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## Oral manifestations of endocrine disorders

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### Abstract

The endocrine system is responsible for hormonal secretion and is closely related to the central nervous system, as it controls its functions through the hypothalamus and pituitary glands. It controls physiology of human body and maintains its homeostasis. The neuroendocrine system is responsible for adaptation to environmental changes. Therefore, it is important for every dentist to be aware of the oral manifestations of endocrine disorders, to avoid the resulting complications. This article reviews the important oral manifestations of endocrine disorders which help dental surgeons to diagnose and treat the patients appropriately.

**Keywords:** Endocrine disorders, oral manifestations, diabetes mellitus

### Introduction

The endocrine system is made up of several endocrine glands that are located in different parts of the human body. Endocrine glands are sometimes called-ductless glands because they secrete their products directly into the blood or into the interstitial space. Endocrine disorders, apart from diabetes mellitus and thyroid diseases are uncommon. They are rare causes of oral disease, but occasionally oral changes can lead to their diagnosis. Patients with Addison's disease, diabetes mellitus and thyrotoxicosis, in particular, may also need special care for dental surgery.

This is important in dentistry because many of the patients attending the dental clinics face stressful situations. Awareness among dentist's regarding the risks and difficulties that may arise during the dental management of patients with endocrine disorders is necessary. This review will be discussing the various oral and perioral manifestations of endocrine disorders <sup>[1]</sup>.

### Disorders of Pituitary gland

#### Hyperpituitarism

An increase in the number of granules in the acidophilic cells or an adenoma of the anterior lobe of the pituitary is associated with the condition known as gigantism or acromegaly. If the increase in production of growth hormone occur before the closure of the epiphyseal of the long bone, gigantism results and if the increase in amount of growth hormone occurs after the closure of the epiphyseal of the long bone it results in the condition known as acromegaly <sup>[2]</sup>.

#### Gigantism

Gigantism is the childhood version of growth hormone excess and is characterized by the general symmetrical overgrowth of the body parts.

Prognathic mandible, frontal bossing, dental malocclusion and interdental spacing are the other features which may be seen in such individuals. Intraoral radiograph may show hypercementosis of the roots <sup>[2]</sup>.

#### Acromegaly

Acromegaly is characterized by an acquired progressive somatic disfigurement, mainly involving the face and extremities, but also many other organs, that are associated with systemic manifestations. The most characteristic craniofacial skeletal differences are protruded glabella and increased anterior face height. Mandibular prognathism and jaw thickening is due to deposition of periosteal bone in response to the excess growth hormone. Other intraoral changes are spacing in the teeth, malocclusion, apertognathia, macroglossia, hypertrophy of

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palatal tissues which may cause or accentuate sleep apnea, buccal tipping of the teeth due to enlarged tongue [2]. Dental radiograph may demonstrate large pulp chambers (taurodontism) and excessive deposition of cementum on the roots. According to the morphologic analysis study conducted in Japan, Male patients tended to demonstrate downward mandibular advancement and crossbite, while females showed extension of the ascending ramus, downward displacement of mandible, bimaxillary alveolar protrusion, and edge-to-edge bite [3].

### **Hypopituitarism**

Hypopituitarism is caused by compression or atrophy of anterior pituitary cells resulting in the condition known as pituitary dwarfism. Pituitary dwarfism. The most striking feature of pituitary dwarfism is short stature of the affected patient and the low growth velocity for age. The maxilla and mandible of affected patients are smaller than the normal and the face appears smaller, with the permanent teeth showing a delayed pattern of eruption [2]. Often the shedding pattern of deciduous teeth is delayed by several years, and also the development of roots of permanent teeth appears to be delayed. The dental arches are smaller than the normal and therefore cannot accommodate all the teeth resulting in dental malocclusion [4]. Complete absence of buds of wisdom tooth even in patient in fourth decade of life is also reported. Other rare findings such as agenesis of the upper central incisor and solitary maxillary central incisor have been observed [3].

### **Disorders of Thyroid gland**

#### **Hyperthyroidism**

The accelerated dental eruption in children is seen in this condition. Maxillary or mandibular osteoporosis, high index of caries and periodontal diseases, burning sensation of tongue, incidence of Sjogren's syndrome and systemic lupus erythematosus are also reported [5].

#### **Hypothyroidism**

In juvenile patients, dysgeusia is a common finding in a hypothyroid patient. Patients report foul taste or metallic taste. Lips will be puffy, thickened and protruding. In adults with Myxedema, macroglossia and enlarged lips are seen as a result of the deposition of water and protein. Facial swelling of non-pitting type may be seen. Mandible will be underdeveloped. There is greater tendency to periodontal diseases [6].

### **Disorders of Parathyroid gland**

#### **Hyperparathyroidism**

Parathyroid hormone plays an important role in the metabolism of calcium and phosphorus, so, influence the mineralization of bone and teeth. Parathyroid disorder may lead to hyper or hyposecretion of hormone, which results in various oral manifestations. Common oral manifestations in patients with hyperparathyroidism (HPT) are brown tumor, loss of bone density, soft tissue calcification, and dental abnormalities, such as development defects, alterations in dental eruption. Malocclusion due to drifting of teeth, with definite spacing of the teeth may be one of the first signs of the disease. Pseudocystic lesion can also be presents, radiolucent lesion at the apex of tooth misdiagnosed as periapical cyst or granuloma. Oral radiographs (intraoral and panoramic) of hyperparathyroid patient reveal generalized rarification of the jaws. The radiograph is typically described as loss of medullary trabecular pattern, jaw appears finely

radiopaque described as clear "ground glass" appearance [7].

### **Hypoparathyroidism**

Hypoparathyroidism is a metabolic disorder characterized by low serum calcium and high serum phosphorus concentrations due to a deficiency or absence of PTH secretion. The two most frequent dental abnormalities are enamel hypoplasia (enamel is thin), delayed eruption, and there may be multiple unerupted teeth. Dental abnormalities like enamel hypoplasia, widened pulp chambers, dental pulp calcifications, shortened tooth roots, hypodontia etc are the common features in hypoparathyroid patients. Delay or cessation of dental development, mandibular tori and fungal infections like chronic candidiasis may be present. Paresthesia of the tongue or lips are also reported. A sharp tap over the facial nerve in front of the ear which causes muscle twitching of facial muscle around the mouth can be noticed. This is called as Chvostek sign [8].

### **Disorders of adrenal gland**

#### **Addison's disease**

In Addison's disease or primary adrenal insufficiency exists a deficiency in the secretion of glucocorticoid and mineralocorticoid hormones by the adrenal cortex. Pale brown or deep chocolate pigmentation of the oral mucosa, spreading over the buccal mucosa from the angle of the mouth and/or developing on the gingiva, tongue and lips may be first evidence of disease [9].

#### **Cushing's Syndrome**

Cushing's syndrome (CS) refers to manifestations induced by chronic exposure to excess glucocorticoids produced by the adrenal cortex. In children, growth and development including skeletal and dental age may be retarded. Reduced bone density may lead to pathological fractures. Loss of lamina dura is also seen [9].

### **Disorders of Pancreas**

#### **Diabetes Mellitus (DM)**

Diabetes Mellitus (DM) is a metabolic disorder characterized by the presence of chronic hyperglycemia accompanied to greater or lesser extent by alterations to carbohydrate, protein, and lipid metabolisms. Among the oral manifestations related to DM described are: dry mouth, tooth decay, periodontal disease and gingivitis, oral candidiasis, burning mouth syndrome (BMS), taste disorders, rhinocerebral zygomycosis (mucormycosis), aspergillosis, oral lichen planus, geographic tongue and fissured tongue, delayed wound healing, and increased incidence of infection, salivary dysfunction, altered taste and other neurosensory disorders, impaired tooth eruption, and benign parotid hypertrophy [10].

### **Conclusion**

Though Endocrine disorders, apart from diabetes mellitus and thyroid disorders are uncommon, dentist should be aware of signs and symptoms of all the endocrine disorders in order to avoid difficulties that may arise during the dental management of patients with endocrine disorders.

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