



## Chronic Subdural Hematoma: Analysis of 159 patients treated with surgery at a Tertiary Care Center.

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### ABSTRACT

Chronic subdural hematoma (CSDH) is one of the common surgically treatable neurosurgical diseases. Still there is lack of consistency in the management of CSDH amongst surgeons in terms of various treatment strategies. Burr-hole evacuation is the treatment of choice for an uncomplicated CSDH. Some of the recent trials favor the use of drain to reduce recurrence rate. Craniotomy and twist drill craniostomy also play a role in the management. This is a retrospective analysis of 159 surgically treated patients with chronic subdural hematoma at a tertiary care center over a span of three years. The study emphasized on recurrence rate, re-surgery, mortality and morbidity.

### KEYWORDS

Chronic subdural hematoma, CSDH, Burr hole, subdural hematoma

### Introduction

The annual incidence of CSDH is about 1-5.3 cases per 100,000 populations. The incidence is rising due to increase in life expectancy, associated medical diseases such as hemodialysis, use of anticoagulant and antiplatelet therapy.<sup>[1,2]</sup>

Head trauma is usually contemplated for the development of CSDH, especially in elderly, which initially seems trivial, may be the cause for the genesis of CSDH.[3] Most of patients with CSDH, manifesting with clinical symptoms, should be operated for evacuation of CSDH. The procedures can be performed with a range starting from twist drill craniostomy to craniotomy and membranectomy.<sup>[4]</sup>

Burr-hole evacuation is an easier and efficient surgical procedure, which can be done for drainage of uncomplicated CSDH.<sup>[5]</sup> However, it has been reported that recurrence rate range from 9.2% to 26.5% after application of this procedure for surgical evacuation. [6] However, there are some studies that have been reported of other recurrence values, which were from 2.3% to 37%.<sup>[3]</sup>

This present study retrospectively analyzed the results a single burr hole in consecutive 159 patients with CSDH at a tertiary care center.

### Materials and Methods

This is a retrospective analysis of 159 patients with CSDH treated in Department of Neurosurgery, RNT Medical College, Udaipur, Rajasthan, India from August 2013 to July 2016. All the patients underwent either computed tomography (CT) scan or magnetic resonance (MR) for diagnosis. A surgical evacuation was performed depending upon clinical condition and thickness of hematoma.

The neurologically preserved patients who were on anticoagulant therapy for their medical condition, anticoagulants were stopped till control of international normalized ratio (INR). In patients with coagulopathies or on anticoagulants who presented in emergency with altered sensorium, anticoagulant status was reversed with vitamin K injection and they were taken up for surgery under FFP cover.

All the patients were operated using single burr hole technique. The burr-hole was made at the site of the maximal hematoma thickness. The patients were analyzed for age, gender, Glasgow Coma Scale (GCS), symptomatology, laterality, days of hospitalization, Glasgow Outcome Scale (GOS) at discharge,

recurrence and mortality.

### Result

A total of 159 consecutive patients were included in this retrospective study over a three-year duration. The mean age of the patients with CSDH was 63 years whereas the range distribution was from 7 to 89 years.

Among these 159 patients, CSDH was predominant in males with 129 cases (81.1%) whereas 30 cases were female (18.9%), and male to female ratio was 4.3:1. Location of hematoma was on the right side in 67 patients (42.1 %), on the left side in 63 patients (39.6%), while bilateral hematomas were present in 29 patients (18.2%).

History of trauma was elicited in 105 patients (66 %) while 54 patients (34%) didn't reveal definite history of head trauma.

There were various presenting signs and symptoms of patients with CSDH. Headache was the commonest symptom occurring in 103 patients (64.7%), followed by contralateral hemiparesis 82 patients (51.6%), speech disturbance 40 patients (25.1%), and altered behavior 37 patients (23.2%). Other symptoms include urinary incontinence (6.3%), paraparesis (3.8%) and seizure (3.8%).

The diagnosis of CSDH was confirmed on computed tomography (CT head) in 135 (84.9%) patients, while in 24 (15.1%) patients were confirmed under magnetic resonance imaging (MRI brain). Mean operative time was 46 minutes. The length of hospitalization ranged from 1 to 34 days, with a mean stay of 4.8 days.

The mean GCS (Glasgow Coma Score) at admission was 13.2. Out of 159 patients, 101 patients (63.5%) had GCS of 15-14, 40 patients (25.2%) had GCS of 13-9 and remaining 18 patients (11.3 %) had GCS of 8-3 points. At the time of discharge, general outcome were assessed using GOS (Glasgow Outcome Scale) with range of 1-5. Out of 159 patients, 133 (83.6%) had favorable outcome (GOS 4-5), 22 patients (13.8%) (GOS 3-2) had poor outcome. Death occurred in four patients (2.9%).

A recurrence rate of 11% (18 patients) was observed in this study. All the patients with symptomatic recurrences were re-operated. ((Re-exploration of same burr hole, expansion of same burr hole, making another burr hole, craniotomy and craniectomy)

## Discussion

CSDH is quite common in neurosurgical practice,<sup>[7]</sup> with a lot of etiological factors; foremost among them are various traumatic factors. However, the etiology of CSDH is not entirely understood until now.<sup>[8]</sup>

As per literature, CSDH is pathologic condition, which is mostly present in older people from 50 to 70 years. The average age of our patients (63 years) was comparable to the series by Agon et al (62.85 years) [9] but much younger than the average age stated by authors Gastone et al. (76.4 years).<sup>[10]</sup>

The ratio of male to female in our patients is 4.3:1 much higher than the ratio found by Gastone et al. and Gelabert-Gonzales et al. 1.68:1 [7], [10]. Other authors also found the higher frequency of CSDH in males in comparison to females.<sup>[11],[12],[13]</sup>

As per our results, head trauma was the most frequent cause for CSDH in 105 patients (66%), while 54 patients (34%) didn't have certain history of head trauma. Our results about the incidence of head trauma (66%) as a causative factor for CSDH are comparable to those of other authors, which report that head trauma is accountable for CSDH in 35-75% of patients.<sup>[13],[14],[15]</sup>

Clinically, CSDH is presented with a lot of symptoms. In our study the foremost symptom was headache (64.7%), followed by hemiparesis (51.6%) and speech disturbances (25.1%). The likewise symptoms and with comparable frequency were narrated by Gelabert-Gonzalez et al., Mori and Maeda, and Sousa et al.<sup>[7],[8],[16]</sup>

We have found CSDH on the right side in (42.1%), on the left side (39.6%), and bilateral CSDH in (18.2%) of the cases. Other authors have described the higher frequency of the CSDH on the left side though not much of difference was seen.<sup>[17],[18]</sup>

All the patients were treated surgically with single burr hole evacuation. Some authors approve that the optimal surgical treatment of patients with CSDH can be accomplished with one burr-hole trepanation with a closed drainage system.<sup>[11],[19]</sup>

We have used single burr hole as a primary procedure in all of our 159 patients. Although the view of the other authors is dissimilar, they consider that extended craniotomy allows better exposure of CSDH with thicker components.<sup>[20],[21]</sup>

The data from literature show that irrespective of surgical procedures, the procedure is accompanied by recurrence rates of 4% to 26%.<sup>[7],[8],[22]</sup> The recurrence rate in our series was 11% and is comparable to the series of the other authors.<sup>[4],[11],[19]</sup>

Four patients (2.9%) of our series have died in the post-operative period, in comparison to 2.7% mortality reported in few studies.<sup>[8]</sup> However, some authors state mortality rate ranging from 0% to 13%.<sup>[23]</sup>

## Conclusion

Chronic SDH is mainly disease of elderly. Single burr hole evacuation is one of the most effective methods of treating uncomplicated CSDH.

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