

Factors Predicting the Need for Surgery of the Opposite Side after Unilateral Evacuation of Bilateral Chronic Subdural Hematomas

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Introduction

- Chronic subdural hematoma (CSDH) may be bilateral in 25-30% of cases.
- Many bilateral CSDHs (bCSDH) undergo unilateral surgery as the contralateral hematoma is insignificant in size and asymptomatic.
- Nevertheless, up to 20% of bCSDHs may require evacuation of the contralateral hematoma due to later enlargement.

Study Aim:

1) To identify factors that underlay the surgeon's decision to perform unilateral vs. bilateral evacuation on initial surgery

2) To identify factors associated with enlargement and the need for operation on the contralateral side in those patients who were initially treated with unilateral evacuation

Methods

- Design: Retrospective
- Period: 2006-2016
- Inclusion criteria: Surgically treated CSDH
- 325 patients
- mean age = 71.6 years, range 28
 -98, M/F ratio: 2.3
- 128 bilateral CSDH: 51 evacuated bilaterally, 77 unilaterally

Results

Unilateral vs. Bilateral Evacuation upon Presentation

- GCS was lower (14.0 vs. 14.7, p = 0.02) and midline shift was larger (6.7 mm vs. 1.2 mm, p < 0.001) in those evacuated unilaterally compared to those evacuated bilaterally.
- Hematoma size was a predictor of the need for initial unilateral vs. bilateral evacuation (p < 0.001).
- There was no difference between those evacuated unilaterally and bilaterally in terms of reoperation (p = 0.4).

Predictors of Contralateral

- Enlargement
- 7 patients (9.1%) who initially underwent unilateral evacuation required later surgery for the contralateral hematoma.

Factors predicting contralateral hematoma growth:

- Contralateral hematoma thickness (10.2 mm vs. 6.1 mm, p = 0.001)
- Midline shift on the early postoperative CT (1.2 mm vs. 3.5 mm in the group who eventually underwent evacuation for the opposite side vs. those who did not; p = 0.008).
- Percent hematoma change of the evacuated side on the early postoperative CT (55.6% for those who underwent evacuation for the opposite side vs. 34.7% for those who did not; p = 0.04).

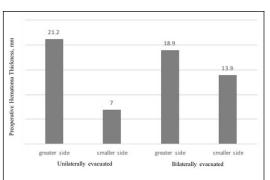
Results cont'd

Factors w/o influence on contralateral hematoma growth:

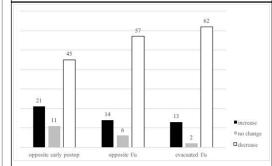
 Sex, age, anticoagulant/antiplatelet use, GCS, ND, preoperative hematoma thickness of the nonevacuated side, preoperative hematoma density characteristic in the evacuated and non- evacuated sides, hematoma loculation in the evacuated and non- evacuated sides, preoperative midline shift, opening the internal membranes during surgery, surgical evacuation techniques, number of burr holes (1 vs. 2), use of intraoperative irrigation, and drain use or its size.

Hematoma Resolution Pattern in the Evacuated and Opposite Nonevacuated Sides in Unilaterally Evacuated bCSDHs

- There was no difference in daily % hematoma change between the 2 sides comparing the early postoperative vs. follow-up time points.
- There was no difference between the pace of hematoma decrease in the evacuated and non-evacuated sides (0.7% decrease per day vs. 0.9%, p = 0.49).



Preoperative maximal hematoma diameter as a function of evacuation laterality



the number of patients who experienced increase, no change, or decrease in hematoma size (compared to the preoperative image) in the early postoperative and follow-up CT on both the evacuated and non-evacuated sides in unilaterally evacuated bCSDHs.

Conclusions

In most unilaterally evacuated bCSDHs, the untreated hematomas do not enlarge or require surgery, but resolve spontaneously. Thickness of the untreated hematoma on the first postoperative day CT and the degree of midline shift reversal after surgery, are the most important factors predicting the need for surgery in the opposite side.