Facial Trauma Reconstruction

Canonical: https://directory.collinsstreetspecialistcentre.com.au/procedures/oral-maxillofacial-surgery/facial-trauma-reconstruction/

Description:

Facial trauma encompasses injuries to the bones, soft tissues, teeth and supporting structures of the face and jaw. These injuries can result from sporting accidents, falls, motor vehicle collisions, workplace inciden...

Details:

Collins Street Specialist Centre Facial Trauma Reconstruction

What Is Facial Trauma Reconstruction?

Collins Street Specialist Centre provides specialist care for facial trauma — injuries to the bones, soft tissues, teeth and supporting structures of the face and jaw. These injuries come from all kinds of circumstances: sporting accidents, falls, motor vehicle collisions, workplace incidents and interpersonal violence. Oral and maxillofacial surgeons are specifically trained to diagnose, treat and reconstruct facial injuries, restoring both function and appearance with precision that comes from holding qualifications in both medicine and dentistry.

Our surgeons bring the highest level of specialist surgical training to facial trauma management. That dual background, combined with access to advanced imaging and digital surgical planning technology, allows for thorough, carefully considered care from initial assessment through to long-term reconstruction.

Common Causes of Facial Trauma

Facial injuries can result from a wide range of circumstances, and the pattern of injury often relates to the mechanism:

Sporting Injuries

Sport is one of the most common causes of facial trauma in Australia. Contact sports — Australian Rules football, rugby, basketball, cricket, hockey and martial arts — carry inherent risks of facial injury. Common sporting injuries include fractured jaws, cheekbones, noses and eye sockets, as well as avulsed (knocked-out) or fractured teeth. Wearing a custom-fitted mouthguard significantly reduces the risk and severity of dental and jaw injuries in contact sports.

Falls

Falls are a leading cause of facial trauma across all age groups, but particularly in children and elderly patients. Ground-level falls (tripping, slipping) can produce significant facial injuries, especially when the hands don't break the fall. Falls from heights — ladders, bicycles, skateboards — often cause more severe injuries affecting multiple facial structures.

Motor Vehicle and Bicycle Accidents

Despite improvements in vehicle safety, motor vehicle collisions remain a significant cause of severe facial trauma. Bicycle accidents, particularly those involving high-speed impacts or collisions with motor

vehicles, can produce complex midface and mandibular fractures.

Workplace Incidents

Industrial and construction site injuries — being struck by objects, falls, machinery accidents — can cause severe facial trauma requiring specialist surgical management.

Interpersonal Violence

Assault injuries to the face are unfortunately common. Mandibular (lower jaw) fractures are particularly frequent in this category, along with zygomatic (cheekbone) fractures and nasal fractures.

Types of Facial Fractures

The facial skeleton is complex, composed of multiple interconnected bones. Fractures are classified by their location:

Mandibular (Lower Jaw) Fractures

The mandible is the most commonly fractured bone of the face. Fracture sites include:

- **Condylar fractures** — Fractures of the jaw joint region, often resulting from a blow to the chin. These can affect jaw function and bite alignment, and may occur bilaterally (on both sides) from a single impact - **Angle fractures** — At the corner of the jaw, often associated with wisdom teeth that weaken the bone at this location - **Body fractures** — Along the tooth-bearing portion of the lower jaw - **Parasymphysis fractures** — Near the chin, often occurring in combination with a condylar fracture on the opposite side - **Symphysis fractures** — At the midline of the chin

Signs of mandibular fracture include pain, swelling, difficulty opening the mouth, a change in the way the teeth bite together (malocclusion), numbness of the lower lip and chin (indicating involvement of the inferior alveolar nerve), and visible deformity.

Midface Fractures

Midface fractures involve the upper jaw and central facial skeleton:

- **Zygomatic (cheekbone) fractures** — The cheekbone can fracture at multiple points simultaneously (a zygomatic complex fracture), causing flattening of the cheek, restriction of jaw opening (when the depressed bone impinges on the coronoid process of the mandible), numbness of the cheek and upper teeth (infraorbital nerve involvement), and possible changes to vision if the orbital floor is involved - **Le Fort fractures** — A classification system for midface fractures based on the pattern of fracture lines through the maxilla. Le Fort I fractures separate the upper jaw from the rest of the face at the level above the teeth. Le Fort II fractures involve the nose and central midface. Le Fort III fractures separate the entire face from the skull base. These classifications often occur in combination and represent progressively severe injury patterns - **Maxillary (upper jaw) fractures** — The tooth-bearing portion of the upper jaw may fracture in isolation (alveolar fracture) or as part of a more extensive midface injury - **Nasal fractures** — While simple nasal fractures are commonly managed by ENT surgeons, complex nasal fractures occurring alongside other facial injuries are managed as part of the overall facial reconstruction

Orbital (Eye Socket) Fractures

The bones forming the floor and walls of the eye socket are thin and can fracture from direct trauma to the eye area. Orbital floor fractures (blowout fractures) can cause:

- Enophthalmos — a sunken appearance of the eye as orbital contents herniate through the fracture into the maxillary sinus below - Diplopia (double vision) — caused by entrapment or swelling of the muscles that control eye movement - Numbness of the cheek and upper teeth — from infraorbital nerve involvement - Periorbital swelling and bruising

Orbital fractures often require surgical repair to restore normal eye position and function, particularly when double vision or significant enophthalmos is present.

Dentoalveolar Injuries

Injuries to the teeth and the tooth-bearing portion of the jaw (alveolar bone) include:

- **Avulsion** — Complete displacement of a tooth from its socket. Reimplantation is possible for permanent teeth if performed promptly (ideally within 30 to 60 minutes) - **Luxation** — Displacement of a tooth within its socket (pushed inward, outward, sideways or partially out) - **Crown and root fractures** — The tooth itself breaks, affecting the visible crown, the root, or both - **Alveolar fractures** — The bone supporting the teeth fractures, often displacing a segment of teeth together

Emergency Assessment — What Happens First

When a patient presents with facial trauma, a systematic assessment determines the extent of injury and guides treatment:

Primary Assessment

The first priority is always life-threatening conditions:

- **Airway** — Is the airway clear? Facial injuries can compromise the airway through swelling, bleeding, or displaced bone and teeth. Securing the airway takes absolute priority - **Breathing** — Is the patient breathing adequately? - **Circulation** — Is there significant bleeding? Facial lacerations and fractures can bleed heavily - **Cervical spine** — Has a spinal injury been excluded? Until cleared, the neck is immobilised as a precaution - **Head injury** — Has there been loss of consciousness, concussion, or more serious brain injury?

Secondary Assessment

Once life-threatening conditions are addressed, a detailed facial assessment follows:

- **Visual inspection** — Looking for asymmetry, swelling, deformity, lacerations, ecchymosis (bruising) - **Palpation** — Systematically feeling the facial bones for step deformities, tenderness, crepitus (grinding), and instability - **Occlusal assessment** — Checking whether the teeth bite together normally. A change in occlusion is a strong indicator of jaw fracture - **Nerve function** — Testing sensation in the distribution of the trigeminal nerve (forehead, cheek, lower lip and chin) to identify nerve involvement - **Eye assessment** — Checking eye movements, vision, pupil responses, and looking for diplopia (double vision) - **Dental assessment** — Checking for loose, displaced, or missing teeth

Imaging

Advanced imaging is essential for surgical planning:

- **CBCT or medical CT scanning** — Three-dimensional imaging is the gold standard for facial fracture assessment, providing detailed information about fracture patterns, displacement, and the relationship to vital structures - **Standard X-rays** — OPG (panoramic) and facial views may provide useful initial assessment, though CT has largely superseded plain films for complex injuries

Surgical Approaches

Surgical management of facial fractures aims to restore the pre-injury anatomy — the position of the bones, the alignment of the teeth, and the contour of the face.

Open Reduction and Internal Fixation (ORIF)

The mainstay of modern facial fracture surgery. The fracture is exposed surgically, the bone fragments are repositioned to their correct anatomical position (reduced), and they are held in place with titanium plates and screws (internal fixation). The titanium hardware is biocompatible and typically remains permanently — though it can be removed if it causes any issues.

Incisions are placed to minimise visible scarring: - **Intraoral incisions** — Inside the mouth, leaving no external scars. Used for mandibular and midface fractures - **Subciliary or transconjunctival incisions** — Along or just below the lower eyelid, used for orbital floor repair - **Existing lacerations** — Extending existing wounds to access deeper fractures - **Coronal incision** — Behind the hairline, used for access to the upper face and frontal bone when needed

Closed Reduction

Some fractures — particularly minimally displaced mandibular condyle fractures and simple nasal fractures — can be managed without open surgery. The bones are manipulated into position externally, and healing is supported by a soft diet, elastics (intermaxillary fixation), and close monitoring.

Maxillomandibular Fixation (MMF)

The upper and lower jaws are temporarily wired or banded together to stabilise fractures and restore the bite. Modern techniques often use arch bars, screws, or elastics. The period of fixation varies depending on the fracture — typically two to six weeks.

Orbital Reconstruction

Orbital floor fractures are repaired by placing a thin sheet of material (often titanium mesh or a resorbable sheet) across the fracture to reconstruct the floor and support the orbital contents. This restores eye position and resolves double vision in the majority of cases.

Recovery Timeline

Recovery from facial trauma surgery varies depending on the severity and type of injury:

Week 1

- Significant facial swelling and bruising — this is expected and peaks at 48 to 72 hours - Pain managed with prescribed medications - Soft or liquid diet, particularly if the jaw is fixated - Rest and limited physical activity - Ice packs to reduce swelling

Weeks 2–4

- Swelling gradually resolving - Bruising fading (may track downward to the neck and chest — this is normal gravity-related migration) - Gradual return to soft foods as fixation is reduced - Return to desk-based work typically possible by week two to three - Follow-up appointments to monitor healing and adjust fixation

Months 1–3

- Bone healing progressing (clinical union typically occurs by six to eight weeks) - Progressive return to normal diet - Numbness (if present) beginning to resolve — nerve recovery is gradual and may continue for months - Return to sport and physical activity as cleared by your surgeon (typically six to eight weeks minimum, longer for contact sports)

Months 3–12

- Hardware removal if required (uncommon) - Final soft tissue settling and residual swelling resolution - Nerve sensation continues to improve - Orthodontic or prosthodontic treatment to address any dental injuries that required staged management

When to Go to Hospital vs a Specialist

Severe facial trauma accompanied by any of the following warrants immediate presentation to an emergency department:

- Loss of consciousness or concussion - Uncontrolled bleeding - Difficulty breathing or swallowing - Suspected spinal injury - Significant facial deformity - Multiple injuries (polytrauma)

The emergency department will stabilise the patient, manage life-threatening conditions, and obtain initial imaging. Our oral and maxillofacial surgeons consult to emergency departments and can be involved in care from the acute phase through to definitive reconstruction.

For less acute injuries — isolated dental trauma, suspected cheekbone fractures without airway compromise, minor jaw fractures — a direct referral to an oral and maxillofacial surgeon may be appropriate. Your GP or dentist can arrange this.

The CSSC Oral and Maxillofacial Surgery Team

Our OMS team brings specialist-level expertise to facial trauma management:

- **Dual medical and dental qualifications** — OMS surgeons hold degrees in both medicine and dentistry, uniquely qualifying them to manage injuries spanning both disciplines - **Hospital surgical training** — Extensive training in operating theatres managing complex facial fractures and reconstructions - **Advanced imaging interpretation** — Specialist expertise in reading and planning from CBCT and CT data - **Digital surgical planning** — Ability to plan fracture reduction and reconstruction using 3D software for complex cases - **Comprehensive follow-up** — From acute management through to dental rehabilitation and final aesthetic refinement

Preventing Facial Injuries

While not all facial trauma can be prevented, risk can be reduced:

- **Custom-fitted mouthguards** for all contact sports — these reduce the risk and severity of dental and jaw injuries significantly compared to no protection or over-the-counter mouthguards - **Seatbelts and airbags** in vehicles - **Helmets** for cycling, horse riding, skateboarding and other high-risk activities - **Workplace safety equipment** where facial injury risk exists - **Fall prevention strategies** for elderly patients

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Experienced facial trauma? Need assessment? Contact Collins Street Specialist Centre on (03) 9654 5705 for a consultation with one of our specialist oral and maxillofacial surgeons. For emergencies, present to the nearest emergency department.