Idiopathic Bone Cavities of Mandible: Report of Two Cases
Fatih Mehmet Coskunses, Ozkan Ozgül, Ismail Doruk Kocyigit, Funda Tugcu

Abstract
Idiopathic bone cavities are the unusual empty cavities that occur in jaws as well as the long bones unknown etiology. A radiolucent cavity that scallops between teeth into the interradicular bone is the classic description of idiopathic bone cavities. This paper report the treatment and follow-up of idiopathic bone cavity of 12 years old girl and a 14 years old boy who had a false treatment of root canal treatment. Clinical, radiological and histological examination aids clinician in diagnosis. Surgical treatment is the most common treatment modality of idiopathic bone cavities.

Key Words: Idiopathic bone cavity; Mandible

Introduction
Idiopathic bone cavities (IBC) are the unusual empty cavities that occur in jaws as well as the long bones with unknown etiology. The term ‘traumatic bone cyst’ has been used for the IBC’s for many years. The designation ‘traumatic bone cyst’ originates from the trauma-hemorrhage theory.(1) Trauma-hemorrhage theory involves an event sufficient to precipitate medullar hemorrhage, yet a failure of the hematoma to undergo organization and tissue replacement. Degeneration of the hematoma results in cavitation.

The other theories assert failure of growth and development of osseous tissue, biochemical and mesenchymal differentiation, degeneration of benign neoplasms, venous obstruction and low-grade infection. Explanation of the various terminologies is the uncertain pathogenesis of IBCs. Most of the IBCs are diagnosed incidentally in orthopantomogram (OPG) and most of the individuals affected are teenage or at early 20s. The body of the mandible (75%) is usually affected in the premolar and molar regions.(2) Past literature search showed different observations for gender predilection. Mild expansion of related bone and thinned but not perforated cortical bone is clinical appearance of IBCs. Because the IBC resorbs the bone instead of expanding, tooth roots, teeth, mandibular canal and other anatomic structures are not displaced.

The largest lesions demonstrate a more radiolucent polymorphic image, often with a scalloped appearance of the extending in between the roots of the related teeth which are vital. Some may be observed with bony filling that not scallop between teeth and may be evaluated falsely. Histologically, IBCs contain bone portions with or without imperceptible fibrous tissue containing capillaries. There is no epithelium lining in the edges of lesion. Diagnosis established with aspiration of lesion and opening of bone window and accumulation of bleeding and fibrin inside the cavity is usually efficient for resolution of bone defect. There are also reports mentioning about spontaneous healing. This paper report the treatment and follow-up of idiopathic bone cavity of 12 years old girl and a 14 years old boy who had a false treatment of root canal treatment.

Case 1
A 12 years old girl referred for evaluation and management of an asymptomatic radiolucency of the mandible anterior region to Oral and Maxillofacial Surgery Department of Ankara University Faculty of Dentistry. The lesion was noted in routine panoramic radiography. Patient’s medical history was clear. Radiographic examination showed a well-defined, unilocular radiolucent lesion that was extended to second premolar teeth from left side to right and caudally to mandible border and scalloping between the roots of incisor. In order to identify the borders of lesion clearly we performed a computerized tomography. Computerized tomography showed cystic cavity did not result any lingual perforation of mandible and any bony relation with mental foramen and did show some expansion buccally. Clinically no cervical lymphadenopathy and was detected. Occlusion was proper and no significant swelling was present. Aspiration biopsy from the lesion showed no cystic liquid and air bubbles with some blood. All of the teeth related to lesion were vital and no tooth displacement was observed.

Under general anesthesia Peter-Novak incision was accomplished between mandibular second premolars. Careful bone exposure was performed to avoid damage to vital structures. The site exposed and a buccal window was created to explore the lesion. The cavity was lined by unsolid tissue and no cystic wall detected. The tissue specimens excavated from the cavity wall for histopathological examination. Histopathological examination revealed reactive changes with hemorrhage and loose vascular fibrous tissue without epithelial lining. The cavity was secured from tissue and closed. Postoperative period was devoid of important occurrences and in tenth day...
A 14 years old healthy boy was referred to our clinic for resolution of an unhealing radiolucency for 9 months between right lower canine and second incisor teeth from a special clinician (Figure 1). Canine tooth was treated with root canal treatment because of the lesion by special clinician. Radiologic examination showed a well-defined, unilocular radiolucent lesion around the lower right canine tooth. Under local anesthesia careful exposure of the lesion was performed as mentioned in first case. Cavity was also lined by unsolid tissue and no cystic wall detected. Histopathological examination revealed IBC as in first case. Patient was followed up 18 months and after seven month resolution of lesion was detected in orthopantomogram (Figure 2).

**Case 2**

A 14 years old healthy boy was referred to our clinic for resolution of an unhealing radiolucency for 9 months between right lower canine and second incisor teeth from a special clinician (Figure 1). Canine tooth was treated with root canal treatment because of the lesion by special clinician. Radiologic examination showed a well-defined, unilocular radiolucent lesion around the lower right canine tooth. Under local anesthesia careful exposure of the lesion was performed as mentioned in first case. Cavity was also lined by unsolid tissue and no cystic wall detected. Histopathological examination revealed IBC as in first case. Patient was followed up 18 months and after seven month resolution of lesion was detected in orthopantomogram (Figure 2).

**Discussion**

A radiolucent cavity that scallops between teeth into the interradicular bone is the classic description of idiopathic bone cavities. Idiopathic bone cavities are named as synonym of simple bone cyst, solitary bone cyst, hemorrhagic bone cyst, traumatic bone cyst and progressive bone cyst in literature. Trauma, local alteration of bone metabolism, low-grade infection, intra-osseous vascular abnormalities and degeneration of bone tumours are some of the theories that have been proposed.(3) The term 'traumatic bone cyst' is still used by many authors for the lesion. Even trauma theory; which is the medullar hemorrhage and a failure of the hematoma to undergo organization and tissue replacement’ is well accepted some literature presents the nullity of this theory. The traumatic etiology hypothesis is challenged by the fact that more than 50% of cases have no traumatic history.(4) Only 23.8% of the patients reported antecedents of orofacial traumatism in the retrospective study of Ballester et al.(5)

Suei et al reported no evidence of support of traumatic theory.(6) Manganaro et al also reported adverse opinion for traumatic theory.(7) In the present study lesion was detected when the patient was 12 years old and on the anamnesis patient reported an experience of fall from ladder and trauma to her chin when she was 8 year old.

Idiopathic bone cavities occurs mostly frequently in the second decade of life.(8) Long bones have more tendencies to produce idiopathic bone cavities. Most of the lesions in jaws occur in the mandible. Maxilla is frequently affected. There are different findings for sex predilection. Patrikiou et al reported that idiopathic bone cavities common in men while some others no sex predilection.(9)

Radiographic examination usually reveals a unilocular homogeneous radiolucency with or without few bone condensation around margins of lesion with scalloping between the dental in most of the cases. Rarely idiopathic bone cavities may get bigger in size and appear as a multilocular lesion. Occlusal radiographs and CT scans are essential for the diagnosis and evaluation of lesions. In the present case, lesion was evaluated with panoramic radiographs and CT. The lesion was unilocular and scalloping between the roots. Idiopathic bone cavities are occasionally asymptomatic. Expansion of the mandible rarely occurs. Lesions may contain straw colored fluid, blood and connective tissue, blood clot or nothing. Aspiration of idiopathic bone cavities would return with blood but this is not because the cavity is filled with blood but the disturbance of the tip of the needle to capillaries and negative pressure in the marrow space consequently. In our cases aspiration biopsy was performed after radiography and CT evaluation and air bubbles with few blood was aspirated from the cavity. Central giant cell lesions, odontogenic keratocyst, ameloblastoma, lateral periodontal cyst, and other destructive bone cysts and tumours should be taken into consideration in differential diagnosis. The lesions in female also are considered in aspect of the florid cementoosseous dysplasia.

Literature mentions about the filling of cavity with blood, bovine lyophilized bone, autologous blood with bone from patient or synthetic bone materials or single bone grafting without blood.(10) However Precious and Mc Fadden reported a lesion that failed to respond initially to treatment with blood injection to cavity.(11) Kuttenberg et al(12) and Baqain et al(13) reported two cases of relapse following surgical curettage. In our cases lesions were explored from buccal bone wall and the cavity was carefully curetted. No bone substitutes or another material was applied. Surgically a window is opened on the outer surface of the cavity and curettage of the osseous cavity used to perform to...
get it filled with blood which in turn leads to the regression of lesion.

In conclusion management of idiopathic bone cavities surgical exploration is the most common treatment.

**Authors Affiliations:** 1. Dr. Fatih Mehmet Coskunses, DDS, Ph.D., Department of Oral and Maxillofacial Surgery, Gumussuyu Military Hospital, Istanbul, 2. Dr. Ozkan Ozgül, DDS, Ph.D., Department of Oral and Maxillofacial Surgery, Ufuk University, Ankara, 3. Dr. Ismail Doruk Kocyigit, DDS, Ph.D., Assistant Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Kirikkale University, Kirikkale, 4. Dr. Funda Tugcu, DDS, Ph.D., Professor, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ankara University, Ankara, Turkey.

**References**


**Address for Correspondence**

Dr. Fatih Mehmet Coskunses, D.D.S, Ph.D., Department of Oral and Maxillofacial Surgery, Gumussuyu Military Hospital, Beyoglu, Istanbul, Turkey.

E-mail: fcoskunses@gmail.com

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