Skull fracture

- Successful minimally invasive reduction surgery with a micro burr hole in a pediatric patient with depressed skull fracture: a case report
- Mandible Fractures: Consensus and Controversy
- Sex-stratified patterns in geriatric patients with mild traumatic brain injury and intracranial bleeding: a retrospective cohort study
- Radiological diagnosis of infantile osteopetrosis in a 1-year-old with macrocephaly and jaundice
- Presentation, Evaluation, and Outcomes of Infants Under 3 Months With Skull Fractures
- Avoiding Skull Base Injury During Nasal Surgery: CT-Guided Assessment of the Middle Turbinates, Septum, and Skull Base
- Does Kinesio taping and/or transdermal diclofenac patch reduce postoperative pain and swelling after open reduction and internal fixation of mandibular angle fractures?
- Conservative management of pediatric mandibular fractures with cap splints- A systematic review

---

A skull fracture is a break in one or more of the eight bones that form the cranial portion of the skull, usually occurring as a result of blunt force trauma. If the force of the impact is excessive, the bone may fracture at or near the site of the impact and cause damage to the underlying physical structures contained within the skull such as the membranes, blood vessels, and brain, even in the absence of a fracture.

While an uncomplicated skull fracture can occur without associated physical or neurological damage and is in itself usually not clinically significant, a fracture in healthy bone indicates that a substantial amount of force has been applied and increases the possibility of associated injury. Any significant blow to the head results in a concussion, with or without loss of consciousness.

A fracture in conjunction with an overlying laceration that tears the epidermis and the meninges, or runs through the paranasal sinuses and the middle ear structures, bringing the outside environment into contact with the cranial cavity is called a compound fracture. Compound fractures can either be clean or contaminated.

Classification

There are four major types of skull fractures:

Linear Skull fracture.

Depressed skull fracture.

Diastatic

Basilar

Linear fractures are the most common, and usually require no intervention for the fracture itself.

Depressed fractures are usually commnuted, with broken portions of bone displaced inward—and may require surgical intervention to repair underlying tissue damage. Diastatic fractures widen the sutures of the skull and usually affect children under three. Basilar fractures are in the bones at the base of the skull.

see Frontal sinus fracture.

Pediatric Skull Fracture

Pediatric Skull Fracture.

Skull base fracture

Skull base fracture

Skull fracture prediction

see Skull fracture prediction

Complications

Intracranial epidural hematoma.

Dural tear.

Tension pneumocephalus

Diagnosis

Gravel et al., conducted a study to develop and validate a clinical decision rule to identify skull fracture in young children with head trauma and no immediate need for head tomography.

They performed a prospective cohort study in 3 tertiary care emergency departments in the province of Quebec. Participants were children less than 2 years old who had a head trauma and were not at high risk of clinically important traumatic brain injury (Glasgow Coma Scale score < 15, altered level of consciousness or palpable skull fracture). The primary outcome was skull fracture. For each participant, the treating physician completed a standardized report form after physical examination and before radiologic evaluation. The decision to order skull radiography was at the physician's discretion. The clinical decision rule was derived using recursive partitioning.

A total of 811 patients (49 with skull fracture) were recruited during the derivation phase. The 2 predictors identified through recursive partitioning were parietal or occipital swelling or hematoma and age less than 2 months. The rule had a sensitivity of 94% (95% confidence interval [CI] 83%-99%) and a specificity of 86% (95% CI 84%-89%) in the derivation phase. During the validation phase, 856

participants (44 with skull fracture) were recruited. The rule had a sensitivity of 89% and a specificity of 87% during this phase.

The clinical decision rule developed in this study identified about 90% of skull fractures among young children with mild head trauma who had no immediate indication for head tomography. Use of the rule would have reduced the number of radiologic evaluations by about 60% [1)].

Case series

Bobeff et al. analyzed 146 consecutive patients (mean age: 49.8 ± 17.5 years) treated at the department of neurosurgery in a 5-year period. Clinical data, radiologic reports, and laboratory results were evaluated retrospectively.

A total of 63% of patients were treated conservatively, 21.9% were operated on immediately, and 15.1% experienced CTF. Overall, 73.3% had a favorable outcome; the mortality rate was 13%. Intracranial bleeding occurred in 96.6% of cases, basilar SF in 61%, and cerebrospinal fluid (CSF) leak in 2.8%. The independent risk factors for outcome were Glasgow Coma Scale (GCS) score, age, and platelet count (PCT). The independent risk factors for CTF were epidural hematoma, subdural hematoma, mass effect, edema, international normalized ratio, PCT, mean platelet volume, and Cerebrospinal fluid fistula. The consensus decision tree algorithm used at the accident and emergency department indicated patients with no need for neurosurgical intervention with an accuracy of 91.7%, sensitivity of 88.9%, and featured the importance of mass effect, GCS, and epidural hematoma.

Tests included in the complete blood count appeared useful for predicting the course in patients with SF, although the most important factors were age and neurologic status, as well as radiologic findings. Our decision tree requires further validation before it can be used in everyday practice [2)].

Case report from HGUA

Multiple comminuted left craniofacial fractures.

Skull fractures: left parietal, temporal, and frontal bones, with herniation of brain parenchyma through them. Soft tissue hematoma in the left facial region with scalp involvement in the temporal and parietal regions. Fractures of the left zygomaticomaxillary complex: zygomatic arch, anterior and posterior walls of the maxillary sinus, with involvement of the frontal sinus and hematosinus. Also associated with subcutaneous emphysema adjacent to the fractures. Fractures of all left orbital walls, without evidence of muscle entrapment. Sphenoid fracture with involvement of both sinus walls, noting a fracture line in the clivus extending to the carotid canal.

Longitudinal and oblique fracture of the left petrous part, extending to the anterior wall of the external auditory canal (CAE)

1)

Gravel J, Gouin S, Chalut D, Crevier L, Décarie JC, Elazhary N, Mâsse B. Derivation and validation of a clinical decision rule to identify young children with skull fracture following isolated head trauma. CMAJ. 2015 Nov 3;187(16):1202-8. doi: 10.1503/cmaj.150540. PubMed PMID: 26350911; PubMed

Central PMCID: PMC4627875.
2)
Bobeff EJ, Posmyk BJ, Bobeff KŁ, Fortuniak J, Wiśniewski K, Stawiski K, Stefańczyk L, Jaskólski DJ. Predicting Outcome and Conservative Treatment Failure in Patients with Skull Fracture after Traumatic Brain Injury: A Retrospective Cohort Study. J Neurol Surg A Cent Eur Neurosurg. 2019 Aug 29. doi: 10.1055/s-0039-1692672. [Epub ahead of print] PubMed PMID: 31466104.