



OCEAN SURGICAL Pty Ltd

Trauma

Lower Wisdom Teeth and Contact Sports

WISDOM TEETH AND CONTACT SPORTS

Sports injury management is a growing area of medical practice; especially as sports evolve that require higher levels of competition, endurance, training, and collision energy. Facial injuries are common with contact team sports; principally where high energy impacts are a normal part of the game.

Because of the predominance of certain types of head injuries, it is common practice in some sports to wear protective appliances such as soft helmets to prevent brain concussion (and ear injury), and dental mouth-guards to protect against dental trauma. Unless a player is wearing a full facial shield, little can protect the bony face against a full frontal or side impact.

Many sports such as boxing, martial arts, hockey, and basketball are associated with facial fractures. However it is the football codes (American, Australian, Irish, Union, League and Soccer) that have the highest rates of facial injury; it is a paradox that only the American code allows for routine use of full facial, head, and dental protection. In the Australian football codes, soft helmets and dental mouth-guards are increasingly accepted on the field, but full facial protection is either impossible because of either the dynamic of the game, or because of cultural unacceptability.

What is increasingly accepted is the *passive* prevention of facial injury. Rules exist which limit player contact to below the neck, and increasingly there is the enforcement of severe penalties for above neck and facial contact. Patterns of facial fractures also allow for surgical prevention, the most classic intervention (but controversially) being the removal of lower impacted wisdom teeth.

Prophylactic surgery for prevention of certain types of sporting injuries is contentious. Prophylactic wisdom tooth removal has good anecdotal evidence for preventing odontogenic tumours, odontogenic disease, and of mandibular angle fractures; but true scientific supportive literature is sparse.

Mandibular impacted wisdom teeth lead to wedge defects of the angles of the lower jaw, and which predispose to notch-type angle fractures under relatively light impacts. It would follow that best preventative practice would be to screen for impacted wisdom teeth *before* they lead to jaw fracture on the sporting field.

Not all wisdom teeth are liable to lead to mandible fractures, nor are all mandible fractures related to wisdom teeth.

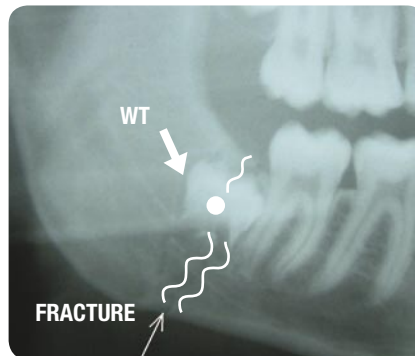
This newsletter highlights four fractured mandible cases in players from the Hunter region (all under the League code), and the management that resulted from them. Each player has a simple (and uncomplicated) right angle fracture of the mandible, and which was due to a wedge defect caused by an impacted wisdom tooth (3rd molar). Each case highlights how management occurred, and the time frames involved in healing before full resumption of play.

Arch bars, or jaw wiring, is not often utilised for simple jaw fracture management. These cases were not treated with arch bars.

Because of the potential to prevent debilitating jaw fractures in sports, this practice recommends the prophylactic screening and removal of all impacted wisdom teeth in full contacts sports players, and *before* the commencement of the playing season.

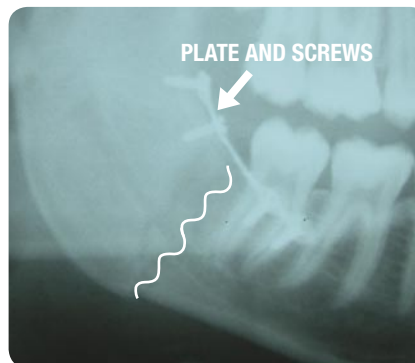
CASE 1. FRACTURED RIGHT ANGLE OF JAW

This 17 year old rugby league player was head tackled during a school competition Wednesday game, and received an uncomplicated right angle fracture of his mandible (lower jaw). This resulted in an inability for his teeth to meet in a normal bite, and a completely numb lower right lip. The fracture is minimally displaced, but transgresses the inferior dental canal which contains the nerve that supplies sensation to the right lower lip and chin (inferior dental nerve).



Pre-operative film OPG showing fracture through impacted right wisdom tooth.

Treatment was to remove the impacted wisdom tooth, and plate the fracture using a 2.0mm diameter titanium plating system utilizing 4 x 7mm uni-cortical screws.



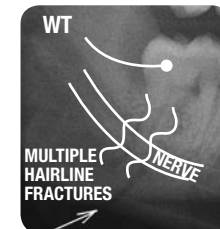
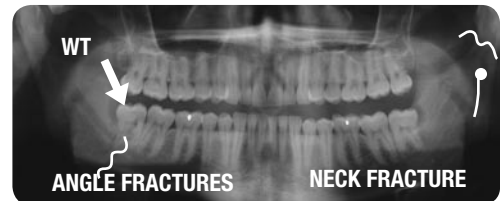
Post-operative film OPG showing reduced fracture with uni-cortical plate.

After a period of at first purée diet (with progressively increased diet density) and with antibiotic prophylaxis (against the development of an infected fracture), the player was able to resume play at 5 weeks. There was a resultant normal bite (occlusion) and the return of full sensation to the lower lip.

CASE 2. FRACTURED RIGHT ANGLE OF JAW AND LEFT CONDYLAR NECK FRACTURE

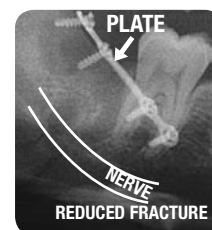
Fractures of the angle of the jaw are usually associated with an opposite (contralateral) sided condylar neck fracture. The mechanism is like breaking a pretzel; where to fracture one part of the biscuit is to also cause fracture in another part.

This 25 year old first grade league player suffered an impact to the chin point during Saturday play. This resulted in a right angle fracture through the impacted lower right wisdom tooth, and also a minor fracture of the left condylar (TMJ) neck. The player complained of a deranged bite, and numbness to the right lower lip.



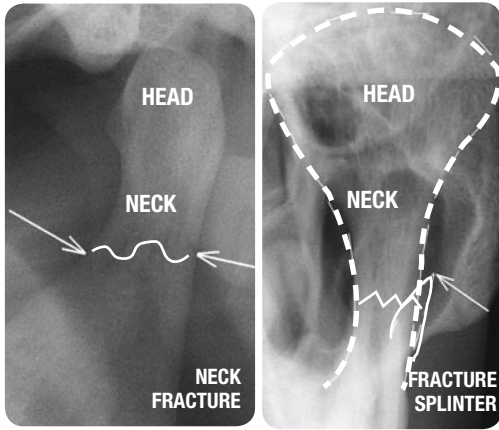
Pre-operative digital OPG showing fracture through impacted right wisdom tooth.

Treatment utilised a uni-cortical titanium plate, with use of 4 x 7mm titanium screws. The condylar neck fracture was treated conservatively with purée diet. Arch bars (inter-jaw wiring) were not required (for treatment of the condylar neck fracture) due to minimal displacement of the break.



Post-operative digital OPG showing removed wisdom tooth and uni-cortical plate fixture.

The player was able to resume full contact play 5 weeks post injury, with full recovery of normal bite and lip and chin sensation.



Pre-operative digital x-rays showing left condylar neck fracture on lateral OPG (sideway view) and postero-anterior or PA (front to back) film.

The fracture of the joint neck is usually on the opposite side of the angle fracture.

CASE 3. FRACTURED RIGHT ANGLE OF JAW

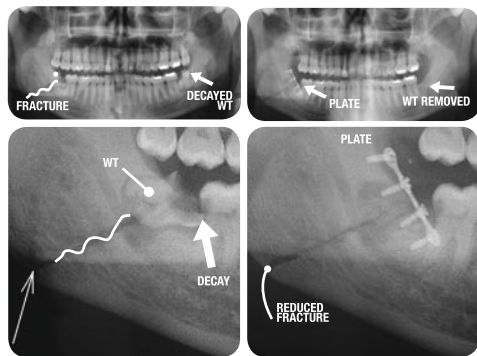
Where there is no evidence of condylar neck fracture, the energy which allowed for the angle fracture to arise, is usually dissipated as a tear in the TM joint capsule of the opposite side. Such tears heal easily, but do lead to some restriction in the normal gliding movements of the joint. Such restrictions are easily overcome with simple physiotherapy and review by the surgeon.

Normal translation and function in the affected joint should have been met about 10 weeks after surgery.

This 28 year old male suffered a head high tackle during a local competition Friday night match play. He complained of numbness of the right lower lip and chin, a deranged bite, left facial swelling (forward of the ear, overlying the left jaw joint) and general jaw pain.

Operation was with a simple uni-cortical titanium plate (on the right), with 6 weeks of mild physiotherapy (to the left jaw joint/TMJ) and purée diet. After, he was able to resume normal full-contact play.

There was full recovery of his lip and chin sensation, and he regained a normal, pain-free bite.



Left: Pre-operative digital OPG (with expansion window on right lower wisdom tooth area) showing fracture through the impacted (and decayed and abscessed) right wisdom tooth.

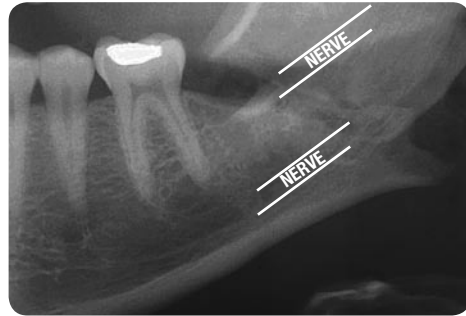
Right: Post-operative digital OPG (with expansion window on right lower wisdom tooth area) showing fracture reduction and uni-cortical plate in-situ as treatment. Note treatment removal of all wisdom teeth as evidenced by empty tooth sockets.

CASE 4. 31 YEAR OLD FIRST GRADE RUGBY LEAGUE PLAYER WITH LEFT ANGLE MANDIBLE AFTER A SIDE-JAW VS SHOULDER COLLISION

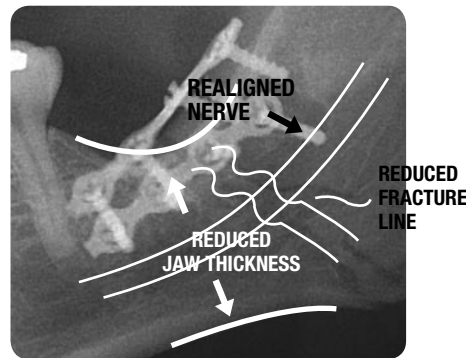
Fracture occurred though a thin portion of the left mandible; left thin by indiscriminate local tooth and bone removal by a general dentist 3 years previously.



OPG shows position of left angle fracture to left jaw.



Close up of fracture point shows severe disruption of fracture segments of ~1cm, with gross loss of inferior dental nerve (IDN) integrity. The result is a completely numb left lower lip and chin, with severe bite disruption. This is a potentially career ending injury.



Immediate operation within 3 hours of injury maximizes nerve recuperation potential. Notice the thin area of jaw bone, which lead to an artificial notch deformity where fracture preferentially occurred. Notch had been developed by a non-surgical (general dentist) removal of the second and third molar teeth, and which lead to extreme loss of local jaw bone which reduced local jaw thickness.

The benefits of early wisdom teeth removal are to remove the notch which can preferentially lead to local crack formation and fracture of the jaw angle. Removal of the tooth aims to carefully preserve local surrounding bone, so that a heavy bone bar heals in place of the wisdom tooth. Indiscriminate bone removal can lead to local jaw weakness, and friability and ease of fracture.

Always use a specialist oral & maxillofacial surgeon when having wisdom teeth removed. In this patient's case, full nerve regeneration occurred, with normal occlusion resulting. The patient resumed full contact play 2 months after injury.

ADVICE TO SPORTING PATIENTS AND DOCTORS

Ocean Surgical advises that all players involved in contact team sports are assessed by their team dentist or doctor with an OPG before the commencement of season play.

1. Assessment is to detect for the presence of existing dental disease, and in particular for evidence of previous dental or jaw trauma.
2. Assessment (in part) is to exclude for impacted teeth which may predispose to jaw fracture during contact play.
3. Dentists should provide a personally manufactured mouth (dental) splint to prevent or minimise dental and jaw trauma.
4. Not all wisdom teeth have the potential to lead to wedge defects of mandibles, or predispose to jaw fracture. The assessment of fracture risk should be made by a qualified surgeon.
5. The prophylactic removal of wisdom teeth has potential other benefits, including prevention of decayed teeth, periodontal disease, local infection, and to prevent formation of cysts or other odontogenic disease.
6. Wisdom teeth surgery has potential complications which in most cases are offset by the benefits of removal. You should carefully discuss the need for, and risks of wisdom tooth surgery with your oral and maxillofacial surgeon.
7. The aim of wisdom teeth removal is to remove the "wedge" defect (represented by the wisdom tooth) and to allow for healing of a substantial bar of bone. Indiscriminate bone removal during wisdom tooth surgery by non-surgical practitioners may still leave the jaw bone thin and weak.

ADVICE TO CONTACT SPORTS PLAYERS WITH FRACTURED JAWS OR RECENT WISDOM TOOTH REMOVAL

Ocean Surgical advises the following:

1. Surgery to correct for a fractured mandible usually employs intra-oral plates and fixation screws. More complex fractures may require jaw wiring and elastics.
2. Following jaw fracture surgery, players are advised to maintain normal training régimes commencing 10 days after surgery, but to limit contact training and play until 5-8 weeks following surgery, and dependent upon complexity of fracture, as well as advice of the surgeon or team physician.
3. Following wisdom tooth surgery, players are advised to maintain normal training régimes commencing 10 days after surgery, but to limit contact training and play until 2-3 weeks following surgery. Full play resumption is dependent upon the complexity of surgery, as well as the advice of the surgeon or team physician.
4. The decision to remove wisdom teeth to prevent mandibular angle fractures has good anecdotal support. The decision to have wisdom teeth removed is entirely at the player's discretion and supported by advice from their sports physician, dentist or surgeon.

5. Not all forms of jaw fracture are potentially preventable by wisdom teeth removal. All players are advised on the appropriate use of head gear and properly manufactured mouth guards provided by a sports dentist.