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ORIGINAL ARTICLE

A STUDY ON PERIPHERAL OSTEOMAS OF THE MAXILLOFACIAL REGION

Divashree Sharma[1], Saurabh Sathe[2], Bharat Rawat[3], Deepak Agrawal[4], Ankit Khasgiwala[5], Neelam Shakya[6]

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ABSTRACT: PURPOSE: The purpose of the study was to evaluate the clinical presentation, diagnosis and management of peripheral osteoma of maxillofacial region. **MATERIALS AND METHODS:** Eight cases of peripheral osteoma were treated by surgical excision in Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore from May 2011 to August 2014. The clinical presentation and outcomes of the surgical management were analyzed. **RESULTS:** The 8 patients ranged in age from 16 to 48 years, with a mean age of 28.75 years. The lesion showed a male predilection with a male to female ratio, 3:1. Out of the eight cases 5 were located in mandible (62.5%) and 3 were present in maxilla (37.5%).
KEYWORDS: Peripheral osteoma, Surgical excision, Maxillofacial region, Neoplasm.

INTRODUCTION: Osteoma is a benign neoplasm of bone tissue in which deposition of compact lamellar, cortical or cancellous bone forms a tumour mass.[1] The majority of cases occur in the craniofacial skeleton, most frequently in the paranasal sinuses and the jawbones, although rare cases in other bones and in soft tissues such as muscle have been documented.[1] The occurrence has been attributed to developmental, neoplastic and reactive factors. Osteomas can be peripheral, central or extraskeletal.[2,3] They usually present as a slow growing mass.[4]

Peripheral osteomas are mostly asymptomatic until they enlarge to the extent that they cause noticeable asymmetry or disfigurement or compression of the adjacent structures.[2] The definitive management is surgical excision and appropriate reconstruction if required.

MATERIALS AND METHODS: This study was conducted from May 2011 to August 2014 in Department of Oral & Maxillofacial Surgery at our institute. A total of 8 cases of peripheral osteoma treated with surgical excision during this period were studied. The data analyzed included age at diagnosis, gender, lesion location, presenting symptoms and treatment outcomes. All patients with a recognized diagnosis of Gardner syndrome were excluded. A pre-operative CT scan was done for all patients to determine the extent of the lesion.

The diagnosis was confirmed with histological analysis of the excised specimen. All cases were treated by surgical excision by intraoral approach. The surgical approach for gaining access to the lesion was selected considering the criterion that it minimizes damage to adjacent structures.

RESULTS: The site of lesion of the 8 cases of peripheral osteoma are presented in Table 1. The 8 patients, which included 6 males (75%) and 2 females (25%) ranged in age from 16 to 48 years, with a mean age of 28.75 years. Out of the eight cases 5 were located in mandible (62.5%) and 3 were present in maxilla (37.5%).

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Out of the 8 lesions, 7 presented as a pedunculated mass. In one patient there were bilateral diffuse lesions at chin involving the lower border. Out of eight patients seven patients complained of facial asymmetry and one patient with osteoma on hard palate complained of difficulty in deglutition.

In the present study group no intra-operative or postoperative complications (Dehiscence, Infection or other complications associated with surgery) were encountered with the open surgical treatment. Since intraoral approaches were used, there were no visible scars. Patients were followed up at intervals of 1, 3, 6 and 12 months and then at yearly intervals. The minimum follow up was one year and maximum was four years. No recurrence of the excised osteomas was observed in any of the patients.

Sl. No.	Age/ Sex	Region of involvement
1	22/M	Buccal alveolar bone in premolar region of mandible.
2	16/M	Bilaterally on chin in parasymphyseal region involving lower border.
3	28/M	Hard palate.
4	21/M	Frontal process of maxilla.
5	35/F	Lingual alveolar bone in premolar region of mandible.
6	32/M	Buccal alveolar bone in molar region of mandible.
7	28/F	Buccal alveolar bone symphyseal region.
8	48/M	Buccal alveolar bone of maxilla.

Table 1: The site of occurrence and the demographic data of the study population

DISCUSSION: Osteoma is a benign, osteogenic neoplasm composed of well‐differentiated mature bone tissue. It occurs due to proliferation of either compact or cancellous bone in an endosteal or periosteal location. In mandible bone, the lesions most frequently develop in the condyle,[5] lingual mandibular surface,[6] angle and margin.[5]

The exact pathogenesis of the peripheral osteoma still remains unclear. It has been considered to be a true neoplasm[7] while other investigators classify it as a developmental anomaly.[4]

It is also described to be a reactive condition that is triggered by trauma. This is explained by the finding that peripheral osteomas are generally located on the lower border or buccal aspect of the mandible, which are often traumatized areas.[8,9] A combination of trauma and muscle traction is implicated in development of osteoma. The mechanism involved in pathogenesis is that trauma causes subperiosteal bleeding or edema that locally elevates the periosteum leading to continuous muscle traction that initiates an osteogenic reaction.[10] Osteomas can be peripheral, central, or extraskeletal.[2,10]

Peripheral osteomas are caused by centrifugal growth of the periosteum and develop as masses attached to the cortical plates, whereas central osteomas arise centripetally from the endosteum.[2,3,10] The extra skeletal soft tissue osteoma lies within a muscle.[9] In the facial bones, both central and peripheral osteomas have been described. Peripheral osteomas occur most frequently in the frontal, ethmoid, and maxillary sinuses.[11] Other locations in craniofacial region include the external auditory canal, orbit, temporal bone, pterygoid processes, and, rarely inside the jawbone or over the jaw bone.[10,12]

Peripheral osteoma occurs in 16 to 74 years of age.[8] In this study there was a male predilection which is in accordance with other studies.[2,3] The signs and symptoms depend on the location, size and direction of tumor growth.[13] Peripheral osteomas may manifest as pain, headache, bone asymmetry and facial deformity.[14,15] Neurologic deficit may occur if the neoplasm compresses the nerve.[16] Since the tumour is often slow growing and asymptomatic, it is diagnosed incidentally on radiographs. It appears as an oval, radiopaque, well‐circumscribed mass attached by a broad base or pedicle to the host bone cortex.

An osteoma of the facial skeleton should raise the suspicion of Gardner syndrome. Gardner syndrome is an autosomal dominant disease and a variant of familial adenomatous polyposis. The syndrome consists of peripheral and/or endosteal maxillofacial osteomas, cutaneous sebaceous cysts, desmoids, multiple supernumerary teeth and colorectal polyposis.[17] The patients may occasionally present with rectal bleeding, diarrhea and abdominal pain. The osteomas often develop before the colorectal polyposis and an early diagnosis of the syndrome may be lifesaving in certain cases. All the cases of Gardener syndrome were excluded from this study.

The differential diagnosis for osteomas includes exostosis, chondroma, chondroblastoma, benign osteoblastoma, or osteochondroma, fibrous dysplasia, ossifying fibroma, condensing osteitis, and odontoma or cementoblastoma in the teeth-bearing areas.[13,14]

Asymptomatic cases are treated conservatively and regular observation and periodic radiologic follow-up are advised because of the slow growth of osteomas.[13,15] Surgical excision is the treatment of choice in symptomatic or actively growing lesion.[10,12] Surgery is also indicated for cosmetic reasons. Both open and endoscopic procedures impart good results.[15] Recurrence after surgery is extremely uncommon.[18] Malignant transformation of peripheral osteoma has not been reported in the literature. [1]

REFERENCES:

1. Woldenberg Y, Nash M, Bodner L. Peripheral osteoma of the maxillofacial region. Diagnosis and management: A study of 14 cases. Med Oral Patol Oral Cir Bucal 2005; 10(Suppl. 2): E139-42.
2. Larrea-Oyarbide N, Valmaseda-Castellón E, Berini-Aytés L, et al: Osteomas of the craniofacial region. Review of 106 cases. J Oral Pathol Med 37: 38, 2008.
3. Sayan NB, Uçok C, Karasu HA, et al: Peripheral osteoma of the oral and maxillofacial region: A study of 35 new cases. J Oral Maxillofac Surg 60: 1299, 2002.
4. Regezi JA, Sciubba J: Oral Pathology (ed 2). Philadelphia, PA, Saunders, 1993, p 407.
5. Bessho K, Murakami K, Iizuka T, Ono T. Osteoma in mandibular condyle. Int J Oral Maxillofac Surg 1987; 16: 372-5.
6. Richards E. Harry, Strider W. James et al: Large peripheral osteoma arising from the genial tubercle area. Oral Surg Oral Med Oral Pathol. 61: 268-271, 1986.
7. Shafer WG, Hine MK, Levy BM: A Textbook of Oral Pathology (ed 4). Philadelphia, PA, Saunders, 1983, p 163.
8. Schneider LC, Dolinsky HB, Grodjesk JE: Solitary peripheral osteoma of the jaws: Report of a case and review of literature. J Oral Surg 38: 452, 1980.
9. Bodner L, Gatot A, Sion-Vardy N, et al: Peripheral osteoma of the mandibular ascending ramus. J Oral Maxillofac Surg 56: 1446, 1998.
10. Kaplan I, Calderon S, Buchner A: Peripheral osteoma of the mandible: A study of 10 new cases and analysis of the literature. J Oral Maxillofac Surg 52: 467, 1994.

DOI: 10.14260/jemds/2015/1237

11. Zaccardi VB, Smith JA: Osteoma of the maxillary antrum. Oral Surg Oral Med Oral Pathol 80: 378, 1995.
12. Cutilli BJ, Quinn PD: Traumatically induced peripheral osteoma: Report of a case. Oral Surg Oral Med Oral Pathol 73: 667, 1992.
13. Boffano Paolo, Roccia Fabio, Campisi Paola and Gallesio Cesare: Review of 43 Osteomas of the Craniomaxillofacial Region J Oral Maxillofac Surg 70: 1093-1095, 2012.
14. Kim AW, Foster JA, Papay FA, et al: Orbital extension of a frontal sinus osteoma in a thirteen-year-old girl. J AAPOS 4: 122, 2000.
15. Miman MC, Bayindir T, Akarcay M, et al: Endoscopic removal technique of a huge ethmoido-orbital osteoma. J Craniofac Surg 20: 1403, 2009.
16. Kaplan I, Nicolaou Z, Hatuel D, et al: Solitary central osteoma of the jaws: A diagnostic dilemma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 106: e22, 2008.
17. 17 Lew D, DeWitt A, Hicks RJ, Cavalcanti MG. Osteomas of the condyle associated with Gardner's syndrome causing limited mandibular movement. J Oral Maxillofac Surg 1999; 57: 1004-9.
18. Richardson PE, Arendt DM, Fidler JE, et al: Radiopaque mass in the submandibular region. J Oral Maxillofac Surg 57: 709, 1999.

Case 1:

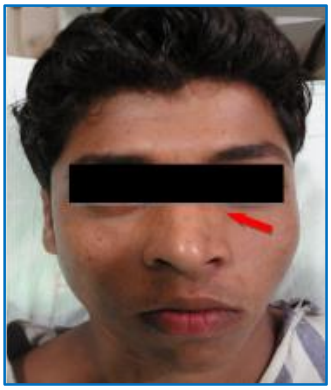

Fig. 1: Pre-operative frontal photograph of the patient with Swelling on the lateral aspect of the bridge of the nose on left

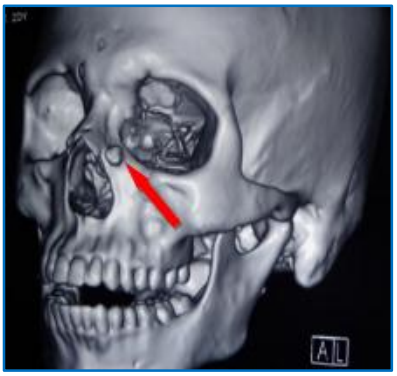

Fig. 2: Three dimensional reconstruction showing well defined, Round radiopacity on the frontal process of maxilla on left side

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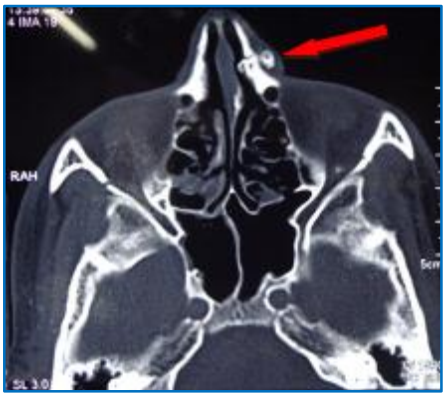

Fig. 3: Axial view of CT scan showing the radiopacity

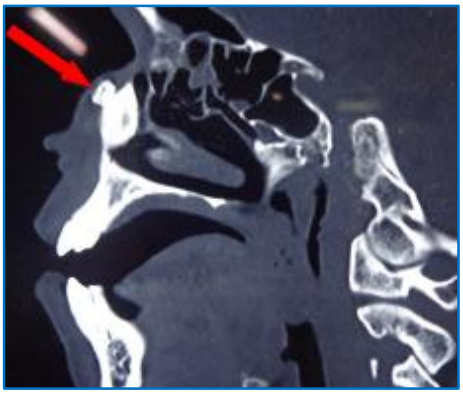

Fig.4: Saggital view of CT scan showing radiopacity on lateral side of nasal bone

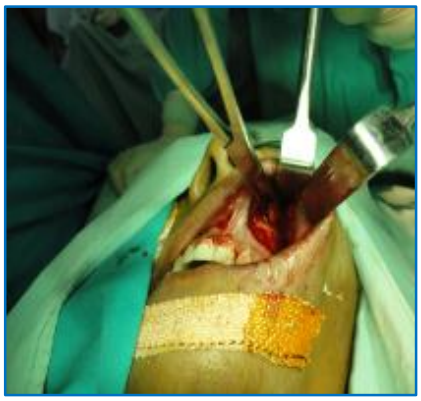

Fig. 5: Intra-operative view showing the surgical exposure of the lesion

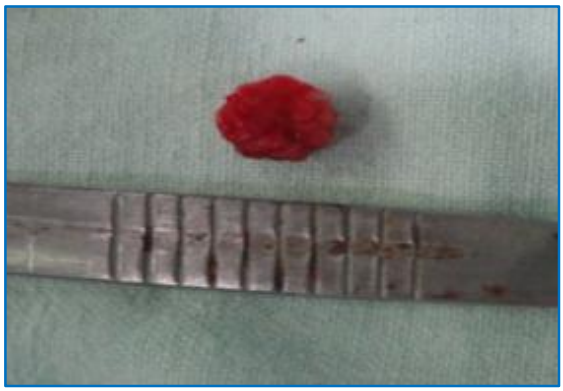

Fig. 6: Excised specimen of 12x 10x 8 mm

Case 2:

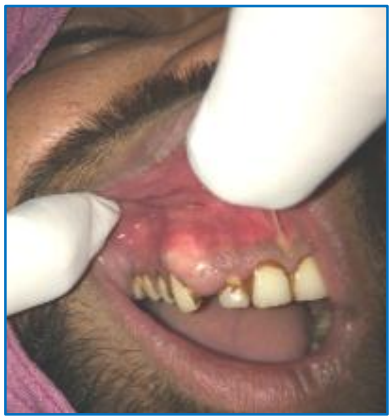

Fig.1: Intraoral view showing a swelling of the buccal gingiva

Fig. 2: Surgical exposure of the lesion

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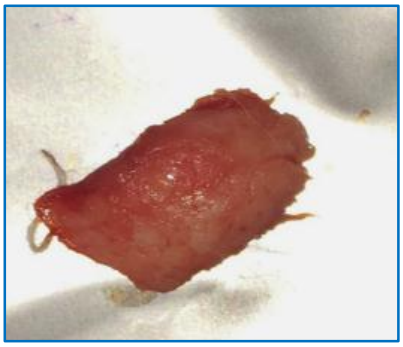

Fig. 3: Surgical specimen consisting of a well-defined, White, smooth mass 18x15x10 mm in size

Case 3:

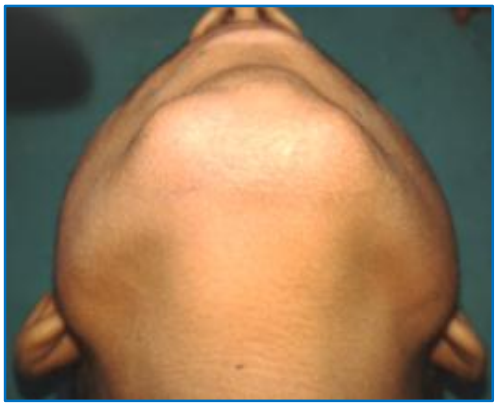

Fig. 1: Clinical appearance of bilateral bony prominences on lower border of mandible

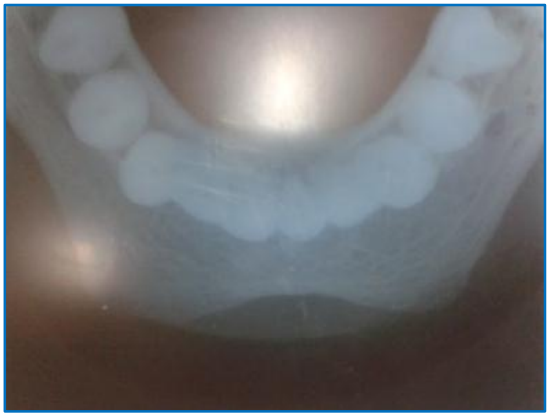

Fig. 2: Occlusal radiograph showing bilateral radiopaque lesion involving the lower border of mandible in parasymphysis region

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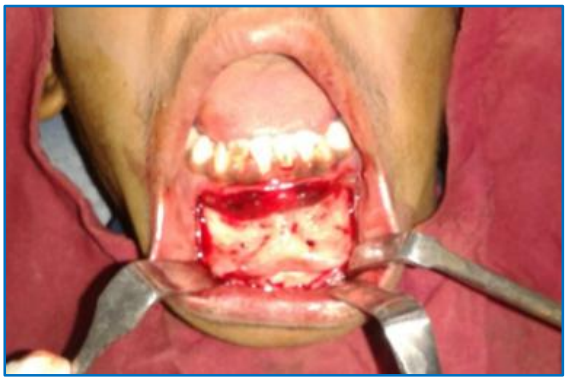

Fig. 3: Surgical exposure of the lesion intraorally

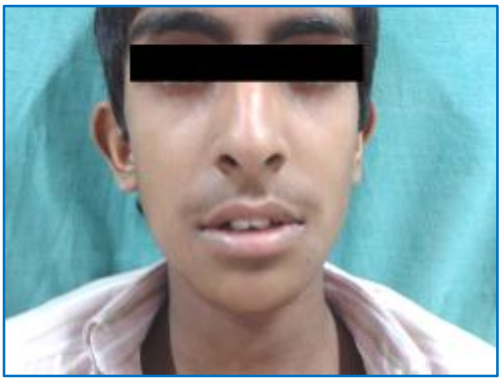

Fig. 4: Postoperative follow up after one week

AUTHORS:

1. Divashree Sharma
2. Saurabh Sathe
3. Bharat Rawat
4. Deepak Agrawal
5. Ankit Khasgiwala
6. Neelam Shakya

PARTICULARS OF CONTRIBUTORS:

1. Senior Resident, Department of Dentistry, Shyam Shah Medical College, Rewa.
2. Post Graduate Student, Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore.
3. Post Graduate Student, Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore.
4. Reader, Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore.
5. Post Graduate Student, Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore.
6. Senior Lecturer, Department of Oral & Maxillofacial Surgery, Government College of Dentistry, Indore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Divashree Sharma,
W/o. Dr. Ambrish Mishra,
F-7/2, New Doctors Colony,
Arjun Nagar, Rewa-486001,
Madhya Pradesh.
E-mail: divashri.19.sharma@gmail.com

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