

口腔胚胎及組織學
Oral embryology & histology

Gingiva and Dento-Gingival Junction

臺北醫學大學 牙醫學系
張維仁醫師
cweijen1@tmu.edu.tw

學習目標

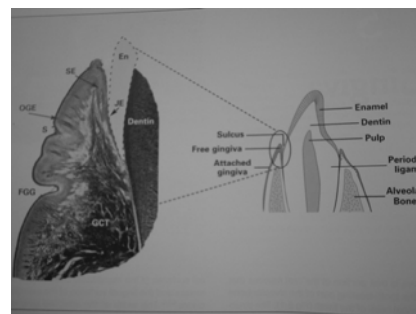
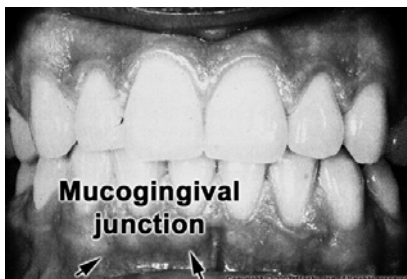
能了解頭面部及口腔之發育、結構與功能，並發展能有效吸收與傳播相關資訊之辭彙，將胚胎及組織學上之基本概念，應用於臨床上之診斷與治療

參考資料

1. Illustrated Dental Embryology, Histology, and Anatomy: Mary Bath-Balogh, Margaret J. Fehrenbach, 2nd Edition, Elsevier Saunders, 2006
2. Esstential of Oral Histology and Embryology--A clinical approach: James K Avery, Denial J Chiego, Jr 3rd Edition, Elsevier Mosby, 2006
3. Ten Cate's Oral Histology: Development, Structure, and Function: Nanci Anatonio, 6th ed. Mosby, 2003

Summary

提供學生探討頭面部及口腔之發育，認識牙齒及口腔組織之正常顯微結構，並了解其功能與結構之關係，進而對生理、病理與臨床牙科學上之問題能做比較與思考，為各牙科臨床科目之重要基礎課程



Gingiva

- Interdental papilla
- Attached gingiva 1-6mm
- Free Gingiva (marginal gingiva) 1-1.5mm

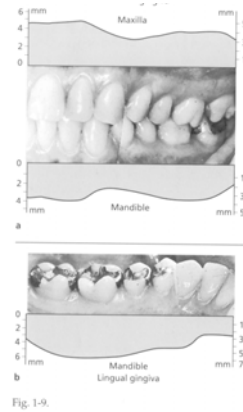
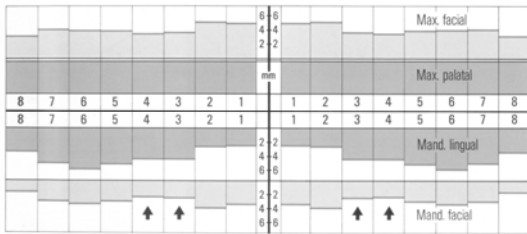


Fig. 1-9.



Microscopic anatomy

- Oral epithelium
- Dentogingival epithelium
 - Junctional epithelium
 - Sulcular epithelium
- Connective tissue

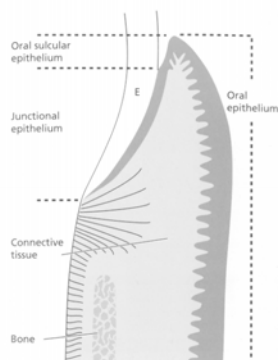
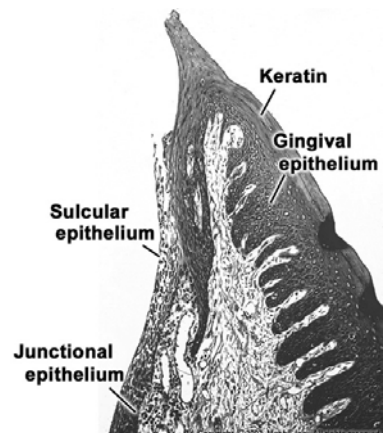
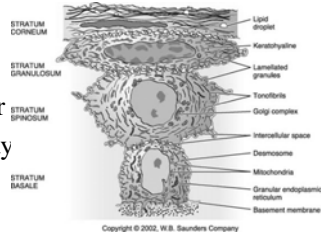


Fig. 1-12a.



Oral epithelium

- Basal layer
- Spinous cell layer
- Granular cell layer
- Keratinized cell lay



Basal Layer

- Rete peg formation
- Basal cell attach to lamina desa of the basal lamina by hemidesmosone
- Anchoring fibrils made of type VII collagen bind to the lamina densa to type I and III collagen
- Cuboidal or columnar cells

Spinous layer

- Prickle cell layer
- Cell to cell contact via desmosome
- Contain keratin filament
- Large ovoid cells
- Melanocyte, Langerhan's cell , Merkel Cell

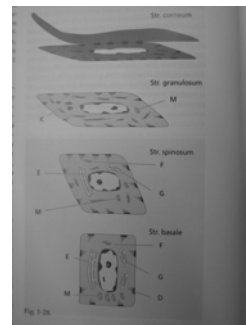
Granular layer

- Contain membrane coating granules,in upper part
- Flattened cells containing kerathyalin granules associated tonofibrils

Keratinized layer

- Cornified layer, Stratum Corneum
- Parakeratinization, orthokeratinization
- Extremely flattened cells and dehydrated cells

Cells in Oral gingival epithelium



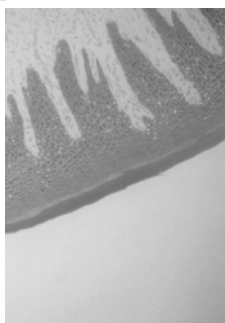
Cells in Oral gingival epithelium

Cell Type	Level in Epithelium	Specific Staining Reactions	Ultrastructural Features	Function
Melanocyte	Basal	Dopa oxidase-tyrosinase; silver stains	Dendritic; no desmosomes or tonofilaments; premelanosomes and melanosomes present	Synthesis of melanin pigment granules (melanosomes) and transfer to surrounding keratinocytes
Langerhans' cell	Predominantly suprabasal	CD1a; cell surface antigen markers	Dendritic; no desmosomes or tonofilaments; characteristic Langerhans' granule	Antigen trapping and processing
Merkel cell	Basal	Probably periodic acid-Schiff positive	Nondendritic; sparse desmosomes and tonofilaments; characteristic electron-dense vesicles and associated nerve axon	Tactile sensory cell
Lymphocyte	Variable	Cell surface antigen markers (CD3-T cells, CD20-B cells)	Large circular nucleus; scant cytoplasm with few organelles; no desmosomes or tonofilaments	Associated with the inflammatory response in oral mucosa

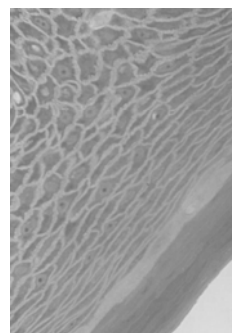
Oral gingival epithelium

- Provide a firm attachment for the epithelium
- Increase a stability of the epithelium
- Develop a permeability barrier to water soluble substances
- Forms a cornified protective outer layer

Gingival epithelium H and Lee stain x160



Gingival epithelium H and Lee stain x640



Dentogingival epithelium

- Junctional epithelium
- Oral sulcular epithelium

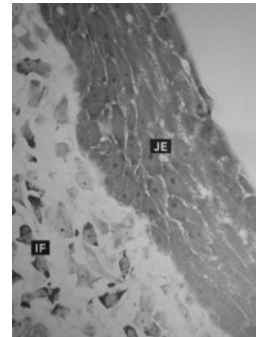
Junctional epithelium

- Direct attachment to tooth surface
- Primary epithelial attachment are formed in enamel maturation
- Secondary epithelial attachment are formed in eruption

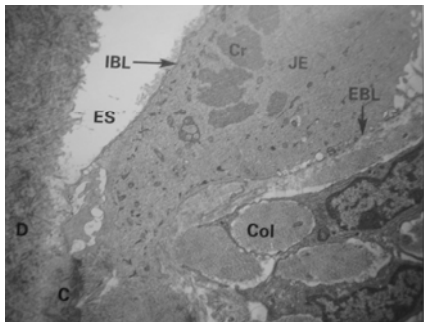
Junctional epithelium

- Greater in RER and Golgi Complexes
- Internal basal lamina are produced by the outermost epithelial cells at the tooth surface
- External basal lamina separates JE from the underlying connective tissue
- Wide intercellular space

Junctional epithelium x640



Junctional epithelium X 4000



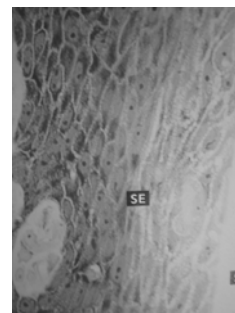
Junctional epithelium

- Has a high rate of proliferation
- Noncornified and poor stratified
- Highly permeable
- Is the main passageway for neutrophil entry into the gingival sulcus

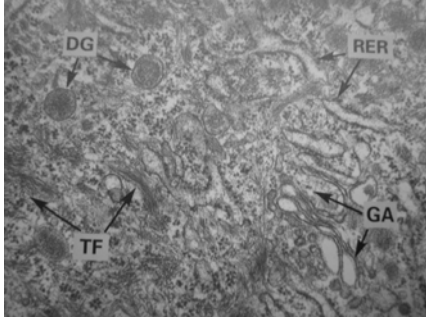
Oral sulcular epithelium

- From the marginal gingiva to junctional epithelium
- Less than 3 mm
- No granular layer
- Inner zone resembles a spinous layer but fewer tonofibrils and desmosomes
- Outer zone contains cells with intact nuclei and abundant cytoplasmic organelles and demonstrate variation

Oral sulcular epithelium x640



Outer layer of sulcular epithelium



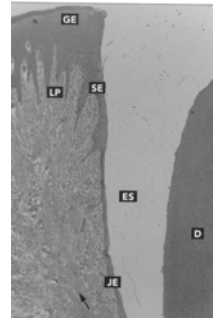
Oral sulcular epithelium

- Does not contain keratohyalin granule
- Is normally noncornified
- Is more permeable to water soluble substances than is the OGE
- Contains increased lysosomal activity

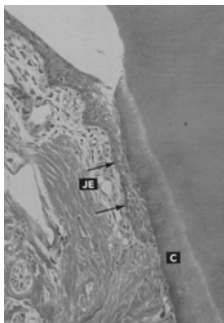
Connective tissue

- 60% Collagen fibers
- 5% fibroblasts
- 35% vessels ,nerves and matrix
- Cell component
fibroblasts,mast cells,macrophage,
neutrophilic granulocyte, lymphocyte,and
plasma cells

Dentogingival junction H.E.x64



Dentogingival junction H.E.x160



Dentogingival Junction

