Case report

Comprehensive Rehabilitation of Multiple Missing Teeth in Severe Early Childhood Caries - A Case Report

Abstract

The purpose of this case report is to present the necessity, advantages, clinical outcome, and importance of removable partial dentures as a prosthetic rehabilitation in children. Oral rehabilitation in patients with ECC is a complex procedure involving a multidisciplinary approach during diagnosis, treatment planning and maintenance of the oral function to maximize comfort, aesthetics and overall health. A 5-year-old female child was referred to the Department of Pedodontics and preventive Dentistry with the chief complaint of early loss and complete destruction of milk teeth, along with difficulty in eating and recurrent hospitalizations caused by dental infections. Prosthetic rehabilitation with removable dentures in children gives the advantage

of the possibility for easy modification during the time of growth and development of the jawbones.

Keywords: Early childhood caries, oral function, partial dentures, permanent teeth

Introduction

Despite repeated emphasis on prevention of caries in primary teeth, Early childhood caries (ECC) continues to be is a significant global health concern, impacting nearly half of preschool children worldwide, with a pooled prevalence of approximately 48%. Alarmingly, one in every two children in India is affected by ECC.[1]

Consequences of ECC include functional, physical and aesthetic impairment, often with repercussions on children's general health at an early age.[2] Children affected by the disease had a higher risk of new carious lesions, hospitalizations and emergency room visits, increased treatment costs, risk for delayed physical growth and development, loss of school days and increased days with restricted activity, diminished ability to learn, and diminished oral health-related quality of life.

Oral rehabilitation in patients with ECC is a complex procedure involving a multidisciplinary approach during diagnosis, treatment planning and maintenance of the oral function to maximize comfort, aesthetics and overall health. Moreover, such multidisciplinary approach should emphasize prevention and health information to the parents.

There are several prosthetic considerations available such as removable complete or partial dentures, overdentures, fixed denture prostheses, and implants. However, adequate prosthetic restoration in children or adolescents must not in any way hinder the proper development of jawbones and permanent teeth.

Removable partial and complete dentures with acrylic denture bases are the most generally perceived choice for restoring the oral structure in children because they can be easily modified as the child grows.

The purpose of this case report is to present the necessity, advantages, clinical outcome, and importance of removable partial dentures as a prosthetic rehabilitation in children.

CASE REPORT

A 5-year-old female child was referred to the Department of Pedodontics and preventive Dentistry with the chief complaint of early loss and complete destruction of milk teeth, along with difficulty in eating and recurrent hospitalizations caused by dental infections. The mother reported intermittent episodes of fever and recurrent swelling of child's face which subsided upon medications in the past one year.

The child received breast-feeding daily till the age 3. The mother reported that the child had free access to cariogenic foods, breastfeeding upon demand, and frequent use of bottles containing sweetened liquids since the age of six months.

Oral habits or a local trauma were not reported.

The intraoral examination revealed crown destruction associated with maxillary anterior teeth. The mandibular and maxillary primary molars exhibited extensive carious lesions caries wrt 55, 65, 36,46. The oral examination showed coronary destruction in all primary teeth. Root stumps wrt 54 53 52 64 75 83 85 (figure 1a and b)

An orthopantomogram revealed no other abnormalities. (figure 2)

Extractions were planned under local anaesthesia with Lidocaine (2% with epinephrine 1:100,000). The proposed treatment was to manufacture a complete denture.

Treatment was carried out in multiple sessions, during which the patient's behaviour became more cooperative but always with the presence of the mother.

Teeth #54, #53, #52 #83, and #85 were extracted in the first session, followed by the extraction of teeth #64 and #75 in subsequent sessions. (figure 3a and b)

The multiple extractions led to the loss of vertical dimension, with difficulty chewing and speaking as well as compromised facial aesthetics. Rehabilitation involved the use of complete prostheses (upper and lower) based on the motivation and cooperation of the parents. Moreover, the child was cognitively able to use the dentures.

The impression was performed with addition silicone (Express XT Denso, 3M). Working Cast was poured to which base plate and occlusion rim was fabricated using modelling wax. In the subsequent visit maxillomandibular relations was recorded. followed by testing and adaptation of the prosthesis where Phonetic and esthetic properties were also evaluated (figure 4 a-d)

After the stability was confirmed prosthesis was acrylized. Internal relief was obtained and a resilient tissue reconditioning material (Coe-Soft; GC América, USA) was used for better adaptation to the thin and resilient alveolar edges. (figure 4e)

On the day of delivery of the dentures, occlusion and retention were adjusted to ensure proper joint function, balance, and the absence of trauma. A total of six sessions were needed to fabricate the dentures.

The parents and the child were instructed regarding use and hygiene (daily brushing of the dentures) as well as the importance of periodic clinical monitoring. The wearing instructions were continual denture use during the day and removal to sleep at night to motivate the child and the family to adopt healthy habits of diet and oral hygiene in order to avoid the recurrence of dental caries

After one week of denture insertion, the patient returned to evaluate oral condition and adaptation. The child was followed up each 15

days. Where the eruption state of the permanent tooth is evaluated and then a vent would to create to facilitate the eruption of the succedaneous tooth.

The mother reported improvement in self-esteem, social behaviour, nutrition, phonation and both, family and patient were very satisfied with the treatment. (Figure 5)

Fig 1a: Preoperative Extraoral Photograph

Fig 1b: Preoperative Intraoral Photograph

Fig 2: OPG reveals presences of all permanent tooth bud

Fig 3 a: Extraction of root stumps

Fig 3 b: Post Extraction Intra Oral Photograph

Fig 4a: Fabrication of occlusion rim

Fig 4b: jaw relation and teeth arrangement

Fig 4c: Try in and Fit in

Fig 4 d: Acrylised Removable Denture in relation to upper and lower arch

Fig 4 e: Delivery of the Removable Prosthesis

Fig 5: Immediate and one-month post-operative Extraoral photograph

Prosthetic treatment plays an important role in providing functional and psychological integrity in children with the absence of teeth.

Tooth loss due to caries or trauma is one of the most common reasons for the need for prosthetic rehabilitation in children. Reddy et al. and Ahamed et al. have reported high prevalence rates of 13.5 and 16.5% for premature loss of primary teeth in India, respectively.

Severe early childhood caries (S-ECC) is highly prevalent globally and pose serious consequences for the child's quality of life. The consequences of untreated S-ECC include multiple episodes of dental pain and infections, poor mastication, delayed physical growth and

development, hypoplasia of developing permanent teeth, loss of school days, hampered learning, and compromised self-esteem.[3]

Premature extractions of primary teeth further have added psychological trauma, disturbed development of occlusion, diminished oral and general health. Oral health and, thus, general health-related - the quality of life in terms of oral function, episodes of pain, sleep quality, growth and development, and self-esteem can be improved with the help of prosthodontic rehabilitation for such cases.[3]

Prosthetic rehabilitation in cases of multiple loss is essential to restoring chewing function, improving phonetics, preventing the development of harmful oral habits, and minimizing negative psychological impacts.

Prosthetic rehabilitation is recommended from the age of 5 years but can be started as early as 3–4 years of age for cooperative children and also three to five years of age is a period of stability in the bone on both the transverse and sagittal planes. Till and Marques recommended that an initial prosthesis should be delivered before the child begins school so that the child has a normal appearance and time to adapt to the prosthesis.

Prosthodontic treatment enhances Masticatory muscles tonicity; delays alveolar bone resorption associated with the absence of teeth, compensates for the decrease in vertical dimension and prevents angular cheilities.[4]

In this current case as per an individual need, factors that govern the treatment planning include the number of teeth present, inter arch spacing, alveolar bone height and width, mucosal attachment, age of the patient, facial and lip support, the thickness of mucosa, and cost-effectiveness of the treatment.[5]

Prosthetic rehabilitation with removable dentures in children gives the advantage of the possibility for easy modification during the time of growth and development of the jawbones. The use of a removable

partial denture allows relining and rebasing in the future, given that the growth of the patient is continuous; also, relining the existing removable partial denture reduces the cost and frequency of remaking the prosthesis in children.

Although the fabrication of complete dentures is similar to that performed for adults and the clinicians concur that children adapt extremely well, it is important to determine the expected level of cooperation.

Regular check-up appointments should be made every three to six months and modifications must be made to accommodate the child's growth and development until the eruption of permanent teeth.

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