

Craniomaxillofacial Injuries and Intensive Care: Personal Experience

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The history of Maxillofacial surgery was established during the second world war by two great eminent figures in Britain and they were Sir Harold Gillies and Sir Kelsy Fry, by their cooperation they established and they put the scientific foundation of principle of cooperation between plastic surgeons and maxillofacial surgeons, their cooperation extended after the war and incidence of road traffic accident very much increased and established the Plastic and Maxillofacial units and distributed in UK, the success of managements of war injuries of the face, McIndoe 1941 and his colleagues Maxillofacial surgeons at East Grinstead Queen Victoria Hospital did better understanding for managements of Maxillofacial injuries.

After the second world war two eminent maxillofacial surgeons in UK, Mr Norman Rowe and Professor HC Killey, they published a book dealing with maxillofacial injuries in the mid fifty of the last centuries and this book was the guide for all maxillofacial and plastic surgeons worldwide for managements of maxillofacial injuries.

In united states great people like of Blair, Ivy, Kazanjian and Converse were great people advance plastic reconstructive surgery and maxillofacial surgery.

In Iraq we faced 4 wars during last century and this century, the Iraqi Iranian wars last for 8 years started 1980 to 1988, the second wars were the Desert Storm for liberation of Kuwait.

In 1990, the third war was the war of liberation of Iraq and the fourth war was war of terrorist we were involved in managements of victims from civilian and soldiers, it was dirty wars.

Trauma and war injuries became important and hot topic because the trauma in highway (RTA) caused by clash of cars and war injuries caused by advance and sophisticated weapons and explosive power as well as blast injuries, the impact effect on functional and structural of craniofacial region once people survived.

We did studies on 600 cases with RTA with new classification and we put the scientific bases for managements of the cases by application of Atlas and Kummoona golden (C), lifesaving steps based on;

- 1- Control breathing and patent airway with tracheotomy or not
- 2- Control shock and circulation by IV fluid and blood after blood grouping or plasma
- 3- Control bleeding by ligation of large vessels and cauterization of small vessels
- 4- Control soft tissue repair and reconstruction and fragment's in anatomical position

The facial skeleton consists of 50 small bones articulated like a pyramid articulation and work as a cushion and shock absorber to absorb severe impact of traumatic injuries and also to absorb severe masticatory forces through buttress and also protecting vision, smell, hearing, swallowing, taste and joint movement and salivation.

Once trauma happened the impact displaces the middle third of the face downward and backward, profuse bleeding from the nose due to injuries of anterior and posterior ethmoidal arteries, the maxilla and palate sited on the dorsum of the tongue, in this situation both nasal airway and oral airway obstructed, life threatening might occur; the maxilla can be elevated by fingers of the nurse during transportation by ambulance or by helicopter for critical multiple injuries, the injured patient to improve oral airway and by pressing ethmoidal region by the nurse to arrest bleeding from ethmoidal arteries and if not enough tracheotomy required in this condition and majority of injured people might suffer from head injuries with CSF leakage due to fracture of frontal-naso-ethmoidal and fracture of anterior cranial fossa with tearing of Dura in LeFort II and LeFort III with cranial bone injuries.

Control of soft tissue required immediate suturing of soft tissue to prevent secondary infection and every piece of jaw fragment should be sited in the same anatomical position by using arch bars and intermaxillary fixation (IMF) to get occlusion of teeth and to prevent open bite.

Serious multiple injuries with head, chest, spine and limbs injuries required admission immediately to intensive care units and maxillofacial injuries might be delayed for few days till recovery from head and chest injuries and control abdominal and spine injuries.

In the facial skeleton injuries required quick examination of the eye by pupil reflex light for safety of vision, in children we have to pay attention to temporomandibular joint (TMJ), intra capsular fracture of the condyle crushing type might end to damage to growth centre and future effect on growth of the mandible, midface and base of skull, the orthopaedic should be sure with no spinal or vertebrae injuries in the cervical or lumbar injuries.

Before that biochemical analysis with radiological examination including plain X-ray for the chest and occipital-mental views, 15, 30 and 45° and posterior-anterior view of the facial skeleton as quick technique followed by CT scans, MRI and ultrasound to the abdomen with Doppler to exclude spleen or pancreas and kidneys.

Collaboration required in these cases between neurosurgeon, chest surgeon, general surgeon and craniomaxillofacial surgeons to evaluate the case properly and to make the decision for priority of managements.

Cerebrospinal fluid (CSF) leakage from the nose and ethmoidal region occurred due to fracture of anterior cranial fossa or from the ear due to fracture base of skull and petrous bone with tearing of Dura, the managements delayed after proper reduction and fixation of LeFort II and LeFort III, usually the leakage stop within 5 - 7 days.

The managements of CSF leakage by application of the following steps:

- 1- Reduction of intra cranial pressure (ICP) by elevation of the head by 45 degree.
- 2- Reduction of CSF leakage by using carbonic anhydrase inhibitors acetazolamide (Diamox3-KCl) 250 mg to correct hyperkalaemia as a complication of Diamox.
- 3- Four triple antibiotic regimen to prevent meningitis.
- 4- The CSF usually stop within 4 - 6 days, if not a lumbar puncture aspiration of CSF to reduce the ICP.

Once the CSF does not stop leakage, Craniotomy required for repair of Dura by either by Galea or by a piece of temporalis muscle and Dura repaired as watertight.

We did research on analysis of CSF by collecting few samples from patients and their blood serum underwent analysis using highly sensitive and high specific Isoelectric focusing electrophoresis on polyacrylamide gel for direct immunofixation of transferrin by a plex electrophoresis set and by spectrophotometer for serum sample.

By this technique and method, we did detect CSF leakage due to traumatic injuries and to differentiate it from serum exudate.

Through this research we detect that the concentration of the B2-transferin enzyme in CSF was 90.26 ppm which approximately 35 times greater than its concentration in the serum.

I hope by this brief description of intensive care of Craniomaxillofacial injuries satisfying the readers as reported through my experience in managements of injuries of Craniofacial regions.

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