Pediatric epidural hematoma treatment

- Cost of pediatric traumatic brain injury in developing countries: a retrospective cohort study
- Epidural hematoma: Bibliometric analysis of scientific trends and developments from 1980 to 2023
- New oral anticoagulants-induced spinal epidural haematomas: case series and review of literature
- Efficacy and Risks of Posterior Vertebral Column Resection in the Treatment of Severe Pediatric Spinal Deformities: A Case Series
- Management of Spontaneous Epidural Hematoma in the Setting of Vaso-occlusive Crisis Among Pediatric Patients With Sickle Cell Disease: A Case Series and Scoping Literature Review
- Adherence in Evidence-Based Neurotrauma Guidelines: A Worldwide Survey
- Worsening Preseptal Cellulitis With an Orbital Abscess and Intracranial Extension in a Pediatric Patient
- Traumatic posterior fossa extradural hematoma in children: a meta-analysis and institutional experience of its clinical course, treatment and outcomes

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see also Intracranial epidural hematoma treatment.

Indications

- Middle Meningeal Artery Embolization in Pediatric Patients
- Axial Convex-Shaped Hematoma was Associated with Poor Curative Effect of Surgical Treatment for Traumatic Posterior Fossa Epidural Hematoma in Children
- Toward rational use of repeat imaging in children with mild traumatic brain injuries and intracranial injuries
- A series of post-traumatic midline epidural hematoma and review of the literature
- Optimization of the scan length of head traumas on the pediatric and adult CT scan and proposition of a new acquisition limit
- Role of routine post-operative CT brain following evacuation of extradural haematoma in children: a single-centre experience
- The importance of skull impact site for minor mechanism head injury requiring neurosurgical intervention
- Bilateral skull fracture with massive epidural hematoma secondary to pin-type head fixation in a pediatric patient: Case report and review of the literature

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Neurological Symptoms: Children with EDH who present with neurological symptoms, such as headaches, vomiting, altered consciousness, seizures, or focal neurological deficits, require immediate medical attention. Neurological symptoms indicate that the hematoma is causing compression and increased pressure on the brain, which can lead to severe brain injury or death.

Significant Hematoma Size: The size of the epidural hematoma is an important factor in determining

the need for treatment. Large hematomas or those with rapid expansion may cause substantial compression of brain tissue and necessitate surgical intervention to evacuate the clot and relieve intracranial pressure.

Midline Shift: A midline shift occurs when the brain shifts from its normal position due to the mass effect of the hematoma. A significant midline shift seen on brain imaging (CT scan or MRI) is a strong indication for surgical evacuation.

Glasgow Coma Scale (GCS) Score: The GCS is a neurological assessment tool that evaluates a child's level of consciousness. If a child's GCS score is low, indicating severe impairment of consciousness, surgical intervention is often necessary.

Rapid Neurological Deterioration: If a child's neurological status rapidly deteriorates, surgical evacuation of the epidural hematoma becomes a critical and urgent intervention.

Age and Physiological Tolerance: Young children, especially infants, may have limited physiological tolerance for increased intracranial pressure. In these cases, medical professionals may be more likely to recommend early surgical intervention.

In general, surgical evacuation of a pediatric epidural hematoma is the primary treatment approach when there are indications of significant compression on the brain or neurological impairment. The surgical procedure involves creating a burr hole or craniotomy to remove the blood clot and relieve pressure from the brain.

The optimal treatment of children with traumatic intracranial epidural hematomas (EDHs) is unknown. Among patients with EDH admitted for observation, larger EDH, mass effect, headaches, and prothrombin time of >14 seconds were associated with delayed surgical intervention. A large-scale study is warranted to identify independent predictors of delayed surgery in children under observation for EDH [1].

In Infants Younger than One Year, traumatic epidural hematomas with normal neurological examination, high Children’s Coma Score, hematoma thickness below 20 mm, no apparent shift, and without an associated brain, pathology can be treated conservatively. None of those patients treated conservatively required an operation after that [2].

Management of pediatric epidural hematoma (PEDH) ranges from observation to emergent craniotomy.Guidelines for management remain poorly defined. More so, serial CT imaging in the pediatric population is often an area of controversy given the concern for excessive radiation as well as increased costs.

A work of Samples et al., from the University of Texas Health Science Center at San Antonio aimed to further elucidate the need for serial imaging to surgical decision-making.

A prospectively maintained single-institution trauma database was reviewed at a level-1 trauma center to identify patients 18 years old and younger presenting with PEDH over a 10-year period. Selected charts were reviewed for demographic information, mechanisms of injury, neurologic exam,

radiographic findings, and treatment course. Surgical decisions were at the discretion of the neurosurgeon on call, often in discussion with a pediatric neurosurgeon.

Two hundred and ten records with traumatic epidural hematomas were reviewed. Seventy-three (35%) were taken emergently for hematoma evacuation. Of these, 18 (25%) underwent repeat imaging prior to surgery. One hundred and thirty-seven (65%) were admitted for observation. Seventy-two patients (53%) did not undergo repeat imaging. Sixty-five (47%) admitted for conservative management had at least one repeat scan during their hospitalization. Indications for follow-up imaging during conservative management included routine follow-up (74%), initial scan in our system following transfer (17%), neurological decline (8%), and unknown (1%). Thirteen patients (9%) were taken for surgery in a delayed fashion following admission. Twelve patients who went to surgery in a delayed fashion demonstrated progression on follow-up imaging; however, increase in hematoma size on repeat imaging was the sole surgical indication in only four patients (3%). There were no deaths related to the epidural hemorrhage or postoperatively, regardless of management, and all patients recovered to their pre-trauma baseline.

Given that isolated hematoma expansion accounted for an exceptionally small proportion of operative indications, this data suggests changes seen on CT should not be solely relied upon to dictate surgical management. The benefit of obtaining follow-up imaging must be strongly considered and weighed against the known deleterious effects of excessive radiation in pediatric patients, let alone its clinical utility [3].

Jamous et al., retrospectively reviewed charts of patients with conservatively treated intracranial acute epidural hematoma (EDH) at the Department of Neurosurgery, King Abdulla University Hospital, Irbid, Jordan, between August 2003 and October 2007. All patients had a Glasgow Coma Scale score of 14 or 15, and an initial computerized tomography (CT) scan demonstrating an EDH with or without skull fractures. Follow-up included neurological examination and brain CT.

Six children (3 boys, 3 girls) with acute EDH were successfully managed at our department without surgical intervention. The Glasgow Outcome Scale score of all patients was 5, with no posttraumatic sequelae. Follow-up brain CT showed complete resolution of the EDH within 2-3 months.

These results demonstrated that pediatric EDH can be managed nonoperatively. The pronounced increase in the number of CT examinations for patients with head injuries has resulted in a greater proportion of EDH detected in conscious patients. We recommend such treatment be performed in specialized pediatric neurosurgical centers under close neurological observation [4].

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2)
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4)

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