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A Case Report: Management of Blunderbuss Canal Using Tailor Made Gutta percha Obturating Technique.

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Abstract

This clinical report aims to report management of Blunderbuss canal applied to 11 of a healthy 11-year-old female after a trauma. Clinical inspection of the tooth showed fractures involving incisal edge and mesial angle. Radiographic analysis of the root revealed incomplete apex formation. The possibility of fracture into the root or luxation injury was rejected, and the diagnosis of pulp necrosis was verified. Apexification by calcium hydroxide and subsequent obturation with tailor made gutta-percha were planned. Clinical, radiographic, examinations verified the success of the treatment, although the choice of calcium hydroxide for apexification treatment is discussed.

Introduction

Trauma to the anterior teeth is a relatively common occurrence during childhood .Depending on its magnitude, it may produce concussion, luxation, fracture, or avulsion of the teeth, leading, in more severe cases, to necrosis of the pulp tissue[1]. When pulp regeneration or repair is not possible, the endodontic treatment of immature permanent necrotic teeth is more time consuming and technically more difficult than conventional procedures because these teeth present widened root canals and open apices.[2] the tooth roots may also suffer external infection-related (inflammatory) root resorption or alterations of their formation during treatment. In cases of infected pulps, it's necessary to use a specific dressing material to neutralize the bacteria and their products and to stimulate the apexification process by forming a mineralized apical barrier so that the subsequent condensation of gutta-percha can be properly achieved[3]. Traditionally, apexification had been performed by using calcium hydroxide paste, due to its biological and healing performances[4]. Regardless of the proprietary brand, calcium hydroxide has been successfully used for apical barrier formation in 74–100% of cases [5]. Additionally, 86% of the treated teeth survived after a follow-up of 5years. However, the suitability of calcium hydroxide paste use for apexification has been

questioned because it involves a long treatment time and the prognosis is always uncertain. The average length of time for apical barrier formation ranges from 3 to17 months, necessitating multiple visits for material replacement and delays in the construction of the definitive[5].Long-term exposure of the tissue to calcium hydroxide may weaken the root structure, resulting in cervical fractures, as well as inducing periapical bone necrosis when there is over filling of the material[6]. Nevertheless, the authors believe that calcium hydroxide paste, if properly used, may still be a suitable material for apexification. Currently, the use of other alternative materials, such as mineral trioxide aggregate (MTA) or calcium hydroxide microspheres, may still be restricted due to socio economical regional conditions.

Case Report

An 11-year-old female Patient presented to the Department of Pediatric and Preventive Dentistry, with a chief complaint of spontaneous toothache in maxillary right central incisor for the past five months. The patient's medical history was unremarkable. The pre-operative radiograph on maxillary right central incisor (Figure 1) shows a large deep coronal root defect caused by gross intra-radicular extension of caries into a previously traumatized central incisor. Preoperative radiograph showed coronal radiolucency involving pulpal radiolucency (with open apex -blunderbuss canal) with large periapical radiolucency. Local anesthesia was administered with 2% lignocaine, after removal of caries the pulp chamber was completely rinsed with normal saline. Working length radiograph was taken by use of # 20 no. K file (Figure-2). The 4mm of apical portion of the canal intra canal medicament calcium hydroxide placement was done and closed by wet cotton, Patient was recalled after 21 days then the wet cotton was removed for obturation gutta percha was fabricated by use tailor made gutta-percha technique 60 number and 30 number 2% gutta-percha was heated under flame and rolled between sterile cold glass slab and fabricated gutta-percha used for obturation of blunder buss canal using zinc oxide eugenol cement (figure 3,4,5,6,7,8) and later the dentin was acid etched rinsed, and dried. To bond the composite resin to dentin, a dentinal bonding system was used according to the manufacturer's instructions. The dentinal primer was applied with a brush over the dentinal surfaces and dried with oil-free air. The adhesive then similarly applied over the primed dentin. After the adhesive was cured with a suitable light-curing unit. Visible light-curing hybrid composite resin was selected, its placement into the cavity. A light-curing unit is applied to transilluminate light along its entire length to polymerize the surrounding composite resin. Following removal of excess material from the coronal surface. Finally, the clinical technique was completed with the cementation of an esthetic porcelain crown radiograph and clinical image.

Discussion

Clinical Applications

There are many clinical situations in which an internally damaged root can be endodontically treated and rehabilitated in conjunction with preparation of the post canal. Generally in these cases, the defect assumes a flared configuration at the coronal portion of the root canal, while the apical portion has adequate dentinal support. The entire external root surface is also essentially intact and adequately supported by periodontal tissues. It is therefore fundamentally sound to reconstitute the weakened coronal portion so that the rehabilitated root is rendered capable of supporting a restoration and thereby continuing the usefulness of the tooth. This technique is

especially recommended for the reinforcement and rehabilitation of function and esthetics to anterior teeth in an otherwise intact arch, as in the following instances:

1. Extension of caries into the coronal portion of the root canal.
2. Trauma to immature incisors.
3. Developmental anomalies, such as fusion and germination.
4. Idiopathic pulpal pathoses, such as internal resorption.
5. Iatrogenic damage,

Such as excessive preparation of an access cavity, excessive taper of a post canal preparation, or other restorative or endodontic misadventure.

Apexification is aimed at the formation of a mineralized barrier in the root apex in such a way that gutta- percha can be condensed properly in the main canal space .The present case is an example of application of traditional method of apexification where in calcium hydroxide was used for barrier formation, following which over a period of 6 months we could observe development of periapical radio opacity suggestive of some calcific barrier. This was however confirmed using a thin file to check for any resistance at the apical region. Excess pressure showed not be applied as it may disrupt the already formed calcification. Induction of apical closure has been the most widely used approach to treating open apex. Calcium hydroxide has been extensively used to accomplish apical closure due to its apparent ability to stimulate hard tissue formation. It was originally introduced to the field of endodontics by Herman in1930 as a pulp-capping agent, but its uses today are widespread in endodontic therapy. Then, Kaiser first introduced the use of calcium hydroxide mixed with camphorated monopara -chlorophenol (CMCP) to induce apical closure. The technique was popularized later in1966 by Frank. Calcium hydroxide can be mixed with a number of different substances (CMCP, distilled water, sterile saline, anesthetic solutions and recently chlorohexidine) to induce apical closure. The relatively good success rate of this procedure has been attributed to one or more of the following properties: (a) the high pH; (b) the calcium ion; (c) the hydroxyl ion; and (d) the antibacterial effect. Various other materials such as tri calcium phosphate collagen calcium phosphate, osteogenic protein-1, bone growth factors and MTA (Mineral Trioxide Aggregates) have been reported to promote similar to that found with calcium hydroxide. However in this case saline was used which has given favorable outcome.

A one-step alternative to conventional apexification procedures has been proposed by Koenig's. Successful performance of a one-step procedure may benefit both the patient and the practitioner because of the reduced amount of office time required. The potential problem of patient compliance is also reduced, and it appears that multiple re opening the root canal and re cleaning it may disturb the process of apexification.

References

1. A. Moore, M. F. Howley, A. C. O'Connell, et al. "Treatment of open apex teeth using two types of white mineral trioxide aggregate after initial dressing with calcium hydroxide in children,"DentalTraumatology,2011 vol.27,no.3,pp.166–173.
2. L.K.Bakland ,J.O.Andreasen et al."Will mineral trioxide aggregate replace calcium hydroxide in treating pulpal and periodontal healing complications subsequent to dental trauma A review,"DentalTraumatology, ,2012,vol.28,no.1,pp.25–32.

3. Z. Mohammadi , P. M. H. Dummer, et al “Properties and applications of calcium hydroxide in endodontics and dental traumatology,”International Endodontic Journal, ,2011,vol.44,no.8, pp.697–730.
4. G.H.Yassen,J .Chin,A.G. Mohammed sharif et al.“The effect to frequency of calcium hydroxide dressing change and various pre-and inter-operative factors on the endodontic treatment of traumatized immature permanent incisors,” Dental Traumatology, 2012 vol. 28, no. 4, pp. 296–301.
5. D. Finucane and M. J. Kinirons et al. “Non-vital immature permanent incisors: factors that may influence treatment outcome,” Endodontics and Dental Traumatology,1999,vol. 15, no. 6, pp. 273–277.
6. T. A. Strom, A. Arora, B. Osborn, N et al.“Endodontic release system for apexification with calcium hydroxide microspheres,” Journal of Dental Research 2012, vol.91,no.11,pp.1055–1059.
7. Moule AJ, Moule CA et al “The endodontic management of traumatized permanent anterior teeth: A review.” Aust Dent J 2007;52:(1 Suppl):S122-37.
8. National Clinical Guidelines and Policy Documents 1999 -management and root canal treatment of non vital immature permanent incisor teeth, Dental Practice Board for England and Wales. www.nhsbsa.nhs.uk/Documents/.../paediatric_dentistry_uk,1999
9. Nunes E, de Moraes IG, et al “Bilateral fusion of mandibular second molars with supernumerary teeth: Case Report.” Braz Dent J. 2002;13:137-41.
10. Cohen S, Hargreaves KM. Pathways of the Pulp Mosby Elsivier; 2009. p. 871.
11. Fidel RA, Carvalho RG, Varela CH, Letra A, Fidel SR, et al. “Complicated crown fracture: a case report.” Braz Dent J. 2006;17:83-6.
12. Finucane D, Kinirons MJ et al . “Non-vital immature permanent incisors factors that may infuence treatment outcome” Endod Dent Traumatol 1999;15:273-7.
13. Koeings JF, Heller AL, Brilliant JD, Mell RC, Driskell TD ,et al . “Induced apical closure of permanent teeth in adult primates using a resorbable form of tricalcium phosphate ceramic.” J Endod 1975; 1:102-6.S

Legends of Figure

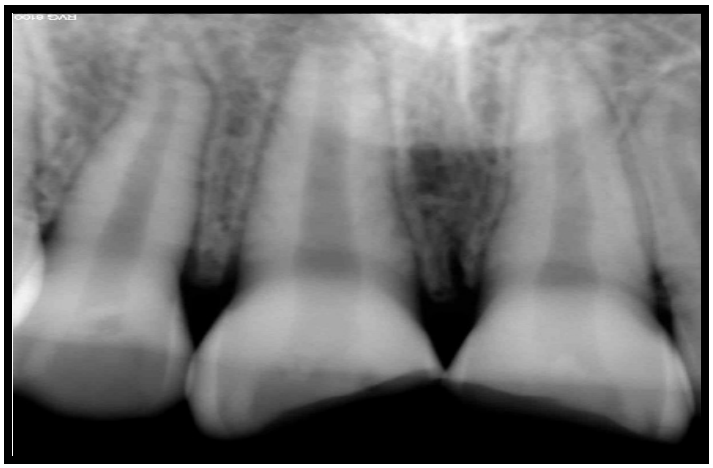

Figure 1 : Preoperative Radiograph

Figure 1 : Working length Radiograph

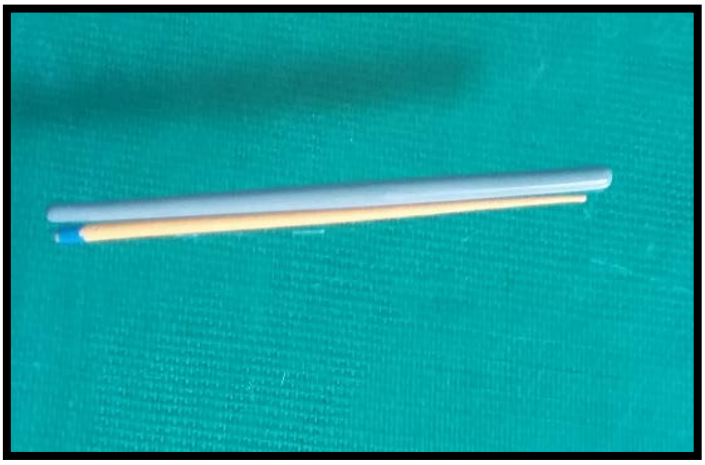

Figure 3: 60 % and 30 % gutta percha

Figure 4: joining of g-p cone and roll on glass slab

Figure 5: Tailor made g-p cone

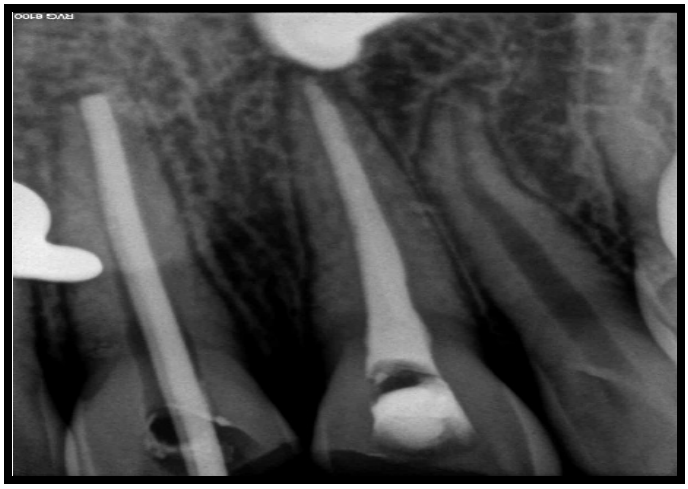

Figure 6: Tailor made g-p cone snugly fitting to apex

Figure 7:obturation done by tailor made gap cone

Figure 8: PFM Crown