Frontal bone fracture

Injury to the frontal bone should be regarded as head injury.

Epidemiology

The majority of these patients are victims of automobile accidents or fall from height with multiple injuries requiring a multispecialty team approach and complete evaluation. The standard trauma protocol must be followed with emphasis on ensuring an adequate airway, breathing, circulation, central nervous system status, and cervical-spine. Any other life-threatening injuries take precedence over the sinus fracture [1)].

see Frontal sinus fracture.

The broad spectrum of frontal bone fractures, including those with orbital and skull base extension, is poorly understood.

Gary et al. propose a novel classification scheme for frontal bone fractures.

Maxillofacial CT scans of trauma patients were reviewed over a five year period, and frontal bone fractures were classified:

Type 1: Frontal sinus fracture without vertical extension.

Type 2: Vertical fracture through the orbit without frontal sinus involvement.

Type 3: Vertical fracture through the frontal sinus without orbit involvement.

Type 4: Vertical fracture through the frontal sinus and ipsilateral orbit.

Type 5: Vertical fracture through the frontal sinus and contralateral or bilateral orbits.

They also identified the depth of skull base extension, and performed a chart review to identify associated complications.

149 frontal bone fractures, including 51 non-vertical frontal sinus (Type 1, 34.2%) and 98 vertical (Types 2-5, 65.8%) fractures were identified. Vertical fractures penetrated the middle or posterior cranial fossa significantly more often than non-vertical fractures (62.2 v. 15.7%, $p = 0.0001$) and had a significantly higher mortality rate (18.4 v. 0%, $p < 0.05$). Vertical fractures with frontal sinus and orbital extension, and fractures that penetrated the middle or posterior cranial fossa had the strongest association with intracranial injuries, optic neuropathy, disability, and death ($p < 0.05$).

Vertical frontal bone fractures carry a worse prognosis than frontal bone fractures without a vertical pattern. In addition, vertical fractures with extension into the frontal sinus and orbit, or with extension into the middle or posterior cranial fossa have the highest complication rate and mortality [2)].

Treatment

Frontal bone fracture treatment

1)
Singh A, Bhardwaj V, Sharma S. Frontal sinus fracture: a case report. J Maxillofac Oral Surg. 2015 Mar;14(Suppl 1):1-3. doi: 10.1007/s12663-010-0131-7. Epub 2011 May 10. PubMed PMID: 25838660; PubMed Central PMCID: PMC4379265.
2)
Garg RK, Afifi AM, Gassner J, Hartman MJ, Leverson G, King TW, Bentz ML, Gentry LR. A novel classification of frontal bone fractures: The prognostic significance of vertical fracture trajectory and skull base extension. J Plast Reconstr Aesthet Surg. 2015 May;68(5):645-53. doi: 10.1016/j.bjps.2015.02.021. Epub 2015 Feb 26. PubMed PMID: 25778872.