

BLAST INJURY

A CASE REPORT

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ABSTRACT

Dentoalveolar and facial trauma is one of the commonest injuries faced by human musculoskeletal system, which may be due to accident or intentional traumatic injuries to the craniofacial complex. The trauma is further complicated if it is a blast injury, because it not only produces fractures of the bones and degloving injuries but also produces a burns of various degrees.

INTRODUCTION

The main objective of the treatment of oro-maxillo-facial trauma is to preserve and restore the function of the oral and maxillofacial complex. Oral and maxillofacial trauma may present potential life threatening conditions and also has long-range problems with physical and psychological impact.

Management of blast injuries of the orofacial complex must take special consideration. When the patient suffers from an explosion, he is invariably wounded by multiple sources. Initially, the patient sustains a burn injury from ignited explosives. Next, the victim is thrown from the blast wave of compressed air and sustains blunt injury to multiple organs. Finally the blunt and penetrating injury by direct contact with exploded fragments occurs. These projectiles are propelled at high or ultra high velocity and cause high-energy injuries. Patients close to the explosion rarely survive. Those who do and who sustain avulsive hard and soft tissue injuries must be treated for burns and for blunt and penetrating injuries.

Appropriate and early treatment may minimize the morbidity and mortality of the patient.

This case report covers the management of the hard and soft tissues injuries of the craniofacial complex due to an explosion.

CASE REPORT

A 21 years male was brought to the trauma ward who had suffered facial injury due to a blast. Patient was disoriented and respiration was jerky and

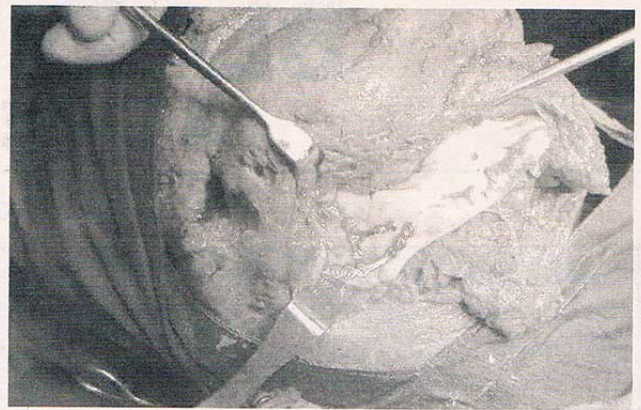
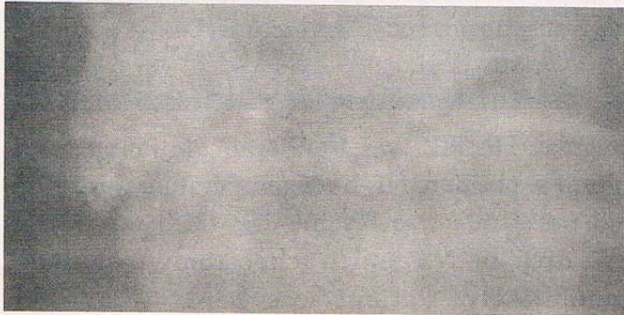
irregular. His B.P. was 100/70 mm Hg in right arm in supine position. His body temperature was 100°F and pulse rate was 82/min. His GCS was 15/15. I.V. drip of NS and tracheostomy was done immediately. Patient was kept on oxygen ventilation and tetanus prophylaxis was given.



Extra oral finding revealed degloving contaminated wound over the right side of the face extending from the preauricular region to the inferior aspect of the lower lip with exposure of the angle of the mandible showing multiple loose fragments of bone pieces indicating comminuted fracture and multiple lacerations in the face. Palpation on the supraorbital rims, infraorbital rims, malar eminences, zygomatic arches, and

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nasal bones did not reveal any abnormal findings. Initial examination of the right eye showed corneal laceration. Intra oral findings revealed bruise along the lower buccal and lingual vestibules on the right side with malocclusion. No lacerations or wounds were noted. Palpations revealed step deformity on the molar area on the right side with tenderness on palpation. No any other abnormal intra oral finding was revealed.



- Open reduction was done with two mini bone plates placed at the fracture sites.

AP view and lateral oblique view of the skull showed comminuted fracture of the right angle of the mandible. Submentovertex view showed normal zygomatic process and Waters view showed normal maxilla and antrum.

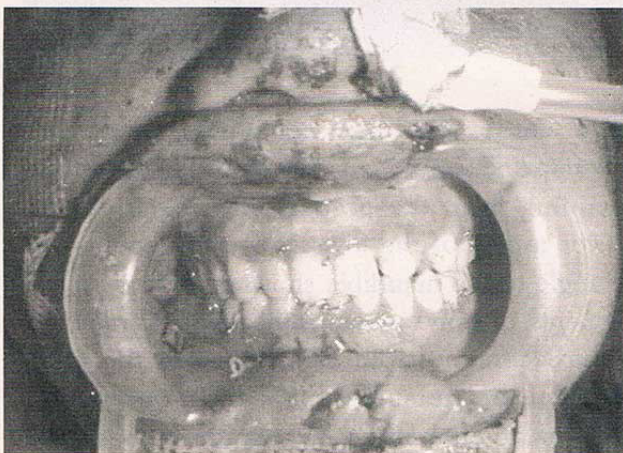


Lab investigation showed Hb level as 10.8gm % and Blood group as B+ve.

PROCEDURE

- Initially thorough debridement of the wound was done. The burnt wound was cleansed gently with normal saline and povidone iodine solution, and the devitalized tissues were removed from the deep section of the wound along with the hematoma collection and foreign materials.

- The wound was closed with sutures in layers after achieving haemostasis.
- Local therapy of the burnt area was done which included application of antibiotic ointment. The objective was to prevent drying of the wound and to prevent the production of the crust and scabs as a defense against infection.
- The maxillary fixation was removed.
- The patient was kept on soft diet and IV antibiotic therapy for a week and then shifted to oral route.
- Dressing was done on daily basis with removal of exudates, scabs, and crust that was formed and fine mesh gauze of chlorhexidine was placed.
- Ophthalmologist was consulted regarding the corneal laceration of the right eye.



- Intermaxillary fixation was done with eyelet wiring for maintaining a perfect occlusion.

Unfortunately, the patient has lost the sight of his right eye and also hearing loss was detected on the right ear for which he is under treatment in ENT department.

- After 6 weeks, the patient was rapidly improving in health with perfect union of the reduced fragments and perfect occlusion.



- The patient is currently on half diet and tracheostomy tube has already been removed.

DISCUSSION

Careful cleansing of skin and wounds is an essential preliminary step in the care of all facial injury. The wound should be explored carefully and all the debris including dirt and foreign bodies should be removed as it helps to prevent contamination of the wound and early and uneventful healing.

Excision of the tissue from the wounds on the face should be minimal because the tissues of the face are unique and are difficult to duplicate.

If possible primary wound closure should be done i.e. within the first 24 hours of injury. Primary wound closure helps in two ways. Firstly, it helps in reducing the scar formation and secondly, it helps in the control of infection. The longer the wound is open, the greater the degree of bacterial contamination and the higher the risk of wound infection.

Open reduction and rigid fixation is considered to be a combination of inadequate blood supply

and adequate stability by Asseal. Due to periosteal stripping of the bone during open reduction, blood supply is compromised as compared to closed reduction. However, MMF, splints, or external pin fixation in closed reduction may cause hamper in day-to-day life. Asseal reported 17 cases of comminuted fractures treated with open reduction and rigid fixation in which 14 underwent undisturbed healing and three developed infected nonunion. Similar results were obtained by a study done by Smith and Johanson.

The most important point in the open reduction and fixation of the mandible is to restore the occlusion and maintenance of the stability of the reduction site and both of these is obtained by the use of bone plates, especially in the angle of the mandible which is considered to be the most prone area of infection amongst all the mandibular fractures.

Ellis reported a very low (7.5%) infection in all the fracture cases of the mandibular angle treated as such in 52 patients.

CONCLUSION

Restoring form, function, and esthetics is the most effective and should be the first aim of the treatment of a debilitating injury.

Burn injuries must be taken into consideration in case of explosion. Debridement of the contaminated wound and primary closure helps to reduce infection and scar formation. Small errors in the treatment of the lower jaw may result in the changes of the occlusion and long-term physical and psychological problems. Therefore proper maintenance of occlusion and proper stabilization of reduced fragments should be done.

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