Skull base trauma

Trauma to the skull base can complicate craniofacial injury and lead to significant neurological morbidity, related to brain and/or cranial nerve injury. The optimal management involves a multidisciplinary effort.

Anterior

Middle (temporal bone) see Temporal bone fracture

With these injuries, all cranial nerves (except 9 to 12) are at risk; the olfactory nerve and the facial nerve are the first and second, respectively, to sustain injuries.

Etiology

The nature of such trauma is multifaceted

Diagnosis

Cerebrospinal fluid leak

see Skull base fracture

The singular anatomical relationship of the base of the skull is responsible for the particular problems that may arise after injury. Extensive dural laceration and severe neurovascular damage may accompany skull base injuries. Trauma to the anterior skull base is frequently related to the paranasal sinuses, and trauma to the middle and the posterior skull base usually affects the petrous bone. Injury to the anterior fossa including the paranasal sinuses may produce CSF leakage, damage the olfactory nerves, optic nerves, and orbita contents. Fractures may affect the carotid canal, injure the internal carotid artery and result in carotid-cavernous fistula. Trauma to the petrous bone may cause facial palsy and deafness, and CSF leakage with otorrhoea or paradoxal rhinoliquorrhoea. Trauma to the posterior fossa may lacerate the major venous sinuses, and affect the cranio-cervical stability. Each one of these injuries will need a particular strategy. Decision making for management as a whole must consider all aspects, including the fact that these injuries frequently involve polytraumatized patients. Decisions regarding the timing of surgery and the sequence of the surgical procedures must be made with great care. Modern surgical techniques and recent technologies including functional preservation of the olfactory nerves in frontobasal trauma, visual evoked potentials, assisted optic nerve decompression, facial nerve reconstruction, interventional technique for intravascular repair of vascular injuries, and recent developments in cochlea implants and brain stem implants, all contributed significantly to improve outcome and enhance the quality of life of patients. This article reviews basic principles of management of skull base trauma stressing the role of these advanced techniques [1].

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Samii M, Tatagiba M. Skull base trauma: diagnosis and management. Neurol Res. 2002 Mar;24(2):147-56. Review. PubMed PMID: 11877898.