Case Report

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PROSTHODONTIC MANAGEMENT OF COMPLETELY EDENTULOUS DOWN SYNDROME PATIENT

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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 present case report discusses construction of complete denture for completely edentulous 36 year old Down syndrome female patient.
Keywords: down syndrome, intellectual disabilities, complete denture, lingualised occlusion.

INTRODUCTION:

Down syndrome, also known as Trisomy 21.[2] 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. 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. In addition, an underdeveloped maxillary arch and mandibular prognathism are common skeletal defects in patients with Down syndrome. The dental management mostly depends on the level of this disability.

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 also 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

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morphologic diversity. 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. The dental management mostly depends on the level of this disability. In addition to the oral manifestations, compromised cooperation may add to the complexity of the treatment. Thus, the trust relationship between patient and dentist is very important to the treatment outcome.

The present case report discusses the prosthodontic management of a 36 year old by constructing a new complete denture prosthesis.

CASE DETAIL:

A 36 year old female patient accompanied by her sister 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 sister communicated on behalf of the patient. Her sister 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,round brachycephalic frontal bossing, flattened nasal bridge and almond shaped eyes. Other features included trunkal obesity, transverse palmer crease and spacing between the to toes. Intra oral findings included,short lip, high arched palate,palatal throat form and lateral throat form were class I, macroglossia, fissured tongue, resorbed mandibular ridge, angular chelitis, and open mouth. 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.she was reluctant to open her mouth and insert the tray,later on after proper explanation,and we made her to touch the tray,she became cooperative.Rigid stock tray with smooth rounded border and angulated handle,border extention of the tray 2mm short of vestibular depth with no interference with muscle or frenal attachment was selected.patient had excessive salivary secretion which was managed by wiping the palate with gauze and using astringent mouthwash just before procedure.Primary impression of both arches were made with impression compound (DPI, India)[fig-1] Primary casts were poured using Dental plaster (Dentico neelkanth, India)[fig-2]. Special trays, were fabricated using self-cure acrylic (DPI cold cure acrylic material, India).Border moulding done and secondary impression made with selective pressure impression technique, 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.(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). The teeth setting was done with lingualised occlusion to minimize resorption. This concept is defined as the form of denture occlusion that where the maxillary lingual cusps articulate with the mandibular occlusal surfaces in centric working and non working mandibular positions.Trial was done to check the centic occlusion record .Esthethic and phonetic requirements were checked. Packing and curing was done in conventional method. Finishing and polishing was done on the cameo surface of complete denture.denture was delivered.(fig-7) ,post insertion instructions given to her sister,and review was done after a week.

DISCUSSION:

It has been shown that persons with DS are particularly prone to orofacial disorders. Systemic dysfunction in this population may predispose to oral disease. Personality disorders may lead to a refusal of treatment on the part of the patient. The quality of the dentist–patient relationship is paramount.[6] These patients are capable of accepting a degree of discomfort provided that the interpersonal relationship is not betrayed. The basic treatment approach should be the same for patients with DS as for the general population with a clear emphasis on prevention.[5] Modifications need only occur when behavioural difficulties prevent the patient from receiving the optimum treatment. It is clear from the literature,the structural features discussed can be directly related to the chromosomal abnormality22. The functional manifestations of these abnormalities are indirectly related to the underlying pathology. Normal development of oral structure and function is altered leading in turn to compromised development of suckling, swallowing, mastication, and speech. Without intervention, drooling is a common consequence.[7] The degree of difficulty experienced by each patient is variable but is primarily due to hypotonicity of the muscles of mastication and facial expression, particularly of the tongue and lips.Sterognostic dysfunction due to hypotonicity is present.But complete denture has been constructed by using neutral zone technique for these patients. Many patients with DS do not receive an equivalent level of dental healthcare as the general population [9].Mandibular protrusion is facilitated in a subject with DS due to the laxity of the temporomandibular joint ligaments. One or more new resting positions may become established, effectively trapping the maxilla behind the mandible.

The principal skeletal craniofacial features include brachycephaly with a flattened occiput and decreased length and flattening of the cranial base.[5–9] The facial mid-third is underdeveloped, producing a hypoplastic maxilla with a

high, short, and narrow palate. The frontal and paranasal sinuses are hypoplastic and the ethmoid bone is retracted. Mandibular prognathism is mild or marked relative to the maxilla. Soft-tissue features include a fissured and protrusive tongue that often rests between the dental arches and high against the palate. The tongue appears macroglossic due to the relatively small size of the oral cavity (relative macroglossia). The tonsils and adenoids are enlarged clinically acceptable degree of comfort and esthetic improvement, which can change their quality of life. People with Down syndrome should be treated as nonsyndromic patients based on the available recent evidence. Reinforcement of oral hygiene instructions for individuals with Down syndrome is also a key factor in the treatment outcome.[3,4,7]

Though 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.[8] Hence the implant supported prosthesis was not considered and also her sister was not willing for any surgical procedure.

CONCLUSION:

According to recent study 21000 babies are born with Down Syndrome. Persons with DS are particularly prone to orofacial disorders. Systemic dysfunction in this population may predispose to oral disease. Personality disorders may lead to a refusal of treatment on the part of the patient. The quality of the dentist–patient relationship is therefore the most important. Early detection, health care management of these adult patients with down syndrome is important as they develop age related problems early in life. Management of these patients with little extra effort has made the attempt successful.

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FIGURES:

Prosthodontic management of completely edentulous down syndrome patient

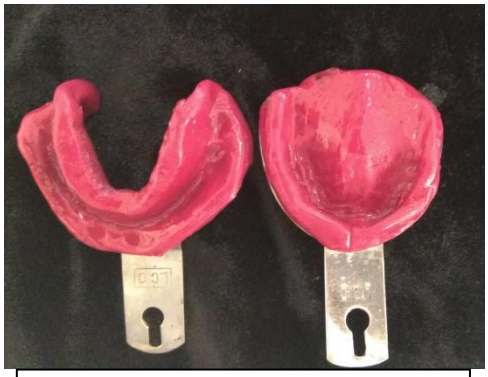

Fig 1 – Primary Impression

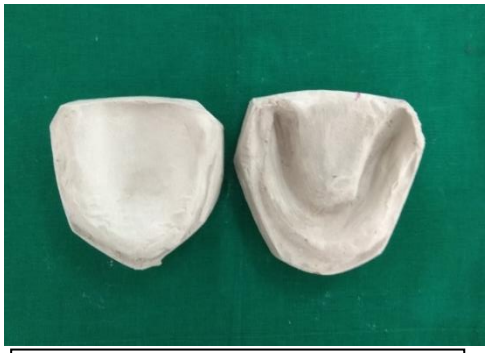

Fig 2 – Primary Cast

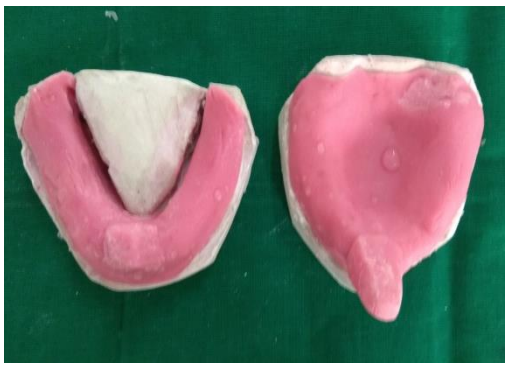

Fig 3 – Special tray

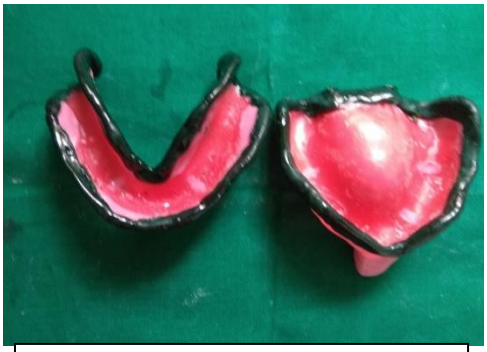

Fig 4 – Border Moulding

Fig 5 – Secondary Impression

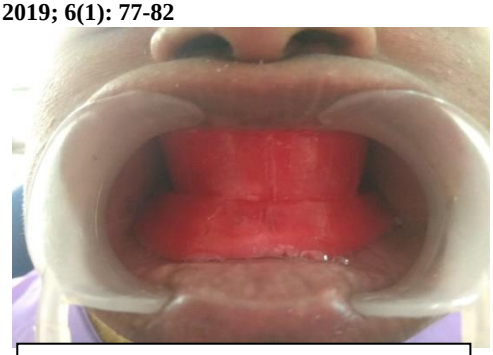

Fig 6 – Jaw Relation

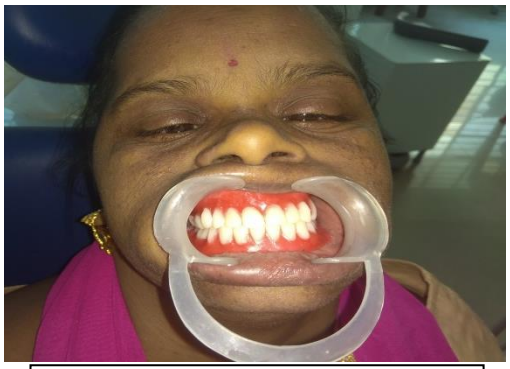

Fig 7 – Wax Try In

Fig 8– Denture Insertion