

## Incidence of Surgically Treated Chronic Subdural Hematoma after Head Injury with Normal Initial Computed Tomography

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**Background:** The objective was to determine the incidence of surgically treated chronic subdural hematoma (cSDH) within 6 months after head trauma in a consecutive series of patients with head injuries who had a normal initial computed tomography (CT).

**Materials and methods:** All patients (N=3,023) with a head injury that were CT-scanned and treated at the Tampere University Hospital's emergency department, between August 2010 and July 2012, were retrospectively evaluated from medical records. This study focused on adult (18 years or older) patients who were residents of the Pirkanmaa region at the time of injury and were clinically evaluated and scanned with head CT at the Tampere University Hospital's emergency department within 48 hours after injury (n=1,941, median age=59 years, IQR=39-79 years, males=57.8%, patients using antithrombotic medication=25.5%). Based on CT findings the patients were divided into two groups: *CT positive* (n=368, 19%) and *CT negative* (n=1,573, 81%). A patient was regarded *CT positive* if there were any signs of acute traumatic intracranial pathology on the initial head CT. As the aim of this study was to examine the development of cSDH after normal initial head CT, the patients with any kind of subdural fluid collection on initial head CT were regarded as *CT positive*. Consequently, patients with no signs of acute traumatic intracranial pathology or any type of subdural collection on initial head CT were regarded as *CT negative*. A six-month follow-up period for cSDH was included to the data collection.

**Results:** Two (n=2) of the 1,573 patients who were *CT negative* received surgical treatment (trepanation) for cSDH. Consequently, the incidence of surgically treated cSDH after normal initial head CT during six-month follow-up in our cohort was 0.13%. Both patients sustained mild traumatic brain injuries initially. One of the two patients was on antithrombotic medication (warfarin) at the time of trauma, hence the incidence of surgically treated cSDH among patients with antithrombotic medication in *CT negative* patients (n=376, 23.9%) was 0.27%. The time intervals from trauma to trepanation of cSDH were 7 and 8 weeks. Additionally, within the *CT negative* group, one subdural effusion was operated shortly after trauma (ten days). Due to the small number of cases, statistical analyses on possible risk factors for cSDH were not performed.

**Conclusion:** The incidence of surgically treated cSDH after head trauma within patients with normal initial CT scans was minute in our cohort. These findings partly challenge the concept of cSDH as a purely trauma-induced disease.