

Condensing Osteitis – A Review and Case Report

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ABSTRACT

Condensing osteitis is pathological lesions of the maxillomandibular region which is seen in root apex of long standing untreated carious lesions or tooth having inappropriate endodontic treatment and generally occurs as a result of body's defence mechanism against the infection. Dense trabeculae formation is seen within the bone marrow which appears as a radiopaque lesion near the apex of the affected tooth. Diagnosis of condensing osteitis depends on proper clinical and radiographic evaluation. In the present case report, condensing osteitis in a 12-year female is reported and with adequate endodontic procedure, healing and regression were seen after 6 months of follow-up.

Keywords: Condensing osteitis, Radio-opaque lesion, Root canal therapy

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INTRODUCTION

Chronic focal sclerosing osteitis is a localized, radio-opaque asymptomatic lesion of the jaw.^[1] It is characterized by bone growth due to mild infection of the dental pulp. Synonyms of chronic focal sclerosing osteitis are condensing osteitis and sclerosing osteitis.^[2] Condensing osteitis is caused by chronic, mild irritation of the root canal due to low-virulence microorganisms in residual, necrotic pulp inducing bone response.^[3] These types of lesions are common in the jaw areas and are mostly encountered during regular dental radiograph examination.^[3]

The prevalence of condensing osteitis in general population is about 4–7%.^[1] It is mostly seen in mandibular region with 91% of prevalence and only 9% are seen in maxillary region.^[4] The most common site for occurrence of condensing osteitis is mandibular first molar region and is most frequently associated with female patients.^[1] Yeh *et al.*^[1] in their study have reported the prevalence of condensing osteitis was found to be more among females patients with predilection of about 73.3% and males was 26.7% which is a 1.9:1.0 female-male ratio.

The typical radiographic feature of condensing osteitis consists of uniform radiographic mass which is dense and opaque with well-defined margins adjacent to the root apex of the tooth.^[3] There is loss of lamina dura and widening of periodontal ligament space.^[3] These lesions generally are seen at the apex of tooth with deep caries or large restorations, a crown or bridge, periodontal disease, and root canal therapy.^[1]

Histologically, there is bone remodeling impairment in condensing osteitis where normal bone marrow is exchanged with fibrous connective tissue and may sometimes be present along with infiltration of inflammatory cells.^[4] In condensing osteitis, there is formation of dense trabeculae within bone marrow space which resembles compact bone and is mostly seen in individual with high tissue resistance.^[1,2]

Condensing osteitis mostly occurs as a result of defense mechanism of the bone tissues against chronic pulpal inflammation or periapical infection. There are a few radiopaque jaw lesions where there is increased deposition of jaw bone which can get confused with condensing osteitis. The differential diagnosis for condensing osteitis should include idiopathic osteosclerosis and cementoblastomas.^[1,5]

Idiopathic osteosclerosis is usually considered as a developmental anomaly and presents as a normal anatomic bone variation formed during early bone development.^[5] The major difference in diagnostic

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criteria between condensing osteitis and idiopathic osteosclerosis is that the teeth with condensing osteitis often disclose large carious lesions or crown restoration or inappropriate endodontic treatment, and the lesion is associated with the apical area. Idiopathic osteosclerosis lesions are asymptomatic in nature, there is an uniform radiopaque foci of dense bone and it is not related to any local infection or systemic disease. The tooth exhibiting idiopathic osteosclerosis is basically intact and vital.^[1]

Another radiopaque lesion to be differentiated from condensing osteitis is cementoblastomas. It constitutes a relatively uncommon benign odontogenic neoplasm of the jaw. The lesions present in cementoblastomas are radiopaque with a peripheral radiolucent rim which is typical in nature. In contrast, the lesion seen in condensing osteitis is a well-defined radiopaque lesion that typically appears around the apex of a necrotic tooth root. This feature is important as it helps to distinguish between condensing osteitis from cementoblastomas.^[5] Thus, proper clinical and radiographic examination is mandatory while diagnosing such radiopaque jaw lesions to differentiate between these lesions.

In this article, a case report of condensing osteitis in the region of lower first permanent right molar with a follow-up of 6 months has been discussed.

CASE REPORT

A 12-year-old female patient reported to the Department of Pediatric and Preventive dentistry, with the chief complain of pain

in the lower right and left back tooth region for 2 weeks. There was no medical history and the patient was not under any medication. On clinical examination, deep dentinal caries was seen in 36 and 46 [Figure 1]. Tender on percussion was positive for tooth 36 while negative for tooth 46. Intraoral periapical radiograph was advised for both the tooth 36 and 46. Radiographic findings revealed radiolucency in enamel and dentin involving pulp in respect to 36 and 46. Periapically, a dense radiopaque mass adjacent to the apex of 46 was seen [Figure 2] which had a well-defined margin. There was widening of periodontal ligament space and loss of lamina dura. These findings in relation to tooth 46 attributed to condensing osteitis. The treatment plan that was advised was routine endodontic procedure in relation to 36 and 46 followed by permanent restoration.

Caries was excavated in relation to tooth 46 and access opening was done. The working lengths were determined [Figure 3]. The root canals were cleaned and shaped using rotary files in a crown-down technique followed by alternate irrigation of the canals with 5.25% of sodium hypochlorite (Chemident, India) followed by 0.2% of saline (Denis Chem Lab Limited, Gandhinagar). Triple antibiotic paste was placed in the canals and the tooth was temporary restored with Glass Ionomer cement (3M Ketac Molar) for 14 days [Figure 4].

The canals were cleaned after 14 days and calcium hydroxide paste (CalciCure, SafeEndo) was placed in the canals for 1 month. After 1 month, clinically, the tooth was asymptomatic and pain free and periapical radiograph revealed reduction in periapical radiopacity adjacent to the



Figure 1: Mandibular occlusal view

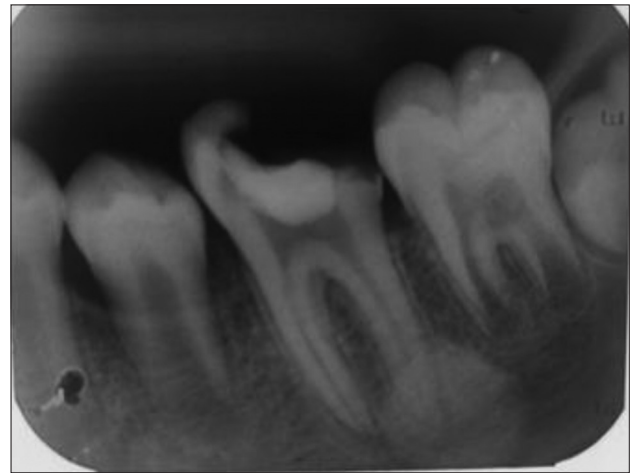


Figure 3: Working length determination

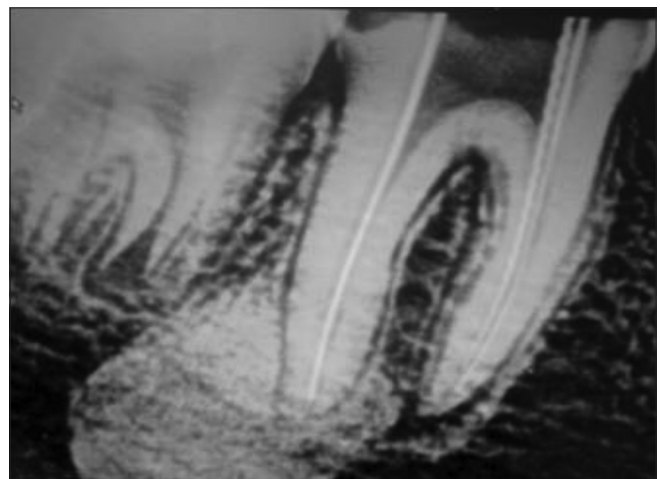


Figure 4: BMP done followed by triple antibiotic paste placement

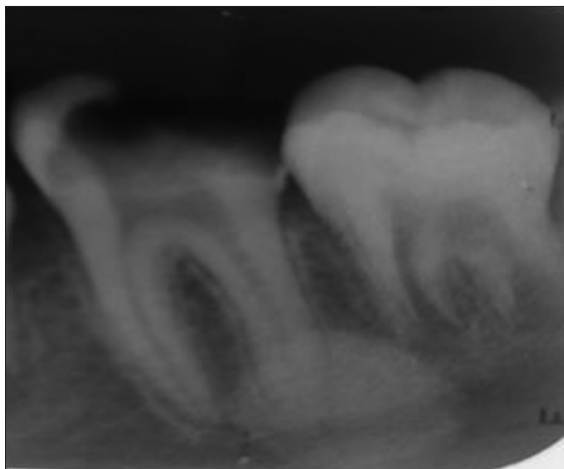


Figure 2: IOPAR wrt 46

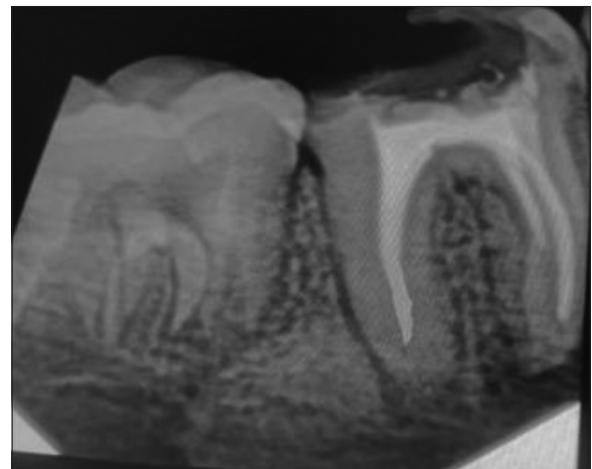


Figure 5: Placement of calcium hydroxide

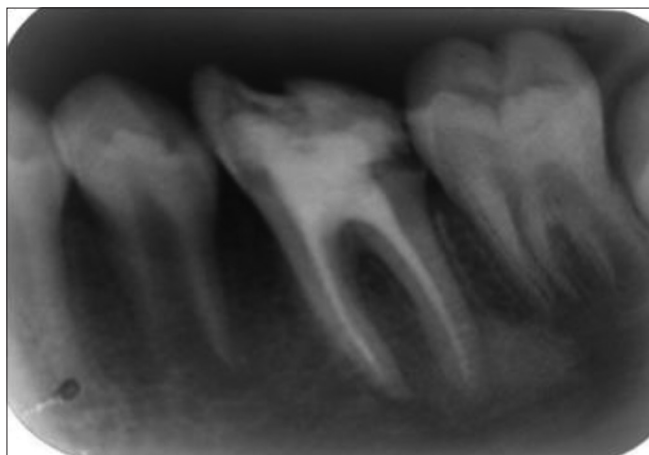


Figure 6: Obturation done wrt 46



Figure 8: Follow-up after 6 months wrt 46

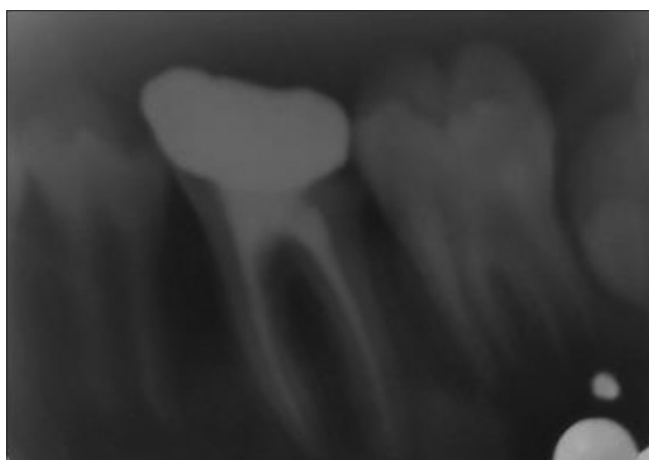


Figure 7: Follow-up after 3 months wrt 46

root apex of 46 [Figure 5]. Obturation was done with gutta-percha points and sealer (Sealapex, Kerr) using the lateral condensation technique [Figure 6]. The tooth was sealed with permanent restoration followed by placement of zirconia crown i.r.t 46. Follow-up was done for 3 and 6 months [Figures 7 and 8]. Radiograph revealed reduction in the radiopaque lesion adjacent to the root apex of 46 at 6 months of follow-up period [Figure 8]. The patient is still under clinical and radiographic observations.

DISCUSSION

Condensing osteitis is generally detected only on routine radiographs. It mostly involves tooth which have a long standing pulpal infection and occurs as a result of body's defense mechanism against the infection.^[6] During diagnosis of condensing osteitis lesion, idiopathic sclerosis which is also an periapical radiopaque lesion should be considered.^[7] Williams and Brooks^[8] conducted a study where it was seen that out of 187 radiopaque lesions, almost 53.5% were classified as idiopathic sclerosis and 46.5% were condensing osteitis. Idiopathic sclerosis is not related to any pupal pathology unlike condensing osteitis which generally develops in the root apex of teeth with untreated caries, long standing pulpal infection, or deep fillings.^[7]

Condensing osteitis is mostly present in the lower first mandibular molar followed by second mandibular molar. This can be explained that there is high prevalence rate of caries and massive fillings in lower molars which are subjected to pulpitis and pulp necrosis.^[6] Mostly, these lesions are seen in young patients with high tissue resistance.^[2] The size of the lesion generally varies from 1 mm to 22 mm. In the present case, the size of the lesion was approximately 5 mm. The shape of condensing osteitis may vary from round 32% to irregular 64% and in around 4% of cases, it may be U shaped.^[7]

Management of condensing osteitis depends on the condition of the affected tooth. Usually with proper endodontic treatment, condensing osteitis will subside or decrease in size. However, condensing osteitis lesion will not subside if the lesions are the result of inadequate root canal treatment. In a study conducted by Yeh *et al.*,^[1] they found that most cases of condensing osteitis were associated with teeth with inadequate root canal therapy.^[1]

Based on the previous literature,^[1] it appears that prognosis of condensing osteitis is good as it can be successfully treated by appropriate endodontic procedures and healing can include total regression of the sclerotic bone. However, if the size of the lesion is greater, usually complete removal of the altered pathologically bone along with extraction of the tooth is the treatment recommended.^[9] In the present case, condensing osteitis lesion was present in a long standing carious tooth which showed regression of the lesion radiographically after proper endodontic treatment and adequate obturation was carried out and clinically, the patient was asymptomatic at the end of 6 months of follow-up.

CONCLUSION

Condensing osteitis is an inflammatory condition where there is bone deposition rather than bone destruction which results in a radiopaque lesion. Regular radiographic examination plays a crucial part in the diagnosis of such lesions and prognosis is usually good if proper endodontic treatment is carried out as in the present case where regression and healing of the lesion were seen after appropriate endodontic treatment in the affected tooth.

REFERENCES

1. Yeh HW, Chen CY, Chen PH, Chiang MT, Chiu KC, Chung MP, *et al.* Frequency and distribution of mandibular condensing osteitis lesions in a Taiwanese population. *J Dent Sci* 2015;10:291-5.
2. Holly D, Jurkovic R, Mracna J. Condensing osteitis in oral region. *Bratisl Lek Listy* 2009;110:713-5.
3. Dukic W, Filipovic-Zore I, Bago I. Condensing osteitis-case report. *Acta Stomatol Croat* 2006;40:182-8.
4. Jacobsson S. Diffuse sclerosing osteomyelitis of the mandible. *Int J Oral Surg* 1984;13:363-85.
5. Mohammadi F, Aminishakib P, Niknami M, Avarzamani AR, Derakhshan S. Benign cementoblastoma involving deciduous and permanent mandibular molars: A case report. *Iran J Med Sci* 2018;43:664-7.
6. Efenbaum A. Condensing osteitis in the dental x-ray. *Dent Dig* 1967;73:554-8.
7. Kawai T, Hirakuma H, Murakami S, Fuchihata H. Radiographic investigation of idiopathic osteosclerosis of the jaws in Japanese dental outpatients. *Oral Surg Oral Med Oral Pathol* 1992;74:237-42.
8. Williams TP, Brooks SL. A longitudinal study of idiopathic osteosclerosis and condensing osteitis. *Dentomaxillofac Radiol* 1998;27:275-8.
9. Eversole LR, Stone CE, Strub D. Focal sclerosing osteomyelitis/focal periapical osteopetrosis: Radiographic patterns. *Oral Surg Oral Med Oral Pathol* 1984;58:456-60.