CASE REPORT

A pedoprosthodontic rehabilitation in patients with severe early childhood caries (S-ECC)

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SUMMARY

Early childhood caries (ECC) is a rapid form of dental caries. ECC is the most common chronic childhood disease that can compromise a child's self-esteem, nutritional intake, oral development and quality of life, subsequently leading to malocclusion and psychological problems. The restoration of severely decayed primary teeth is often a difficult procedure that offers a great challenge to paediatric dentists. The present case series document the clinical management of patients suffering from severe early childhood caries using removable partial prosthesis restoring their masticatory function and aesthetics. The ultimate aim of the treatment was to improve psychological and physiological development leading to better functioning of the stomatognathic system.

BACKGROUND

Early childhood caries (ECC) is a virulent form of dental caries that can destroy the primary dentition of toddlers and preschool children, usually prevalent in low socioeconomic groups and in general population. ECC besides affecting the teeth also has consequences that may lead to more widespread health issues. Premature loss of primary maxillary anterior teeth may result in defective speech, decreased masticatory efficiency, abnormal tongue habits and slower the growth potential than caries-free child.

The aesthetic restoration of severely mutilated teeth in cases of severe ECC has for a long time been a challenge to the paediatric dentist because of widespread destruction of tooth structure, leaving minimal surface for bonding. In addition large pulp chamber and aprismatic enamel further makes the bonding difficult. Hence extraction is indicated as a treatment plan for severely mutilated teeth.

The present case series illustrate a challenging task of treating two different patients suffering from severe ECC with gum fit dentures.

CASE PRESENTATION

Case 1

A 4-year-old girl reported to the Department of Pedodontics and Preventive Dentistry, King George Medical University, India with difficulty in chewing and unpleasant smile due to multiple extractions of primary teeth because of severe ECC.

On examination

The intraoral examination revealed absence of 52, 51, 61, 62, 64, 74, 84 teeth. The teeth 54, 53, 75,

73, 85 were observed to be carious (figure 1). Extraction was planned for grossly carious 54 and 53, 63, while for 73, 75 and 85 restoration was performed with glass ionomer cement. Stainless steel crown restoration was carried out 75, 85 and crown and loop space maintainer was inserted in relation to missing 74 and 84 (figure 2).

Case 2

A healthy 5.5 year-old boy reported with multiple decayed teeth since 1 year leading to inability in chewing food.

On examination

The intraoral examination revealed carious 55, 54, 53, 52, 51, 61, 62, 63, 64, 65, 72, 83, 84 teeth (figure 3). Extraction was planned for grossly carious 54, 53, 52, 51, 61, 62, 63, 64 teeth in subsequent appointments. Pulpotomy was performed in 55, 65 with stainless steel crown restoration. Glass ionomer cement restoration was performed in 72, 83 and 84.

Maxillary arch rehabilitation using gum fit dentures

Primary maxillary alignate impression was obtained to fabricate a custom tray. The secondary impression was taken using zinc oxide eugenol impression paste, and master cast was prepared. Occlusion rims are fabricated on the working cast with a hole allowing the access of 55, 65 and were inserted into the mouth to establish the vertical dimension and centric relation. The vertical dimension was first determined by swallowing, checked by the rest position and associated freeway space, and thereafter verified by means of phonetics leading to registration of centric relation.

The denture was processed with a conventional type resin inserted and the appropriate adjustments were carried out. The patient was re-called next day. On next day discomfort was relieved and the patient was instructed for periodic follow-up every month (figures 4 and 5).

OUTCOME AND FOLLOW-UP

Retention and stabilisation of the dentures with retained teeth were clinically acceptable in subsequent follow ups.

DISCUSSION

Early loss of primary teeth may affect psychological and physiological conditions of patients during childhood. A high failure rate is observed while restoring severely decayed primary anterior not

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Figure 1 (A–C) Preoperative photographs of case 1 patient.

Figure 2 (A–B) Crown and loop space maintainer rehabilitation.

Figure 3 (A–B) Preoperative photographs of case 2 patient.

Figure 4 (A–B) Gum fit denture case 1 patient after denture insertion.

Figure 5 (A–C) Gum fit denture before and after insertion in case 2 patient.

Learning points

- ▶ The prime difficulty in the paediatric patient is recording impressions. The patient cooperation can be achieved by the technique Operant conditioning by Franks.
- ▶ The restoration of dental and facial aesthetics along with mastication and speech can be carried out with removable prosthesis without affecting the growth of arch in contrary to fixed prosthesis.
- ▶ In many instances, artificial teeth are not generally useful because of poor retention or stability. Hence the preservation of remaining tooth/teeth and their supportive structures are advised to be preserved in consonance.

only because of absence of tooth structure and poor adhesion of bonding agent to primary teeth but also because of limited availability of dental materials and techniques. Children requiring restorations are among the youngest and least manageable group of patients.

Rifkin¹ described restoring primary anterior teeth with post and crown, but it was not widely accepted because of the potential for interference with physiological root resorption. The wire

extends a long way into the root also, can increase internal stresses within the root leading to fracture of root.

Motisuki *et al*² have restored severely decayed primary teeth using an indirect composite resin restoration using fibre glass post. This technique was expensive and required extensive laboratory work.

The restoration of mastication and space maintenance by the fabrication of a prosthetic restoration enables better speech and improvement in nutritional status.³ In addition, increased vertical dimension has established better muscle tone and lip support.

Contributors All the authors have contributed significantly towards the case report.

Competing interests None.

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