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Case Report

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PROSTHODONTIC REHABILITATION OF A YOUNG COMPLETELY EDENTULOUS PATIENT WITH DOWN SYNDROME -A CASE REPORT

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ABSTRACT

Down syndrome is one of the most common chromosomal abnormalities. Down syndrome patients can present with a variety of oral and systemic manifestations. The intellectual ability of people with Down syndrome varies widely. They present with a mild-to-severe intellectual disability which restricts their communication skills and tolerance to different emotional situations. Hence co-operation during stressful situation like reciveing dental treatment is difficult in these patients. The present case report discusses the rehabilitation of a completely edentulous 20 year old Down syndrome female patient with complete dentures.

KEYWORDS: Down syndrome; Complete dentures; Special care patients; Intellectual disabilities.

INTRODUCTION

Down syndrome, also known as Trisomy 21 and Mongolism ,was first described by John Langdon Down in 1866.[1] In 1959, French pediatrician and generalist, Dr. Jerome Lejeune discovered an extra pair of chromosome 21 Patients with down syndrome when compared to normal individuals, hence the name given as Trisomy 21.[2] Down syndrome is the most common chromosomal disorder in humans and the most common cause of mental retardation. Down syndrome is predominantly due to non-disjunction of chromosome 21; while translocation of an extra copy of the same chromosome accounted for a small proportion of the condition. A mosaic vary of the situation comes about when the extra chromosome 21 is present in some, but not all, cells of the affected individual.[3] It is characterized by various physical, mental and medical features such as intellectual disability, motor disorder and dysmorphologies and cardiovascular, immunological, hematological, respiratory, neurological, and musculoskeletal abnormalities.

The degree of intellectual disability in Down syndrome patients is variable, ranging from mild (IQ: 50 to 70) to moderate (IQ: 35 to 50) to severe (IQ: 20 to 35).[4] The maternal age contributes to the Down syndrome. Patients with Down syndrome have non inherited mental retardation, and varying range of cognitive disorders and facial features.[3] Individuals with Down syndrome are especially susceptible to periodontal disease, delayed tooth eruption, malocclusion, lip thickening, macroglossia, a fissured and protruding tongue. Occlusal and dental anomalies can complicate dental care which are open bite, crossbite, extreme overjet, congenitally missing teeth, delayed tooth eruption, supernumerary teeth, and morphologic diversity.[3] The dental clinician should consider these factors while treating Down syndrome patients.

Edentulism is frequently observed among disabled patients, and prosthetic treatment is more complicated in them compared to healthy patients, because of anatomic variations and problems with patient cooperation.[4] The basic dental treatment of patients with Down syndrome should be the same as that of healthy individuals with special consideration towards the psychologic counselling. The present case report discusses the prosthodontic management of a 20 year old patient with Down syndrome who was rehabilitated with a complete denture prosthesis.

CASE REPORT

A 20 year old female patient accompanied by her father reported to the Department of Prosthodontics. The patient was slow to understand and could communicate only few words and not even complete sentence. So, her father communicated on behalf of the patient. Patient complained of loose upper denture and broken lower denture. Her past history revealed that patient was a complete denture wearer since 4 years. Since the age of 16 years patient has been completely edentulous. Loss of teeth was due to periodontal involvement. Her father gave history of mental retardation was present since birth. No history of drug allergy, seizures or any

systemic disease was found. Patient was not under any medication .Her medical history revealed her to be a case of Down syndrome. The facial characteristic of the patient included frontal bossing, flattened nasal bridge and almond shaped eyes. Other features included trunkal obesity, transverse palmer crease and spacing between the toes (Fig1). Intra oral findings included high arched palate, macroglossia, fissured tongue, resorbed mandibular ridge, angular chelitis, dry and open mouth (Fig 2). The treatment plan included fabrication of conventional complete dentures with special care during Impression making and jaw relation recording.

Procedure

Patient had decreased muscular co-ordination with limited mouth opening, macroglossia and hyper salivation. Primary impression of both arches were made with impression compound (DPI, India). Due to the presence of macroglossia distolingual sulcus of the mandibular arch was difficult to record. Hence border molding with greenstick compound (DPI, India) was done in primary impression (Fig 3). Primary casts were poured using Dental plaster (Dentico neelkanth, India). Special trays, were fabricated using self-cure acrylic (DPI cold cure acrylic material, India). Patient had pronounced gag reflex hence after border molding secondary impressions were made using non eugnol impression paste (Prime Dental Products Pvt. Ltd, India) (Fig 4). Master casts were poured in type III dental stone (Kalstone India). During the jaw relations the patient was unable to bite in the centric relation and was bitting in edge to edge relation anteriorly. Thus modification in the mandibular occlusal rim was made by making 1mm trough in the anterior region from canine to canine region (Fig 5). Enabling to bite in centric relation which was recorded and casts were mounted on articulator. Teeth arrangement was done with small sized acrylic teeth (A2 Acry rock teeth, Ruthinium Dental Products Pvt. Ltd, India) (Fig 6). Trial was done to check the centic occlusion record (Fig 7). Packing and curing was done in conventional method. Finishing and polishing was done on the cameo surface of complete denture as shown in (Fig 8) and dentures were inserted (Fig 9). After care instructions were given to the father. A follow up of the case is being done from the past 2 years.(Fig 10).

Figure 1:Pre-Operative Extra oral pictures of the patient. A:Front view, B:Lateral view And C:Full Profile view.

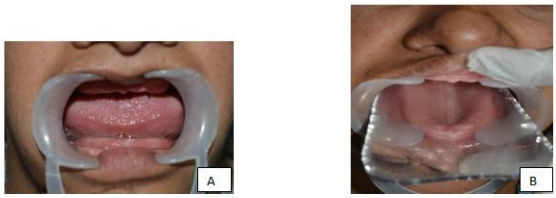

Figure 2: Pre-Operative Intra oral pictures of the patient. A:Resorbed mandibular ridge with macroglossia and hyper salivation, B:High arched palatal vault.

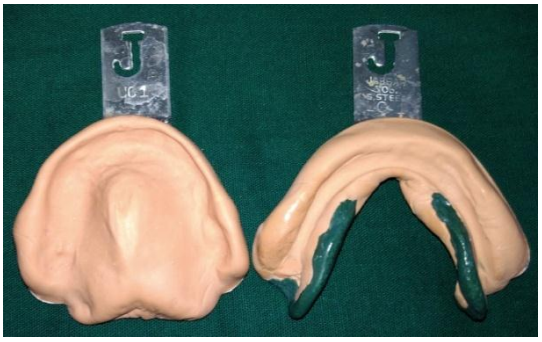

Figure 3: Primary impression with impression compound of maxillary and mandibular arch border molding of distolingual area.

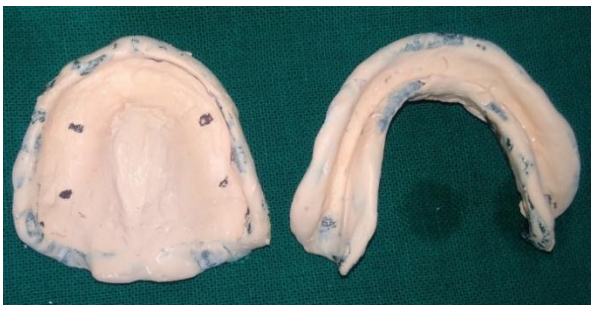

Figure 4: Final impression with eugenol free zinc oxide paste.

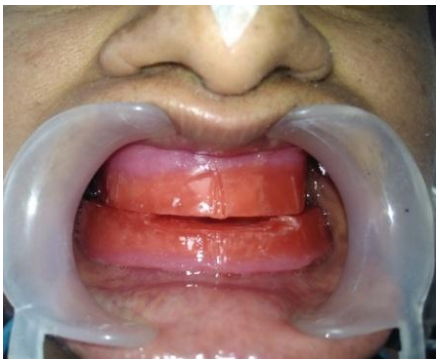

Figure 5: Jaw relation 1mm trough made in the mandibular anterior occlusal rim.

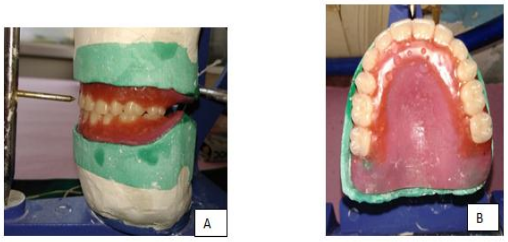

Figure 6: Teeth arrangement. A: Lateral view ,B: Occlusal view.

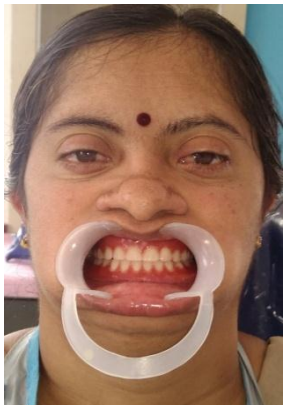

Figure 7:Try in

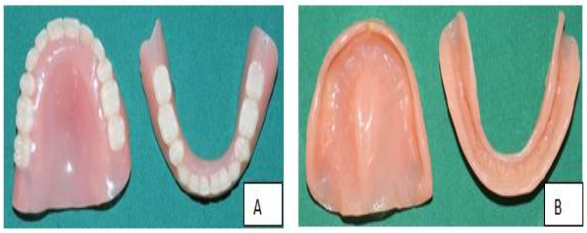

Figure 8:Final complete denture prosthesis. A:Cameo surface ,B:Intaglio surface.

Figure 9: Final insertion of complete denture. A: Occlusion in right side, B:Occlusion in left side, C:Profile picture.

Figure 10: Two year follow up after insertion.

DISCUSSION

Several techniques and approaches have been proposed to manage common oral problems of patients with Down syndrome and the treatment depends on the age, intellectual disability, severity of the oral manifestations, and the dentist's skills and knowledge.[5] Dental management of a Down syndrome patient starts with the behavior management. As per National Institute of Dental and Craniofacial Research, the practical oral care for people with Down syndrome one should:

1. Listen actively.
2. Talk with the parent or caregiver to determine the patient's intellectual and functional abilities and then explain each procedure at a level the patient can understand.
3. Use simple, concrete instructions; Schedule appointments-early in the day. Directing first appointment toward Down syndrome orientation and with history recording.[6]

Treatment of the patient with Down syndrome is challenging to the practitioner accompanied with macroglossia, hyper salivation along with the average response of the patient to all the clinical procedures. Down syndrome patients tend to have a more sensitive gag reflex than normal patients, so the dental practitioner should use behavioral management techniques such as relaxation and distraction to minimize gagging and reflux. Facial and intraoral massage or pharmacologic or non pharmacologic interventions may be needed.[7] A reduced degree of muscle tone (hypotonic)is generally found in Down syndrome which affects the musculature of head and oral cavity as well as large skeletal muscles.[8]

There are many articles supporting for the implant supported prosthesis even in down syndrome patient. Patients with Down syndrome are prone to develop osteoporotic bone. Impaired host response is also seen in these patients. Current research suggest that reduced neutrophil and monocyte chemotaxis, reduced phagocytosis and a defect in T-cell proliferation and maturity might be reasons for the increase in periodontal disease seen in these patients.[9] Hence the implant supported prosthesis was not considered and also her father was not willing for any surgical procedures.

It can be concluded that prosthodontic treatment to a completely edentulous Down syndrome patient is a challenging due to intellectual disability of the patients and also due to the muscular co-ordination. Clinician must have an interdisciplinary approach to be scientifically based, technically competent and be socially integrated in order to provide the best care possible and promote the inclusion of individuals with special need. Role of care taker is crucial due to the intellectual disability of the patient.

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