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CASE REPORT

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A Clinical report of functional and esthetic oral rehabilitation in a high-caries-risk child: one-year follow-up

Caso clínico de reabilitação oral estética e funcional em criança de alto risco à cárie: um ano de acompanhamento

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ABSTRACT

This case discusses a multi-disciplinary approach to oral functional and esthetic rehabilitation on a high-caries-risk child with prematurely lost primary teeth due to endodontic complications associated with wide-spread dental caries. The patient was diagnosed with an anterior open bite and atypical swallowing. He exhibited anxiety and low self-esteem due to esthetic impairment. A combination of targeted clinical procedures, a focus on oral home care and active parental involvement was integral to the treatment process. The patient was examined monthly by a pediatric dentist regarding dietary habits, fluoride exposure, biofilm presence, caries prevalence, and malocclusion. Improvement was evident in patient's masticatory function, facial esthetics, and psychological behavior at a 12-month follow-up evaluation.

KEYWORDS

Tooth deciduous; Dental caries; Mouth Rehabilitation; Tooth.

RESUMO

Este caso discutiu a abordagem multidisciplinar da reabilitação oral estética e funcional de uma criança com alto risco à cárie com perda prematura de dentes decíduos devido a complicações do tratamento endodôntico associado a cárie dentária generalizada. O paciente foi diagnosticado com mordida aberta anterior e deglutição atípica. O mesmo apresentou ansiedade e baixa auto-estima devido ao comprometimento estético. Combinação de procedimentos clínicos direcionados, com ênfase e foco no cuidado bucal domiciliar e o envolvimento ativo dos pais fez parte do processo de tratamento integral do paciente. Este foi examinado mensalmente por um odontopediatria, o qual orientou sobre hábitos alimentares, exposição a fluoretos, presença de biofilme, prevalência de cárie e má oclusão. Evidente melhora foi observada na função mastigatória, estética facial e comportamento psicológico aos 12 meses de acompanhamento clínico do caso.

PALAVRAS-CHAVE

Dente Decíduo; Cárie dentária; Reabilitação bucal; Dente.

INTRODUCTION

In developed countries the dental caries prevalence has declined over recent decades[1]due to community water fluoridation, use of fluoride toothpaste, introduction of pit and fissure sealants, and expansion of oral health promotion strategies[2]. However, population subgroups continue to experience a high incidence of dental caries[1]. It has been characterized by a high percentage of white spot lesions and untreated carious cavities, which can cause pain, functional limitations and adverse effects on general health, impacting body weight, growth and quality of life[3,4]. Another issue associated with high carious conditions in children is premature loss of primary teeth.

This can affect speech, decrease masticatory efficiency, produce abnormal tongue habits, and malocclusion[3]. Children may also suffer psychologically if esthetics is compromised[4]. Thus, the establishment/maintenance of an appropriate masticatory system in child is extremely important.

Oral rehabilitation in patients with clinical conditions associated with missing teeth is a complex procedure involving diagnosis, treatment planning and maintenance of the oral function to maximize comfort, appearance and overall health[5]. Full mouth rehabilitation in children has always been a challengebecause children requiring such treatment are usually the least manageable patients[3,5]. This case describes a multi-disciplinary treatment approach to promote rehabilitation and general health in a child with widespread decay and high-risk-caries.

CASE REPORT

A 6.3-year-old boy was referred to the XXX XXX Division, XXXXXX School, University of XXX, XXX. Main complaints were pain, poor esthetics, and speech limitations. Medical and dental history revealed no contra-indications to dental treatment. An extra-oral exam showed no significant abnormality. The intra-oral examination revealed:mixed dentition; dental caries; restorations presence; premature tooth loss (Figure 1). Additionally, an open-bite malocclusion and atypical swallowing was noted. Radiographic examination revealed pulpotomy done in the left first and second lower molars, and endodontic complications, including internal root resorption and radiolucencies in bifurcation and periapical areas in the left first molar. A three-day diet record indicated an every other day frequency of ate/drank sugar-containing snacks or beverages between meals. Based on medical/dental history, dietary habits, clinical and radiographic findings, the patient was classified as high-risk for caries.

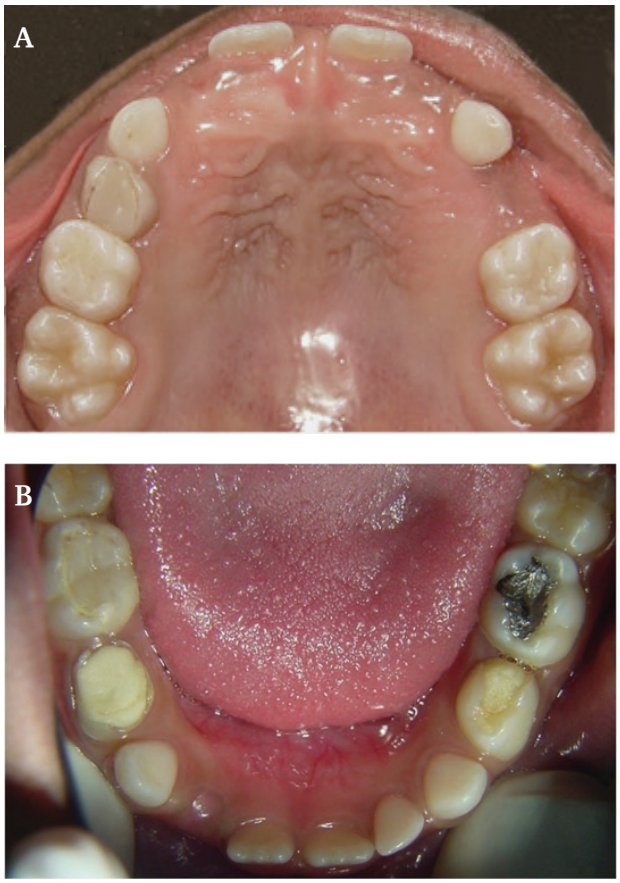

Figure 1 - Pretreatment maxillary and mandibular-occlusal views: (A) presence of unsatisfactory resin restorations, premature tooth loss, and lateral incisors ununrupted; (B): amalgam and glass-ionomer cement restorations; unsatisfactory resin restorations; and extensive coronary destruction.

A three-phased treatment plan was implemented. Phase-I aimed at controlling disease and preventing new outbreaks. Oral hygiene was reinforced and included twice-daily use of fluoridated toothpaste, and diet adjustments. Caries were removed followed by placement of glass-ionomer restoration in primary mandibular right firstmolar, and resin sealants (FluroShield, Dentsply, Germany) applied on the first permanent molars. A 5% sodium fluoride varnish (Duraphat-Colgate-Palmolive, Brazil) was used once/week in three serial appointments. Phase-II focused on infection control and included the extraction of primary mandibular right

second molar. Primary mandibular left first and second molars were restored (Z-100, Shade A1, 3M/ESPE Dental Products, Brazil) after pulpectomy, and Primary mandibular right first molar was restored using indirect composite restoration[6].For pulpectomy, the chemical-mechanical root preparation was performed with K-files (#15-#35) (Dentisply/Maillefer, Brazil) and with 0.5% sodium hypochlorite associated with hydrogen peroxide cream. The roots were filled with a paste composed of iodoform (K-Dent; Quimidrol, Brazil), Rifocort (MerrelLepetit, Brazil) and camphorated paramonochlorophenol (SS White, Brazil) in equal portions. Phase-III included functional rehabilitation with removable partial dental prosthesis associated with a palatal crib[7] (Figure2). Three adjustment appointments were scheduled to diminish prostheses' discomfort and the patient was referred to a speech specialistto address atypical swallowing.The patient was seen weekly during the first month and monthly until the final appointment. Clinical parameters assessed were: biofilm index, oral hygiene practices, dietary habits, health care attitude, physical status, mental and social factors, systemic disease and medication.

DISCUSSION

Functional and esthetic oral rehabilitation in a high-risk-caries child associated with other physical and emotional disabilities constitute a complex procedure. As observed in the presented case, the assessment of the patient's oral and general health was the first phase of a three-phase approach. Temporary restorations were usedto control infection and provide accurate prognosis for each tooth. Resin sealant was used on erupted permanent molars to prevent new lesions, and procedures associated with patient's lifestyle changes proposed to reduce caries risk and to increase patient self-esteem[4,8]. Parental cooperation throughout the treatment process was a requirement. Primary teeth lossesmay have an impact on an individual's psyche or self-image[4]. After repairing coronal destructions with endodontics and restorative procedures the patient reported no pain, expressed pleasure with his appearance and seemed more amenable to increased social integration. A variety of

Figure 2 - Photograph illustrating final appearance of functional rehabilitation: (A and B) Occlusal views-treated teeth, maxillary and mandibular removable partial dental prosthesis associated with a palatal crib; (C) Frontal view-after treatment and insertion of the removable partial dental prosthesis.

pulpectomy techniques and root canal filling materials for primary teeth have been described[9] Iodoform paste was selected in this case because of its clinical and radiographic successes after 10–16 months[9]. For primary molars that had undergone pulpotomy/pulpectomy, stainless-steel crowns and adhesive restorations were used [6], with the advantages of preservation of sound tooth tissue and normal contact area[6]. Additionally, they reduce appointment time, minimize variables associated with direct placement techniques, and create more homogeneous, durable, and esthetic results[8]. Regarding primary teeth extraction attention was centered on malocclusion. Therefore, a removable partial dental prosthesis was used to maintain the mesiodistal relationship, preventing malocclusion and recovering oral function[7]. Because of the patient's atypical swallowing, a palatal crib was used with prosthesis to prevent tongue projection and its interposition between the anterior teeth, enabling physiological tooth eruption and alveolar growth[10].

Overall, parents reported that the treatment positively impacted on the patient's self-esteem due to improvement of esthetic appearance and that restoration of tooth anatomic forms allowed the child to chew better. However, the atypical swallowing remained unresolved. At the one-year follow-up appointment, the intra-oral examination showed satisfactory oral health, with a low amount of biofilm and normal periodontal characteristics. Endodontically treated teeth were painless, with no significant findings on the surrounding soft tissues. Removable partial dental prostheses were stable and the child was satisfied with his health condition.

CONCLUSION

A successful multi-disciplinary oral rehabilitation approach for high-risk-caries childrendepends on a combination of appropriate clinical decisions, good oral hygiene and patient/parental collaboration and restores occlusion, patient's esthetic appearance and self-confidence.

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