

# Compact osteoma of mandible: A clinical case report

Kalpana Rakshit<sup>1\*</sup>, Neelima Rajhans<sup>2</sup>, Nilkanth Mhaske<sup>3</sup>, Nikesh Moolya<sup>4</sup>

<sup>1</sup>PG student, <sup>2</sup>Professor and HOD, <sup>3,4</sup>Reader, Department of Periodontology, Yashwantrao Chavan Medical Memorial and Rural Development Foundation's Dental College, Ahmednagar, Maharashtra, INDIA.

Email: [kalps101@gmail.com](mailto:kalps101@gmail.com)

## Abstract

Osteomas are relatively rare benign osteogenictumor characterized by the proliferation of compact or cancellous bone. Osteomas can develop as peripheral, central or extraskkeletal mass. The peripheral type arises from the periosteum and is rarely seen in the mandible. The lingual surface and lower border of the body are the most common locations of these lesions. They are usually asymptomatic and can be discovered in routine clinical and radiological examination. We are presenting a case of peripheral compact osteoma originating from the buccal surface of the mandible in a 58-year-old woman.

**Keywords:** osteoma, mandible, peripheral, lingual.

## \*Address for Correspondence:

Dr. Kalpana Rakshit, PG student, Department of Periodontology, Yashwantrao Chavan Medical Memorial and Rural Development Foundation's Dental College, Ahmednagar, Maharashtra, INDIA.

Email: [kalps101@gmail.com](mailto:kalps101@gmail.com)

Received Date: 16/03/2015 Revised Date: 25/03/2015 Accepted Date: 31/03/2015

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Quick Response Code:	Website: <a href="http://www.statperson.com">www.statperson.com</a>
	DOI: 02 April 2015

## INTRODUCTION

An osteoma is a benign tumor characterized by proliferation of compact or cancellous bone. It can be classified as peripheral, central, or extraskkeletal. A peripheral osteoma arises from the periosteum, a central osteoma from the endosteum, and an extraskkeletal osteoma in the soft tissue.<sup>1-4</sup>The exact aetiology of osteomas is poorly understood. They are thought to be developmental anomalies, true neoplasms, or reactive lesions triggered by trauma, muscle traction, or infection.<sup>2-3, 5</sup> Osteomas are mainly found in the craniofacial bones. Paranasal sinuses are most common location for peripheral osteoma. Other sites include the orbital wall, temporal bone, pterygoid processes, and external ear canal.<sup>6-8</sup> A solitary peripheral osteoma of the

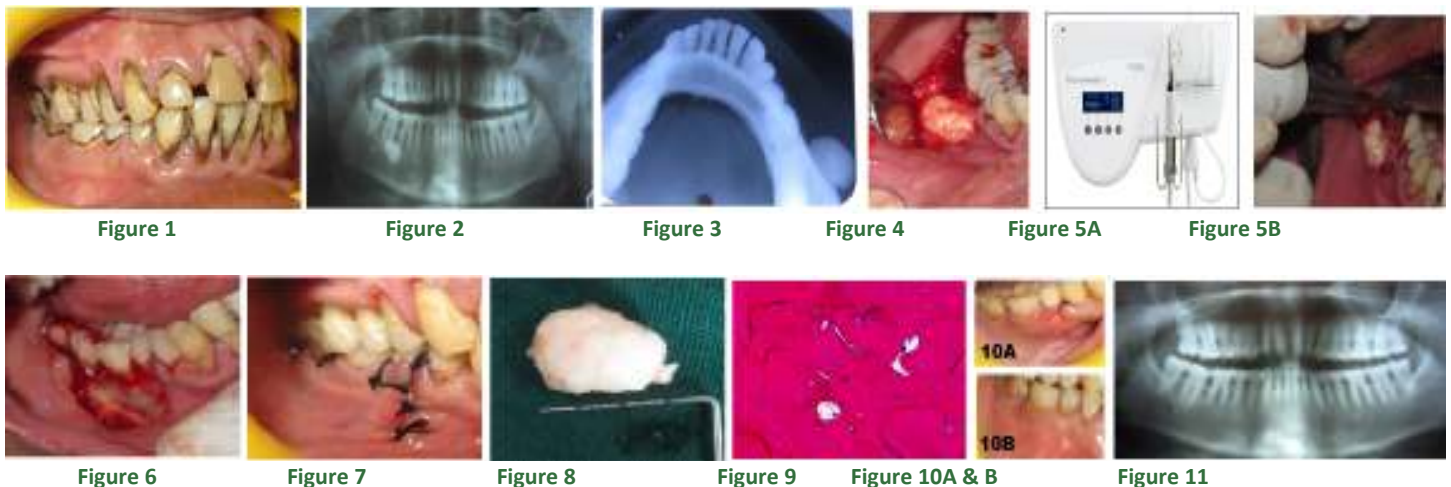
jaw bones is quite rare, involving the mandible more often than the maxilla.<sup>9</sup> The most common sites affected in the mandible are the posterior body, the condyle, angle, ascending ramus, coronoid process, anterior body, and sigmoid notch.<sup>5,9</sup> Osteomas can occur at any age and that males and females are equally affected.<sup>2, 9</sup> Peripheral osteomas are slow-growing lesions and, clinically, they usually remain asymptomatic. However, on increasing to a large size, they can produce swelling and asymmetry. Although multiple osteomas of the jaws are a hallmark of Gardner's syndrome (familial adenomatous polyposis), non-syndromic cases are typically solitary. Gardner's syndrome is an autosomal dominant disease characterized by gastrointestinal polyps, multiple osteomas, skin and soft tissue tumors, and multiple impacted or supernumerary teeth. Intestinal polyps may progress to malignancy in almost 100% of patients.<sup>10</sup> As osteomas can be seen in the earlier stage of Gardner's syndrome, the dentists may play an important role in the diagnosis of colonic polyposis. The therapeutic approach is surgical with careful removal of the lesion and curettage of the adjacent tissue. The prognosis is extremely favorable since the recurrence is not expected.<sup>11</sup> Piezoelectric surgery has during the last decade been used in oral and maxillo-facial surgery, ENT surgery, orthopedic surgery and neurosurgery to perform odontectomies, osteotomies and osteoplasties.<sup>12</sup> The main feature of piezoelectric

surgery is the selective cut which consists into cutting only hard tissue sparing soft tissue structures included nerve tissue. The instruments used for ultrasonic cutting create microvibrations caused by the piezoelectric effect: certain ceramics and crystal deform when an electric current is passed across them, resulting in oscillations of ultrasonic frequency. The used frequency is in the 20-32 kHz range and creates micromovements ranging between 60 to 210 μm that cut only mineralized tissue while soft tissue is cut at frequencies higher than 50 kHz. The amplitude of these microvibrations permits a clean, precise cut. In addition the operative site is blood-free due to the action of the saline solution and cavitation. The cavitation assists in closing the smallest blood vessels and rinses away any blood from the larger vessels. We are presenting a large peripheral osteoma originating from the buccal surface of the mandible in a 58-year-old woman treated by Mectron Piezosurgery medical ultrasonic device.

Ahmednagar with the chief complaint of swelling over the right side of the lower jaw in relation with the molar region since 1 Year. She gave the history that the swelling was first noticed 1 year back, insidious onset, gradually increased to the present size and thereafter no fluctuation in the size of swelling was noticed. The swelling was not associated with pain, discharge, fever, paresthesia or difficulty in eating or speaking. No history of trauma, infection or history of similar swelling in that region. Salivary flow was normal. No similar swellings elsewhere in the body. The patient was in apparent good health and her medical history was non-contributory. On extra oral examination, no gross facial asymmetry was noticed however on palpation a solitary diffuse swelling was evident on the buccal aspect of the right side of the mandible associated with molar region, measured 2 \* 3 cms which was non tender and hard in consistency. The swelling was non-compressible, non-reducible, non-fluctuant, non-pulsatile. The overlying mucosa was normal. On intraoral examination palpably there were no signs of osseous deformity and the oral mucous membrane was intact.

### CASE REPORT

A 58 year old female patient came to the outpatient department of Yashwantrao Chavan Dental College,



#### Legend

Figure 1: Preoperative Intraoral Photograph

Figure 2: Preoperative OPG

Figure 3: Preoperative occlusal radiograph

Figure 4: Intraoperative

Figure 5A: Mectron Piezosurgery unit

Figure 5B: Mass incised from all the sides with piezosurgery unit using OT1,OT2,OP1 inserts

Figure 6: Cortical bone plate smoothed with a bone file

Figure 7: Mucoperiosteal flap sutured

Figure 8: Excised mass

Figure 9: Histopathological picture

Figure 10 A: 1 week post-operative

Figure 10B: 6 months post-operative

Figure 11: Post-operative panoramic radiograph showing complete clearance

The regional teeth were not mobile, decayed or tender on percussion.(Fig. 1) X-ray results ( through Panoramic radiograph) confirmed a solitary, well defined radio-opaque mass measuring 3\*2 cms. The lesion extended from the mesial aspect of the first molar distal root to the distal aspect of the second molar mesial root.( Fig. 2) An occlusal radiograph demonstrated a large mass attached to the buccal surface of the right mandibular body. (Fig. 3) Based on the history given by the patient, the clinical examination carried out and the radiographic features, a provisional diagnosis of peripheral osteoma was made. For differential diagnosis, periosteal reaction, exostosis and Garre's osteomyelitis were considered. Under local anesthesia the lesion was approached by making a crevicular incision, mucoperiosteal flap was reflected. The mass was found to be attached to the bone.(Fig.4) Osteotomy was performed at the interface between bone and lesion on the Superior, inferior, mesial and distal aspect using the OT1, OT2 and OP1 insert of the Mectron Piezosurgery medical ultrasonic device in a continuous gentle upward-downward or forward backward movements of the vibrating tip; the lesion was successively incised from all the sides and removed using a chisel.(fig.5) The cortical plate of the body of the mandible was smoothed with a bone file under copious saline irrigation (Fig. 6). The mucoperiosteal flap was sutured(Fig. 7) The excised mass was sent thereafter for histological analysis (Fig.8)Histopathological examination revealed dense compact bone composed of numerous lacunae containing osteocytes . Resting and reversal lines are seen. Haversian canals and some marrow spaces containing blood elements are also seen. The lesion was nonencapsulated and all the features were suggestive of osteoma.(Fig. 9) The post operative recovery was uneventful.( Fig. 10) Post-operative radiograph shows total clearance (fig 11).

## DISCUSSION

The etiology of osteoma is unknown.<sup>13, 14</sup> Various factors that contribute to the development of the disease are trauma, infection and/or inflammation, congenital and hereditary endocrine disorders and external causes. The mechanism that best explains its pathogenesis is a combination of trauma and muscle traction. The former may cause subperiosteal bleeding or edema, and the latter could be related to local elevation of the periosteum. These two probabilities might initiate an osteogenic reaction that could be perpetuated by the continuous muscle traction in the area.<sup>2,4</sup> Osteoma usually occurs in patients between 15 and 35 years of age with no sex predilection and may occur as a central or peripheral lesion.<sup>3, 4, 13</sup> Clinically, this lesion appears as a hard, slow growing mass and cause facial asymmetry when its size increases. With regard to facial bones, it is more common

in the mandible than in the maxilla, and the lingual surface of the mandible body and the lower border in the angle region are the most common sites.<sup>15</sup> In the present case, the site of the lesion was at the Buccal aspect of the mandible in molar region . Differential diagnosis include exostoses, osteoblastoma, and osteoid osteoma, late-stage central ossifying fibroma, or complex odontoma. Exostoses are bony excrescences that usually stop growing after puberty, differentiating them from osteomas.<sup>16</sup> The borders of central ossifying fibromas are well-defined, and a thin, radiolucent line may separate it from the surrounding bone. A sclerotic border may be present in the bone next to the lesion.<sup>17</sup> Osteoblastomas and osteoid osteomas are more frequently painful and grow more rapidly than peripheral osteomas.<sup>4, 5</sup> A complex odontoma presents as a well-defined radio opacity situated in bone, but with a density that is greater than bone and equal to or greater than that of a tooth. It is also surrounded by a narrow radiolucent rim.<sup>17</sup> The complete surgical removal of the osteoma is indicated if it becomes large enough to cause facial asymmetry and if it is causing functional impairments such as blockage of cavities, compression of nerve terminals or noble tissues.<sup>18</sup> In the present case removal of the lesion was carried out by using piezoelectric surgery device with the main intent to protect deeper structures as nerves and vessels from injury during excision. Piezoelectric bone surgery is a tissue-selective technique that allows a micrometric, exact and smooth cut into mineralized tissue, while adjacent soft tissue such as nerves, vessels, periosteum or schneiderian membrane, when the ultrasonic device is correctly used, remain unharmed because surgical action ceases when the device tips come in contact with non-mineralized tissue.<sup>19, 20</sup> An in vitro study concerning inferior alveolar nerve transposition by piezoelectric surgery showed that after surgery the epineurium became roughened without any damage to the deeper structures.<sup>21</sup> Comparing with traditional surgery carried out by using conventional burs or chisels, ultrasonic cutting precision and selectivity have undoubtedly to be considered advantageous. An additional consideration regarding ultrasonic surgery is its favorable role in surgical wound healing because the less invasive cutting action produce minor tissue damage and consequently better healing. Besides, when compared with traditional surgery, bone healing following piezoelectric surgery seems to be either similar<sup>22</sup> or even improved due to the fact that piezoelectric bone surgery seems to induce an earlier increase in neo-osteogenesis resulting in a more favourable osseous response.<sup>23</sup> The latter may depend on the cavitation effect induced by ultrasonic cutting that allows an effective cooling avoiding significant hyperthermia and coagulation

damages to the surrounding area.<sup>24</sup> Recurrence of peripheral osteoma after surgical excision is extremely rare and the goal of the follow-up is to look out for new osteomas or other signs indicative of Gardner's syndrome, which was ruled out in our case. The patient, in this paper, did not show any evidence of recurrence and a clinical and radiographic follow-up protocol was provided.

## CONCLUSION

We have presented a case of osteoma on the buccal surface of the mandibular body. The lesion had grown slowly and caused intraoral swelling. Following clinical diagnosis, surgical excision was done. Recurrence of peripheral osteoma after surgical excision is extremely rare. However, it is appropriate to provide both periodic clinical and radiographic follow-up after surgical excision of a peripheral osteoma.

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Source of Support: None Declared  
Conflict of Interest: None Declared