

## Comparative Study on the Out Come of Burrhole Craniostomy for Chronic Subdural Haematoma with or Without Drainage Tube

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### ABSTRACT

**Object:** To determine the role of drainage after burr hole craniostomy on the outcome of chronic subdural hematoma in terms of brain damage, infection, hospital stay and recurrence rate.

**Study Design:** Quasi experimental.

**Place and Duration of Study:** Neurosurgery department Bahawal Victoria Hospital Bahawalpur from Jan 2009 to Dec 2009.

**Methods:** Forty patients were divided in two equal groups. In group A drain was placed and in group B patients were managed only with burrhole.

**Results:** The study group was composed of 30 male and 10 female patients (mean age, 58.63 years, age ranges 40-70 years). In 35 patients there was a history of trauma prior to the onset of major neurological symptoms. In group A patients drain was placed. Drainage tube damaged the brain in 2 patients, Infection in 4 patients and seizure in 3 patients. In group B infection in 2 patients, seizure in one patient. Recurrence of CSDH in 2 patients in group A and 4 patients in group B.

**Conclusion:** Chronic subdural hematoma is a discrete clinical entity. Trauma appears to be the primary causative factor that resulted in chronic subdural hematoma Bur hole drainage under local anesthesia forms the basis of treatment. Drainage tube after evacuation of hematoma should be avoided because it can damage the brain parenchyma and prevalence to infection with drain.

**Key Words:** Ch. SDH, Burhole, Haematoma, Morbidity.

### INTRODUCTION

Subdural hematoma (SDH) is hemorrhage in space between Dura matter and arachnoid layer of the brain. Acute subdural hematoma is hemorrhage at the time of trauma up to 3 days. Subdural hematoma that develops from 3 days to 3 weeks after head injury is called sub acute. Those hematomas that present after 3 weeks are called chronic subdural hematoma. The incidence of chronic SDH is 1-2 per 100,000 people per year. About half of the patients presented with chronic SDH have no H/O trauma.<sup>1,2,5</sup>

A chronic subdural hematoma (SDH) is an old clot

of blood on the surface of the brain beneath its outer covering. These liquefied clots most often occur in patients age 60 and older who have brain atrophy, a shrinking or wasting away of brain tissue due to age or disease.<sup>1,3</sup> When the brain shrinks inside the skull over time, minor head trauma can cause tearing of blood vessels over the brain surface, resulting in a slow accumulation of blood over several days to weeks.<sup>2,4</sup> Because of the brain atrophy, the liquefied blood clots can become quite large before they cause symptoms. Less than half of patients remember the traumatic event itself because even relatively trivial trauma, such

as a minor bump on the head, can produce these slow hemorrhages. The bleeding from a chronic bleed is slow, probably from repeated minor bleeds, and usually stops by itself.<sup>3,4</sup> Since these bleeds progress slowly, they present the chance to be stopped before they cause significant damage. : Chronic subdural hematomas are common in the elderly.<sup>1,5,7</sup> Other risk factors include alcohol abuse, seizures, shunts that drain excess cerebrospinal fluid from the brain, and blood thinning medications such as Coumadin.<sup>5,6</sup>

The most common complaint is headache, seen in up to 80 percent of patients. Other symptoms include lethargy, memory impairment, confusion, weakness, nausea, vomiting, impaired vision and seizures. Patients with large hematomas may develop varying degrees of paralysis and coma.<sup>1,2,5,8</sup> A chronic subdural hematoma may mimic a number of other brain disease and disorders, including dementia, stroke, temporary disruption of blood supply to a portion of the brain (transient ischemic attacks), encephalitis and brain lesions such as tumors or abscesses.<sup>3,4,6</sup> Diagnosis involves computed tomography (CT) and magnetic resonance imaging (MRI) brain scans. SDHs vary in density and may extend over a large portion of the surface of the brain.<sup>7,9,10</sup>

Patients with chronic subdural hematomas that produce symptoms are effectively and safely treated by drilling a hole in the skull and draining the blood mass through a catheter.<sup>4</sup> this procedure can often be performed at the patient's bedside rather than the operating room. Recovery after brain injury varies widely. Overall, 80 to 90 percent of patients have significant brain function improvement after drainage of a chronic SDH. Residual fluid may collect after treatment, but improvement of symptoms does not require complete removal of the fluid.<sup>1,2,8,12</sup>

The study was carried out to see the role of drainage after burrhole craniostomy in a prospective design.

## MATERIAL AND METHODS

This study was conducted at the department of Neurosurgery Bahawal Victoria Hospital Bahawalpur from the Jan 2009 to Dec 2009. All patients presenting with CSDH were included in the study criterion for selection of the patient was based on CT scan findings. Patients were divided in two groups of 20 patients each. In group A patients drain was placed after burrhole craniostomy and in group B patients drain was not placed. A comprehensive periforma was used to record the findings. Bleeding profile done in all



Fig. 1: Chronic Subdural haematoma.

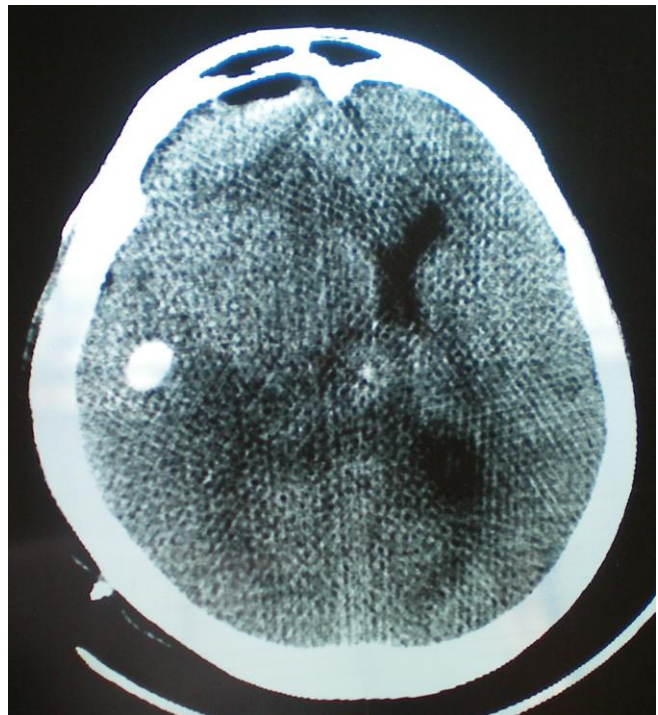


Fig. 2: Drain impacted in Brain Parenchyma.

patients. All the patients were managed by burrhole craniostomy under local anesthesia. Recovery was then evaluated with respect to amount of drainage,

complications, recurrence, length of hospital stay and relief from symptoms. CT scan was done in all the patients when feasible to assess the adequacy of drainage and position of the drain. The length of hospital stay was defined as the number of days in the hospital after burr hole drainage. Recurrence as reappearance of neurological symptoms and increase in hematoma volume on C T scan within four weeks of operation. Data was entered and analyzed. Frequency distribution tables were used to present data. Mean and standard deviation were used for continuous variables. Categorical variables were presented as proportions and percentages.

**RESULTS**

Forty patients underwent burrhole drainage .Mean age was 58.62 + 11.52 years with a minimum of forty years and a / maximum of 70 years. Nineteen (47.5%) of patients were between 50 and 60 years (table 1).

**Table 1:** *Demographic Presentation of patients with CSDH.*

Total No. of Patients		40
Gender	Male	Female
		30 (75%)
Age		
40 – 50 years		14 (35%)
51 – 60 years		19 (47.5%)
61 – 70 years		7 (17.5%)
GCS		
> 12		22
< 12		18

Gender distribution was 30 (75%) males and 10 (25%) females. Male to female ratio was 3:1 Majority of patients experienced minor head injuries resulting from blunt trauma in 35 (87.50%) other include bleeding profile derangement in 5 (12.50%) the initial Glasgow coma scale (GCS) was more than 12 in 13 patients of group A and 9 patients of group B (55%). 7 patients in group A and 11 patients in group B had GCS less than 12 (45%). Single burrhole was done in most of the cases (30 patients) of both groups. Two burrholes were done in those patients who had septated hematoma or deranged bleeding profile i.e. 4 patients of group A and 6 patients of group B (table 2). Improvement was

recorded in all patients except 2 patients in group A and 4 patients in group B. There was average daily output in group a 10 ml. Post operative CT scan was done in all patients. In group A hematoma was evacuation in 18 (90%) patients and drain entered in brain parenchyma in 2 patients, infection in 4 patients, seizures occurred in 3 (15%) patients and recurrence of symptoms and signs in 2 patients. In group B reasonable evacuation of hematoma was found in 16 (80%) and infection in 3 patients. seizures occurred in 1 (5%) patients and recurrence of symptoms and signs in 6 patients. Drain was removed on 4<sup>th</sup> post-operative days. Postoperative C T scan was repeated in 2 patients of group A and 4 patients of group B for symptoms of headache and failure of improvement in deficit. Recurrence found in 2 patients of group A and 4 patients of group B, repeated evacuation of CSDH done resulted in improvement. Reoperation was done in those patients in whom inadequate drainage was found. Death occurred in three patients of group A one death was due to brain contusion by drain and one patient died because of seizures and one patient expired due to pulmonary complications. Death occurred in 2 patients of group B because of pulmonary complications (Table 2).

**DISCUSSION**

Out of 40 patients in both groups, 26(65%) patients with CSDH age were between 51-70 years and male to female ration is 3:1. Most patients 35 (87.50%) in our study with CSDH caused by head injury; other causes and predisposing factors include coagulopathy (including patients on warfarin and aspirin), seizure disorders, and CSF shunts.<sup>6,14,15</sup> Antithrombotic therapy factor for development of CSDH in our study was 5 (12.5%) of the patients.

CSDH presents as a wide range of symptoms from headache to focal deficit. C T scan brain plain is the basic investigation to diagnose CSDH. Mostly clot is frontopeirietal 80%. CSDH expands along the wide area of the brain unlike epidural hematoma which can not past the sutures of the skull.<sup>5,6,9,16</sup>

Surgery is the mainstay of treatment of CSDH, explained by Putnam and Cushing in 1925. Burr hole craniostomy claimed three fold reduction in mortality.<sup>14,15</sup> Single burr hole drainage of the CSDH showed successful treatment. In our study Single burr hole drainage in 16 (80%) patients in group A and 14 (70%) patients in group B. Two burr hole drainage in 4 (20%) patients in group A and 6 (30%) patients in

group B. drain was placed in all patients of group A. Placement of drain is associated with brain damage<sup>8</sup> in 2 (10%) patients in group A and no patient in group B, higher rate of infection<sup>11</sup> in group A patients 4 (20%) while in group B 2 (10%) patients. Seizures<sup>15</sup> occurred in 3 (15%) patients in group A and one patient in group B in our study. Recurrence subdural hematoma<sup>10,16</sup> in 2 (10%) patients in group A and 4 (20%) patients in group B. Average hospital stay of group A patients was 4 days while in group B patient it was 3 days. Placement of the drain after evacuation of CSDH had no significant effect on recovery of the patient (88% vs 86%).

**CONCLUSION**

Burrhole craniostomy without drainage tube is safe and have better results as compared to burrhole craniostomy with drainage tube for chronic subdural hematoma.

There is no significance difference on the outcome and recurrence of CSDH treated by burrhole craniostomy whether drain placed or not .at the time of operation the hematoma should be washed and thoroughly irrigated with Normal saline.

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**Table 2: Treatment Results and Post-op Complications.**

Total No. of Patients		40	Group A	Group B
			20	20
Burr hole				
	single burr hole		16	14
	two burr holes		4	6
Brain injury			2	0
Infection			4	2
Seizures			3	1
Hospital stay			4 days	3 days
Recurrence			2	4

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