



Journal Homepage: [-www.journalijar.com](http://www.journalijar.com)

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/12443
DOI URL: <http://dx.doi.org/10.21474/IJAR01/12443>



RESEARCH ARTICLE

NON-SURGICAL MANAGEMENT OF A LARGE CYSTIC LESION WITH SURGICAL DECOMPRESSION: A CASE REPORT WITH 14 MONTHS FOLLOW UP

Shwetank Shrivastava¹, Ashish K. Jain², Rahul D. Rao¹, Meenakshi Verma¹, Nupur Nidhi¹, Pooja Yadav¹,
Anamika Sinha¹ and Tejas Ghone¹

1. Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital, Navi Mumbai.
2. Head of Department and Professor, Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital, Navi Mumbai.

Manuscript Info

Manuscript History

Received: 07 December 2020
Final Accepted: 10 January 2021
Published: February 2021

Key words:-

Decompression, Root End Surgery,
Periapical Lesion

Abstract

The main aim of this case report was to report the clinical efficacy of decompression for treating large periapical lesions. Tooth with large periapical cystic lesions were treated with decompression after root canal treatment. A conventional decompression technique such as aspiration/irrigation technique was used in this case. An 18-G needle with a syringe was used to aspirate the cystic lesion. Two needles were then inserted into the lesion; copious saline irrigation was delivered from 1 needle and until clear saline was expressed from the other. Complete enucleation and root-end surgery was not done in the case. Healed lesions or lesions in healing were observed after 14 months. On the basis of the presented case and published case reports regarding large periapical cystic lesions, conservative decompression may be used for certain cases before or in lieu of apical surgery. Decompression enables healing of large, persistent periapical lesions after root canal treatment.

Copy Right, IJAR, 2021,. All rights reserved.

Introduction:-

Dentists for the most part feel that in cases with large periapical lesions which resemble bone cysts with clear borders, there are minimal chances to heal after root canal treatment. (1–4). Fifty percent of the frequency of cystic lesions such as periapical cysts in the jaw are time and again identified odontogenic cysts (5, 6).

On the basis of histologic examination of periapical biopsies which was obtained from surgical procedure or extraction it was concluded that occurrence of periapical cyst ranges from 7%-54% (7). Based upon whether the epithelium lining of cyst is open to root canal the two periapical cysts i.e., pocket cyst and true cyst can be differentiated (8,9). The occurrence of a true cyst is 8%–13% (8–10)

True periapical cysts are self-sustainable with an ability to persist even if the microbial stimulation is eliminated from the root canal. (10–12). From this it should be entailed that surgical interventions are unavoidable in such type of cases.

Despite the fact that there is no consensus approach for the management of large cystic lesions, surgical drainage, also known as “decompression,” may establish great adjunctive treatment (13, 14). This procedure was based on the

Corresponding Author:- Shwetank Shrivastava

Address:- Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth (Deemed to be University) Dental College and Hospital, Navi Mumbai.

rationale of reducing internal pressure (15), but the real mechanism behind the decompression is as yet obscure from a biologic point of view (16).

Decision making of the subject may be impacted for periapical surgery due to various factors including the size of lesion, the location of tooth, a neighbouring anatomical structure and the general ailment (17). For circumstances where surgical intervention is contraindicated it is important for clinician to be well versed with alternative treatment option.

Dr Carl Partsch was the first person to describe decompression more than a century ago as a conservative regimen to manage cystic lesions. The technique is likewise alluded to as marsupialization or exteriorization (18). Commonly to reduce lesion size decompression is used as an adjunct before enucleation for the treatment of odontogenic keratocyst dentigerous cysts, and other large bone cysts decompression (19, 20).

This article looks to portray the management of large cystic lesion by endodontic treatment followed by surgical decompression technique in the anterior region of the maxilla.

Case Report:

A 48 years old female patient reported to the Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Dental College and Hospital, Navi Mumbai, with a chief complaint of swelling and pus drainage in palatal region of anterior teeth for last one month. She also added that when the size of swelling increased it drains through buccal aspect. On drainage the swelling settles down which recedes after some time. Patient also gave history of trauma in upper anterior teeth 2 years back. On intra oral examination a swelling which was extending from 13 to 11 regions measuring 2.5 x 2 cm was present in the palatal region.

Medical history of the patient was noncontributory. On examination there was a slight mucosal swelling in the center of the hard palate. On palpation, swelling was not tender, it was soft and fluctuant in nature similar to the turgidity of a water-filled balloon. Tenderness on palpation was seen in labial vestibule. Electric and thermal pulp vitality testing showed no response in 12 and 11 while adjacent teeth showed normal response. No response was seen in respect to vertical percussion. No tooth mobility was seen on examination. On radiographic examination, a large radiolucent lesion involving periapical region of 12 and 11 was seen respectively.

Endodontic treatment of teeth 12 and 11 was performed following standard endodontic procedure. Appearance of frank purulent exudate in the pulp chamber was a clear sign of indication communication between the periapical lesion and the root canal. An apex locator (Denta Port Zx, J Morita Mfg. Corp) was used to estimate the root length and confirmed by intra oral periapical radiography. Working length determined was 16 mm. After establishment of apical patency, biomechanical preparation with protaper universal till F3 was done and obturation was done by single cone obturation technique using gutta-percha cone and resin sealer (AH Plus, Dentsply). Composite resin (Filtek Z250, 3M/SPC Dental Products, St Paul, MN, USA) was used to seal the access cavity.

On CBCT examination, it showed perforation of the palatal cortical plate between teeth 12 and 11. Pulpal necrosis with asymptomatic apical periodontitis was established diagnosis. After informed consent and local anesthesia, a full-thickness flap was raised from the labial aspect. For debridement of the lesion, a surgical washout technique was used (21). Decompression was carried out with aspiration, curettage, and saline flush. An incisional puncture site was marked with a tissue marker, through the buccal plate an 18-G needle was embedded into the lesion and aspiration of purulent hemorrhagic fluid was carried out. The site was continuously irrigated with approximately 40 mL sterile saline until clear exudate was seen. Reviewing of patient was done at 14 months. On examination of the oral cavity, no swelling of the soft tissues or any sign of a sinus tract was seen. Radiographs examination showed an intact lamina dura with increasing density of the regenerated trabecular bone surrounding teeth 12 and 11.

Discussion:-

For these types of large cystlike lesions and periapical lesions persisting intracanal or extraradicular infection or irritants are the main cause for failure of nonsurgical root canal treatment (16). Endodontic surgery is the treatment of choice to conserve the affected teeth on identification of these complex and persistent lesions. Bone lesion with size larger than 2.5 cm are considered as critical size lesion with less chances of complete bone regeneration (22, 23).

There are many controversies regarding the management of large periapical lesions whether it should be done by surgical or non-surgical means (1,13). Decision of the treatment is based on lesion size on radiographs in relation with the diagnosis based on histopathology of a periapical cyst (1, 24). Numerous studies (9, 11) have forwarded that without surgical removal apical true cysts are unlikely to be resolved, because they are independent of the root canal system. Yet, the current endodontic practice of treating large periapical lesions involves use of nonsurgical root canal treatment first (1).

The typical surgical treatments for radicular cyst involve complete enucleation of small lesions and marsupialization for decompression of larger cysts or a clinician can opt for combination of these techniques. The clinician must have enough knowledge to decide if surgical intervention become necessary about attempting “decompression” first or raising a flap and complete enucleating the lesion (25,26). Marsupialization with decompression is performed, to decrease the size of the lesion to make it less difficult to enucleate and less danger of iatrogenic damage the associated vital structures and teeth. (27). According to the literature it has been reported that management of the cyst should be done by surgical enucleation because in case of marsupialization if any cystic cells are left behind, they may become malignant later (28,29). Although, in this case, we found marsupialization as the best treatment alternative because of the strategic distance which was maintained from causing harm by perforating the floor of the maxillary sinus, also there was no need of general sedation to be used in this procedure when compared to surgical procedures.

Intracystic fluid pressure is said to be involved in odontogenic cyst growth, hence reducing the pressure might play a necessary role in periapical healing. (30). Therefore, the decompression technique said to be effective in decreasing the size of cystic lesions (31). Lin et al (16) however, suggested that apical true cysts are not the reason for apical periodontitis lesions, and couldn't forestall periapical wound healing after root canal treatment. Periapical inflammation gradually subsides and wound healing gradually occurs after complete elimination of root canal infection. Decompression by surgical drainage will accelerate the wound healing by release of inflammatory mediators, proinflammatory cytokines, necrotic debris and irritants in cystic lesions (14, 32).

Decompression procedures are a type of fistulative surgery (17). When decompression is compared to enucleation, decompression for cystic lesions is more appropriate adjacent to the vital structure such as nasal floor, sinus floor and mandibular nerve canal (14, 15). As such type of procedure helps in preserving original root length and pulp vitality of the adjacent teeth (33).

Decompression for the patients which are medically compromised and those who do not wish to undergo enucleation surgery, it is considered as a traditional method to eliminate a substantial surgical procedure. In the matter of deciduous dentition, decompression evades potential damage to the underlying permanent teeth and provides good regeneration potential of the bone in the developing craniofacial skeleton of children. Access for decompression technique should be approached as far coronal as possible to facilitate optimal soft tissue adaptation (14).

Decompression is a procedure for drainage which eliminates the first reason for the development of epithelial cells. This procedure involves degeneration of these cells leading to programmed cell death. Consequently, bone remodeling and reduction in lesion size of the lesion will be seen (16). Aspiration and irrigation with needles can also work for persisting periapical true cysts, as mentioned by cases reported in the past (21, 34-38). Advantages of this technique are it is more conservative, and drainage for longer duration may not be required once disruption of epithelial lining is done. This procedure gives a superior treatment experience and eliminates the necessity for patient compliance.



Fig:- Pre-operative palatal view with swelling seen in rugae area.



Fig 2:- Pre-Operative photograph.



Figure 3:- Pre Operative radiograph.

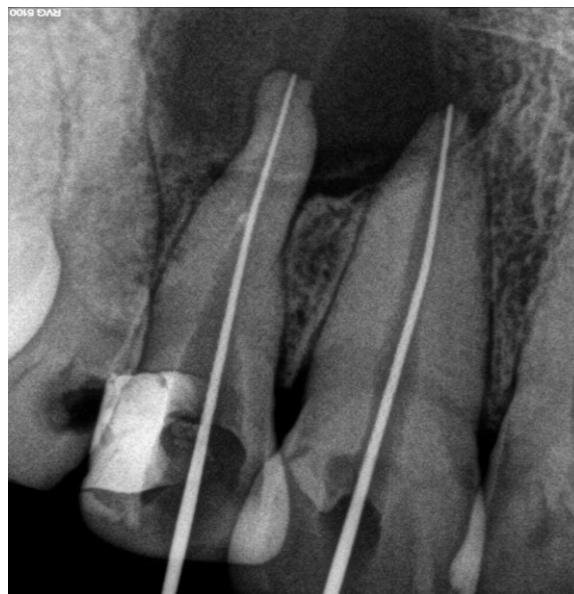


Fig 4:- Working length determination.



Fig 5: -Master cone.



Figure-6: -Needle insertion view



Fig-7:- Decompression technique being carried out.



Fig-8:- Aspiration of purulent hemorrhagic fluid was carried out.



Fig- 8:- 14 month follow up with fixed prosthesis.

Conclusion:-

In view of and previous literature reviews and based on present clinical report, management of large periapical cystic lesion done by decompression gives an elective technique to the patients. Nonsurgical root canal treatment is required before cyst decompression because of the inflammatory nature of true periapical cysts. Decompression technique encourages successive root end surgery by decreasing the lesion size and minimizing the damage to adjacent vital structures.

References:-

1. Caliskan MK. Prognosis of large cyst-like periapical lesions following nonsurgical root canal treatment: a clinical review. *Int Endod J* 2004; 37:408–16.
2. Valois CR, Costa-Júnior ED. Periapical cyst repair after nonsurgical endodontic therapy- case report. *Braz Dental J* 2005; 16:254–8.
3. Soares J, Santos S, Silveira F, et al. Nonsurgical treatment of extensive cyst-like periapical lesion of endodontic origin. *Int Endod J* 2006; 39:566–75.
4. Soares JA, Brito-Júnior M, Silveira FF, et al. Favorable response of an extensive periapical lesion to root canal treatment. *J Oral Sci* 2008; 50:107–11.

5. Nuñez-Urrutia S, Figueiredo R, Gay-Escoda C. Retrospective clinicopathological study of 418 odontogenic cysts. *Med Oral Patol Oral Cir Bucal* 2010;15: e767–73.
6. Johnson NR, Gannon OM, Savage NW, et al. Frequency of odontogenic cysts and tumors: a systematic review. *J Investig Clin Dent* 2014; 5:9–14.
7. Maalouf EM, Gutmann JL. Biological perspectives on the non-surgical endodontic management of periradicular pathosis. *Int Endod J* 1994; 27:154–62.
8. Simon JH. Incidence of periapical cysts in relation to the root canal. *J Endod* 1980;6:845–8.
9. Nair PN, Pajarola G, Schroeder HE. Types and incidence of human periapical lesions obtained with extracted teeth. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; 81:93–102.
10. Ricucci D, Loghin S, Siqueira JF Jr, et al. Prevalence of ciliated epithelium in apical periodontitis lesions. *J Endod* 2014; 40:476–83.
11. Nair PN. New perspectives on radicular cysts: do they heal? *Int Endod J* 1998;31:155–60.
12. Nair PN. Pathogenesis of apical periodontitis and the causes of endodontic failures. *Crit Rev Oral Biol Med* 2004; 15:348–81.
13. Enislidis G, Fock N, Sulzbacher I, et al. Conservative treatment of large cystic lesions of the mandible: a prospective study of the effect of decompression. *Br J Oral Maxillofac Surg* 2004; 42:546–50.
14. Neaverth EJ, Burg HA. Decompression of large periapical cystic lesions. *J Endod* 1982; 8:175–82.
15. Loushine RJ, Weller RN, Bellizzi R, et al. A 2-day decompression: a case report of a maxillary first molar. *J Endod* 1991; 17:85–7.
16. Lin LM, Ricucci D, Lin J, et al. Nonsurgical root canal therapy of large cyst-like inflammatory periapical lesions and inflammatory apical cysts. *J Endod* 2009;35:607–15.
17. Glickman GN, Hartwell GR. Endodontic surgery. In: Ingle JI, Bakland LK, Baumgartner JC, eds. *Ingle's Endodontics*, 6th ed. Ontario: BC Decker; 2008:151–220.
18. Castro-Nuñez J. Decompression of odontogenic cystic lesions: past, present, and future. *J Oral Maxillofac Surg* 2016;74: e1–9.
19. Tolstunov L, Treasure T. Surgical treatment algorithm for odontogenic keratocyst: combined treatment of odontogenic keratocyst and mandibular defect with marsupialization, enucleation, iliac crest bone graft, and dental implants. *J Oral Maxillofac Surg* 2008; 66:1025–36.
20. Wakolbinger R, Beck-Mannagetta J. Long-term results after treatment of extensive odontogenic cysts of the jaws: a review. *Clin Oral Investig* 2016; 20:15–22.
21. Hoen MM, LaBounty GL, Strittmatter EJ. Conservative treatment of persistent periradicular lesions using aspiration and irrigation. *J Endod* 1990; 16:182–6.
22. Schmitz JP, Hollinger JO. The critical size defect as an experimental model for craniomandibular nonunions. *Clin Orthop Relat Res* 1986; 205:299–308.
23. Schemitsch EH. Size matters: Defining critical in bone defect size!. *J Orthop Trauma* 2017;31(Suppl 5): S20–2.
24. Natkin E, Oswald RJ, Carnes LI. The relationship of lesion size to diagnosis, incidence, and treatment of periapical cysts and granulomas. *Oral Surg Oral Med Oral Pathol* 1984; 57:82–94.
25. Freedland JB. Conservative reduction of large periapical lesions. *Oral Surg Oral Med Oral Pathol* 1970;29(3):455–64.
26. Neaverth EJ, Burg HA. Decompression of large periapical cystic lesions. *J Endod* 1982;8(4):175–82.
27. Martin SA. Conventional endodontic therapy of upper central incisor combined with cyst decompression: a case report. *J Endod* 2007;33(6):753–7. Epub 2007 Mar 21.
28. Gardner AF. A survey of odontogenic cysts and their relationship to squamous cell carcinoma. *Dent J* 1975;41(3):161–7.
29. Schneider LC. Incidence of epithelial atypia in radicular cysts: a preliminary investigation. *J Oral Surg* 1977;35(5):370–4.
30. Oka S, Kubota Y, Yamashiro T, et al. Effects of positive pressure in odontogenic keratocysts. *J Dent Res* 2005; 84:913–8.
31. Anavi Y, Gal G, Miron H, et al. Decompression of odontogenic cystic lesions: clinical long-term study of 73 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011; 112:164–9.
32. Lin LM, Huang GT, Rosenberg PA. Proliferation of epithelial cell rests, formation of apical cysts, and regression of apical cysts after periapical wound healing. *J Endod* 2007; 33:908–16.
33. Liang YJ, He WJ, Zheng PB, et al. Inferior alveolar nerve function recovers after decompression of large mandibular cystic lesions. *Oral Dis* 2015; 21:674–8.
34. Tsurumachi T, Saito T. Treatment of large periapical lesions by inserting a drain tube into the root canal. *Endod Dent Traumatol* 1995; 11:41–6.

35. Mejia JL, Donado JE, Basrani B. Active nonsurgical decompression of large periapical lesions - 3 case reports. *J Can Dent Assoc* 2004; 70:691-4.
36. Fernandes M, De Ataíde I. Non-surgical management of a large periapical lesion using a simple aspiration technique: a case report. *Int Endod J* 2010; 43:536-42.
37. Keles, A, Alc, in H. Use of EndoVac system for aspiration of exudates from a large periapical lesion: a case report. *J Endod* 2015; 41:1735-7.
38. Santos Soares SM, Brito-Junior M, de Souza FK, et al. Management of cyst-like periapical lesions by orthograde decompression and long-term calcium hydroxide/chlorhexidine intracanal dressing: a case series. *J Endod* 2016; 42:1135-41.