

**CASE REPORT**

Down Syndrome with Gingival Enlargement

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Abstract

Down syndrome is the commonest autosomal chromosomal anomaly with an incidence of 1 in 600 to 1000 live births in all races and economic groups. In this condition extra genetic material causes mental and physical retardation. The physical features and medical problems associated with Down syndrome can vary widely. Generally, these patients now live longer due to increase medical attention. Dental practitioners are challenged by the high incidence of early onset aggressive dentine problems. The complex anatomy, physiology, immunology, and microbiology underscore the need to describe a case report of a 15-year old male patient with the classical features of Down syndrome with gingival enlargement and its dental treatment.

Key Words

Down Syndrome, Gingival Enlargement, Periodontitis

Introduction

Down syndrome is an easily recognized congenital, autosomal anomaly characterized by generalized physical and mental deficiencies. It affects between 1 in 600 and 1 in 1000 live births. Down syndrome is named after John Langdon Down, the British doctor who first described the condition in 1887 (1).

Down syndrome is a chromosomal disorder caused by an error in cell division that results in the presence of an additional third chromosome 21 or "trisomy 21." The incidence of Down syndrome rises with increasing maternal age. The features of Down syndrome can range from mild to severe. These patients present with delayed physical development (1-3).

Most people with Down syndrome have IQs that fall in the mild to moderate range of mental retardation. They may have delayed language development and slow motor development (3).

Some common physical signs of Down syndrome are flat face with an upward slant of the eye, short neck, and abnormally shaped ears, small hands and feet, deep crease in the palm of the hand, poor muscle tone, loose ligaments and white spots on the iris of the eye (3-4).

The other health conditions that are often seen in

people who have Down syndrome include skeletal problems, dementia, thyroid dysfunctions, hearing problems, congenital heart disease, intestinal problems such as blocked small bowel or oesophagus and eye problems such as cataracts.

Anomalies related to the dentition

About 35% to 55% of individuals with Down syndrome present with microdontia in both the primary and secondary dentition. Clinical crowns are frequently conical, shorter, and smaller than normal, and the roots are shorter as well. Tooth agenesis or defective development is more likely in patients with Down syndrome. The teeth most affected by agenesis are mandibular central incisors, followed by maxillary lateral incisors, second premolars, and mandibular second premolars. Canines and first molars are rarely affected. There is a delayed eruption in both the deciduous and permanent dentition. The central incisors still erupt first and the second molars are usually last but in between, the sequence of eruption varies greatly (5-6).

A relatively high frequency of mal-alignment is seen in both the deciduous and permanent dentition in individuals with Down syndrome. Some individuals have

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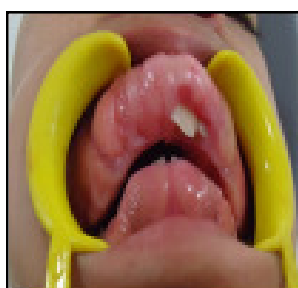


Fig. 1 & 2 Showing Pale Pink Gingiva and Fibrotic in Consistency

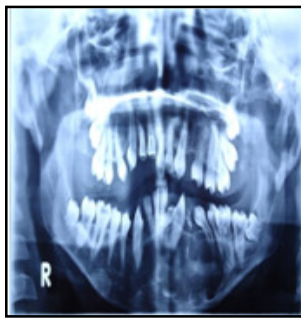
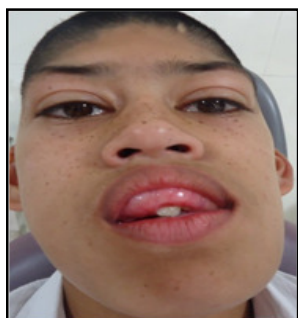


Fig. 5 & 6. Frontal facial view & OPG of the Patient Showing Submerged Teeth

open-mouth which causes in-coordination of the lips, and cheeks in swallowing and speech. Individuals with habitual mouth breathing tendencies are more susceptible to periodontal disease. The prevalence of dental caries in patients with Down syndrome is low.

Soft Tissue Features

Patients with Down syndrome have a high arched V-shaped palate, which is caused by deficient development of the midface, affecting the length, height, and depth of the palate. Perioral muscles are affected by characteristic muscle hypotonia. This leads to a descending angle of the mouth, elevation of the upper lip, and an everted lower lip with tongue protrusion.

Case Report

A 15 year-old male patient, was referred to the Department of Periodontics with the chief complaint of enlargement of gums in upper as well as lower jaws. On clinical examination gingiva was pale pink in colour and fibrotic in consistency as shown in figure 1 & 2.

The patient was moderately built and had mild degree of mental retardation. He had most of the common dysmorphic features of Down syndrome like short palpebral fissures, epicanthic folds of the eyelid causing almond shaped eyes; mongoloid slant, hypertelorism, depressed nasal bridge. The patient also presented with a short neck, and abnormally shaped ears, small hands



Fig 3 & 4. Showing Simian Crease of Hands & Widely Spaced Toes



Fig. 7 & 8. Pocket Measured with Calibrated Periodontal Probe & Internal Bevel Incision made with no 11 Blade



Fig. 9. Post operative view of patient

and feet, deep crease in the palm of the hand, single palmer fold known as Simian crease, poor muscle tone, and white spots on the iris of the eye known as Brushfield spots. The patient also presented with excessive space between his toes. Family history was non-significant. His medical history was remarkable and he was on sodium valproate drug for past 13 years. The facial profile showed a flat face with an upward slant of the eye and short palpebral fissure. The profile view revealed depressed nasal bridge and infra-orbital margins.

Discussion

Three cytogenetic variants cause Down syndrome namely trisomy of 21 chromosome, chromosomal translocation & mosaicism. Trisomy accounts for nearly 95% of all patients with Down syndrome. In chromosomal translocation the extrachromosomal material of number 21 chromosome is translocated to



another chromosome G/D group. Many of the medical and physiological characteristics of this condition have direct consequences for the oral health of subjects affected and indirect consequences for the quality of life of the affected persons and their guardians.

Individuals with Down syndrome show higher levels of some subgingival bacterial species and specific associations between certain subgingival bacterial species and loss of periodontal attachment. These findings are consistent with the notion that certain subgingival bacteria may contribute to the increased level of periodontal disease seen in Down syndrome individuals (7). *Selenomonas noxia*, *Propionibacterium acnes*, *Streptococcus gordonii*, *Streptococcus mitis* and *Streptococcus oralis*, *Treponema socranskii* are found in higher proportion in Down syndrome subjects compared with non-Down syndrome subjects (7). This however was not studied in the current case report.

In another recent study showed that children who had Down Syndrome had a significantly higher percentage of surfaces with severe gingival index and a higher mean of probing pocket depth than children without Down Syndrome. Significantly more peg-shaped maxillary lateral incisors and retained primary teeth ($P < 0.001$) were observed in subjects with DS, compared with non-DS children. Average decayed, missing and filled teeth (DMFT) was significantly lower in male children with DS compared with male non-DS children only ($P = 0.034$). The most common reason cited for not taking children to the dentist for Down Syndrome group was 'Not aware of the dental problems of their children' (8).

Dental care for the patient with Down syndrome can be achieved in the general practitioner's office in most instances with minor adaptations. Although this population has some unique dental care needs, few patients require special facilities in order to receive dental treatment. Adequate dental health care for persons with developmental disabilities is a major health need.

Treatment objectives for any population with developmental disabilities should be the same as that of normal patients. Treatment plans may need to be adapted as necessary due to each individual's condition, but the overall goal should be to provide as comprehensive treatment as possible. Areas of dental care such as cosmetic dentistry, orthodontics, prosthodontics, and reconstructive oral surgery should be considered in these patients. Thus a multidisciplinary approach is of utmost importance in these patients. In our patient after assessing the complete medical and oral health status, the following treatment plan was outlined:

Phase 1 therapy which included:

Oral hygiene instructions

Thorough oral prophylaxis including scaling, root planing and curettage.

Surgical therapy which included undisplaced flap.

Pockets were measured with a calibrated periodontal probe and bleeding points were produced on the outer surface of the gingiva for marking the bottom of the pocket. First of all, internal bevel incision was given at the level of the bleeding points. The incision was carried to a point little apical to the alveolar crest. The crevicular incision was made from the bottom of the pocket to the bone to detach the connective tissue from the bone. Then with the help of interdental knife, interdental incision was made and the triangular wedge of the tissue created by these incisions was removed. The area was thoroughly debrided, removed of all tissue tags and granulation tissue. After the necessary scaling and root planing, the flap was sutured at root-bone junction. With the help of interrupted figure of eight sutures, the flap was stabilized at its position. The area was covered with periodontal dressing for seven days. After 7 days pack was removed. The area healed quite well and without any complication. Our patient was kept on vigorous periodontal maintenance.

Conclusion

The current case report underscore the importance of creating awareness by dental & other medical health care professionals who have the power and knowledge to appropriately address the needs of those affected by dentine problems in Down syndrome

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