



OCEAN
SURGICAL Pty
Ltd

Pathology | Mandibular Jaw Cysts

ORAL AND MAXILLOFACIAL SURGERY AND JAW PATHOLOGY

Oral and Maxillofacial Surgeons are specifically trained to deal with all pathological lesions of the mouth, face and jaws. Surgical care begins with diagnosis which in turn allows for surgical planning towards pathology eradication and later reconstruction of the surgical defect.

ROUTINE OPG X-RAY SCREENING OF JAWS

Routine OPG (orthopantomogram) screening is recommended for all people at age 9, 13, 17, and 21 years and thereafter at least every decade.

OPG's are jaw x-rays which can assess simultaneously for jaw joint (TMJ), wisdom teeth, standing teeth, developing teeth, jaw bone, and (maxillary) sinus diseases.

Jaw x-ray screening, particularly during development, allows for the exclusion of developmental lesions before they lead to major pathological problems. Such lesions commonly include jaws cysts and tumours.

Wisdom teeth in particular are a major source of developmental lesions of the jaws, predominantly if they become impacted. Wisdom teeth may also lead to other problems such as jaw fracture, local infections, and damage to adjacent teeth.

Of the entire population, very few people will retain healthy wisdom teeth over their lifetime. Wisdom teeth are a major source of morbidity and jaw disease, and specialist surgeons and orthodontists will usually recommend their prophylactic removal before they become a health problem. (See Volume 1, Issue 3 "Prophylactic Removal and Complications of Wisdom teeth.")

Routine x-ray screening of the jaws and of wisdom teeth is an important part of modern dental (and oral surgical) practice. OPG x-ray films when read and interpreted by qualified specialist oral and maxillofacial surgeons (or by maxillofacial radiologists) are an ideal screening tool for an enormous variety of conditions that can occur throughout the jaws. Modern OPG machines are digitally based, and have extremely low radiation when compared with film based devices.

Routine OPG screening should only be conducted by surgical or radiological specialists using only digital OPG machines. OPGs are Medicare rebate items when performed by approved surgeons or radiologists.

Good general dental practice includes routine (6-12 monthly) dental caries assessment with clinical examination and dental bitewing films. Periodically, your general dentist or specialist orthodontist should advise for routine OPG screening of your jaws (by a maxillofacial surgeon or radiologist) for hidden jaw disease; *before* you present with symptoms.

JAW CYSTS

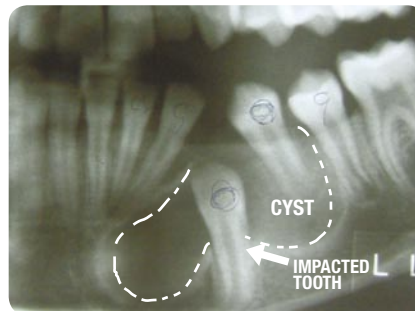
In synchrony, many cell and tissue types develop teeth and bone; together they allow for normal tooth and jaw growth. Once teeth and bone have formed, residual cells and tissues have the potential to form a range of hidden cysts and tumours which typically arise during growth, but which present throughout the adult years.

The routine use of screening OPGs allows your dentist, orthodontist, or maxillofacial surgeon to catch jaw cyst and jaw tumour development at an early and treatable stage. Excessive growth of cysts and tumours can destroy teeth, and in some instances lead to extensive jaw loss.

When referred by your medical GP, screening OPGs by the specialist Maxillofacial Surgeon are bulk billed under Medicare, and are free to the patient. Screening OPGs are only useful when interpreted by surgical specialists trained in OPG interpretation.

CASE 1. 10 YEAR OLD FEMALE WITH UNERUPTED LEFT LOWER CANINE DUE TO EARLY DEVELOPING KERATOCYST

This patient was originally referred by her orthodontist for a routine OPG screening film, particularly as all permanent teeth had erupted and the left lower canine remained buried.



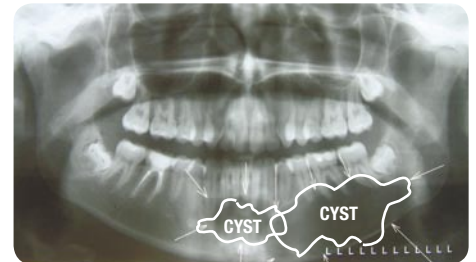
OPG shows extent of suspicious lesion surrounding embedded lower canine. The cyst is already displacing adjacent teeth, whilst extensively resorbing jaw bone. Pathology examination confirmed a keratocyst.

Keratocysts are potentially very destructive odontogenic jaw lesions that can assume large proportions within bone marrow, and which actively destroy adjacent teeth. Because of high recurrence rates, early screening detection helps preserve teeth and minimises the extent of reconstructive surgery. Even when caught early, this girl at 10 years of age has lost two teeth, has had at least one bone graft and requires further complex orthodontic management as well as later reconstructive surgery; including dental implants.

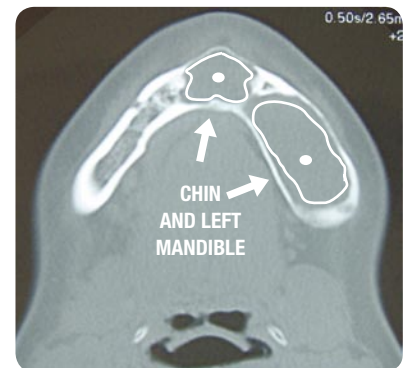
CASE 2. 17 YEAR OLD FEMALE WITH LARGE SOLITARY BONE CYST OF LEFT MANDIBLE

A routine screening OPG was performed for assessing developing wisdom teeth. A large lesion occupying the left mandible and chin was found. The patient was otherwise without symptoms and had recently completed a root canal therapy of the right sided jaw. No previous screening OPG had been performed, and the left sided lesion had developed unchecked over 5-6 years.

As the lesion had not expanded beyond the bone confines, removal was a relatively simple operation, and teeth and jaw tissue were preserved, with retention of normal facial form.



OPG shows large solitary bone cyst left mandible and mid line chin.

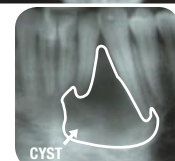
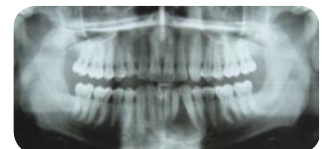


CT scan shows extent of cyst involving and expanding left mandible and chin.

Solitary bone cysts are relatively common cysts of the mandible and can cause local jaw and tooth destruction if caught late. In extreme cases, major facial deformity and pathological jaw fracture can result from all forms of cyst. This cyst had been caught relatively early, and treatment lead to complete resolution of disease.

CASE 3. 24 YEAR OLD MALE WITH SWELLING LEFT CHIN

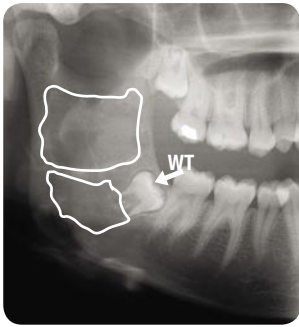
Left lower chin swelling was present for several weeks prior to presentation to a dentist for investigation. Lower incisor teeth were mobile, non-vital and tilting, and he was subsequently referred for OM surgical management.



OPG demonstrates 3.5cm cyst between lower left canine and two incisor teeth (which can be seen tilting away from the growing adjacent cyst on close-up view). Surgery demonstrated a calcifying odontogenic cyst. This is a rare form of jaw cyst, with destructive and growth features suggestive of an odontogenic keratocyst, but with comparatively much lower rates of recurrence after removal.

CASE 4. 17 YEAR OLD FEMALE WITH RIGHT SIDED IDIOPATHIC TRAUMATIC BONE CYST SIMULATING AN INVAGINATING TUMOUR

With direct impact, jaw bone can die and resorb away, leaving "lakes" of necrotic tissue. The appearance on x-ray resembles jaw cysts (or tumors) and can lead to areas of jaw weakness.



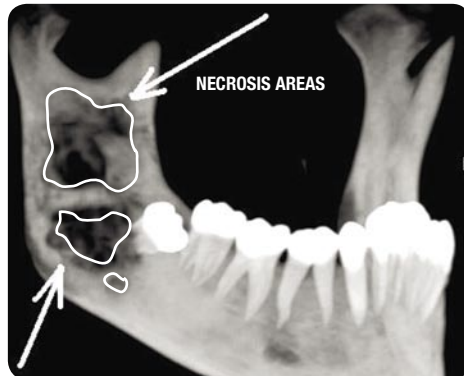
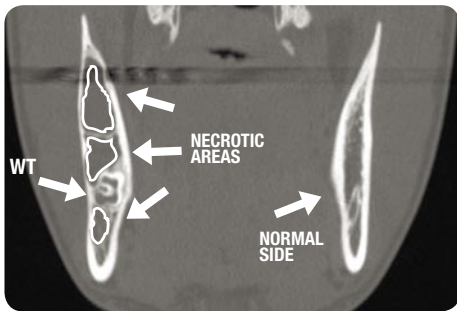
Impacted wisdom tooth surrounded by a lobulated lesion involving the right ascending ramus of the mandible.

Screening OPG taken prior to initiating orthodontic treatment showed a large lesion behind the impacted and developing 48 (lower right wisdom) tooth. The lesion occupied the entire right jaw ramus.

There was an antecedent history of direct blow with a child's swing to the right side of the jaw 2-3 years previously.

CT demonstrated a diffuse cavity defined by the cortex of the right ascending ramus of mandible. The ramus had expanded, and the cortex was thinned. The lesion appeared homogenous and of soft tissue density; implying invaginating tumour. Spicules of bone appeared throughout the lesion.

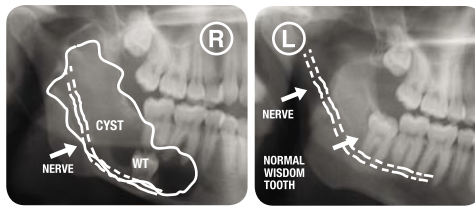
Biopsy confirmed the lesion was a traumatic bone cyst.



Operative treatment was to remove the wisdom tooth and cause intra-lesional bleeding. At review 2 years later, normal bone formation had occurred within the entire field, resulting in a normal mandible.

CASE 5. 21 YEAR OLD FEMALE WITH RIGHT SIDED KERATOCYST

This patient was originally referred by her orthodontist for a routine OPG screening film. A previous screening film at 14 years showed normally developing wisdom teeth, without sign of developing tumour.



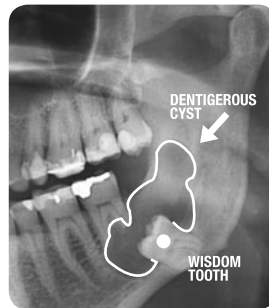
Comparison of left (mirrored) and right sides of same OPG. Right slide shows impacted wisdom tooth present on normal (left) side. Left slide shows impacted wisdom tooth displaced to base of jaw, with large odontogenic keratocyst occupying almost entirety of right side of mandible.

Treatment involved removal of several teeth, and local tissue surrounding the tumour like cyst. Two years of reconstructive surgery of the right mandible followed, involving bone and soft tissue grafts as well as dental implants. Caught reasonably early, the mandible was able to be surgically saved.

CASE 6. 60 YEAR OLD MALE WITH LARGE DENTIGEROUS (FOLLICULAR) CYST OF LEFT ANGLE MANDIBLE

Dentigerous cysts arise from the epithelium (or "skin") which surrounds the crown of a tooth. With buried teeth, this "follicle" can transform and grow to become a large cyst that can destroy local bone and adjacent teeth.

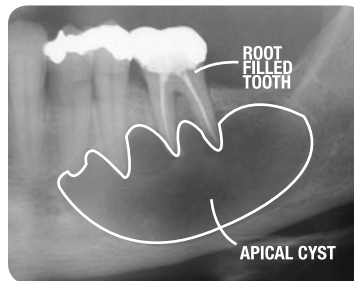
This lesion slowly grew and was asymptomatic for 45 years, but had recently become infected and had lead to local jaw tenderness.



X-ray shows extent of cystic lesion that has developed around the left lower wisdom tooth crown (38). The 38 (3rd molar) tooth is displaced deeply, and the cyst has eroded the roots of the forward second molar tooth. There is considerable local bone loss. Operative clearance requires removal of both the 2nd and third molar teeth, and careful dissection of the involved inferior dental nerve (IDN). Earlier OPG screening would have detected the lesion at a smaller size, with less operative effects from prophylactic removal.

CASE 7. 65 YEAR OLD NON-SYMPOMATIC FEMALE GIVEN FIRST SCREENING OPG

Apical cysts commonly grow from infected or non-vital teeth. Usually beginning from tooth abscesses, apical cysts occur around the apex of "dead" teeth and can grow to large proportions.



Large cyst left mandible developed over 20 years since root canal therapy (RCT) and crown to left lower first molar tooth (36 tooth). Cyst has developed from pre-existing apical abscess to tooth, and now compromises health of adjacent forward teeth as well as embedded inferior dental nerve (IDN).

Left to develop and to continue local bone destruction, cyst and tumors of the jaw may remain asymptomatic until spontaneous infection or jaw fracture occurs. Treatment for these conditions are usually complex, and usually require multiple reconstructive operations.

ADVICE FOR PATIENTS SEEKING OPG SCREENING

Ocean Surgical advises that all patients are offered screening OPGs at ages 9, 13, 17 and 21 years and thereafter every decade...

1. During growth, the screening OPG assesses for impacting teeth, and for the presence of developmental lesions of the jaws,

2. Throughout life, jaw lesions may arise *de novo*, and screening OPGs of the jaws are an effective, low radiation screening tool. They are effective for screening of...

a. Dental disease such as caries and periodontal disease,

b. Impacted teeth,

c. Developmental lesions of the jaws,

d. Maxillary sinus disease,

e. Bony changes of the TM joints.

3. Even if you have had previous disease (or impacted teeth) identified or removed, the practice still recommends for screening OPGs once each decade,

4. Screening OPGs performed by this practice are bulk-billed when referred by your medical GP or orthodontist (and when referring to this newsletter).

ADVICE FOR PATIENTS SEEKING 3rd MOLAR SCREENING

1. Wisdom teeth either cause problems due to their impactions, or because of their partial eruptions through early to late adulthood,

2. Normally all developing or developed wisdom teeth will be advised for removal *before* they become a problem,

3. Impacted wisdom teeth can lead to jaw fractures, tumour or cyst development, orthodontic crowding, local and regional swelling, neck infections, and destruction of the backside surface (distal) of the forward second molar tooth,

4. Only have wisdom teeth removed by specialist surgeons in order to guard against surgical complications that commonly arise from untrained wisdom teeth removal.