Emergency craniotomy

Patients with closed head injury and expanding intracranial acute epidural hematoma (EDH) or intracranial acute subdural hematoma require urgent craniotomy for decompression and control of hemorrhage. In remote areas where neurosurgeons are not available, trauma surgeons may occasionally need to intervene to avert progressive neurologic injury and death.

After emergency neurosurgery, ORE is associated with absent cerebral edema, high GCS score, and better ASA status [1].

A retrospective review was conducted for each patient who underwent an emergent or urgent craniotomy within 24 hours of presentation between January 2010 and April 2017. Demographic, clinical, and surgical details were recorded for a total of 48 variables. Any readmission within 90 days was analyzed. Hospital charges for each admission and readmission were collected and adjusted for inflation to October 2018 values.

Among the 223 children who underwent urgent or emergent craniotomies, the majority were admitted for traumatic injuries (n = 163, 73.1%). The most common traumatic mechanism was fall (n = 51, 22.9%), and the most common non-traumatic cause was tumor (n = 21, 9.4%). Overall, craniotomies were typically performed for hematoma evacuation of one type or combination (n = 115, 51.6%) during off-peak times (n = 178, 79.8%). Seventy-seven (34.5%) subjects experienced 1 or more postoperative events, 22 of whom returned to the operating room. There were 13 (5.8%) and 33 (14.8%) readmissions within 30 days and 90 days of discharge, respectively. Non-trauma patients (compared with trauma patients) and polytrauma (compared with isolated head injury) had greater healthcare needs, resulting in higher charges.

Most urgent or emergent pediatric craniotomies were performed for the treatment of traumatic injuries involving hematoma evacuation, but non-traumatic patients were more complex requiring greater resources [2].

In 1990, a young man with rapidly deteriorating neurologic signs underwent emergency burr hole decompression of a combined EDH/SDH at our hospital, with complete recovery. In anticipation of future need, five surgeons at our rural, American College of Surgeons-verified Level III trauma center participated in a neurosurgeon-directed course in emergency craniotomy. Since January 1, 1991, 792 patients have been entered into the trauma registry, including 60 with closed head injury and Glasgow Coma Scale (GCS) score of 13 or less. All but seven were transferred to a regional Level II trauma center, which is a minimum flight time of 1 hour each way. All patients with EDH (5) and 2 of 14 with SDH were deemed too unstable for transport and underwent burr hole decompression followed by immediate transfer. All craniotomies were approved by the consulting neurosurgeon and were done for computed tomography-confirmed lesions combined with neurologic deterioration as demonstrated by (1) GCS score of 8 or less, (2) lateralizing signs (dilated pupil, hemiparesis), or (3) development of combined bradycardia and hypertension. One patient with a GCS score of 3 on arrival died. Seven survivors (mean follow-up, 3.9 years; range, 1-6.5 years), including the index case, function independently, although one survivor has moderate cognitive and motor impairment. We conclude that early craniotomy for expanding epidural and subdural hematomas by properly trained surgeons may save lives and reduce morbidity in properly selected cases when timely access to a

neurosurgeon is not possible [3].

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