



# Types of Gingival diseases affecting pediatric patients: A Review

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**Abstract:** Gingival diseases affect children, not only adults. Gingival diseases can progress from childhood to adulthood. There are differences between child and adult gingiva. The gingival diseases affecting pediatric patients are classified into various types. A pediatric dentist must be able to diagnose and manage these gingival diseases. This article gives a review of gingival diseases affecting pediatric patients.

**Keywords:** *Gingival Diseases; Pediatric Patients; Pediatric Dentistry; Gingiva*

## INTRODUCTION

Gingival diseases affecting children are many and may progress to affect the periodontium of the adult.<sup>1</sup> The effects of periodontal diseases observed in adults mostly have their roots in childhood. paediatric dentists have an important role to play in the early recognition and diagnosis of gingival and periodontal diseases to optimize treatment outcomes. The prevalence of gingivitis can be similar to or greater than dental caries during childhood. Nevertheless, when compared to dental caries, gingivitis in children has received much less attention in understanding the long-term impact that chronic inflammation of the periodontal tissues in childhood may have on the overall health of the periodontium throughout life.<sup>2</sup> The contact points between deciduous teeth are not as tight as those between the permanent dentition providing a favourable location for bacterial growth, thus leading to increased susceptibility for gingival diseases in the interdental region. The mean gingival sulcus depth for the primary dentition is 2.1 mm ± 0.2 mm, this tends to increase in depth in gingival diseases. During the transition period in the development of dentition, changes associated with the eruption of permanent teeth occur in the gingiva. The prevalence of gingival diseases is more between the ages of 6-11 years.<sup>4</sup> The prevalence of gingivitis is less in girls than boys, which is probably related to the levels of oral hygiene. Gingival diseases in paediatric patients are classified into different types. (table 1)

Table 1 GINGIVAL disease IN PEDIATRIC PATIENT

A. Gingival Diseases Associated with Plaque	i. Without Local Contributing Factor <ul style="list-style-type: none"> <li>• Plaque - Induced Gingivitis</li> </ul> ii. With Local Contributing Factor <ul style="list-style-type: none"> <li>• Eruption Cyst &amp; Hematoma</li> <li>• Eruption Gingivitis</li> <li>• Gingivitis Associated with Orthodontic Appliance</li> </ul>
B. Gingival Diseases Modified by Systemic Factors	i. Associated with Endocrine System <ul style="list-style-type: none"> <li>• Puberty Gingivitis</li> </ul> ii. Associated with Blood Dyscrasias <ul style="list-style-type: none"> <li>• Leukaemia</li> </ul> iii. Associated with Nutritional Deficiency <ul style="list-style-type: none"> <li>• Scorbutic Gingivitis</li> </ul>

C. Modified by Medication	Drug Influenced Gingival Enlargement
D. Non-Plaque Induced Gingival Diseases	i. Viral <ul style="list-style-type: none"> <li>• Acute Herpetic Gingivostomatitis</li> </ul> ii. Fungal <ul style="list-style-type: none"> <li>• Linear Gingival Erythema</li> <li>• Candidiasis</li> </ul> iii. Bacterial <ul style="list-style-type: none"> <li>• Acute Necrotizing Ulcerative Gingivitis</li> </ul>
E. Congenital Anomalies	i. Congenital Epulis ii. Congenital Gum Synechiae
F. Trauma and Foreign Body Reaction	
G. Gingival Diseases Associated with Heredity	
H. Gingival Manifestations of Systemic Conditions	i. Gingival Lesions Associated with Chicken Pox ii. Gingival Lesions Associated with Mononucleosis iii. Soft Tissue Lesions Associated with Herpangina iv. Soft Tissue Lesions Associated with Hand, Foot and Mouth Disease v. Wegener's Granulomatosis vi. Kindlers Syndrome

### PLAQUE - INDUCED GINGIVITIS

It is a Gingival Diseases Associated with Plaque without a local contributing factor. Dental plaque appears to form more rapidly in children aged 8 to 12 years than in adults. The plaque-induced inflammatory lesion is usually confined to the marginal aspects of the gingiva and with time, progresses to other tissues of the periodontium. Gingival colour change and swelling appear to be more common expressions of gingivitis in children than bleeding and increased pocket depth. Complications include gingival enlargement.<sup>6</sup>

### ERUPTION CYST & HEMATOMA

It is associated with a local contributing factor. Erupting teeth are associated with a form of dentigerous cyst called an eruption cyst. It is usually translucent, fluctuant and circumscribed swelling. When the cystic cavity contains blood, swelling appears as purple/deep-blue fluctuant, circumscribed swelling termed as eruption hematoma.<sup>7</sup>

### ERUPTION GINGIVITIS

Gingivitis associated with tooth eruption is frequent. However, tooth eruption does not cause gingivitis. It may be caused by a greater risk of plaque accumulation in areas of shedding primary teeth and erupting permanent teeth, which makes it difficult to maintain oral hygiene leading to gingival diseases.<sup>8</sup>

### PUBERTY GINGIVITIS

It is associated with the endocrine system. Enhanced levels of gingival inflammation without increased levels of plaque accumulation occur in children at puberty. The cytoplasm of gingival cells contains specific high-affinity, low-capacity receptors for both oestrogens and testosterone. Oestrogen receptors are found in the basal and spinous layers of the epithelium and in fibroblasts and endothelial cells of small vessels in the connective tissue. Thus, gingiva appears to be a target organ for some of the steroid hormones. The relationship between elevated levels of circulating sex hormones and the prevalence of gingivitis in puberty is strengthened by the observation that, during adolescence, gingivitis peaks earlier in girls (11-13 years) than in boys (13-14 years)<sup>9</sup>

### LEUKAEMIA

Gingival diseases associated with blood disorders include leukaemia. Acute lymphoblastic leukaemia mainly occurs in children under 10 years. Factors that have been implicated to be of etiologic significance are radiation injury, chemical injury, genetic factors – Down's syndrome, immune deficiency and viral infections. Gingiva appears as swollen, glazed, and spongy tissue which

is red-deep purple in appearance with gingival bleeding. Enlargement may appear as a diffuse enlargement of the gingival mucosa, an oversized extension of the marginal gingiva, or a discrete tumour-like interproximal mass. Lethargy, malaise, sore throat, fever, skin infections that fail to heal, purpura, cervical lymphadenopathy, splenomegaly, hepatomegaly and petechiae.<sup>10</sup>

### **SCORBUTIC GINGIVITIS**

It is a gingival disease associated with nutritional disease. Vitamin C deficiency causes haemorrhage, collagen degeneration and oedema of the gingival connective tissue. The involvement is usually limited to the marginal tissues and papillae. Gingiva is bluish, soft, and friable and has a smooth shiny surface.<sup>11</sup>

### **DRUG-INFLUENCED GINGIVAL ENLARGEMENT**

It is a gingival disease modified by medication. The most frequently implicated are phenytoin, cyclosporine and nifedipine. Interdental papillae become nodular before enlarging more diffusely to encroach upon the labial tissues. The anterior part of the mouth is most severely and frequently involved. Enlarged gingiva is pink, firm, and stippled in subjects with a good standard of oral hygiene. When it is refractory to long-term treatment, the patient's physician may be requested to modify or change the anticonvulsant therapy.<sup>12</sup>

### **ACUTE HERPETIC GINGIVOSTOMATITIS**

It is a viral-induced gingival disease. It is caused by Herpes simplex virus (HSV) type 1. It occurs mostly in Infants and children younger than 6 years of age. Clinical features include Diffuse erythematous, shiny involvement of the gingiva and the adjacent oral mucosa. Varying degrees of oedema, gingival bleeding, and Discrete spherical grey vesicles which rupture and form painful small ulcers with a red, elevated, halo-like margin and a depressed yellowish or greyish-white central portion are also seen.<sup>13</sup>

### **LINEAR GINGIVAL ERYTHEMA**

It is a fungal-induced gingival disease. It is characterized by a 2-3mm marginal band of intense erythema in the free gingiva extending to the attached gingiva as focal or diffuse erythema and/or extending beyond the mucogingival line into the alveolar mucosa. It may be localized to one or two teeth but it is more commonly a generalized gingival condition.

### **CANDIDIASIS**

It is also a fungal-induced gingival disease that occurs from an overgrowth of candida albicans, usually after a course of antibiotics or as a result of congenital or acquired immunodeficiencies.<sup>8</sup>

### **ACUTE NECROTIZING ULCERATIVE GINGIVITIS**

It is a bacteria-induced gingival disease. Young age is one of the predisposing factors of ANUG. Many cases occur in children below 10 years of age. The clinical features include Punched appearance due to ulcerated and necrotic papillae and gingival margins. Ulcers are covered by a yellowish-white or greyish slough termed pseudomembranous. Removal of the slough results in bleeding and underlying tissue becomes exposed. A foetor ex ore is often associated but can vary in intensity. The involved papillae are separated into facial and lingual portions with an interposed necrotic depression. Swelling of lymph nodes and increased bleeding tendency are often present. Fever and malaise are not consistent. The oral hygiene in these patients is usually poor.

### **CONGENITAL EPULIS AND GUM SYNECHIAE**

They are congenital anomalies that cause gingival diseases. Congenital Epulis of a newborn is a rare gingival tumour that occurs along the alveolar ridge. It is usually without associated abnormalities of the teeth or additional congenital malformations. Clinically it presents as smooth well defined erythematous masses arising from the gum pad. The size may be large enough to lift the upper lip. Gum Synechia are characterized by congenital adhesions between different parts of the oral cavity. <sup>15</sup>

### **GINGIVAL CHANGES DUE TO TRAUMA**

It occurs due to External trauma to the tissue, bites, toothbrush abrasion, idiopathic trauma, and habits like nail biting and abrasive foods. Fixed anterior margin of the acrylic plate of a removable appliance, Chronic irritation during orthodontic treatment and Improper brushing technique. The abnormal gingival changes include Traumatic lesions, Transient Gingival Hyperplasia, Localized, acute inflammatory reactions and Mucogingival defects like recession.

### **GINGIVAL DISEASES ASSOCIATED WITH HEREDITY**

Benign, non-inflammatory, familial fibrotic enlargements such as hereditary gingival fibromatosis, appear non-haemorrhagic, firm, progressing slowly upon eruption of permanent dentition. Hereditary gingival fibromatosis can be inherited as a simple Mendelian trait, in some chromosomal disorders and as a malformation syndrome. Although the specific genes for this disease have not been identified, genetic analysis supports the presence of 2 different gene loci on chromosome 2P.<sup>16</sup>

**GINGIVAL MANIFESTATIONS OF SYSTEMIC CONDITIONS**

**INTRODUCTION:** Many systemic diseases can mimic periodontitis or gingivitis. These include many immunologic, infectious, neoplastic and metabolic disorders.<sup>17</sup> Despite dental plaque biofilm being considered the primary risk factor for periodontitis in the vast majority of patients that dentists encounter on a daily basis, there are other factors that can also contribute to and/or accelerate the pathologic progressive attachment loss. One should also recognize that the periodontium may be considered as a reservoir of bacteria, bacterial products, and inflammatory and immune mediators which can interact with other organ systems remote from the oral cavity.<sup>18</sup> The gingival manifestations of various systemic diseases are listed below (table 2)

Table 2 GINGIVAL MANIFESTATIONS OF SYSTEMIC DISEASES

Gingival Lesions Associated with Chicken Pox	Varicella herpes virus primarily affects individuals under the age of 15 years. In the oral cavity small ulcers may develop in any area of the mouth, however, lesions are found most often on the palate, gingiva and buccal mucosa
Gingival Lesions Associated with Mononucleosis	Mononucleosis is produced by the Epstein - Barr virus and is primarily a disease of children. common signs & symptoms include fatigue, malaise, headache, fever, sore throat, enlarged tonsils, and lymphadenopathy. Alterations in the oral cavity include gingival bleeding, petechiae of the soft palate, ulceration of the gingiva and buccal mucosa.
Soft Tissue Lesions Associated with Herpangina	The coxsackie group A viruses are associated with herpangina. Commonly seen in young children. Clinically consists of numerous small vesicles which proceed to small ulcers contained on a grey base and inflamed periphery. The ulcers appear on the hard & soft palate, posterior pharyngeal wall, buccal mucosa or tongue. The ulcers are generally not painful and usually heal within a few days to a week.
Soft Tissue Lesions Associated with Hand, Foot and Mouth Disease	The majority of cases of hand, foot and mouth disease occur in children between 6 months & 5 years of age. Both coxsackie group A & B may play a role in this disease. Clinically resembles herpangina but results in difficulty in eating due to sore mouth. This disease is generally self-limiting and will regress in 1-2 weeks.
Wegener's Granulomatosis	It is a systemic disease that initially present with striking alterations that are confined to the gingival diseases. Classically, the gingival tissues exhibit erythema and enlargement band are typically described as Strawberry gums
Kindlers Syndrome	Cutaneous neonatal bullae, poikiloderma, photosensitivity and acral atrophy are present in this condition. It may also present with oral lesions that are clinically consistent with desquamative gingivitis <sup>19,20</sup>

**CONCLUSION**

Hence gingival diseases are not just found in adults but also in children. Not treating them at the earliest stage can lead to problems in permanent dentition. A paediatric dentist must be aware of them, and able to diagnose and manage them accordingly.

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