

Non Surgical Management of Periapical Cysts – A Review

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Abstract: Non Vital tooth with periapical cysts does not respond to routine root canal therapy alone. Conventional RCT should be combined with conservative management of cysts or the surgical management. Contemporary options for non surgical management are repeated intra canal dressing with Ca(OH)₂ or sspiration and decompression techniques. Repeated intra canal dressing with Ca(OH)₂ and Iodoform (Metapex) was advocated in 25 of our patients in a period of four years from 2011 – 2015. The healing of the lesions were excellent with respect to bone formation, reestablishment of periodontal ligament and reduction in tooth mobility in one and half year of follow up. This paper reviews published articles retrieved from Medline and google scholar on non surgical management of Periapical cysts. The articles retrieved were twenty in number. The reviewed articles were analyzed for the prognosis of the treatment based on bone formation in the lesion, period elapsed for healing, reduction in tooth mobility and reestablishment of periodontal ligament. We reiterate the effectiveness of non surgical management of periapical cysts as observed in reviewed articles. The promising prognosis of non surgical management of periapical cysts can render the surgical options antediluvian.

Keywords: Periapical cysts, Radicular Cysts, Non surgical Management, Bay Cysts, True Cysts

I. Introduction

Periapical lesions are host response to endodontic infections caused by dental caries or trauma. Periapical lesions are abscess, granulomas or cysts. The cysts are of two categories the bay cysts or pocket cysts and the true cysts. Bay cysts are those in continuation with the root canal and true cysts are usually detached from the root canal¹. The differential diagnosis of these lesions are impossible without a histopathological examination. However radiological and clinical criteria for diagnosis of Periapical cysts are 1. Presence of a non vital tooth, 2. Presence of a radiolucency of > 200m², 3. a well defined radiolucency with a radiopaque border involving one or more tooth and 4. Presence of straw coloured fluid on aspiration or from the root canal³.

These Periapical cyst do not resolve with chemomechanical preparation of root canal alone. It should be combined with repeated long term intra canal dressing or surgical procedures Lin at al⁴ suggested treatment of any Periapical lesion with a conservative non surgical management as a first priority. Intra canal medication with ca(OH)₂ and Iodoform (Metapex) is a novel method of treating periapical cysts. Surgical treatment should be reserved for non responding cases and in cases of true cysts in ileu of its complications.

II. Method

Patients with pain in anterior teeth with trauma or carious lesions are subjected to radiographs. The Periapical radiographs were carefully analyzed depending on the radiological criteria for diagnosis of Periapical cysts. Patients having all four radiological criterions were taken up for study. RC opened and straw colored fluid aspirated from the root canal or aspirated from the cysts. Diagnosis of Periapical cyst confirmed. One precaution that is followed in aspiration of fluid from the canal or from the cysts was with constant digital pressure to avoid air entrapment. Diagnostic x-ray made. Length determined and metapex paste placed in root canal. Check x-ray showed extension of metapex paste into the cyst in five of our cases.. The canal dressing changed every eight weeks and finally RCT completed after 6 months. Follow up radiograph IOPA or occlusal view taken every 3 months. At the end of one and a half year we found trabecular bone formation and resorption of extended paste. During the entire procedure no flare ups were seen. The healing of Periapical lesion is quite evident as the cystic cavity were being filled with bone.

III. Discussion

Microorganisms in the necrotic pulp release toxins into the Periapical tissues at the inter face between the apex and the periodontal tissues. The inflammatory process contribute to the formation of periapical lesion⁵. The growth of the cyst is due to increase in hydrostatic pressure which enhances osteoclastic activity⁶. These complex mechanisms leads to the formation of granulomas, Bay Cysts and true cysts. Bay Cysts have epithelium in continuation with the root canal system and true cysts develop as a self perpetuating entity and does not respond to non surgical management³.The periapical cysts does not respond to conventional RCT alone. Most often after RCT they develop persistent swelling, sinus tracts and recurrent infections.

Non-surgical management of these cysts should be adopted before advising surgery. The non surgical treatments options are long term repeated intracanal dressing, aspiration and drainage through root canal, aspiration and decompression technique.Repeated intracanal dressing is the most popular one and we adopted intracanal dressing with Metapex paste. Metapex paste has calcium hydroxide, Iodoform, 38% (antibacterial) silicone oil vehicle and barium sulphate (radiopaque material). The non water silicone oil vehicle promotes low solubility and slow diffusion of calcium hydroxide in the tissues⁶.

Since the introduction of Ca(OH₂) in 1920, it is the most popular and time tested intracanal medicament. It PH is 12.5. It diffuses into calcium and hydroxyl ions. This hydroxyl ion is an oxidant free radical and exerts microbicidal activity by disruption and damage to DNA, cell membrane, protein denaturation and nullifying the effect of bacterial endotoxins⁷. The Oxidant free radical is also responsible for inhibition of tooth resorption and tissue resolving ability⁸⁻¹⁰.

Intracanal medicaments can only be used as an adjuvant for cleaning and shaping and should not to be used as an alternative¹¹. The increase in hydrostatic pressure of the cyst leads to increase osteoclastic activity¹² and aspiration and decompression of the cysts is of paramount importance in reducing this osteoclastic activity. Approximately 70% of cases with Periapical lesions heal in two years of treatment¹³.Increase in instrumentation 1mm beyond the apex leads to pressure release and strangulation of cyst. This leads to conversion of a cyst to granulomas and gradually heals¹⁴⁻¹⁶.A large periradicular lesion may have a direct communication with the root canal system(apical pocket cyst) and respond favorably to nonsurgical treatment. Clinical studies have confirmed that simple nonsurgical treatment with proper infection control can promote healing of large lesions. When this treatment is not successful in resolving the periradicular pathosis,additional treatment options should be considered, such as marsupialization or tube decompression¹⁷⁻²¹

In our institutional experience,we found that large Periapical cysts respond well to root canal therapy combined with repeated Metapex paste dressing. Periapical region has rich blood supply, lymphatic drainage and undifferentiated cells. It is well documented worldwide that healing of those Periapical lesions is excellent with this modality of treatment.

IV. Conclusion

Periapical cysts with non vital pulps does not respond to root canal therapy alone. Large Periapical cysts managed with surgical therapy poses threat to adjacent normal tooth and their periodontium. RCT combined with repeated intra canal dressing obviate the need for surgery in most of the similar clinical scenarios.

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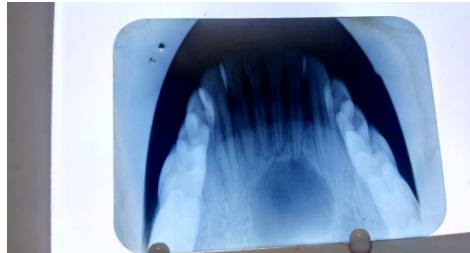


Figure 1 Pre op image



Figure 2 diagnostic radiograph

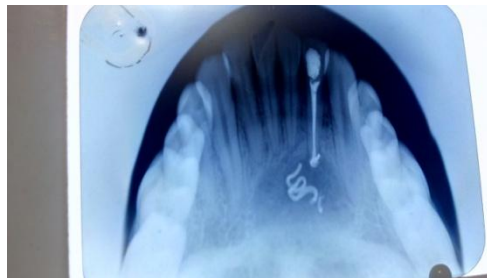


Figure 3 with metapex paste



Figure 4 bone formation

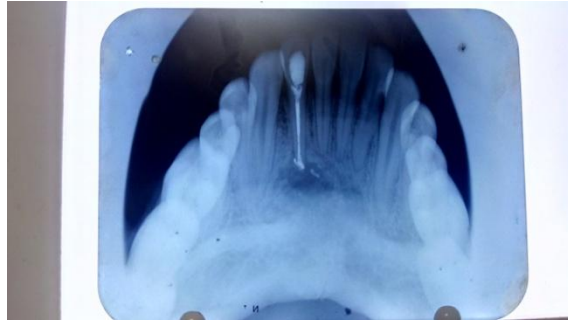


Figure 5 healing of cyst



Figure 6 healing of maxillary cyst