

Radicular Cyst Due To the Occupational Hazard: A Case Report

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ABSTRACT

Occupational hazard is something unpleasant conditions, circumstances, or combinations of factors that you may suffer or experience as a result of doing your job or hobby. It is many types like biological, infectious, physical, psychological, and allergic. The radicular cyst arises from epithelial remnants stimulated to proliferated by an inflammatory process originating from pulpal necrosis of a non vital tooth. This article infected radicular cyst associated with maxillary lateral incisor (12) due to the occupational hazard in a 21 year male patient treated with the help of endodontic procedure, extraction of offending tooth, enucleation with primary closure.

Key words: Occupational hazard, Radicular cyst, Enucleation, Maxilla

INTRODUCTION

Work has its positive health promoting effects, as the financial dividend provides the workers with the basic necessities of life (1). It is many types like biological, infectious, physical, psychological, and allergic. Safety tools are limits these types of hazards in limited manners in workplaces. The radicular cyst is the most common inflammatory cyst in the jaw that is of odontogenic origin (2). The cyst is believed to be originated from the epithelial cell of rests of malassez (3). It is usually associated with a tooth having a necrosed pulp. The lesion is seen mostly in the males during their 3rd-4th decades of life (4). Treatment of radicular cyst may be conservative or surgical intervention depends upon the size of cyst (5).

CASE REPORT

A 21 year male patient reported to the department of oral and maxillofacial surgery with the chief complains of bleeding from gums in upper front tooth region since 15 year. Patient gives the history of trauma in the offending tooth due to the wire biting since last 2-3 year because he is professionally electrician, but had quit the habit as reported. Tooth was started to develop asymptomatic blackish discoloration.

In Intra oral examination notching and tender on percussion present in relation to 12 (FDI) with healthy periodontium. No signs of mobility present in same tooth (Fig. 1). No significant past medical / dental history noted and no history of any known drug allergy.

Radiographic examination shows depression in incisal third of the crown. The radicular and the periodontal ligament (PDL) portion appeared radiographically normal. The lamina dura was obliterated at the apical one third of the root of 12. A well defined solitary, oval, 2x3cm in size radiolucent lesion with definitive cortical margin which involve the periapical region of 11,12 and middle one third of 13. Resorption of root also seen in the 12. There was no displacement of adjacent tooth. The radiographic finding show radicular cyst w.r.t 12 (Fig. 2).



Fig. 1 show the intraoral findings



Fig. 2 show the radiographic findings

After the completion of endodontic treatment (RCT) of 11 and 13 we planned for extraction of 12 and enucleation of cyst with apicectomy of 11 and primary closure of the lesion, under the 2% lignocaine containing 1: 80,000 adrenaline.

Under the all aseptic condition and precaution 2% lignocaine with adrenaline administered (infraorbital and nasopalatine nerve block). Sulcular incision from 11-13 with vertical extension from mesial to 11 and distal to 13 was given with the help of BP blade no. 15 and 3 no. handle (Fig.3). Full thickness trapezoidal mucoperiosteal flap was raised with the help of periosteal elevator. Flap was gently held with Austin retractor and maxilla was exposed (Fig.4). Overlying cracked shell like bone was identified and removed. Window was extended with the help of straight bur under copious irrigation and cystic mass exposed. Offending tooth 12 was extracted. Cystic lining was enucleated with the help of periosteal elevator and curettage was done. During the procedure pus was discharge from the cyst found to be infected (Fig.5). Apicectomy of 11 and toileting of cavity was done. Primary closure was done with 3-0 silk (Fig.6), and specimen sent for histopathology examination. After the seven days sutures were removed (Fig.7). Other postoperative problems were not noticed.



Fig. 3 show the incision line



Fig. 4 show the exposed maxilla



Fig. 5 show enucleation of cyst and pus in cystic cavity



Fig. 6 show closure of the defect with 3-0 silk



Fig. 7 show healed soft tissues



Fig. 8 show histopathologic image

Histopathological examination show epithelial cell with connective tissue capsule. Epithelial is of stratified sq. type of varying thickness and arcading pattern. Dense chronic inflammatory cell and giant cell seen in Connective capsule. This impression suggestive of infected radicular cyst (Fig.8).

DISCUSSION

Being unaware of the potential hazards in the work environment makes them more vulnerable to injury. Many risks like biological, physical, psychological, chemical, infectious and allergy have still leading to occupational hazard. Work, material, substance process or situation are predisposes or itself causes accidents or disease at work place so Occupational hazard is defined as the risk of the person health usually arising out of employment. The history of occupational hazard is in 18th century when Bernadino Ramazzini, father of occupational medicine, recognized the role of occupation in the dynamic of health and diseases (6).

Radicular cyst / Periapical cyst is the most common type of cyst found in the oral cavity (52.3-70.7%) followed by the dentigerous cyst (16.6-21.3%) and odontogenic keratocyst (5.4-17.4%) (7). It is odontogenic type of cyst that is derived from the inflammatory activation of epithelial root of sheath residues (cell rests of malassez). It is usually associated with a tooth having a necrosed pulp due to the infection, trauma, in the middle age (3rd- 4th decades) (4), more common in male and anterior maxilla is the most common site of infection (4).

Radicular cyst are usually asymptomatic and noticed in routine radiographic examinations where some infected cyst show swelling, pain, tooth mobility and displacement of unerupted tooth (8). Associated teeth are always non vital and may show discoloration (9). It clinically exhibits as buccal or palatal swelling in maxilla, where as in mandible it is usually buccal and rarely lingual. At first, the enlargement is bony hard but as the cyst increases in size, bony covering becomes very thin and the swelling exhibits springiness and becomes fluctuant when the cyst has completely eroded the bone as seen in present case (7). Periapical abscess, periapical granuloma, dentigerous cyst and odontogenic keratocyst are differential diagnosis of radicular cyst.

Pathogenesis of the cyst is due to Infection spreads to the apex of tooth and adjacent bone. This leads to apical periodontitis, granuloma formation and eventual cyst formation. These cyst are centrally located on the apex of

tooth and may be small in size (≤ 1 cm). A few well-documented cases indicate that squamous carcinoma occasionally arises from the metaplastic changes in the epithelial lining of the long standing radicular cysts (10, 11).

Cyst may or may not be infected, no specific microorganism was found, streptococcus spp. Bacteria (47.5%) especially SMG (23.8%) were predominantly found in the cyst, and some radicular cyst fluids might be sterile (12).

Histopathologically, the cystic cavity shows nonkeratinized stratified squamous epithelial cells with connective tissue capsule. Epithelial cells may be discontinuous, especially in areas of intense inflammatory cell infiltration. In the early stages, epithelial cell lining may be proliferative and show an arcading pattern with intense chronic inflammatory infiltrate. Rarely, mucous-producing cells may be observed within the epithelial lining. The underlying connective tissue wall is usually mature and collagenous and is infiltrated by chronic inflammatory cells; predominantly composed of lymphocytes and plasma cells. The lumen of the cyst usually contains a fluid with varying concentration of protein and may contain a great deal of cholesterol (cholesterol clefts) and Rushton bodies (hyaline). In rare instances, limited amounts of keratin may also be found (13).

Conventional radiography and cone beam computed tomography are able to detect changes at tissue or organ level but not at cellular level. Although several studies have demonstrated that computed tomography could differentiate radicular cysts from periapical granulomas [14-16], it is impossible to diagnose a radicular cyst with certainty clinically without histological confirmation [17].

Radiographically most radicular cysts appear as round or pear-shaped radiolucent lesions in the periapical region (18). Greater likelihood of radiolucencies being radicular cysts rather than chronic periapical periodontitis lesions with increased size of radiolucencies, particularly those over 2cm (19).

Other radiographic features like resorption of the affected tooth root, cortical expansion, and adjacent teeth displacement also seen (20). According to the literature, it has been clearly specified that the next (adjacent) tooth also can become dead (non-vital) as the cyst enlarges in size (21).

Because radicular cysts are of inflammatory nature, it is believed that most radicular cysts can be treated with non-surgical root canal therapy (22-25). However, it was suggested that true radicular cysts might have to be treated with more or less aggressive surgical approach (23). Enucleation of the lesions and primary closure of the defects, the so-called "cystectomy", has evolved as the treatment of choice, and primary closure of the defect still represents the "state of the art procedure" (26), enabling spontaneous bone healing (27,28), more conservative approach, comprising just decompression of the cystic cavity as the primary procedure, has become popular recently, especially in case of large jaw cysts (> 3 cm) (29), and those lesions very close to vital structures such as maxillary sinus, mental foramen, or mandibular canal [30-32]. Failure of radicular cysts to regress after non-surgical and surgical treatment is due to persistent root canal infection or reinjection and not due to the self-sustaining nature of the cysts (22, 33). Treatment outcome of radicular cysts is favorable.

CONCLUSION

Occupational hazard is something unpleasant conditions, circumstances, or combinations of factors that you may suffer or experience as a result of doing your job or hobby. Radicular cyst is most common odontogenic cyst in oral cavity and it is mainly present in maxilla, especially in male in middle age. Radicular cyst is usually asymptomatic but infected cysts show swelling, pain, tooth mobility and displacement of unerupted tooth. Enucleation of the cyst is treatment of choice.

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