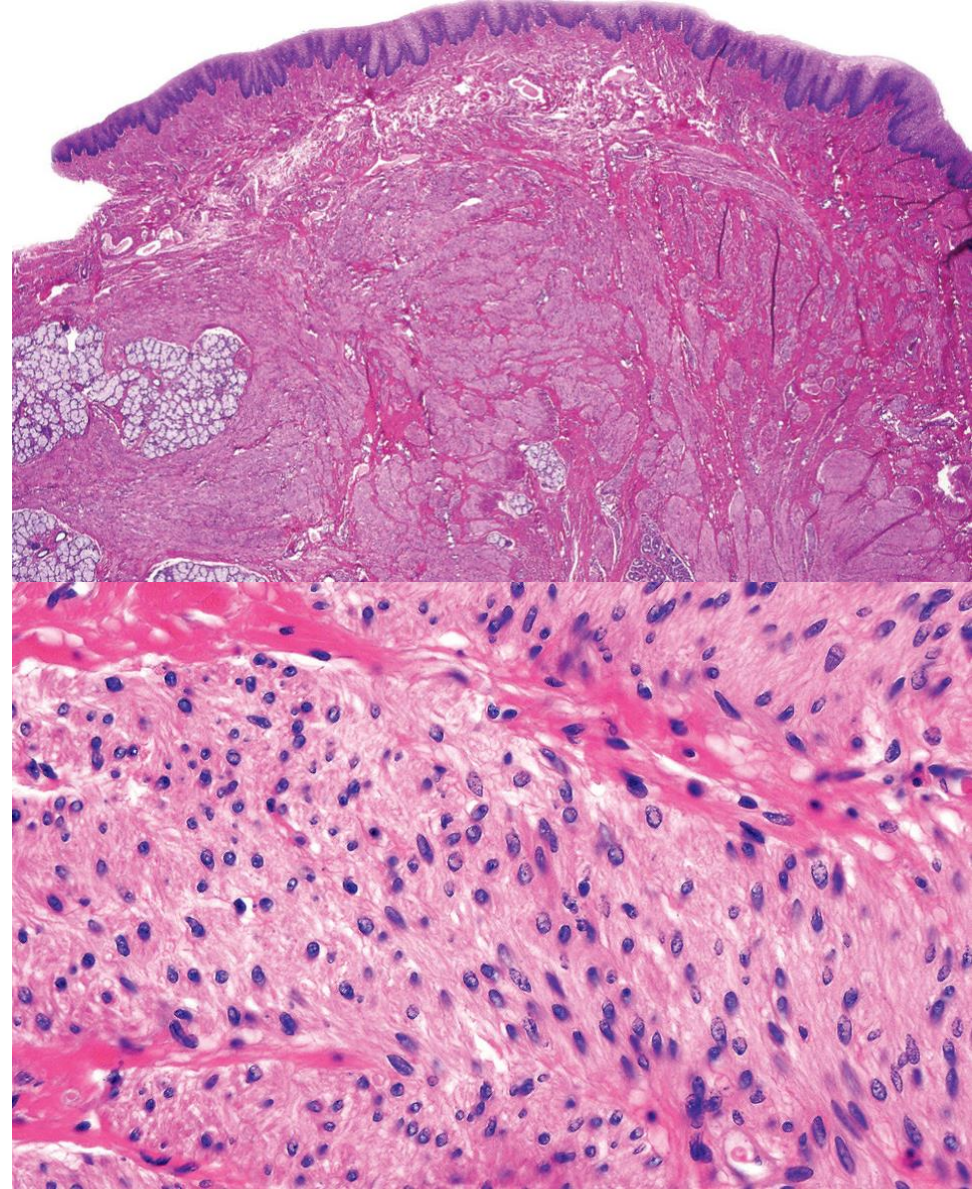
²*Private Practice, OMFSurgery, Cambridge Street, Wembley, WA, Australia*

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LEIOMYOMATOUS HAMARTOMA

- Nonencapsulated, discrete proliferation of fusiform and spindled smooth muscle cells in bundles separated by fibrous tissue
- Tumour cells express smooth muscle actin, muscle-specific actin and desmin, but not S100 protein



Quiz

SLIDO.com

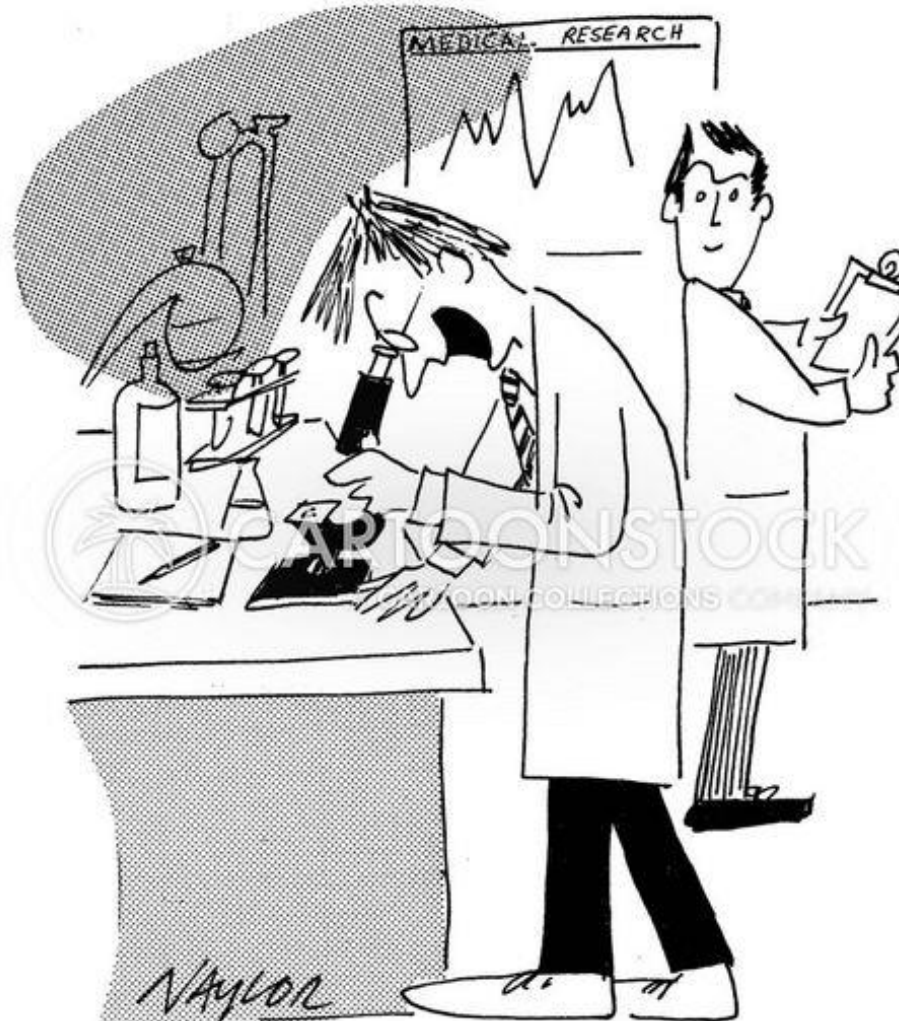
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Questions



"Good, our side's winning!"