Rehabilitation of Completely Edentulous Down Syndrome Patient with Removable Prosthesis - A Case Report

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ABSTRACT

Down Syndrome is one of the commonest autosomal disorders with trisomy of chromosome 21. These patients present with various disorders like mental retardation, cardiovascular disorder, musculoskeletal abnormalities etc. Oral manifestations include periodontal disease, hypodontia, macroglossia and much more. These patients become edentulous frequently and rehabilitation of such patients becomes a challenging task. This case report presents rehabilitation of completely edentulous female patient with down syndrome.

Keywords: Down Syndrome, Autosomal, Rehabilitation, Edentulous, Hypodontia

I. INTRODUCTION

Genetic disorders are due to abnormalities in the genetic constitution of an individual. They can be caused by mutations of genes which can lead to either deletion or addition of genetic material. Addition of extra copy in chromosome 21 leads to downs syndrome, also known as Trisomy 21 and Mongolism [1]. It was first described by John Langdon Down in 1866 and established in 1959 by Dr. Jerome Lejeune who discovered an extra pair of chromosome 21 [2]. The incidence of this syndrome has shown to be 1 per 650 to 1 per 1000 live births [3,4.5]. According to a study, 95% of Down Syndrome cases are due to Trisomy 21 [6]. The remaining 5% constitutes the translocation and mosaic types of Down Syndrome [6]. Down syndrome is relatively common in Jammu and Kashmir region. A variety of factors, including late marriage, have been linked to an increase in the prevalence of Down syndrome. For the past 20 years or so, the trend of late marriages in Kashmir has taken a heavy toll on the children of these couples. Between 2004 and 2011, 773 suspected cases of various genetic abnormalities from various regions of Kashmir were evaluated. "Out of 773 patients, abnormal chromosomes were found in 127 (17 percent) of the cases," It revealed, out of 100 suspected cases, Down's Syndrome was found in 82 (28 percent) cases [7].

Individuals with Down syndrome have been reported to have a number of common

medical and dentofacial anomalies. They have characteristic physical features like brachycephalic skull, low set ears, broad hands and feet. Medical conditions like intellectual disability, cardiac defects, epilepsy etc [8,9]. Dentofacial anomalies include periodontal disease, hyposalivation, hypotonic musculature, dental caries, hypodontia, underdeveloped maxilla etc [10,11]. Down syndrome is one of the recognizable causes of intellectual impairment. Children with Down syndrome have an average intelligence quotient of 50, ranging from 30 to 70 [12]. Because of intellectual disability, patient is not able to cooperate properly and in addition to this, hyposalivation, hypotonia, increased gag reflex, makes dental treatment further difficult. Several techniques have been suggested for such patients like behaviour management, training devices etc [13]. This case report describes the rehabilitation of completely edentulous female patient with downs syndrome.

II. CASE DETAILS

A female patient 32 years old, presented to the Department of Prosthodontics Government Dental College and Hospital Srinagar, J&K with the chief complaint of missing teeth and medical history of downs syndrome. She was accompanied with her mother. Patient was childish, shy, affectionate but slow to communicate. Her mother communicated on her behalf. Medical history revealed that she was having hypothyroidism and was taking medications for the same. There was no history of allergic reactions to medication, local anesthetics, or food. Extra oral examination revealed frontal bone bossing, upward slanting palperal fissures, small low-set ears, transverse palmar crease, broad hands and feet [Fig.1.] She had no symptoms of any temporomandibular joint discomfort and no palpable lymph nodes. Intraoral examination revealed poorly formed residual alveolar ridges with square shaped upper dental arch, class III maxillofacial ridges, palatal fissures, class II palatal and lateral throat form [Fig.2,3]. Other findings include reduced mouth opening, angular cheilitis and hyperactive gag reflex. The orthopantomogram revealed poorly formed maxillary and mandibular arches, with no evidence of temporomandibular joint abnormalities.

The treatment plan included fabrication of complete denture with certain modifications. The patient was given an emphatic approach that included a well scheduled appointment time, patient desensitisation to dental instruments and materials using Tell-Show-Do approach, good communication, and a trustful rapport.

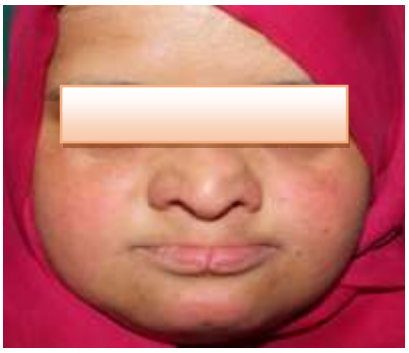

Fig.1 Extra-oral Photograph

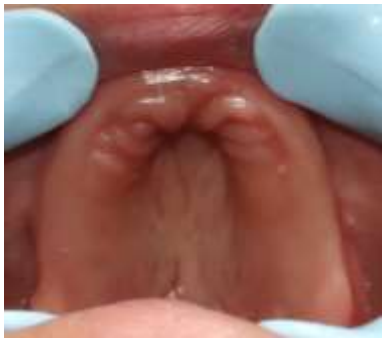

Fig.2 Maxillary arch

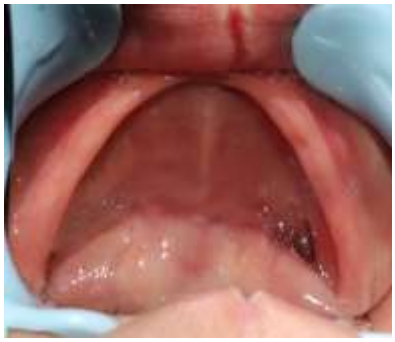

Fig.3 Mandibular arch

III. PROCEDURE

Primary impressions were made with stock trays using alginate impression material. Initially patient was not allowing insertion of tray due to fear of unknown procedure. After proper explanation of the procedure and making her familiar with tray and impression material, she became co-operative. With an indelible pencil, the outline for the custom tray was marked on

the impression, providing adequate relief along the vestibular sulcus and frenal attachments. Casts were obtained [Fig.4,5] and upper & lower special trays were made with cold cure resin material based on the indelible marks transferred on the cast. Border moulding was done using silicone putty material in one step. For that purpose special trays were tried in the mouth, checked and corrected for extension. Tray adhesive was applied over the border of the custom trays and a roll of 3-4 mm width of putty was placed along the entire periphery of the tray. Following border moulding, wash impression was made with light body material [Fig.6,7]. Jaw relation was done in many steps as patient was not able to tolerate denture base for adequate time in mouth due to hyper gag reflex [Fig.8]. A training denture base was given for desentization. A thin acrylic denture base without teeth was fabricated on the secondary cast, and the patient was instructed to wear it at home. Following jaw relation, teeth arrangement was done in class III relation. Try-in was done two times for conformation of centric relation record before processing of denture. After final processing, denture was inserted into the patients mouth [Fig.9,10]. Both verbally and in writing, post-insertion instructions were given to her mother. After a day, the patient was called for necessary adjustments, followed by once a week for the first two months, then once every two weeks for the next three months, and finally once a month for the final six months.

Fig.4 Primary maxillary Cast

Fig.5 Primary mandibular cast

Fig.6 Secondary maxillary impression

Fig.7 Secondary mandibular impression

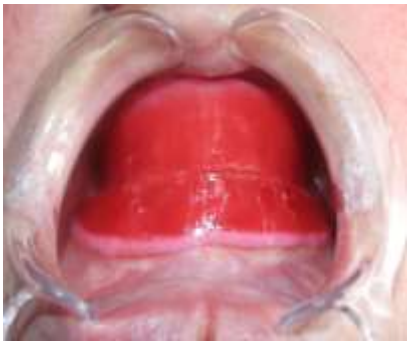

Fig.8 Jaw Relation

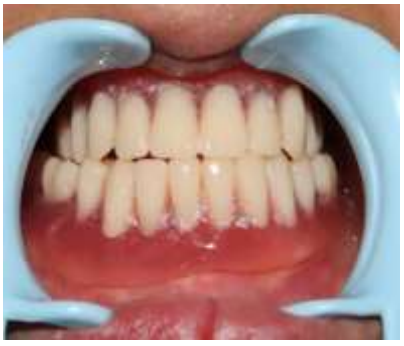

Fig.9 Final prosthesis

Fig.10 Extra-Oral Post-Operative Photograph

IV. DISCUSSION

The most prevalent genetic intellectual disability, Down syndrome is characterised by a variety of physical abnormalities and delays in language, motor planning, and cognitive development [8,9,12]. Due to increased prevalence of periodontal disease and poor oral hygiene practices, these patients become frequently edentulous and need prosthetic rehabilitation. For patients who require special care, such as those with Down syndrome, prosthodontics rehabilitations utilising implant therapy have been effective treatment modality [14,15]. However, implant supported prosthesis was not given for the patient because of decreased quantity of available bone and financial limitations. Hence, conventional removable complete denture was fabricated for the patient. According to the most recent data, people with Down syndrome should be treated like nonsyndromic patients. However, necessary modifications are required like emphatic approach, extra care, desensitisation of the patient to dental equipment, reassurance and counselling, early appointment times, more clinical time, employment of a mediator during treatment processes. Selective pressure impression technique was employed for preservation of residual alveolar ridge. Additionally, elastomeric impression material was used instead of eugenol to prevent gagging. Also, border moulding was done in single step which was more acceptable for patient. These patients often present with hyperactive gag reflex which was also seen in our case. Desensitization was done by giving a training device in the form of processed denture base. Except for eating and sleeping, the patient was instructed to wear a denture base full-time for a week. As the patient was comfortable wearing both the training denture base plate for a week, the procedure for jaw relation was started. After insertion of prosthesis, simple and detailed instructions, were given with regular follow ups. The importance of oral hygiene and denture hygiene was emphasised.

V. CONCLUSION

Down syndrome patients should undergo meticulous evaluation and receive the appropriate care. Patience on the part of the prosthodontist and constant support of caretaker is essential for the successful treatment of these cases.

Declaration by Authors

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