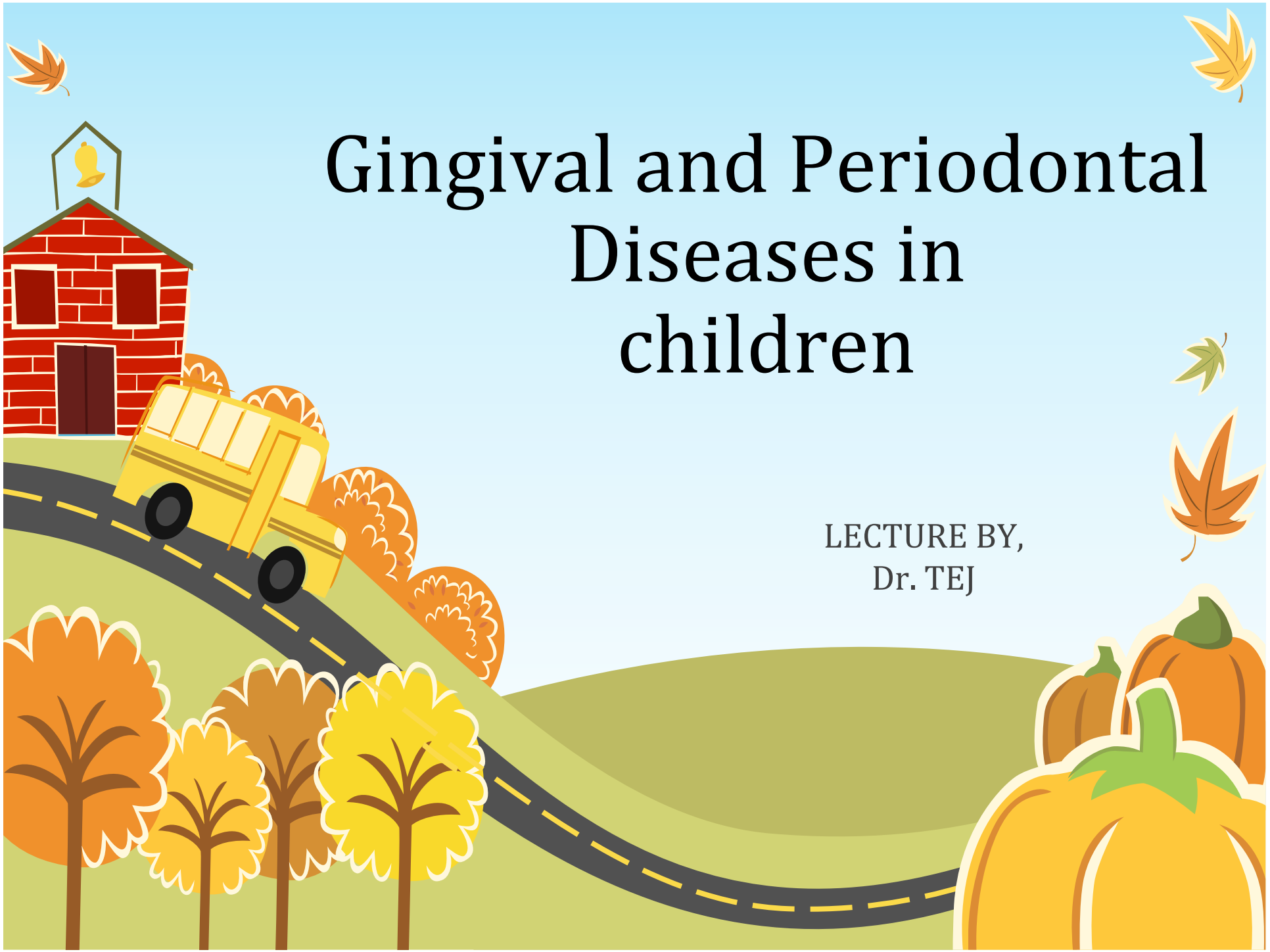
Gingival and Periodontal Diseases in children



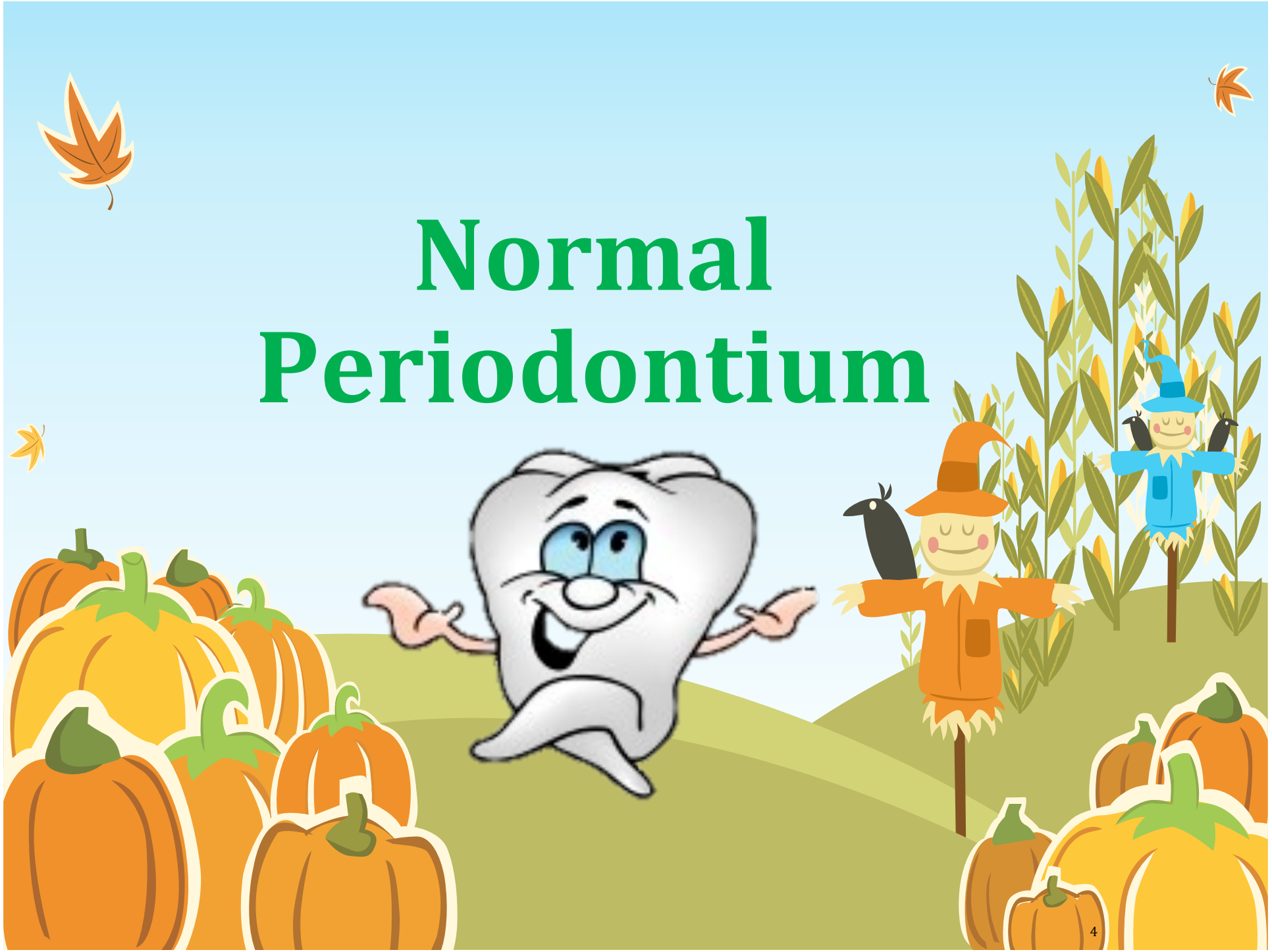
LECTURE BY,
Dr. TEJ

Contents:

Introduction

- Periodontal diseases peak their destructive stages in the middle age , but many of them have their inception during childhood.
- The early detection and early treatment are important from a preventive aspect since, the prevention of most periodontal diseases are relatively simple and very effective, providing lifetime benefits.

Normal Periodontium



- The clinical and radiographic images of gingiva and periodontium in children and adolescent differ from those seen in adults, owing to the significant changes taking place during growth and development.
- The periodontium during childhood and puberty is in constant state of change owing to the exfoliation and eruption of teeth.
- This makes a general description of the normal periodontium difficult because it varies with age of the patient. (Baer and Benjamin, 1974)

Features	Children	Adults
Gingival colour	More reddish	Coral pink
contour	Free gingival margin-rounded	Gingival margin-knife edge
Consistency	Flabby due to less CT density and lack of organized collagen fiber bundles	Firm and resilient
Surface texture	Stippling absent in infancy. `Mostly seen by age of 6 yrs	Stippling present

feaatures	Children	Adults
Interdental area	Saddle shaped gingiva	Papillary gingiva
Gingival sulcus	Newly erupted teeth sulcus depth is greater than deciduous predecessor	1-2mm
Attached gingiva	Width increases with age and concomitant decrease in sulcus depth	Greater in adults

Gingival & Periodontal diseases

Classification:

GINGIVAL CONDITIONS

Acute gingivitis

- Herpetic gingivostomatitis
- Necrotizing ulcerative gingivitis

Chronic gingivitis

- With local contributing factor (Plaque induced)
- Without local contributing factor

Gingivitis associated with systemic disease

Welbury R, Duggal MS, Hosey MT. Pediatric dentistry , ed 4, Oxford, 2012

PERIODONTAL CONDITIONS WITH LOSS OF CONNECTIVE TISSUE ATTACHMENT

Early-onset periodontitis

- Localized aggressive periodontitis
- Generalized aggressive periodontitis

Prepubertal periodontitis associated with systemic disease

- Papillon-Lefevre syndrome
- Ehlers-Danlos syndrome
- Chediak-Higashi syndrome
- Leucocyte adhesion deficiency syndrome
- Neutropenias

Gingival diseases

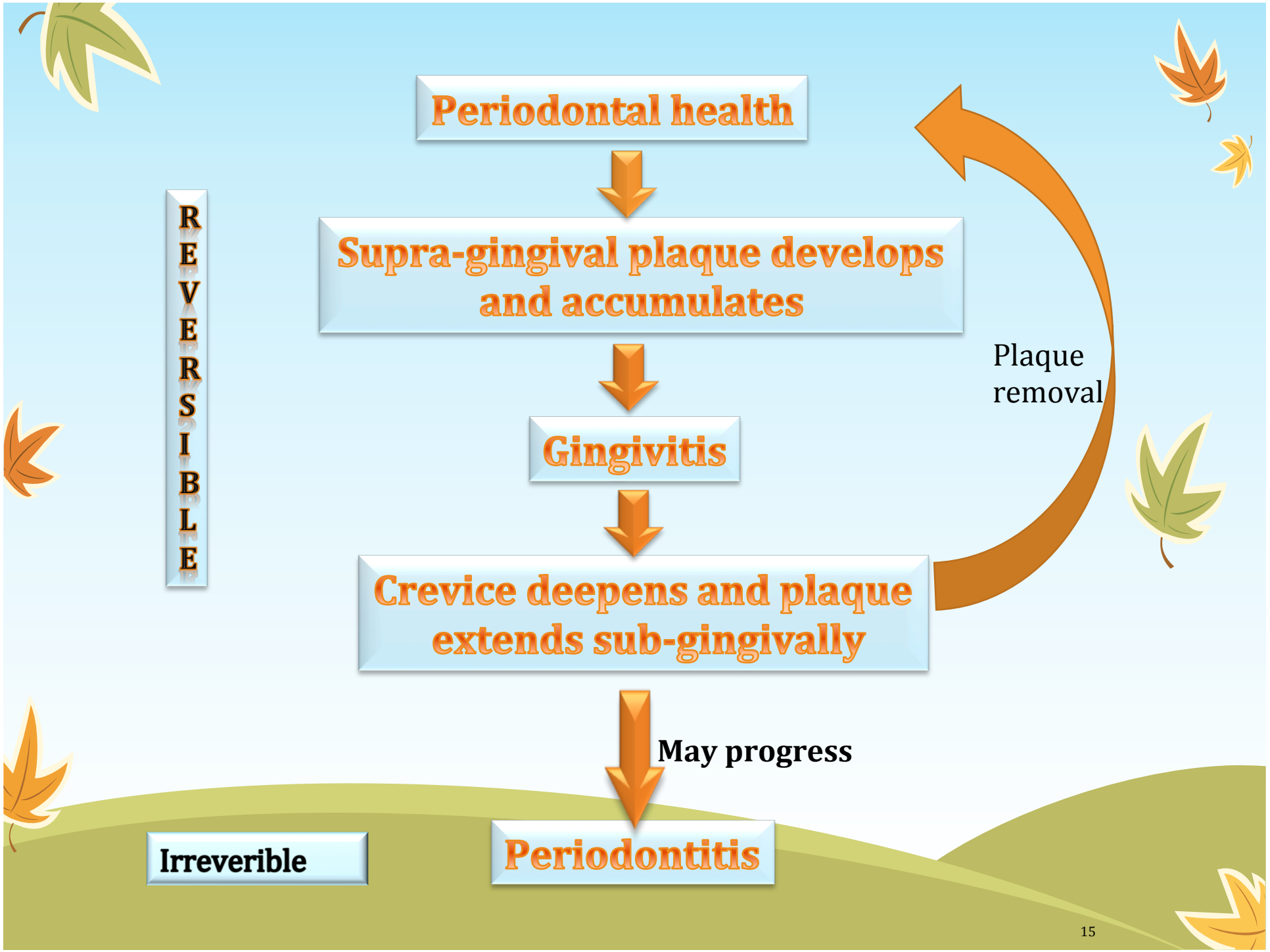
Gingivitis

- Dental plaque induced gingival inflammation is the most common form of gingivitis.
- It is characterized by inflammation of gingival tissues without loss of attachment or bone.
- Local factors contributing t
  children
  - Crowded teeth
  - Orthodontic appliances

- Gingivitis associated with poor oral hygiene is usually classified as
  - Initial lesion
  - Early lesion
  - Moderate lesion
  - Advanced lesion

Stages of gingivitis

stage	Initial stage	Early stage	Established stage
Time (days)	2-4	4-7	14-21
Blood vessels	Vascular dilatation	Vascular proliferation	Vascular proliferation, Blood stasis
Junctional & Sulcular epi.	Infiltration by PMNs	Same as stage 1,	Same but more advanced
Predominant immune cells	PMNs	Lymphocytes	Plasma cells
Collagen	Perivascular loss	Increased loss	Continuous loss
Clinical findings	Gingival fluid flow	Erythema, Bleeding on probing	Changes in color, texture, size


Periodontal health
Supra-gingival plaque develops and accumulates
Gingivitis
Crevice deepens and plaque extends sub-gingivally
Periodontitis
REVERSIBLE
Irreverible
Plaque removal
May progress

Acute gingival diseases

- Primary herpetic gingivostomatitis
- Recurrent aphthous ulcer
- Acute necrotizing ulcerative gingivitis (vincent infection)
- Acute candidiasis (thrush, candidosis)

Primary herpetic gingivostomatitis

- Caused by Herpes simplex virus type 1
- Age-Children younger than 6 yrs, but also may be seen in adolescents and adults.
- Primary infection is asymptomatic
- Location- lesions mainly involve hard palate, attached gingiva and oral mucosa.
- Manifestations include blister outside the lip so disease commonly called recurrent herpes labialis.

- Characteristic oral finding:
  - Diffuse erythmatous involvement of gingiva.
  - Initial stage in characterized by discrete spherical gray vesicles.
  - Lip- excoriation involving lip become hemorrhagic
  - Course is self limited to 7-10 days.

- Oral symptoms:
  - Generalized soreness
  - Ruptured vesicles – focal site of pain
  - Infants show irritability and refusal to eat
  - Pain upon swallowing
- Extra oral symptoms:
  - Cervical lymphadenopathy
  - Fever (101- 105℃)
  - Generalized malaise, irritability

Treatment

- Symptomatic & supportive.
- Application of mild anesthetic such as dyclonine hydrochloride(0.5%)
- Bed rest , soft diet are recommended during the febrile stage & the child should be kept well hydrated.
- Pyrexia - paracetamol suspension and secondary infection of ulcers may be prevented using chlorhexidine.
- In severe case, systemic acyclovir(200 mg daily for 5 days).

Recurrent aphthous ulcer

- Characterized by painful ulceration on the oral mucosa
- Occurs between school age and adults
- Recurrent ulceration with painful discrete and confluent lesions.
- Lesions are round to oval crateriform base, raised and reddened margins.

- Etiology:
  - Immunological abnormality: mucosal destruction T-mediated immunological reaction.
  - Microbial organism: ∝-hemolytic strept. And S. sanguis.
  - Systemic factors: like nutritional deficiency

- **Clinical features:**
  - Occur between second and third decade of life.
  - Buccal and labial mucosa tongue and gingiva are commonly involved.
  - Symptoms- lesions are typically very painful.
  - Signs- begins as single or multiple superficial erosion covered by grey membrane, surrounded by localized area of erythema.

Treatment

- Symptomatic treatment
- Topical corticosteroid triamcinolone 3-4 times daily by rinse and expectorate method.
- Nutritional diet.
- Maintenance of oral hygiene.

Acute necrotizing ulcerative gingivitis

- Characterized by sloughing of gingival tissue
- Uncommon in children
- Predisposing factors:
  - Local: poor oral hygiene, pre-existing gingivitis and smoking
  - Systemic: Emotional stress
- Nutritional deficiency –Vit B and C

- Clinical features
  - Characteristic lesions are punched out, crater like depression at the crest of interdental papillae
  - Surface of gingival craters is covered by pseudomembranous slough.
  - Linear erythma.

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Atout RN, Todescan S. Managing patients with necrotizing ulcerative gingivitis. J Can Dent Assoc. 2013;79:d46.

- Extra oral and systemic symptoms:
  - Local lymphadenopathy
  - Elevation in temperature
  - Increased pulse rate, leukocytosis, loss of appetite, and general lassitude
  - Systemic reactions are more severe in children, insomnia, constipation, GIT disorders, headache etc.

- Treatment:
- Perform debridement under local anesthesia.
- Remove pseudomembrane.
- Patient counselling should include specific oral hygiene instructions, instruction on proper nutrition,
- For any signs of systemic involvement, the recommended antibiotics are:
  - Amoxicillin, 250 mg 3 x daily for 7 days and/or
  - Metronidazole, 250 mg 3 x daily for 7 days

Acute candidiasis (thrush, candidosis)

- Acute candidiasis:
  1. Pseudomembranous
  2. erythmatous
- Causative organism- C. albicans (yeast like fungus.
- Pathogenesis-

- Clinical features:
  - Pearly white or bluish white plaque present on oral mucosa which may extend to circumoral tissues.
  - Painless and noticed on careful evaluation. They may be removed with little difficulty.
  - Patient may complain of burning sensation.

- Treatment:
  - Infants and very young children
    - Nystatin 1ml (100,000U) dropped in to mouth for local action four times a day.
    - Clotrimazole suspension (10mg/ml) 1 to 2 ml applied over affected areas four times daily
    - Systemic fluconazole suspension (10mg/ml) 6mg/kg body weight

Gingival enlargement

- Inflammatory enlargement
  - Chronic inflammatory enlargement
  - Acute inflammatory enlargement
- Drug induced gingival enlargement
- Vitamin C deficiency associated gingival enlargement

Chronic inflammatory gingival enlargement

- Long standing gingivitis in young patient sometimes results in chronic inflammatory gingival enlargement, which may be localized or generalized.
- Etiology:
  - Prolonged exposure to plaque
  - Factors that favour plaque accumulation and retention.
  - Chronically dried gingiva in mouth breathing

- Clinical features:
  - Characterized by slight ballooning of interdental papilla and marginal gingiva.
  - In early stage , it produces a life preserver-shaped bulge around the involved teeth.
- Treatment:
  - Removal of local irritants
  - Oral hygiene maintenance

Chronic inflammatory gingival enlargement

Acute inflammatory enlargement

- **Gingival abscess**
- Is a localized, painful rapidly expanding lesion that is usually of sudden onset
- Etiology:
  - Irritation from foreign substance
    - Tooth brush bristle
    - Piece of apple core
    - Lobster shell fragment –embedded in to gingiva

- Clinical feature:
  - Localized, painful, rapidly expanding lesion
  - Limited to the marginal gingiva or interdental papillae
  - Early stage: red swelling with smooth shiny surface
  - With in 24 hours to 48 hours- lesion will be fluctuant.
- Management: Incision and drainage

Drug-induced gingival enlargement

- Drug-induced gingival enlargement:
  - Anticonvulsant
  - Immunosuppressant cyclosporine
  - Calcium channel blocker
- Clinical and microscopic features of enlargement caused by different drugs are similar.

- Clinical features:

- The growth starts as a painless, beadlike enlargement of the interdental papilla and extends to the facial and lingual margins.

- As the condiiton progress, marginal and papillary enlargment units and may develop into a massive tissue fold.

- May interfere with occlusion.

Treatment modalities

Mild – < 1/3 of clinical crown	**oral hygiene maintenance and frequent dental care**
Moderate- **1/3 to 2/3 of clinical crown**	**oral hygiene** **Antiplaque mouthrinse** **4 consecutive weekly office visits for prophylaxis, 5th week- evaluate the gingiva** **If no improvement – surgical correction**
Severe – **> 2/3 of clinical crown**	**If does not respond above treatment.** **Surgical correction is done -meticulous oral hygiene is essential .** **Surgical procedure:- gingivectomy, laser, or electrosurgery.**

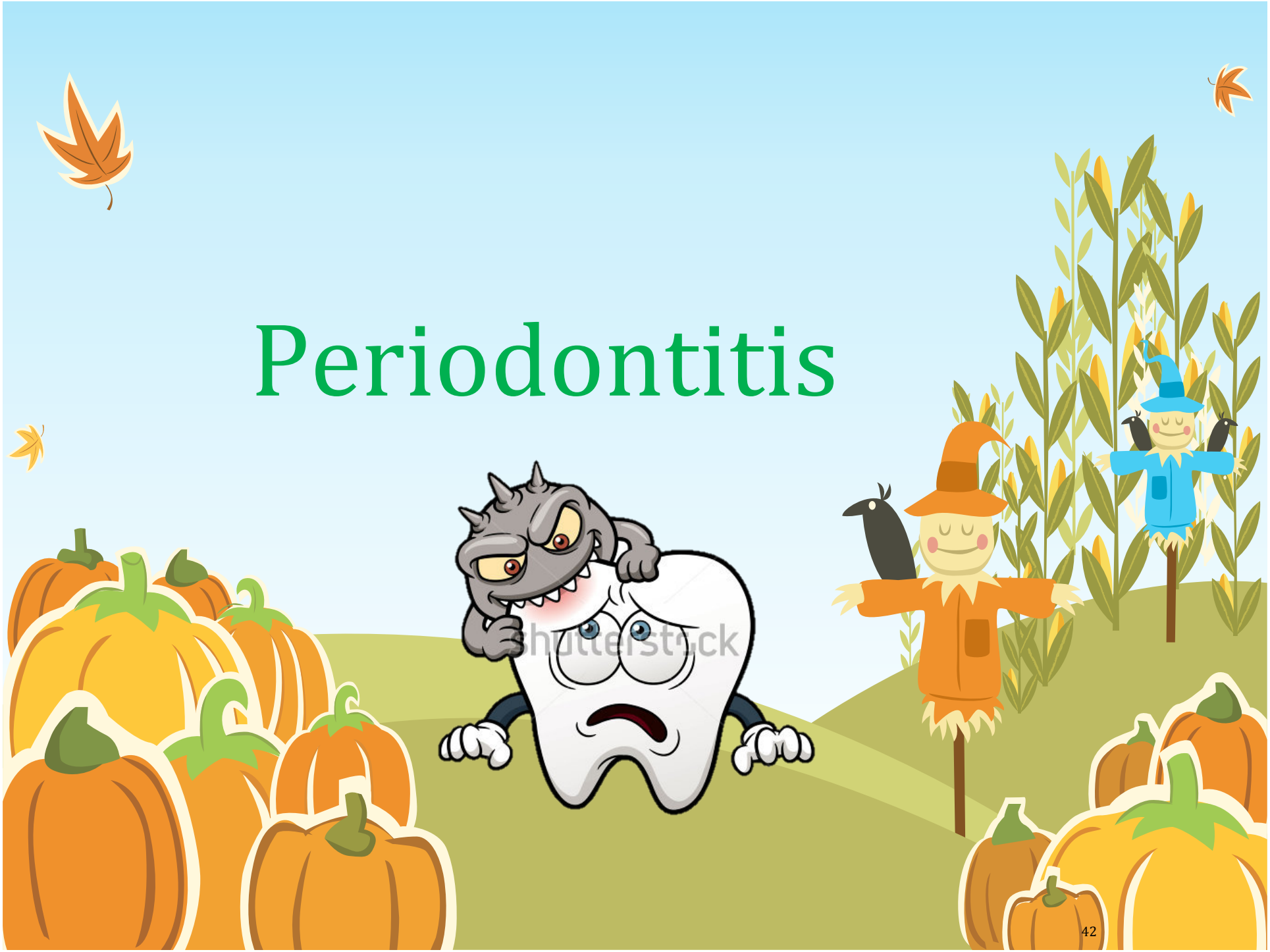
Ascorbic Acid Deficiency Gingivitis

- Associated with vit C deficiency
- Involves marginal and papillary gingiva in the absence of local predisposing factors
- Complains of severe pain and spontaneous hemorrhage
- Treatment: Complete dental care, improved dental hygiene, and supplementation with vit C – improves gingival conditions

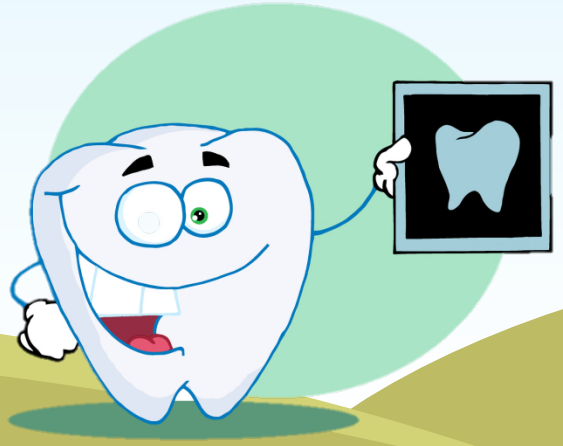
Eruption Gingivitis

- Gingivitis associated with tooth eruption.
- Tooth eruption usually does not cause gingivitis, however inflammation associated with plaque accumulation around erupting tooth.
- perhaps secondary to discomfort caused by brushing these friable areas, may contribute to gingivitis.
- Treatment: Complete dental care, improve oral hygiene.

Periodontitis



- It is inflammatory disease of gingiva and deeper tissues of periodontium.
- Characterized by pocket formation and destruction of supporting alveolar bone.
- Periodontal probing for attachment loss and bitewing radiograph are often used to clinically confirm the diagnosis.



- According to Delaney, in preschool children with periodontitis, recession, gingival erythema, and oedema are not usually found unless the child is neutropenic.
- Bimstein and Colleagues demonstrated abnormal alveolar bone resorption in 7.6% of 4yr old children and 5.9% of 5yr old children with high caries.
- In its classification of periodontitis, the American Academy of Periodontology categorized the early-onset form under Aggressive Periodontitis.

Delaney JE. Periodontal and soft tissue abnormalities. Dent Clin North Am. 1995;39:837-850
Bimstein E, et al. Radiographic assessment of alveolar bonein children and adolescents. Pediatr Dent.1988;10:199
American Academy of Periodontology. Parameter on aggressive periodontitis. J Periodontol. 2000;71(suppl):867.

Aggressive periodonti s

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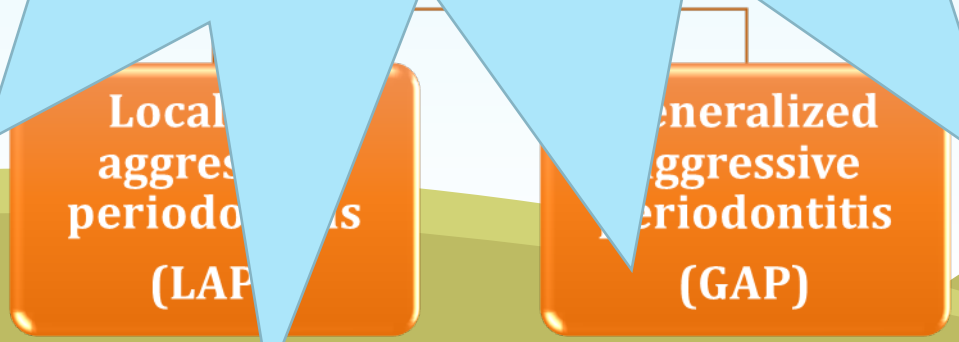
  titis.
- This is following

Page and colleagues believe that there are four different forms of periodontitis : prepubertal, juvenile, rapidly progressing and adult.



COMMON FEATURES OF LAP AND GAP

- Aggressive forms of periodontal disease have been defined based on the following primary features (Lang et al. 1999)
  - Non-contributory medical history
  - Rapid attachment loss and bone destruction
  - Familial aggregation of cases

Localized Aggressive periodontitis(LAP):

- Clinical features:
  - characterized by “localized loss of attachment and bone around permanent incisors and first permanent molars”

- Prevelence is 1%
- It is linked to presence of Actinobacillus actinomycetemcomitans and successful treatment outcomes correlate well with eradication of bacteria.
- Treatment : local measures in combination with systemic antibiotic therapy.

Generalized aggressive periodontitis (GAP):

- It sometimes occurs in adolescents and teenagers.
- Characterized by generalized interproximal attachment loss affecting at least three permanent teeth other than incisor and first molar.




Radiographs showing the severe generalized nature of disease

Treatment:

- A combined regimen of regular SRP with 2-week course of systemic tetracycline therapy (250 mg, four times daily) .

- Aa is sensitive to tetracycline, which also has the ability to be concentrated up to 10 times in gingival crevicular fluid when compared with serum.

- A combination of metronidazole (250 mg) & amoxicillin (amoxycillin) (375 mg), three times a day for 8 days, in association with subgingival scaling, has also been found to be effective.

- A more radical approach is to undertake flap surgery so that better access is achieved for root cleaning, and the superficial, infected connective tissues are excised.

- An antimicrobial regimen can also be implemented in conjunction with a surgical approach.

Systemic diseases and conditions with associated periodontal problems

- Diabetes
- Down syndrome
- Hypophosphatasia
- Neutropenia
- Leukemia

Conclusion

- The early detection and treatment of periodontal problems in children and adoloscents are important for
  1. Incipient periodontal diseases in children may develop into advanced periodontal diseases in children.
  2. Severe periodontal destruction in children may be related to underlying systemic pathology.
- Education and motivation of children regarding proper maintainence of periodontal health is the simplest and most effective way for prevention of periodontal diseases in the adult life.

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Thank
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