Postendodontic restoration of severely decayed primary tooth using modified omega loop as a post

Ruchi Arora, Chirag M. Raiyani, Vikram Singh¹, Abhinandan Anand Katageri

Abstract
The esthetic concern of severely mutilated primary anterior teeth in the case of early childhood caries has been a challenge to pediatric dentist. Early childhood caries is the most common chronic disease of the preschool child. The case report presented here is of a three year old boy with severely decayed maxillary anterior teeth. After root canal treatment, the primary maxillary central incisors were reinforced using modified omega post and followed by using celluloid strip crowns. The technique described here offers a simple and effective method for restoring severely decayed primary anterior teeth that reestablishes shape, function, and esthetics.

Key words: Early childhood caries, omega post, primary tooth

INTRODUCTION

Early childhood caries (ECC) is one of the most common chronic diseases of the childhood.[1] According to the American Academy of Pediatric Dentistry (2003) ECC may be defined “as the presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth in a child 71 months of age or younger.”[2] The prevalence is 1-12% in developed countries and 70%, while in India, a prevalence of 44% has been reported for caries in 8-48 months old children.[3]

The early loss of primary anterior teeth may result in reduced loss of vertical dimension, masticatory efficiency, development of parafunctional habits (tongue thrusting, speech problems), esthetic functional problems such as malocclusion, psychological problems that can interfere in the personality and behavioral development of the child.[4-5]

This case report describes the challenging task of treating a 3-year-old child with severely decayed maxillary anterior teeth that were restored using modified omega loop post followed by strip crown.

CASE REPORT

A 3-year-old child reported to the Department of Pedodontics and Preventive Dentistry, with a complaint of severely decayed upper front teeth. The child was shy, and behavior of the child was definitely negative according to Frankl behavior rating scale.

Intraoral examination revealed a complete set of deciduous and caries involving with 61 (maxillary left primary central incisor). Coronal portions of 61 were severely damaged, and most of the tooth structure was lost with pulpal involvement. The periapical radiograph revealed periapical abscess i.r.t. 61. After taking parents, consent diet analysis, counseling, and oral prophylaxes were performed. Pulpectomy procedure was performed i.r.t. 61 using metapex, followed by custom-made half omega-shaped post with 0.9 mm stainless steel orthodontic wire using no.130 to make omega loop, and serrations were done to increase the stability of the esthetic restoration and the mechanical retention of the core. About 5 mm of the metapex was removed from the coronal end of the root canal, and 1 mm of glass ionomer cement (GIC) was placed. The incisal end of the wire projected 3-4 mm above the remaining root structure. After GIC set, the canal was prepared to get a space of about 3 mm [Figure 1].

The root canal was etched with 35% phosphoric acid for 20 s, followed by bonding agent was placed and cured for 20 s. The flowable composite was injected into the root canal along with the loop. The composite was light-cured for 40 s. Crown was reconstructed using strip crown. Finishing and polishing were performed using soflex tips after checking the occlusion [Figure 2].

DISCUSSION

Treatment of preschool children and restoration of primary anterior teeth with the severe loss of coronal structure is a
challenging task for the pediatric dentists. The main aim is to preserve teeth and restore them so that child is able to perform normal like mastication, speech, and esthetics. The failure rate is high in such type of cases due to the absence of tooth structure, poor adhesion of bonding agent of primary teeth, limited availability of material and technique. After the successful endodontic treatment and placement of intracanal retainers, the remaining coronal structure can be restored with indirect or direct technique or single tooth prostheses, such as strip crown, stainless steel crown, metal plastic crown, porcelain veneers, polycarbonate crowns, and acrylic resin crown.[6]

Nowadays, esthetic crowns are introduced in pediatric dentistry like pedo jacket crowns, fuks crowns, new millennium crowns, prevenereed crowns, cheng crowns, dura crowns, pedo pearl crowns and kinder crowns to overcome the disadvantages of strip crown like low retention and poor adhesive of bonding agent. These crowns are more durable and less technique sensitive.

Many studies advocate the use of nonmetallic posts such as ceramic post, polyethylene glass fibers, carbon fibers, etc,[7,8] but in such kind of cases, it has some disadvantages like technique sensitive, time-consuming, multiple steps, and expensive.

A simpler and effective method is to use an omega loop that was introduced by Mortada and King.[6] In this technique, omega loops wire extensions are placed at the depth of around 3-4 mm inside pulp chamber and the projected portion of the loop is used for retention of the coronal restoration. The biggest advantage is that the wire does not cause any internal stresses in the root canal as it is incorporated in the restorative material mainly, and it can be done with minimal chair side time.

In the present case report, a simple and effective method for reconstruction of severely destroyed primary anterior teeth has been used. This technique can be done directly in the oral cavity without involving any laboratory procedures. The complete procedure can be completed in one appointment, easy for the pediatric patient and less cooperation required from the child. As the core length of the omega loop, which is placed intracanal, is around 3 mm thus occupies only the cervical one-third of the canal and does not interfere with deciduous tooth root resorption and permanent tooth eruption. Omega loop technique can be an easier, simpler, and inexpensive treatment of choice for severely damaged primary anterior teeth.

CONCLUSION

The modified omega loop with serration used in this case report demonstrated good retention, good esthetics, and masticatory function to the child. However, it is a long time success, and its durability in children having parafunctional habits like bruxism, deep bite, etc., is a matter of further research.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Mouradian WE. The face of a child: Children’s oral health and dental education. J Dent Educ 2001;65:821-31.
2. Verma L, Passi S. Glass fibre-reinforced composite post and core used in decayed primary anterior teeth: A case report. Case Rep Dent 2011;2011:864254.
3. Jose B, King NM. Early childhood caries lesions in preschool children in Kerala, India. Pediatr Dent 2003;25:594-600.
4. Ngan P, Fields H. Orthodontic diagnosis and treatment planning in the primary dentition. ASDC J Dent Child 1995;62:25-33.
5. Usha M, Deepak V, Venkat S, Gargi M. Treatment of severely mutilated incisors: A challenge to the pedodontist. J Indian Soc Pedod Prev Dent 2007;25 (Suppl):S34-6.
6. Mortada A, King NM. A simplified technique for the restoration of severely mutilated primary anterior teeth. J Clin Pediatr Dent 2004;28:187-92.
INTRODUCTION

The artery of Percheron (AOP) is a rare vascular variant in which a single dominant thalamoperforating artery arises from the P1 segment and bifurcates to supply both paramedian thalami.[1] Occlusion of this uncommon vessel results in a characteristic pattern of bilateral paramedian thalamic infarcts with or without mesencephalic infarctions. This type of infarct might be associated with embolic phenomena; nevertheless, all the workup for embolic cause was negative including cardiac arrhythmias, and the finding of the patent foramen ovale (PFO) was incidental without an evidence of a source of paradoxical embolization such as venous thromboembolism (VTE), also the possibility of underlying thrombophilia was excluded in regard of arterial thrombosis as a possible underlying etiology.[2,3]

CASE REPORT

A 37-year-old man with no medical history presented to the Emergency Department (ED) after being...