

APPROACH OF OSTEOLYTIC LESION IN JAW

YY Ng , OK Wu, SC Wong , NY Pan

Department of diagnostic radiology , Department of oral maxillofacial surgery & dental clinic, Princess Margaret Hospital

OBJECTIVES

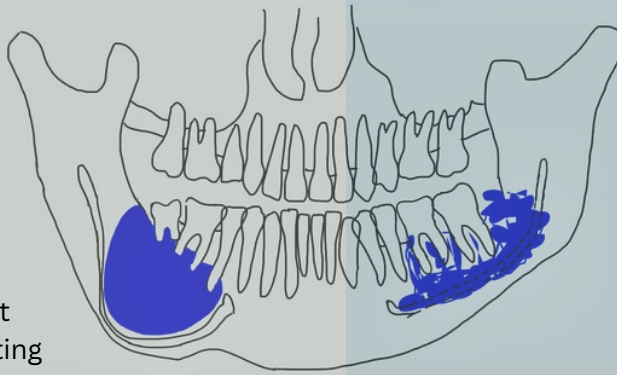
Broad spectrum of disease processes could present as cystic/ osteolytic appearing lesions in maxillomandibular complexes that could be a diagnostic challenge. This poster aims to review characteristic radiological features of most commonly encountered cysts, benign but locally invasive bone tumours, to osteomyelitis, osteonecrosis and other malignant processes that cause destruction to jaw bones. Radiographs and CT images seen in our institution will be included with illustration to demonstrate the approach in making radiological diagnosis of radiolucent bony lesions.

1

CATEGORISE THE OSTEOLYTIC LESIONS AS NON AGGRESSIVE VS AGGRESSIVE

Non aggressive

- Smooth border
- Displaced , intact mandibular canal
- Cortical erosion happened when sufficient bony expansion
- Displaced and root resorption, indicating slow growth

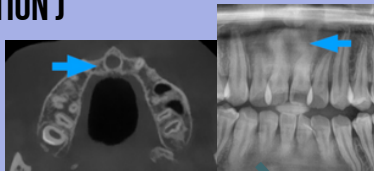


Aggressive

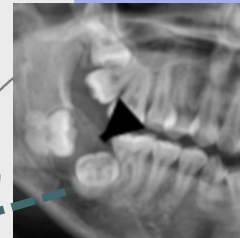
- Irregular margin
- Non displaced and eroded mandibular canal
- Cortical erosion without sufficient bony expansion
- May present with intact root morphology with floating teeth appearance

2

LOCATION OF THE LESION (ODONTOGENIC / DEVELOPMENTAL CYSTS WITH CHARACTERISTIC LOCATION)



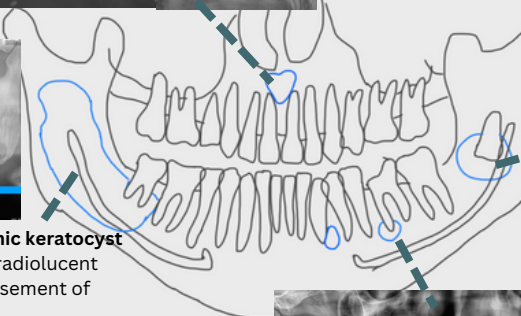
Nasopalatine duct cyst which is an embryonic remnant of nasopalatine duct. Typical location at anterior midline maxilla.



Characteristic features of **dentigerous cysts** are well defined border , unilocular radiolucency centered on an unerupted tooth.



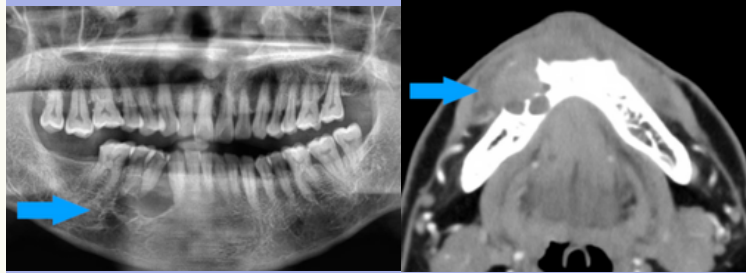
Histologically proven **odontogenic keratocyst (OKC)**. Picture shows lobulated radiolucent lesion in left mandible with encasement of mandibular canal. They are benign intraosseous cystic lesions arising from dental lamina. They are potentially aggressive with infiltrative behaviour, which correspond to the clinical nature of high recurrence. They have high density in CT and low ADC (<1) in MRI.



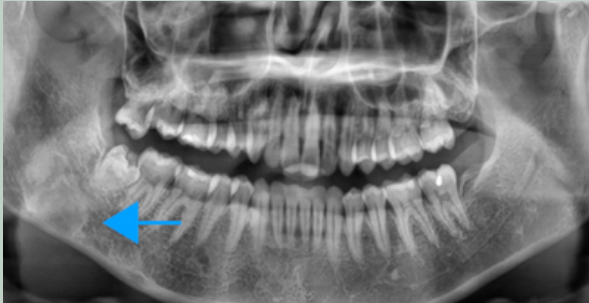
Radicular cyst: well defined border with radiolucency associated with a carious retained root. Dental infection leads to pulpal necrosis and development of periapical abscess which give rise to radicular cysts.

3

IDENTIFY PATHOGNOMONIC FEATURES OF CERTAIN LESIONS



Ameloblastomas are benign and locally aggressive odontogenic tumours. They typically have multilocular, soap bubble appearance. In CT, the lesion is hyperdense, with solid component with variable enhancement.

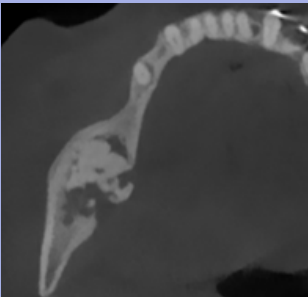


Fibrous dysplasia has characteristic ground glass opacities because normal bone is replaced by fibrous type tissue.

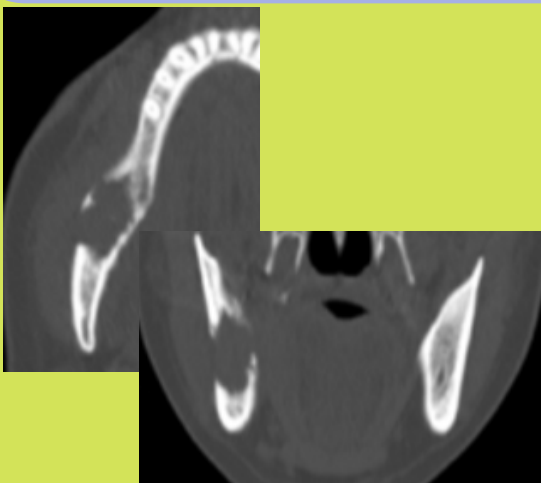
4

AGGRESSIVE LESIONS WARRANT FURTHER EVALUATION

Non-expansive, erosive lesions are usually aggressive, could be osteomyelitis or carcinoma. There are limitations in radiology in the identification of specific pathological processes, often requiring clinical and histological correlation. Selected cases encountered in daily clinical practice are included.

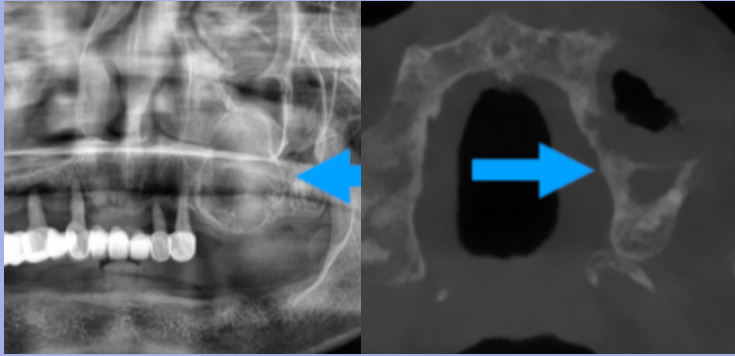


Osteomyelitis with typical periosteal reaction, soft tissue edema and sequestrum. History of dental caries or trauma are often hints in arriving at the diagnosis.

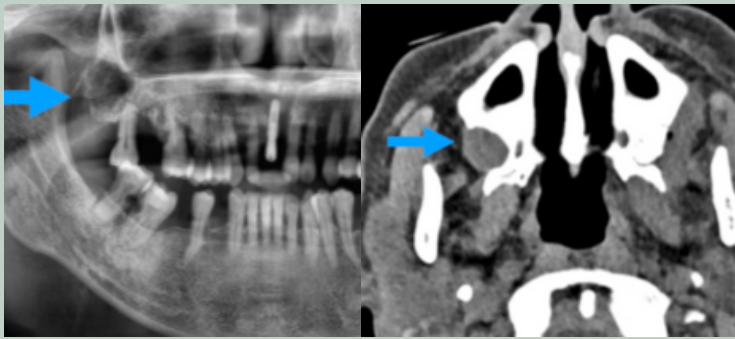


If focal osteolytic process in alveolar ridge lesion in the absence of dental infection, could be suspicious of malignant process. CT shows aggressive soft tissue lesion with cortical erosion in right mandible. Note that bony erosion is evident without sufficient bony expansion, suggestive of aggressive process. Biopsy : **squamous cell carcinoma**. The mass also invades the mandibular canal.

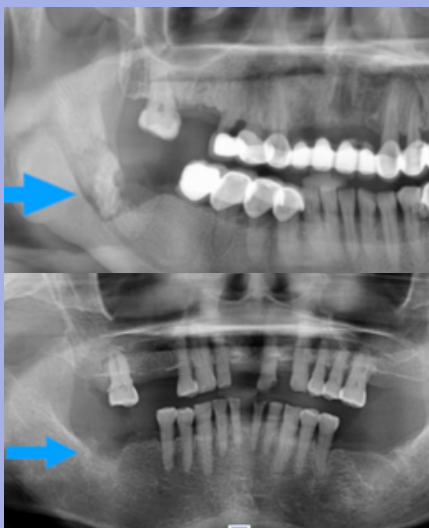
CONT. AGGRESSIVE LESIONS



OPG shows a well circumscribed osteolytic lesion in the left maxilla with cortical erosion at alveolar process. CT face of the same patient shows irregular margin of the osteolytic lesion with soft tissue component at postero medial margin
Pathology : odontogenic carcinoma.



Patient with unhealed ulcer in right maxilla. OPG shows ill defined radiolucent lesion. Despite its small size, there is bony erosion in the lateral aspect of the lesion. Biopsy: *polymorphic lymphoproliferative disorder*. Other neoplastic processes such as bone metastasis , myeloma and leukaemia can present similarly. Biopsy is mandatory for correct histological diagnosis.



Medication induced osteonecrosis of jaw in a patient with bone modulating agent. Orthopantomogram shows exposed bone and sequestrum.

Another patient with a history of radiotherapy for nasopharyngeal cancer, there is unhealed exposed bone in bilateral mandible associated with previous dental extraction. Clinically diagnosed as *osteoradionecrosis*.

CONCLUSION

The first step in identifying an osteolytic jaw lesion is to categorize the lesion into aggressive vs nonaggressive nature. For cysts / benign tumours, recognition of typical locations, relationship with teeth and characteristic radiographic features are keys in arriving at a correct diagnosis. Aggressive jaw lesions warrant further investigations, often biopsy is needed for the definitive diagnosis.