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BDS Year 4 Regular batch
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Subject: Oral Medicine and Radiology
Topic: Pigmented Lesions of Oral Cavity 2

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Previous Lecture

Endogenous pigmentations

- Focal pigmentation
- Multifocal/diffuse pigmentation
- Melanosis associated with systemic or genetic disease

Lecture content

- Idiopathic pigmentation
- Exogenous pigmentation
- Summery

Laugier–Hunziker Pigmentation (Idiopathic Lenticular Mucocutaneous Pigmentations)

- Acquired, idiopathic
- Macular hyperpigmentation of the oral mucosal tissues (lips and buccal mucosae), Esophageal, genital, and conjunctival mucosae and acral surfaces
- <5 mm, adult patients, equal sex predilection
- Light-skinned individuals
- Nail involvement:
- Longitudinal melanotic streaks. Fingernails are more commonly affected than the toenails

Multiple pigmented macules

Faint brown macule appeared on the fingertip of the right thumb

Laugier–Hunziker Pigmentation (Idiopathic Lenticular Mucocutaneous Pigmentations)

Differential Diagnosis:

- Physiologic pigmentations
- Drug- or heavy metal–induced pigmentation
- Endocrinopathic disease
- Peutz–jeghers syndrome

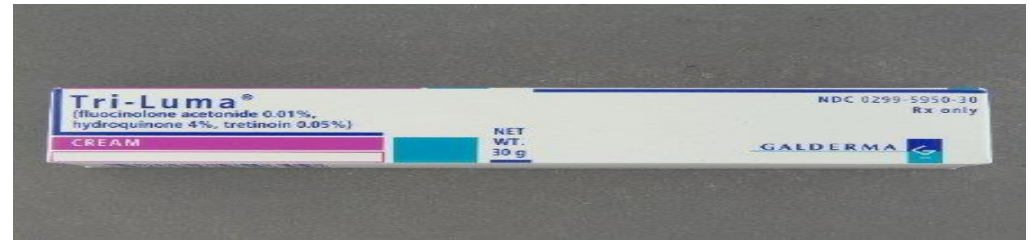
- Treatment: not indicated

Multiple pigmented macules

Faint brown macule appeared on the fingertip of the right thumb

TREATMENT OF MUCOCUTANEOUS MELANOSIS

- First-line therapy - topical medications, bleaching creams
- Single agents: azelaic acid or hydroquinone
- Dual- or triple-combination therapy (combination of 4% hydroquinone (0.05%) retinoic acid (0.01%) fluocinolone acetonide
- May experience immunologic sensitivity or other treatment-related adverse events, including the development of exogenous ochronosis



- Different thickness flap
- Gingivectomy, Cryotherapy, Electrosurgery
- Bur abrasion
- Scraping with a scalpel
- Laser therapy : superpulsed CO2, q-switched nd-yag, q-switched alexandrite lasers

Exogenous ochronosis

- Cutaneous hyperpigmentation with or without atrophic striae
- Coarsening of the skin or formation of numerous coalesced, black papules
- In black individuals, female, undergone long-term bleaching therapy
- Intense colour changes develop in the areas where the cream was applied
- Accumulation of a yellow-brown pigmented substance (not melanin) in the dermis
- Q-switched nd: YAG laser therapy appears to be effective in reducing the dyschromia

Vitiligo

- Acquired, autoimmune
- **Hypomelanosis** of the inner and outer surfaces of the Lips and perioral skin
- No gender preference, second and third decade of life

vitiligo involving the forehead, face, and lips

- Factors like
- Autoimmunity(diabetes type 1
- Systemic lupus erythematosus
- Rheumatoid arthritis
- Cytotoxicity, genetics, and alterations from metabolic or oxidative stress - destruction of the melanocytes

Segmental Vitiligo

Vitiligo

Non-segmental vitiligo
- Multiple achromic patches
- remitting-relapsing course

Segmental vitiligo
- Dermatomeric distribution of the achromic patches with a rapid onset
- Not progressive

Unclassified/undetermined vitiligo:
- Arise in patients undergoing immunotherapy for the treatment of malignant melanoma

vitiligo involving the forehead, face, and lips

Segmental Vitiligo

Management

Nonsurgical Therapies:

- Topical Corticosteroids
- Topical Calcineurin Inhibitors
- Ultraviolet B Narrow Band
- Psoralen And Ultraviolet A

Surgical Intervention:

- Autologous Epithelial Grafts
- Split-thickness Skin Grafts
- Punch Grafting

NB- UVB

Title	Advances in Vitiligo: An Update on Medical and Surgical Treatments
Authors	Dillon AB, Sideris A, Hadi A, Elbuluk N. J Clin Aesthet Dermatol. 2017 Jan; 10(1): 15–28
Objective	To provide a comprehensive overview of the medical and surgical therapies for vitiligo with emphasis on the most recent treatment modalities.
Material and method	Search using PubMed and the National institutes of Health's clinicalTrials.gov databases from January 2010 to July 2015. This yielded 86 studies, 12 of which were excluded, and 74 of which were reviewed.
Conclusions	A combination of traditional and newer treatments may work synergistically to provide additional improvement in patients' disease state and quality of life.

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Haemoglobin And Iron-Associated Pigmentation

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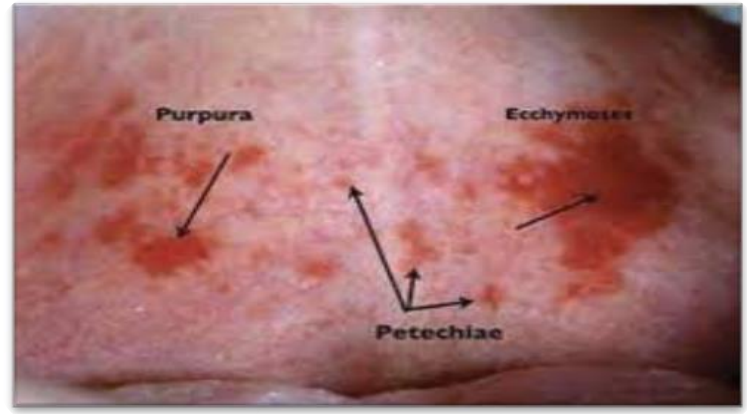
Ecchymosis

- Common lips and face, uncommon in the oral mucosa.
- Traumatic event--erythrocyte extravasation into the submucosa--bright red macule or as a swelling if a hematoma forms. haemoglobin is degraded to hemosiderin--Brown coloration

- Encountered in patients
- Taking anticoagulants
- Liver cirrhosis
- Leukaemia
- End-stage renal disease (undergoing dialysis)
- Laboratory tests: Bleeding time, prothrombin time, partial thromboplastin time, and international normalization ratio.

Petechiae & Purpura

- **Petechiae :** pinpoint or slightly larger than pinpoint
- **Purpura:** multiple, small 2–4 mm collection of extravasated blood.
- Etiology: trauma, viral, or systemic disease, Secondary to platelet deficiencies or aggregation disorders
- Site: on the soft palate
- Seen in patients with:
- Autoimmune or (ITP)
- HIV-related ITP
- Disorders of platelet aggregation
- Aspirin toxicity
- Myelosuppressive chemotherapy



- When trauma suspected, patient should be instructed to cease whatever activity may be contributing to the presence of the lesions.
- By 2 weeks, the lesions should have disappeared

Hemochromatosis

- Excessive iron deposition (usually in the form of hemosiderin) in the liver and other organs and tissues.
- Palate and gingiva: Blue-gray to brown pigmentation
- Early: pigmentation a result of basilar melanosis rather than iron-associated pigment.
- Iron deposition within the adrenal cortex may lead to hypoadrenocorticism and ACTH hypersecretion, with the associated addisonian-type changes.

- Later stages of hemochromatosis,--hemosiderosis and melanosis
- Lower labial gland biopsy.
- Prussian blue stain confirm the presence of iron. Medical referral is necessary

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Exogenous pigmentations

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Amalgam Tattoo

- Flat, blue–grey lesion of variable dimensions
- Site: gingiva, alveolar mucosa, buccal mucosa, and floor of the mouth
- Consequence of the inadvertent deposition of amalgam restorative material into the submucosal tissue
- With large amalgam restorations or crowned teeth that probably had amalgams
- Around the apical region of endodontically treated teeth with retrograde restorations or obturated with silver points
- In areas in and around healed extraction sites
- Occur in dentists and represents an occupational hazard resulting from failure to use facial protective barriers
- For esthetics surgical removal may be warranted

Graphite Tattoos

- Focal exogenous pigmentation
- Palate and gingiva and represent traumatic implantation of graphite particles from a pencil

- Solitary gray or black macule
- Traumatic event often occurs in childhood, many patients may not report a history of injury

- Areas of cosmetic concern, removal of the lesion
- Subsequent autogenous connective tissue graft provide a highly esthetic outcome

Ornamental Tattoos

- Amateur tattoo inks: permanent and consist of simple, carbon particles originating from a variety of sources, including
- Burnt wood
- Plastic, or paper
- India ink
- Pen ink
- Plant-derived matter

- Ornamental Mucocutaneous tattooing is considered a rite of passage and esthetically pleasing in most cases,
- Pigment is plant derived

Medicinal Metal-Induced Pigmentation

- Gold and colloidal silver - diffuse cutaneous pigmentation.
- Silver- generalized blue-gray discoloration (argyria)
- Gold-induced pigment may appear blue-gray or purple (chrysiasis)
- Systemic gold therapy- oral lichenoid eruptions
- Silver nitrate cautery has been used to treat recurrent aphthous stomatitis
- Zinc oxide is a common component of sunblock creams- focal mucocutaneous pigmentation
- Bismuth subsalicylate- black tongue is caused by deposition of actual pigment (bismuth sulfide), without any other lingual changes.
- Chewing of bismuth subsalicylate tablets discontinuation of the antacid and cleansing of the tongue are curative- generalized black pigmentation of the tongue

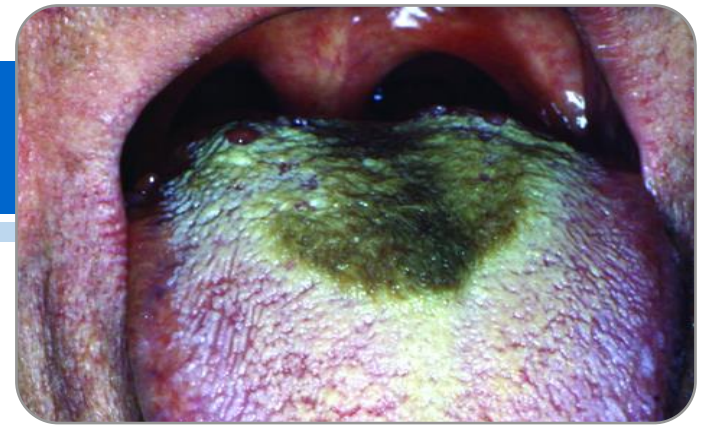
Heavy Metal Pigmentation

- Lead, mercury, bismuth, and arsenic
- Ingested metal salts-- extravagate from vessels in areas of chronic inflammation--deposited in oral tissue
- Oral pigmentation may be the first sign of heavy metal toxicity
- Arsenic: Leukoplakia lesions
- Lead: Characteristic free marginal gingiva and gray hue or line to gingival cuff (burtonian line)
- Mercury: Slate-gray gingival hyperpigmentation.
- Gold and bismuth: Blue-black to brown
- Systemic symptoms of toxicity:
- Behavioural changes, neurologic disorders, intestinal pain, and sialorrhea

Drug induced pigmentation

- Minocycline metabolites may incorporated into normal bone
- Surrounding bone appear green, blue, or even black
- Palatal and alveolar mucosae
- Soft tissue pigmentation: gray, brown, or black. Particulate substance represents an actual precipitated drug metabolite rather than true melanin
- Subsides within months after discontinuation of the medication
- Bone pigment may persist for longer periods of time
- Another drugs: Methacycline, Imatinib (a tyrosine kinase inhibitor)

Hairy Tongue



- Causative -chronic antibiotic therapy (tetracycline, linezolid, olanzapine, bismuth, and erlotinib)
- Dorsal tongue, particularly the middle and posterior one-third. Filiform papillae: elongated hyperplastic (appearance of fine hairs)
- Colonization of chromogenic bacteria impart a variety of colours, including white, green, brown, or black
- Smoking of tobacco or crack cocaine has been associated
- Filiform papillae: Elongated and hyperplastic with hyperkeratosis, Superficial microbial colonization of the papillae
- Treatments: brush the tongue, or use a tongue scraper, and limit the ingestion of colour- forming foods and drinks until the discoloration resolves

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BLUE/PURPLE VASCULAR LESIONS

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Hemangioma

- Proliferations of vascular channels are tumor like hamartomas
- Appear a few weeks after birth
- Grow rapidly
- Found on the skin, in the scalp, and within the connective tissue of mucous membranes

Classification

<u>According to depth, distribution number, location</u>

1. **Superficial hemangiomas/Mucosal hemangioma** - involve only the mucosa/skin
   - Capillary hemangioma
   - Cavernous hemangioma

2. **Compound hemangiomas** - Involve both the mucosa/skin and subcutaneous tissue

3. **Deep haemangiomas** - Involve the subcutaneous surface and not the overlying mucosa/skin.
   - Central hemangioma
   - Intramuscular hemangioma
   - Hemangioma within salivary glands

<u>Another classification</u>

1.Congenital hemangiomas

2. Acquired hemangiomas

Capillary Hemangioma

- Composed of small fine blood vessels filled with blood.
- Small, and may or may not involute in childhood.
- Superficial lesions appear raised with a bright red colour and are called strawberry haemangioma

Cavernous Hemangioma

- Large thin-walled vessels or sinusoids lined with a single layer of endothelium.
- Dome-shaped bluish lesion, which is commonly located on the lips, tongue, buccal mucosa, etc.

Central Hemangioma

- Develops within bone.
- Rarely develops in the jaws. Mandibular body or condylar regions.
- Bony hard, painless swelling producing a non-tender expansion of the jaw. Pain, if present, probably is the throbbing type.
- May be compressible or pulsatile. Bruit may be detected on auscultation.
- Anaesthesia of the skin supplied by the mental nerve. May cause rebound mobility

Intramuscular Hemangioma

- Proliferation of benign vascular channels within the skeletal muscle.
- Most frequently from masseter (erectile haemangioma) and trapezius muscles bruits, thrills, compressibility are often absent.
- Mass with associated pain. Usually no skin changes.

- Clenching the teeth could make the lesion to become more firm and fixed.

Hemangioma

- Treatment can undergo
- Conventional surgery
- Laser surgery
- Cryosurgery
- Larger lesions that extend into muscles: sclerosing agents such as 1% sodium tetradecyl sulfate may be administered by intralesional injection.

Port Wine Stain

- Flat, macular, and diffuse, particularly on the facial skin, where they are referred to as port-wine stains.
- Present at birth although become more obvious with time
- Unilateral distribution along one or more segments of trigeminal nerve
- Sometimes may involve face, labial mucosa , gingiva and palate
- At birth: flat, pale, pink
- With age: deep red or deep purple as well as thickened, become nodular in some areas
- Do not shrink by themselves or disappear spontaneously
- Investigations: OPG(to rule out Sturge Weber Syndrome),USG, MRI (to rule out brain pathology)
- Sturge weber syndrome:

Sturge Weber Syndrome

- **S** –Stain (Portwine)
- **T** – TramTrack Calcification
- **U** – Unilateral Weakness
- **R** – Recurrent seizure
- **G** – Glaucoma
- **E** – Eye signs (Buphthalmos)

Varix and Thrombus

- Focal dilatation of a vein or group of venules is known as a varix
- Varices are abnormally dilated veins, seen mostly in patients older than 60 years of age, once formed, does not regress
- Most common: ventral surface of the tongue
- Appear as multiple bluish purple, irregular (tortuous serpentine) , soft elevations that blanch on pressure
- May evolve from trauma such as lip or cheek biting
- Treatment:
- Electrosurgery and cryosurgery.
- Intralesional 1% sodium tetradecylsulfate injection (depositing .05 to 0.15 ml/cm3).
- If the varix contains a thrombus, it presents as a firm bluish purple nodule that does not blanch on pressure. Thrombi are more common on the lower lip and buccal mucosa.

Angiosarcoma

- Malignant vascular neoplasms,
- Can arise anywhere in the body.
- Although the oral cavity is an extremely rare site for such tumors, those that occur will (if superficial) appear red, blue, or purple.
- Rapidly proliferative and therefore present as nodular tumors.
- Arise from blood or lymph vessel endothelial cells or from pericytic cells of the vasculature.
- They have a poor prognosis and are treated by radical excision.

Telangiectasia

- Small, red, macular lesion that is composed of dilated capillaries under the epithelium.
- Blanch with pressure
- Seen in patients with
- Rendu-osler-weber syndrome (hereditary haemorrhagic telangiectasia)
- Syndrome of calcinosis cutis
- Raynaud's phenomenon
- Esophageal dysmotility
- Sclerodactyly and telangiectasias (CREST syndrome) associated with progressive systemic sclerosis.
- Treatment: electrocautery

Kaposi's Sarcoma

- Predominantly in HIV-infected individuals.
- Diagnostic of aids progression.
- A human herpesvirus (hhv-8) implicated as the cause.
- Most commonly affects the hard palate, gingiva and tongue.
- Early lesions appear as flat or slightly elevated brown to purple lesions
- Often bilateral.
- Advanced lesions appear as dark red to purple plaques or nodules that may exhibit ulceration, bleeding and necrosis.
- Early plaque or macular stage lesions- not require treatment.
- Nodular lesions may become unsightly and interfere with mastication-
- Electrocautery
- Intralesional injection of 1% sodium tetradecyl sulfate will result in necrosis of the tumefactions
- Intralesional 1% vinblastine sulfate - multiple biweekly injections

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PIGMENTATION OF TEETH

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Types of Tooth Discolourations

a) Based on Involvement

Extrinsic discolouration	**Direct : dietary components , beverages like tea coffee, tobacco pan chewing, poor oral hygiene, chromogenic bacteria** **Indirect: mouth rinses like chlorhexidine, medication containing iron, manganese, copper, vitamin c , iron**
Intrinsic discolouration	Pre eruptive pigmentation : Amelogenesis imperfecta Dentinogenesis imperfecta Dentin dysplasia, turner tooth, infections, nutritional deficiency(vit A,D etc) medications like: tetracycline, minocycline, ciprofloxacin, fluoride supplements Post eruptive pigmentation: Trauma, fluorosis , localized RBC break down, internal resorption

Fig. 9.20 (A) Extrinsic stains - Blackish brown (cigarette smoking), (B) Reddish brown (due to pan masala), (C) Blackish stains (due to chromogenic bacteria).

Fig. 9.21 Different types of intrinsic stains: (A) Brown (due to trauma), (B) Yellow (due to dentigerous imperfecta), (C) yellow (due to amelogenesis imperfecta), (D) Yellowish white (due to dental flourosis).

b) Based on colour of pigmentations

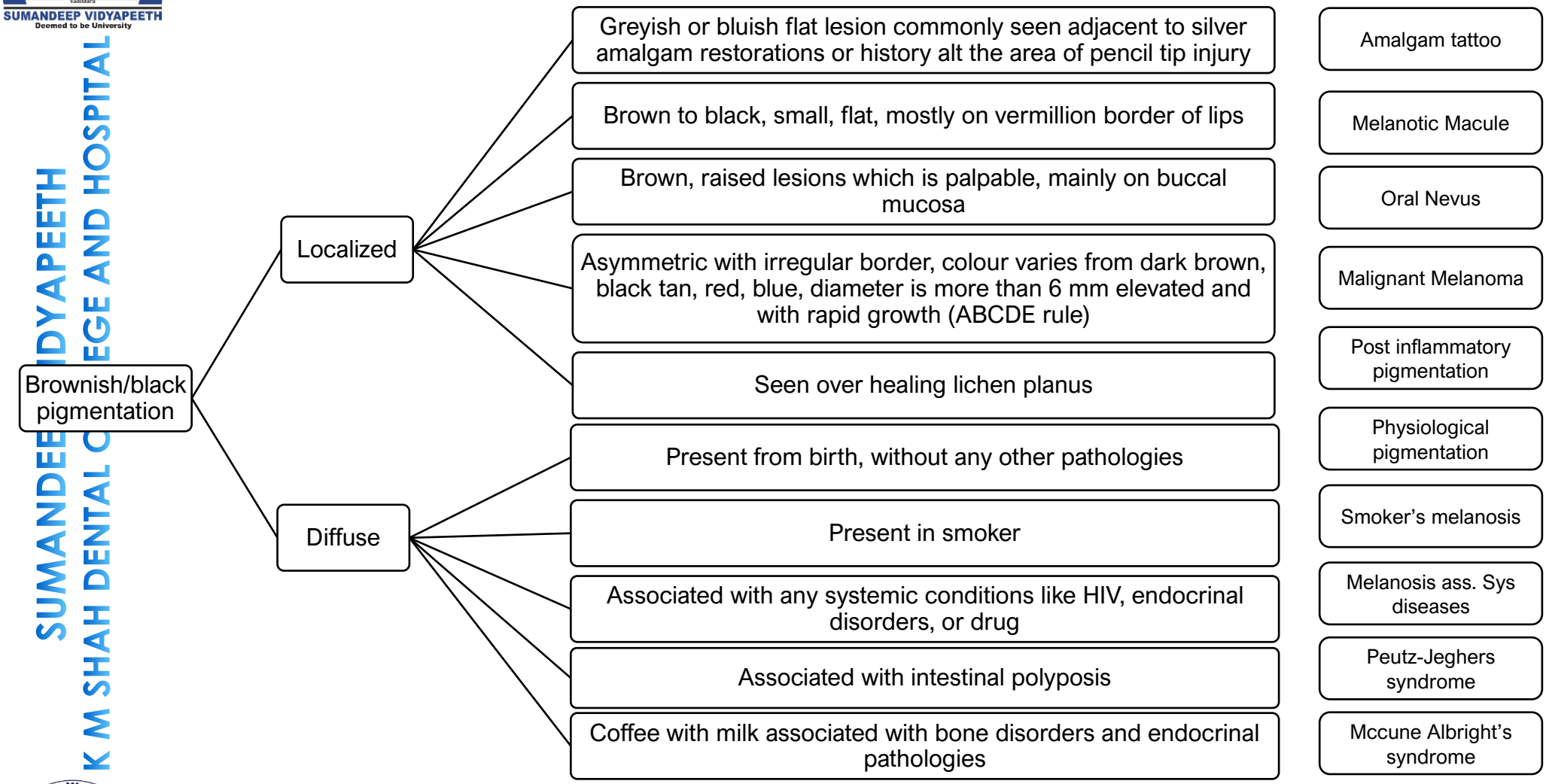
Color	Different Causes
Yellow	Aging, Poor Oral Hygiene, Dental Fluorosis, Hypomaturative Amelogenesis Imperfecta Turners Teeth (Single Teeth Staining), Dentin Dysplasia, Dentinogenesis Imperfecta,
Chalky White	Dental Fluorosis, Hypoplastic Amelnogenesis , Turners Teeth
Brown	Brown- Alkaptonuria Traumatic Haemorrhage Within Teeth-blackish Brown Diet-tea, Coffee, Others Chromogenic Bacteria, Dental Fluorosis, Hypo Calcified Amelogenesis Imperfecta , Severe Form Of Dental Fluorosis, Tobacco Smoking, Chewing Reddish Brown- Erythropoietic Porphyria, Pan Chewing Golden Brown- Stannous Fluoride Yellow Brown - Chlorhexidine
Yellow Green	Hyperbilirubinemia, Chromogenic Bacteria Copper Containing Drug

Management

- Radiography usually not helpful for extrinsic stains
- Radiography is useful in case s of intrinsic stains where enamel/ dentin affected (amelogenesis and dentinogenesis imperfecta or in case of pulpal involvement (internal resorption, trauma, caries)

- Treatment :
- Extrinsic stains: scaling and polishing using prophylactic paste with rubber cup
- Intrinsic stains: requires restoration/ RCT/ bleaching/ veneering / crown placement etc

SUMMARY



Blue / purplish lesion	Bluish purplish dome shaped swelling, present from birth, mostly regress with age, diascopy test positive	Hemangioma
	Presence of purplish dome shaped lesion, usually in older aged, diascopy test mostly positive	Varix
	Presence of purplish dome shaped lesion, with history of biting or trauma, may have history of decrease and increase in size, swelling may have history of rupture and spillage of saliva. Diascopy test negative	Mucocele
	Presence of large flat patch of dark red colour from birth which darkened to purplish colour with multiple nodules with age, usually affected unilaterally, along the segment of branches of trigeminal nerve	Portwine stains
	These are smaller elevated lesions which is present at birth or early childhood and remain unchanged throughout life	Blue Nevus
	The lesion begin as flat, reddish purplish discolouration which does not blanch, then it increases in size, become symptomatic, invade mucosa or bone as well	Kaposi Sarcoma

CCES MCQS

1. Green stains frequently occur in children are due to_____?

A. Enamel deficiency
B. Dentin deficiency
C. Material alba
D. Chromogenic bacteria

2. Port wine stains seen in ?

A. Nevus
B. Hemangioma
C. Melanoma
D. All of the above

3. Hemochromatosis is due to ?

A. Bilirubin
B. Haemosiderin
C. Methaemoglobin
D. Myoglobin’

CCES MCQS

4. Human herpesvirus (hhv-8) is implicated in?

A. Hemangioma
B. Kaposi's Sarcoma
C. Melanoma
D. Telangiectasia

5. Presence of purplish dome shaped lesion, usually in older aged is ?

A. Nevus
B. Hemangioma
C. Blue Nevus
D. Varix

Ans key

- 1-D
- 2-b
- 3-b
- 4-b
- 5-d

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