Case Report

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Orthodontic Management of Impacted Teeth in A Visually Impaired Patient

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Abstract:

Special needs individuals are those individuals who are prevented by a physical or mental condition from full participation in the normal range of activities of their age groups. They usually exhibit high prevalence of impacted teeth. Case presentation: 15- year old visually impaired patient presented with an impacted upper left canine and upper left second premolar with multiple deciduous teeth. The canine was brought into occlusion using a boot loop. Conclusion: Treatment of impacted teeth requires thorough analysis of patients' records, correct diagnosis, and a treatment plan with a special focus on behaviour management in handicapped children.

Key words: impacted teeth, handicapped, boot loop.

INTRODUCTION

In general, syntagm "special needs" refers to individuals who are suffering from a developmental disability, or are medically compromised or are high-risk patients who may require special attention.[1] In their everyday life, these special needs children comprise a group of individuals who depend heavily on their families and others for their needs and welfare.

Over the past 20 years or so, both the absolute number and proportion of special needs children in society has increased.[2] These children with special needs exhibit a higher percentage of malocclusions and craniofacial deformity than the normal population.[3,4] From the observations of Oreland and colleagues5, we learn that they suffer from malocclusion of the teeth, which is more frequent, more severe, and more skeletally based. Several conditions, such as cerebral palsy, Down syndrome, and mental retardation, exhibit increased prevalence of specific dental features[5-7], which can adversely affect function. This is related to the more frequent abnormal growth and development, higher incidence of abnormal tongue posture and oro-facial muscular disturbances.[8]

Not only do orthodontic abnormalities compromise oral function, they also represent an obstacle to the social acceptance of physically and learning disabled persons from an aesthetic point of view.[9-11] With the higher public profile of these children, there is an increased demand for orthodontic treatment. The one of the aims of the orthodontic treatment is an acceptance into society, including the chance for employment toward self-sufficiency. Concern for facial appearance has become an item for discussion among parents and this has generated a demand for orthodontic treatment.[12] However, these patients are those least likely to receive orthodontic treatment.[13]

In the private clinics and hospitals these patients are very difficult to treat due to their uncooperative nature. Therapeutic access to these patients is impeded by the following several specific obstacles.[14]

1. General behaviour is often problematic because of reduced understanding and increased apprehension, short attention span, and limited tolerance.

2. Uncontrolled limb and head movements and an inability to sit still making it difficult even to seat the child in the dental chair.

3. Level of cooperation during treatment is usually significantly impaired.

4. Exaggerated gag reflex, apparently related to dental/ medical phobia.

5. Markedly increased incidence of drooling in many cases.[15]

These factors contribute to significant difficulty in performing otherwise routine procedures, such as impression taking and

intraoral radiography. Owen and Graber (1974) classified handicapped children as mildly, moderately, and severely handicapped based on the possible benefits from orthodontic treatment, the exact treatment plan, and the management modality on the physical and mental characteristics of each category. These patients are also classified according to the Frankl Behaviour Rating Scale (FBRS; Frankl *et al*., 1962).

Impaction of multiple is of teeth is one of the common findings in such patients.[16,17] Such patients with multiple impactions need meticulous management to guide eruption of as many teeth as possible. The following case is of a young boy, who had permanent impacted canine t with retained deciduous tooth.

CASE REPORT

The patient was a 15-year-old male who is visually compromised due to optic nerve damage since birth. A review of the medical history revealed no other allergies. No signs or symptoms of temporomandibular dysfunction, no history of trauma to teeth, lips, or jaws were noted. He had a convex profile with normal muscular activity [Figure 1]. The patient was graded according to the following categories of patient cooperation for handicapped children:

Fig: 1

- Extreme gag reflex interfering with regular treatment.
- No uncontrolled movements.
- Mild inability to remain still.
- Moderate hypersalivation controllable for bonding in dental chair

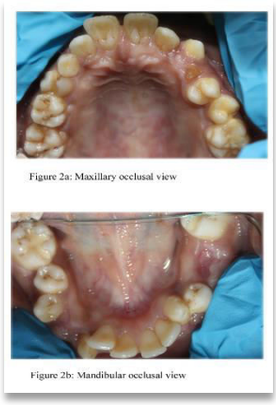

Figure 2a: Maxillary occlusal view

Figure 2b: Mandibular occlusal view

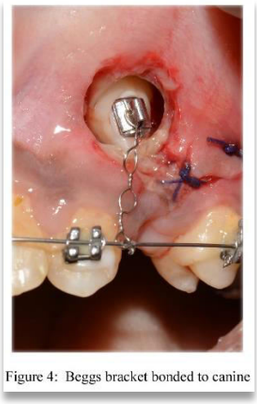

Figure 4: Beggs bracket bonded to canine

Intraoral clinical examination revealed a Class II molar relationship with retained primary canine and second molar in the second quadrant and a root piece in the first quadrant [Figure 2a and b]. The lower left second premolar and upper right second premolar were mesially rotated and a GIC restoration was present in relation to the lower left and right first permanent molar. All teeth except 17, 23, 25, 27, 35, 37, 47 and the third molars were present. A scissor-bite in relation to 14, 15, 16 and 44, 45, 46 and 26 and 36 was present. Mandibular anterior crowding was present. A midline diastema with 30% overbite was present. The curve of Spee was 2.0 mm. The maxillary tooth-to-lip relationship was normal. The gingiva appeared healthy. Panoramic radiograph revealed a missing mandibular right second molar and missing third molars. The mandibular right second premolar and the left maxillary canine and second premolar were impacted. The position of the maxillary left second premolar was high near the sinus. The position of the maxillary left canine was high and a large radiolucency was noted appearing like a dentigerous cyst. In a radiograph taken one year mid treatment the canine appeared to move in the downward direction. The retained deciduous canine was moderately resorbed. Periapical views and orthopantamogram [Figures 3] confirmed the diagnosis of buccally impacted left maxillary canine (tube shift method).[18] Model analysis showed adequate space in the upper arch for alignment of the maxillary canine.

TREATMENT OBJECTIVES

The main treatment objective was guided eruption of the impacted teeth to obtain a functional occlusion with minimal impact on the soft tissue profile. However, it was also important to control the active carious lesions and to educate the patient about caries control regimen. A sodium fluoride mouthwash and fluoridated toothpaste were advised.

Figure 5: Boot loop

TREATMENT PROGRESS

The orthodontic treatment was commenced by progressing from 0.016" NiTi, 0.018" NiTi, 0.16 X 0.22" NiTi and finally to 0.019 X 0.025" NiTi. The deciduous canine was extracted on observing the downward progression of the permanent canine. The patient was referred to the oral surgeon for extraction of the retained primary canine teeth, followed by sequential exposure of upper canines and bonding of the attachment. A full mucoperiosteal flap was reflected. The connective tissue and bone was removed just enough to bond the Begg bracket. After good hemostatic control, a Begg bracket with traction chain were bonded on the canines labially [Figure 4]. The flap was re-approximated and sutured back. A boot loop was fabricated on a 0.017 x 0.025-inch SS wire[Figure 5]. A module was extended from the boot loop to the bracket. Two months after sufficient downward movement of the canine 0.12 NiTi overlay wires were tied into the brackets. The last 3 months of treatment focused on finishing with a well-interdigitated occlusion of the canine. The position of the left second maxillary premolar was still high near the sinus and the decision for the premolar was to wait and watch.

DISCUSSION

A close eruption technique was followed as tooth can be erupted through the attached gingiva, maintaining the width of the attached gingiva, with good periodontal attachment[19] with less chances of vertical relapse. Power thread provides light eruptive forces but has a high decay rate. After the permanent canines erupted in the mouth, NiTi overlay wires were tied on to the main base archwire to maintain the rigidity of the anchorage units.[20]

CONCLUSION

Treatment of impacted teeth requires thorough analysis of patients' records, correct diagnosis, and a treatment plan with good interdisciplinary efforts that can cater maximal benefit to the patient.

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