

Giant Peripheral Osteoma of the Mandible in a Geriatric Patient: a case report of a life threatening benign neoplasm

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Abstract

Background: Osteomas are benign, slow-growing osteogenic neoplasms of the craniofacial skeleton. Giant peripheral mandibular osteomas are rare and may produce significant facial deformity, functional impairment, and airway compromise.

Case Presentation: A 69-year-old patient presented with a painless, progressively enlarging swelling on the left side of the face of six years' duration, associated with difficulty in swallowing and phonation. Clinical examination revealed marked facial asymmetry, intraoral extension into the left retromolar and lingual mandibular regions, and deviation of the tongue. Computed tomography with three-dimensional reconstruction demonstrated a large, well-defined multilobulated hyperdense osseous mass involving the mandibular symphysis, angle, and ramus, with multiple exophytic bony outgrowths causing displacement of adjacent soft tissues and airway deviation. Gardner's syndrome was excluded following endoscopic evaluation. A stereolithographic model was used for preoperative assessment and mock surgery. Owing to the altered airway anatomy, elective tracheostomy was performed prior to definitive surgery. Surgical excision was carried out through a lip-split and low neck crease approach with paramedian mandibulotomy, followed by osteoplasty and fixation with titanium miniplates and screws. Histopathological examination confirmed the diagnosis of osteoma. Postoperative recovery was satisfactory with preservation of mandibular continuity and functional restoration.

Conclusion: Giant mandibular osteomas can cause substantial esthetic and functional morbidity because of their extensive growth and displacement of adjacent structures. Three-dimensional modelling, appropriate airway management, and adequate surgical exposure are important for the safe and effective management of extensive lesions

Keywords: Osteoma, Difficult airway, Stereolithographic model, Geriatric

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Introduction

Osteoma is a benign osteogenic neoplasm characterized by the proliferation of compact or cancellous bone within the craniofacial skeleton. Bones formed by intramembranous ossification, including the skull, maxillofacial region, and jaw bones, are most commonly affected[1]. Peripheral

osteomas of the jaws are reported more frequently in the mandible than in the maxilla[2].

Osteomas may present as solitary or multiple lesions and are often discovered incidentally on radiographic examination as well-circumscribed

radiopaque masses. Although generally asymptomatic, larger lesions may produce facial asymmetry, swelling, pain, or functional disturbances due to compression of adjacent structures[1]. The exact etiology remains uncertain, with developmental, traumatic, infectious, and genetic factors proposed in the literature[1,3]. Multiple craniofacial osteomas are particularly associated with Gardner's syndrome, a variant of familial adenomatous polyposis[4].

Conventional radiography is usually adequate for diagnosis, while computed tomography (CT) provides superior delineation of lesion extent and anatomical relationships[5]. Histologically, osteomas are classified into compact (ivory), cancellous (trabecular), and mixed variants [1]. Management depends on lesion size, location, and symptomatology, with complete surgical excision indicated for restoring function.

We report a rare case of a giant mandibular osteoma with extensive involvement of the mandible causing significant esthetic deformity and functional impairment, highlighting the importance of management of airway and surgical challenge.

Case Report

A patient aged 69, presented with a gradually progressive swelling over the left side of the face for six years, associated with increasing difficulty in swallowing and phonation. The patient had previously undergone surgical excision of a submental swelling approximately 20 years earlier. The present swelling initially appeared small and hard in consistency and progressively enlarged over time without associated pain or identifiable aggravating factors. Medical history was significant for hypertension and diabetes mellitus under regular medication with ejection fraction of 40%.

Extraoral examination revealed a large diffuse hard swelling involving the left side of the face and extending below the inferior border of the mandible, producing marked facial asymmetry. The overlying skin appeared normal without signs of inflammation. The swelling was non-tender, smooth surfaced, well defined, and fixed to underlying structures. Intraoral examination demonstrated a bony hard swelling measuring approximately 3 × 6 cm in the left retromolar and lingual mandibular region with associated deviation of the tongue toward the right side.

Based on the clinical findings, a provisional diagnosis of mandibular osteoma was made. Gardner's syndrome was suspected and ruled out by endoscopic investigations. Orthopantomogram

revealed multiple irregular radiopaque masses involving the left mandible; however, the extent of the lesion could not be clearly delineated. CT scan with three-dimensional reconstruction demonstrated a large, well-defined multilobulated hyperdense osseous mass arising predominantly from the buccal surface of mandible in the symphysis, angle and ramus region. Symphysis region was independent from The lesion showed multiple exophytic cauliflower-like bony outgrowths causing displacement of adjacent soft tissues and airway deviation(Fig. 1A, B). No evidence of cortical destruction, orbital involvement, or intracranial extension was seen.

Radiological findings were suggestive of an extensive benign osteogenic lesion consistent with osteoma.

Considering the complexity of the case, a stereolithographic(STL) model was printed to evaluate the osteoma and perform a mock surgery on STL model (Fig. 2). Following that, a decision was taken to perform elective tracheostomy prior to surgery due to altered airway anatomy.

Surgical access was achieved through a lip-split incision combined with a low neck crease incision (Fig 3). A paramedian mandibulotomy was then performed to provide adequate exposure, following which complete surgical excision of the lesion involving the mandibular symphysis, body, and ramus was carried out using osteotomes and saws, followed by osteoplasty (Fig. 4).

Stabilization was achieved using titanium miniplates and screws, and associated teeth were extracted where indicated. Closure was performed in layers with placement of a drain. Histopathological examination confirmed the diagnosis of osteoma. Postoperatively, satisfactory mandibular continuity and functional restoration were achieved.

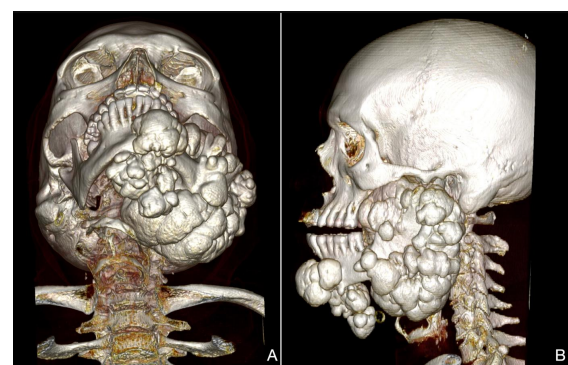


Figure 1 : 3-D CT reconstruction images showing the extent of the osteoma

A) 3-D CT showing the deviation of trachea

B) 3-D CT showing the extent of osteoma

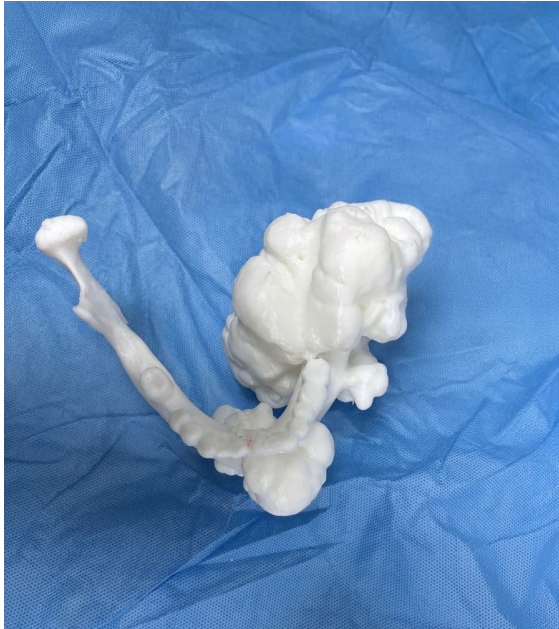


Figure 2 : Stereolithographic model



Figure 3 : Exposure of the anterior segment of osteoma via Lip-split and low neck crease incision

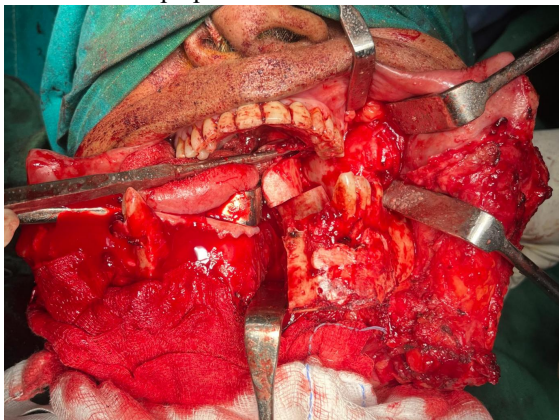


Figure 4 : Exposure of the medial segment of osteoma via paramedian mandibulotomy

Discussion

Osteomas are benign osteogenic tumors composed of mature compact or cancellous bone and are most frequently encountered in the craniofacial region. Depending on their site of origin, they are classified as peripheral (periosteal), central (endosteal), or extraskeletal osteomas. Peripheral osteomas are the most common subtype affecting the jaws and typically present as slow-growing sessile or pedunculated masses arising from the periosteum [4].

The mandible is a commonly affected site for peripheral osteomas of the jaws, with reported predilection for the body, angle, condyle, and lingual cortical surfaces. In a series of 35 peripheral osteomas of the oral and maxillofacial region Sayan et al. reported a predominance of mandibular involvement, supporting the recognized predilection of peripheral osteomas for the mandible[6]. Other reviews have similarly reported a predilection for the mandible among peripheral jaw osteomas[7]. In the present case, extensive involvement of the mandibular symphysis, body, and ramus resulted in marked facial asymmetry and dysphagia.

The pathogenesis of osteoma remains controversial. Proposed mechanisms include developmental abnormalities, true neoplastic proliferation, trauma, infection, and reactive bone formation secondary to muscle traction [1]. The patient's previous history of submental swelling and surgery may suggest a reactive or recurrent osteogenic process, although a definitive causal relationship could not be established.

Clinically, osteomas are usually asymptomatic and detected incidentally on imaging. Symptoms arise when lesions enlarge sufficiently to compress adjacent structures. Such lesions may cause facial deformity, dysphagia, airway compromise, malocclusion, and restriction of mandibular movement. In the present case, progressive enlargement over the years resulted in significant cosmetic deformity. Reports on osteomas on the lateral aspect of mandible have resulted in cosmetic deformities but in our case the extension of osteoma on the medial aspect lead to functional problems as well.

Radiographically, osteomas appear as well-circumscribed radiopaque masses with density comparable to cortical bone. CT imaging remains the modality of choice for assessing lesion extent and planning surgical management [5]. Histopathologically, osteomas are categorized into compact, cancellous, and mixed variants based on

the relative composition of dense lamellar bone and trabecular marrow spaces.

The differential diagnosis of peripheral mandibular osteoma includes exostoses, sessile osteochondroma, osteoid osteoma, periosteal osteoblastoma, peripheral ossifying fibroma, and paraosteal osteosarcoma[8]. Unlike exostoses, peripheral osteomas may continue to enlarge during adulthood, whereas exostoses typically cease growth after puberty. Osteoid osteoma and osteoblastoma are generally associated with more rapid growth and pain than peripheral osteomas; osteoid osteoma typically demonstrates a radiolucent nidus, while osteoblastoma may present as a predominantly radiolucent lesion[9,10,11].

An important differential consideration in cases with multiple osteomas is Gardner's syndrome, an autosomal dominant disorder associated with intestinal polyposis, epidermoid cysts, and dental abnormalities [4]. Accordingly, patients presenting with multiple craniofacial osteomas should undergo careful systemic evaluation. No evidence suggestive of Gardner's syndrome was identified in the present case.

Management depends on lesion size, location, symptoms, and cosmetic considerations. Small asymptomatic lesions may be observed, whereas symptomatic or enlarging lesions require complete surgical excision [1,9]. Extensive mandibular lesions may necessitate mandibulotomy and reconstructive procedures to restore form and function. Recurrence after complete excision is rare, and malignant transformation has not been reported[12].

The present case is noteworthy because of the unusually extensive mandibular involvement associated with significant functional compromise and esthetic deformity. Early diagnosis and timely surgical intervention remain essential to prevent progressive morbidity and achieve favorable functional and cosmetic outcomes.

Declarations

Informed consent: Obtained from the patient

Clinical trial number : Not Applicable

Consent to publish: Obtained from patient

Consent to participate: Obtained from patient

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Data and/or code availability: The data presented in this study are available on request from the corresponding author

Use of AI : The authors declare the use of AI tools for language editing and grammar

References

1. Larrea-Oyarbide N, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Osteomas of the craniofacial region. Review of 106 cases. *J Oral Pathol Med.* 2008;37:38–42.
2. Johann AC, de Freitas JB, de Aguiar MC, de Araújo NS, Mesquita RA. Peripheral osteoma of the mandible: case report and review of the literature. *Journal of Cranio-Maxillofacial Surgery.* 2005 Aug 1;33(4):276-81
3. Cutilli BJ, Quinn PD. Traumatically induced peripheral osteoma of the mandible: report of a case. *Oral Surg Oral Med Oral Pathol.* 1992;73:667–669.
4. Madani M, Madani F. Gardner's syndrome presenting with dental complaints. *Arch Iran Med.* 2007;10:535–539.
5. Chattopadhyay CP, Chander MG. Peripheral osteoma of the maxillofacial region diagnosis and management: a study of 06 cases. *Journal of maxillofacial and oral surgery.* 2012 Dec;11(4):425-9.
6. Sayan NB, Uçok C, Karasu HA, Günhan O. Peripheral osteoma of the oral and maxillofacial region: a study of 35 new cases. *J Oral Maxillofac Surg.* 2002;60:1299–1301.
7. Kaplan I, Nicolaou Z, Hatuel D, Calderon S. Solitary central osteoma of the jaws: a diagnostic dilemma. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2008;106:e22–e29.
8. Karande V, Ranade S, Pagare V. Compound Odontoma in the Anterior Mandible: Diagnostic Challenges and Surgical Management of a Rare Presentation. *Oral Sphere J. Dent. Health Sci.* 2025;1(3):173-177.
9. 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:E139–E142.
- Kashid A, Sharma H, Kamal A, Kashwani R, Kumari A. Insights into peripheral giant cell granuloma: A case study analysis [Internet]. *J Orolac Health Sci.* 2024 [cited 2026 Sep 17];11(2):82-85. Available from: <https://doi.org/10.18231/j.johs.2024.018>
10. Natasja F, Lam SW, Anne-Marie CJ, VMG BJ. What's new in bone forming tumours of the skeleton?. *Virchows Archiv.* 2020;476(1):147-57
11. Starch-Jensen T. Peripheral solitary osteoma of the zygomatic arch: a case report and literature review. *The open dentistry journal.* 2017 Feb 28;11:120.