

An Aggressive Presentation of a Histologically Benign Tumour: Extensive Mandibular Acanthomatous Ameloblastoma

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Abstract

Background: Ameloblastoma is a benign odontogenic epithelial tumour characterized by locally aggressive behaviour and a propensity for recurrence. Progressive enlargement may cause substantial mandibular expansion, cortical thinning, tooth displacement, root resorption and facial asymmetry. Its clinical and radiographic features can overlap with other odontogenic lesions, making histopathological examination essential for definitive diagnosis.

Case presentation: A 55-year-old woman from Guntur, Andhra Pradesh, India, presented with a progressively enlarging swelling involving the anterior and right lower facial region and the right posterior mandible. The swelling had been present for approximately four years and was first noticed intraorally following the extraction of decayed mandibular posterior teeth. It gradually increased in size, eventually producing visible facial asymmetry. Although the swelling had remained largely painless, right-sided facial pain had developed during the 10 days preceding presentation. Clinical examination revealed an approximately 4 × 3 cm hard, tender extraoral swelling and extensive intraoral mandibular expansion with obliteration of the labial, buccal and lingual vestibules. An eggshell-crackling sensation and varying degrees of mobility of the adjacent mandibular teeth were noted. Cone-beam computed tomography demonstrated an expansile multilocular lesion involving the mandibular symphysis, bilateral parasymphysis and right body, with internal bony septations, marked buccolingual expansion, cortical thinning, focal cortical perforation, tooth displacement and root resorption. Incisional biopsy established the diagnosis of ameloblastoma, acanthomatous variant.

Conclusion: This case highlights the importance of correlating clinical examination, cross-sectional imaging and histopathological findings when diagnosing extensive mandibular odontogenic lesions. Appropriate treatment planning must consider lesion extent, cortical integrity, functional morbidity and recurrence risk. Definitive treatment details and long-term follow-up should be incorporated into the final report.

Keywords: Ameloblastoma; mandible; acanthomatous variant; odontogenic tumour; cone-beam computed tomography; case report.

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I. Introduction

Ameloblastoma is a benign epithelial odontogenic tumour known for its locally aggressive and infiltrative growth pattern. Although it rarely metastasizes, its potential to destroy surrounding bone makes it one of the most clinically significant odontogenic tumours encountered in oral and maxillofacial practice. The lesion may enlarge slowly over several years, often remaining asymptomatic during its initial stages. As it progresses, it can cause cortical expansion, tooth displacement, root resorption, facial asymmetry and, in advanced cases, perforation of the cortical plates and extension into adjacent soft tissues.

The mandible is the most frequently affected site, particularly the posterior body and ramus. Nevertheless, extensive lesions may involve multiple anatomical regions, including the body, parasymphysis and symphysis. The clinical presentation varies according to the lesion's size, location and biological behaviour. Patients commonly present with a painless jaw swelling, while pain, tooth mobility and altered sensation may develop as the lesion advances or when secondary complications arise.

Radiographically, conventional ameloblastoma may appear as a unilocular or multilocular radiolucent lesion. Multilocular lesions may exhibit internal septations producing the characteristic soap-bubble or honeycomb appearance. However, these features are not pathognomonic. Odontogenic keratocysts, odontogenic myxomas, central giant cell granulomas and aneurysmal bone cysts may produce similar radiographic appearances. Certain malignant lesions, including ameloblastic carcinoma and intraosseous mucoepidermoid

carcinoma, may also enter the differential diagnosis. Consequently, imaging findings must be interpreted alongside the clinical presentation and histopathological examination.

Histologically, ameloblastoma may demonstrate several patterns, including follicular, plexiform, acanthomatous, granular-cell, basal-cell and desmoplastic patterns. The acanthomatous pattern is characterized by squamous metaplasia within the central portions of tumour epithelial islands. Correct identification of the histological pattern is important for diagnostic classification, although treatment decisions must also account for the lesion's clinical and radiological extent.

Management remains an important clinical consideration because conservative treatment may preserve mandibular continuity but can carry a greater risk of recurrence in conventional solid or multicystic ameloblastoma. More extensive surgical procedures may provide improved local disease control but can result in significant functional, aesthetic and reconstructive challenges. Therefore, individualized treatment planning is necessary.

The present case describes a 55-year-old woman with a slowly progressive, extensive mandibular lesion that produced marked facial asymmetry, buccolingual cortical expansion and displacement of adjacent teeth. The case emphasizes the diagnostic value of clinical examination, serial imaging and histopathological confirmation in the assessment of extensive mandibular ameloblastoma.

II. Case presentation

Patient information and chief complaint

A 55-year-old woman, a farmer residing in Guntur, Andhra Pradesh, India, presented to the Oral and Maxillofacial Surgery Department with a chief complaint of swelling involving the lower anterior and right side of the face and the right mandibular posterior region. The swelling had been present for approximately four years and had progressively increased in size.

The patient reported that she had undergone extraction of decayed teeth in the right mandibular posterior region approximately four and a half years before presentation. Following extraction, she noticed a small swelling inside the mouth. The swelling gradually increased in size and subsequently became apparent externally, resulting in progressive facial asymmetry.

Approximately 18 months before the current specialist assessment, she had consulted a private dental clinic in Mangalagiri and was referred to Sibar Institute of Dental Sciences for an oral and maxillofacial surgical opinion. The swelling had remained largely painless throughout its course, with no reported pus discharge or paraesthesia. However, the patient developed pain on the right side of the face approximately 10 days before presentation.

Medical, dental and personal history

The patient's past medical and family histories were reported as non-contributory. Her previous dental history was significant for extraction of teeth in the right mandibular posterior region.

The patient reported previous allergic reactions to penicillin and to certain analgesics that she could not identify by name. According to her history, the reactions subsided after taking cetirizine, and a physician had advised her to use alternatives to penicillin and paracetamol for pain relief. This history should be verified and documented before any medication is prescribed.

She reported brushing her teeth once daily and consuming a mixed diet.

General examination

The patient was described as well built and well nourished. No clinically evident pallor, icterus, cyanosis, clubbing or koilonychia was recorded. The general examination did not reveal clinically evident generalized lymphadenopathy.

Extraoral examination

Extraoral examination revealed gross facial asymmetry involving the lower facial region. Mouth opening was described as adequate. Right submandibular lymph nodes were palpable, while the remaining lymph nodes examined were not palpable. The available case presentation did not specify the exact dimensions, consistency, mobility or tenderness of the palpable lymph nodes.

An approximately 4 × 3 cm ovoid swelling was identified over the right lower facial region. Anteroposteriorly, it extended from the chin towards the body of the mandible on the right side. Superoinferiorly, it extended from the angle of the mouth to the inferior border of the mandible.

On palpation, the swelling was hard, smooth and tender. The overlying skin appeared similar to the surrounding skin, without sinus tract openings or ulceration. No increase in local temperature was detected. The swelling was non-fluctuant, non-compressible, non-reducible and non-pulsatile.



Fig-1 Showing extraoral gross asymmetry on right side of the face

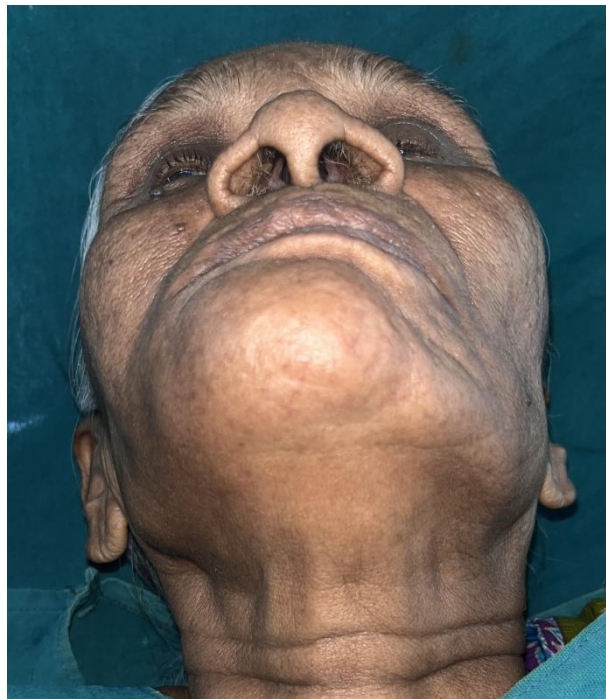


Fig.2- Worm's view showing gross facial asymmetry on right side and crossing the midline

Intraoral examination

Intraoral examination revealed slight erythema of the buccal mucosa in the right mandibular region. The labial mucosa, gingiva, floor of the mouth, tongue and palate did not demonstrate any other reported abnormality.

There was marked obliteration of the labial, buccal and lingual vestibules in the affected mandibular region. An approximately 4 × 3 cm intraoral swelling extended anteroposteriorly from the distal aspect of tooth 31 towards the mesial aspect of tooth 48. Superoinferiorly, it extended from the gingival crest into the attached gingiva, involving the region from distal to tooth 31 towards tooth 43, the edentulous 44–45 region, and posteriorly towards the distal aspect of tooth 47.

The lesion produced evident buccolingual expansion, with extension towards the floor of the mouth adjacent to the lingual frenulum. The swelling was hard, smooth and diffusely demarcated, with slight erythema of the

overlying mucosa. Tenderness was present, and an eggshell-crackling sensation was elicited on palpation, suggesting substantial thinning of the expanded cortical plate.

No ulceration or discharge was reported.

Dental examination revealed the following tooth mobility:

- Grade III mobility: tooth 46.
- Grade II mobility: teeth 47, 43 and 42.
- Grade I mobility: teeth 41, 31 and 32.

Teeth 44 and 45 were missing. An impacted mandibular right third molar (48) was also recorded.

These findings suggested a slowly progressive intraosseous lesion causing extensive mandibular expansion and compromising the supporting bone around adjacent teeth.



Fig.- 3a



Fig.- 3b

Figs. 3a and 3b- showing intraoral findings and swelling on right side of the mandible

Provisional diagnosis

Based on the patient's age, prolonged history of progressive swelling, facial asymmetry, marked buccolingual expansion, tooth mobility and eggshell-crackling sensation, a provisional diagnosis of ameloblastoma of the right mandible was considered.

However, a definitive diagnosis could not be established on clinical findings alone, and further radiological and histopathological investigations were required.

Investigations

The investigations planned or documented in the case presentation included:

1. Complete blood picture.
2. Viral markers.

3. Aspiration of the lesion.
4. Orthopantomogram (OPG).
5. Cone-beam computed tomography (CBCT) of the mandible.
6. Computed tomography of the facial bones.
7. Incisional biopsy.

The preoperative investigations revealed that the viral markers, including HIV (TR-DOT), HBsAg and HCV (TRI-DOT), were non-reactive or negative. The random blood sugar (RBS) level was 136 mg/dL. Complete blood picture analysis showed a haemoglobin level of 11.0 g/dL, neutrophils of 66%, lymphocytes of 30%, eosinophils of 4%, packed cell volume (PCV) of 42%, red blood cell (RBC) count of 4.0 million/ μ L, white blood cell (WBC) count of 2,300 cells/ μ L and platelet count of 2.49 lakh/ μ L. The red cell indices included a mean corpuscular volume (MCV) of 83 fL, mean corpuscular haemoglobin (MCH) of 32 pg and mean corpuscular haemoglobin concentration (MCHC) of 33 g/dL. Bleeding time and clotting time were recorded as 1 minute 15 seconds and 3 minutes 20 seconds, respectively.

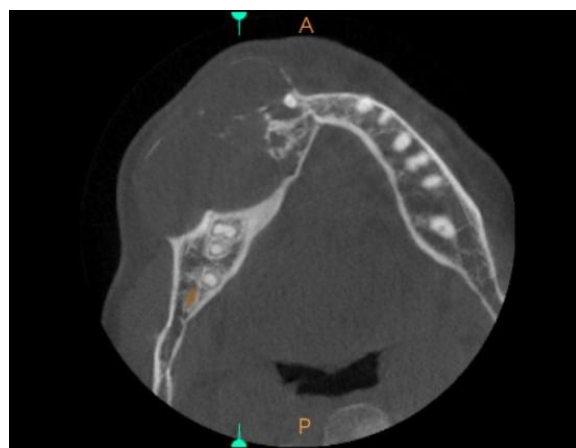
Radiographic findings

OPG Findings- Ill defined multilocular radiolucency, honey comb appearance- small locules and soap bubble appearance- Large locules separated by coarse septa.



Earlier CBCT examination (2023)

The earlier CBCT images demonstrated an expansile lesion involving the mandible, extending across the midline. The lesion showed anteroposterior and buccolingual expansion, with thinning of the labial and buccal cortical plates. These findings indicated a slowly enlarging intraosseous process with progressive expansion of the mandibular bone.

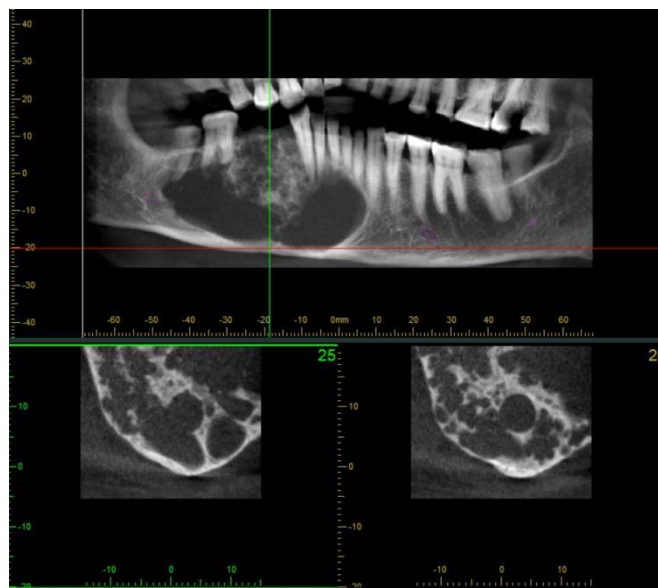


Recent CBCT examination (2026)

The more recent CBCT demonstrated an expansile multilocular hypodense lesion involving the mandibular symphysis, bilateral parasymphysis and right mandibular body.

Internal bony septations divided the lesion into multiple compartments, producing a mixed honeycomb and soap-bubble appearance. Marked buccolingual cortical expansion was present, together with focal cortical thinning and areas of cortical perforation.

The lesion had enlarged compared with the earlier imaging and extended posteriorly beyond the distal aspect of tooth 48 towards the right mandibular angle. Adjacent teeth demonstrated displacement and root resorption. The radiographic findings were suggestive of an expansile odontogenic lesion with considerable local bone destruction. Although the multilocular appearance was compatible with ameloblastoma, histopathological confirmation was necessary to distinguish it from other lesions with overlapping imaging characteristics.



Aspiration findings

Aspiration was included in the diagnostic assessment, and the presentation describes the aspirate as straw-coloured fluid.



Differential diagnosis

The clinical and radiographic differential diagnoses included odontogenic keratocyst, odontogenic myxoma, central giant cell granuloma, aneurysmal bone cyst, residual cyst, intraosseous mucoepidermoid carcinoma and ameloblastic carcinoma.

Odontogenic keratocyst: This lesion commonly affects the posterior mandible and may present as a unilocular or multilocular radiolucency. It was considered because of the mandibular location and multilocular appearance. However, odontogenic keratocysts often grow predominantly in the anteroposterior direction with relatively limited buccolingual expansion. The extensive expansion in the present case favoured an alternative diagnosis, although this feature alone could not exclude an odontogenic keratocyst.

Odontogenic myxoma: Odontogenic myxoma may present as an expansile multilocular lesion with internal septations. A honeycomb or tennis-racket appearance may be observed. It remained a differential diagnosis because of the lesion's internal architecture and cortical expansion.

Central giant cell granuloma: This lesion can produce multilocular radiolucency, cortical expansion and tooth displacement. However, it more commonly affects younger individuals and frequently involves the anterior mandible. The patient's age and the lesion's extensive posterior involvement made it less typical.

Aneurysmal bone cyst: An aneurysmal bone cyst can cause marked expansion, cortical thinning and a multilocular or soap-bubble radiographic appearance. Its clinical and radiological overlap with ameloblastoma justified its consideration.

Residual cyst: A residual cyst was considered because the swelling developed after extraction of posterior mandibular teeth. Nevertheless, the extensive multilocular architecture, pronounced buccolingual expansion and tooth displacement were less characteristic of a typical residual cyst.

Intraosseous mucoepidermoid carcinoma: This uncommon malignant salivary gland tumour may arise within the mandible and mimic an odontogenic lesion radiographically. Histopathological examination was required to exclude this possibility.

Ameloblastic carcinoma: Ameloblastic carcinoma may share the anatomical location and radiographic appearance of ameloblastoma. Histological evidence of malignant cytological features is required to distinguish it from conventional ameloblastoma.

The differential diagnosis was therefore narrowed through integration of the clinical presentation, imaging and incisional biopsy findings.

Histopathological diagnosis

Incisional biopsy was performed, and the final diagnosis was- Ameloblastoma of the mandible, acanthomatous variant.

The acanthomatous pattern of ameloblastoma is characterized by squamous metaplasia within the central portions of tumour epithelial islands. The overall histological architecture and peripheral ameloblastoma-like cellular features are important in establishing the diagnosis.

Microscopic findings

- Sections exhibit a fibrocellular connective tissue stroma with odontogenic epithelium.
- Odontogenic epithelial islands and follicles are present.
- The follicles show peripheral columnar to cuboidal cells with elongated nuclei.
- The centres of the follicles demonstrate stellate reticulum-like cells.
- A few follicles show squamous metaplasia, and some areas contain strands resembling odontogenic epithelium.
- The connective tissue stroma shows bundles of collagen fibres surrounding the follicles.
- Peripheral extensions show squamous metaplasia and strands suggestive of bone.

Treatment considerations

The case presentation discussed several possible treatment approaches, including:

- Enucleation and curettage.
- Enucleation followed by peripheral ostectomy.
- Segmental mandibular resection.
- Reconstruction using a conventional or locking reconstruction plate.
- Patient-specific reconstruction systems.
- Reconstruction with a vascularized free fibula flap.
- Reconstruction using a non-vascularized iliac crest bone graft in selected cases.

III. Discussion

Ameloblastoma is a clinically important odontogenic tumour because its apparently benign histological nature does not necessarily correspond to indolent local behaviour¹. The lesion may infiltrate cancellous bone, expand the cortical plates and compromise the integrity of the mandible. Delayed presentation can therefore result in extensive anatomical involvement and increase the complexity of surgical management^{2,3}.

The present case is notable for the prolonged history of swelling, gradual progression from an intraoral lesion to visible facial asymmetry, substantial buccolingual expansion and mobility of several mandibular teeth⁴. The clinical course extended over approximately four years, during which the lesion enlarged sufficiently to involve the symphyseal, parasymphyseal and right body regions of the mandible^{5,6}.

Clinical presentation and disease progression

Ameloblastoma often presents as a slowly enlarging, painless jaw swelling. Because symptoms may be minimal during the early stages, patients may delay seeking specialist treatment until facial asymmetry or functional changes become apparent⁷. In the present patient, the swelling was initially noticed following extraction of posterior mandibular teeth and subsequently enlarged over several years.

The temporal association with extraction does not establish that the extraction caused the tumour. Rather, the procedure may have drawn attention to a lesion that was already developing or becoming clinically apparent in the region.

The recent onset of pain after a predominantly painless course is clinically relevant. Pain can arise from expansion, pressure on adjacent structures, inflammation or other secondary changes, but it does not independently indicate malignant transformation. Similarly, the absence of paraesthesia does not exclude extensive disease⁸. The eggshell-crackling sensation elicited on palpation is consistent with marked thinning of the cortical bone caused by progressive expansion. Tooth mobility and root resorption further indicate that the lesion has affected the supporting structures of the involved teeth. These findings should prompt detailed radiological assessment and tissue diagnosis.

Radiological characteristics and diagnostic value of CBCT

The comparison between the 2023 and 2026 CBCT examinations is an important feature of this case. The earlier study documented cortical expansion and thinning, whereas the later study demonstrated increased lesion extent, multiple internal compartments, focal cortical perforation and effects on adjacent teeth.

The multilocular honeycomb and soap-bubble appearances are commonly associated with expansile odontogenic lesions, including ameloblastoma. However, they are not specific enough to establish a diagnosis without histopathological examination^{8,9}.

CBCT is particularly useful for evaluating the osseous boundaries of a mandibular lesion, its relationship to teeth, internal septations, cortical thinning and possible perforation. Conventional computed tomography may provide additional information about adjacent soft tissues and anatomical structures when required for surgical planning¹⁰. For lesions of this extent, a complete radiological description should document three-dimensional measurements, the integrity of the inferior mandibular border, the relationship to the mandibular canal, cortical perforation, soft-tissue extension and the involvement of the mandibular angle. These details help determine the feasibility of conservative surgery and the potential need for segmental resection and reconstruction.

Differential diagnosis

The broad differential diagnosis in this case reflects the considerable overlap between odontogenic lesions on clinical examination and imaging.

Odontogenic keratocysts may involve the posterior mandible and ramus, often with prominent anteroposterior growth. Odontogenic myxomas may produce multilocular radiolucencies with internal septations, sometimes resembling a tennis racket. Central giant cell granulomas can cause expansion and tooth displacement, while aneurysmal bone cysts may produce extensive cortical thinning^{11,12}.

Residual cysts should be considered when a lesion arises in an edentulous region following extraction. However, the presence of a previous extraction alone cannot establish a cystic diagnosis, particularly when imaging demonstrates extensive multilocular expansion and root resorption.

Intraosseous mucoepidermoid carcinoma and ameloblastic carcinoma are important alternative diagnoses because their management and prognosis differ from those of conventional ameloblastoma. The absence of pain or paraesthesia cannot reliably exclude malignancy, and radiographic margins alone cannot definitively distinguish benign from malignant lesions¹³.

Aspiration may contribute supplementary diagnostic information, but the colour or consistency of aspirated fluid is not sufficiently specific to establish the nature of the lesion. In this case, histopathological assessment was essential for reaching the final diagnosis.

Histopathological significance of the acanthomatous variant

Acanthomatous ameloblastoma is a recognized histological pattern of conventional ameloblastoma. It is characterized by squamous metaplasia within the central portions of tumour epithelial islands, while the overall architecture retains features supporting ameloblastoma¹⁴.

The distinction between the acanthomatous pattern and other odontogenic epithelial lesions depends on the complete microscopic appearance rather than the presence of squamous cells alone. Representative histopathological images and a detailed microscopic description would strengthen the diagnostic component of this report.

The available presentation records the final diagnosis as acanthomatous ameloblastoma but does not reproduce the complete biopsy report. Consequently, any detailed description of peripheral palisading, reverse nuclear polarity, central keratinization or the absence of cytological atypia should be included only if confirmed in the original histopathological findings.

Treatment planning and recurrence considerations

The management of ameloblastoma remains a balance between achieving adequate local disease control and preserving mandibular function, facial contour and quality of life.

Drug allergy history: The patient reports a history of allergic reactions to penicillin and non-steroidal anti-inflammatory drugs (NSAIDs). Therapeutic alternatives:

- Antibiotics: Alternatives may include azithromycin or clindamycin, depending on the indication, local antimicrobial guidelines and the patient's allergy history. Clindamycin carries a significant risk of *Clostridioides difficile* infection and should not be used routinely when safer suitable alternatives are available. Cephalosporins and azithromycin were used pre-, intra- and post-operatively.
- Analgesics: Paracetamol (acetaminophen) may be considered if the patient has previously tolerated it and there is no contraindication. Its safety should be assessed because cross-reactivity can occur in some patients with NSAID hypersensitivity. A selective COX-2 inhibitor should only be considered after appropriate medical or allergy evaluation.

Conservative procedures, including enucleation and curettage, may preserve bone and reduce immediate surgical morbidity. Peripheral ostectomy may be considered in selected cases to remove residual tumour tissue from the surrounding bone. However, conventional solid or multicystic ameloblastoma may extend microscopically beyond its apparent radiographic limits, and conservative treatment can be associated with a greater risk of recurrence^{15,16}.

Retrospective studies and systematic reviews generally report lower recurrence following resection than after conservative treatment for conventional ameloblastoma, although the available evidence is predominantly observational and subject to selection bias¹⁷. These findings support individualized planning rather than a uniform treatment strategy for every lesion.

The extensive involvement in the present case, particularly the cortical thinning and focal perforation, makes assessment of the remaining mandibular bone especially important. The decision between conservative treatment and resection should consider:

- The three-dimensional extent of the lesion.
- The integrity of the inferior mandibular border.
- The presence and location of cortical perforation.
- Any soft-tissue extension.
- The relationship to the inferior alveolar nerve.
- The feasibility of complete lesion removal.
- The patient's preferences, general health and ability to attend long-term follow-up.

A benign histological diagnosis alone is not sufficient justification for conservative treatment when the lesion is extensive. Conversely, the extent of the lesion and anticipated morbidity should be carefully weighed before recommending radical surgery^{18,19}.

Ryle's tube was secured for post-operative care.

Reconstructive considerations

When resection is necessary, reconstruction should restore mandibular continuity, facial contour and function while providing a stable foundation for future dental rehabilitation where feasible.

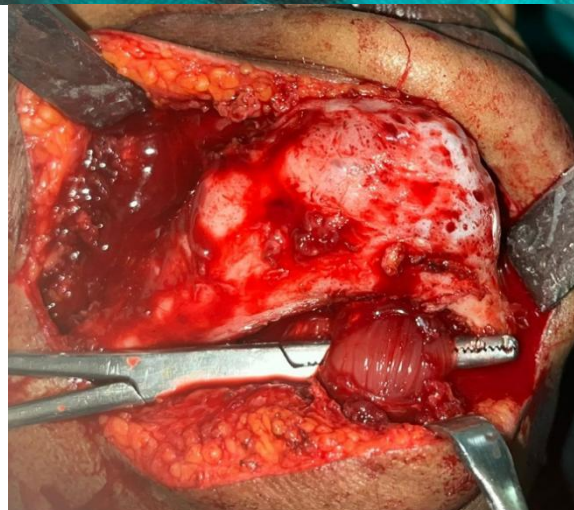
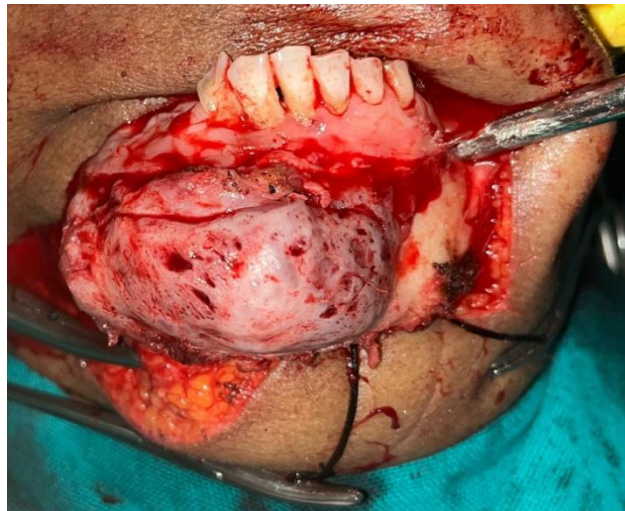
A reconstruction plate may be appropriate in selected circumstances, particularly when immediate restoration of mandibular continuity is required. Patient-specific reconstruction systems can assist with preoperative planning and restoration of the intended mandibular contour. Non-vascularized bone grafts, including iliac crest grafts, may be considered for selected defects, whereas vascularized osseous free flaps, such as the fibula flap, can provide bone and soft tissue for more extensive defects.

The choice of reconstructive method depends on the length and location of the defect, the soft-tissue requirement, the patient's medical condition, the anticipated functional demands and the resources available at the treating centre²⁰.

Intraoperative photographs



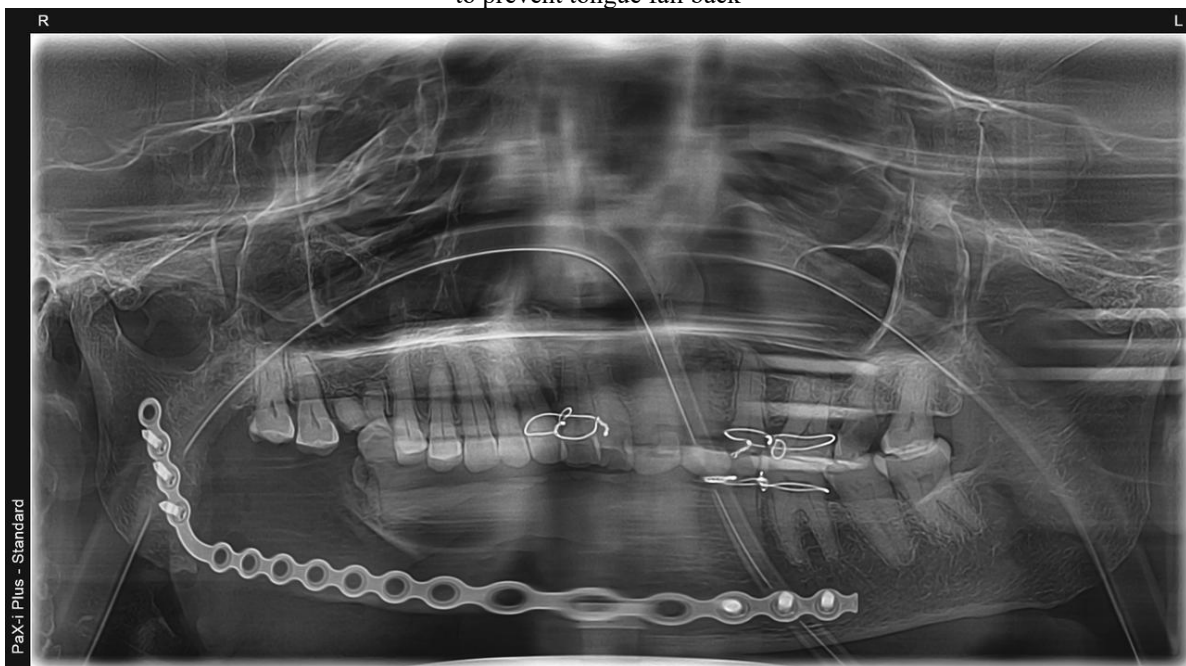
Extended submandibular incision



Exposure of the lesion and segmental resection done from angle region to 32 region on left side



Reconstruction with continuous locking plate with 3 screws stabilized over ramus on right side and 3 over parasymphysis over left side and genioglossus and geniohyoid muscles secured with silk sutures over the plate to prevent tongue fall back



Immediate Post-op OPG

Clinical significance of the case

This case illustrates the importance of investigating persistent mandibular swelling even when symptoms are limited. A lesion that initially appears clinically innocuous may progressively compromise the supporting bone and involve multiple mandibular regions.

The documented comparison between the earlier and later CBCT examinations provides useful evidence of interval progression^{21,22}. The combination of clinical expansion, tooth mobility, root resorption and multilocular imaging findings emphasizes the value of a systematic diagnostic approach incorporating clinical examination, cross-sectional imaging and histopathology²³.

The case also reinforces the importance of long-term surveillance following treatment of ameloblastoma. Because recurrence may become evident after a prolonged interval, follow-up should be planned according to the lesion type, treatment performed and the patient's clinical circumstances.

IV. Conclusion

Ameloblastoma should be considered in the differential diagnosis of a slowly enlarging mandibular swelling associated with marked buccolingual expansion, tooth mobility, root resorption and multilocular radiographic changes. The present case demonstrates the importance of integrating clinical findings with CBCT assessment and histopathological examination to establish the diagnosis of acanthomatous ameloblastoma²⁴.

Extensive lesions require careful evaluation of cortical integrity, anatomical involvement and the potential morbidity of treatment^{25,26}. The choice between conservative surgery and resection should be individualized, taking recurrence risk and functional and reconstructive consequences into account. Long-term clinical and radiological surveillance is essential²⁷.

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None

Conflicts of interest

None reported

Data availability

Patient-related clinical information were handled in accordance with institutional privacy policies and the consent obtained for publication.

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