

# Comparison of Recurrence of Chronic Subdural Haematoma after Burr Hole Craniostomy with one time Drainage and Burr Hole Craniostomy With Tube Drainage

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## ABSTRACT

**Aim:** To evaluate the recurrence of chronic subdural haematoma after burr hole craniostomy with one time drainage and burr hole craniostomy with tube drainage.

**Methods:** This comparative study was conducted from June 2005 to June 2006 in the Department of Neurosurgery Unit-1 LGH Lahore. A total of 50 cases (25 in each group) were enrolled in the study with aged between 20 to 60 years and both sexes presenting with symptomatic chronic subdural haematoma having headache, change in personality or haemiparesis proven by CT scan while recurrent cases and the patients in whom surgery other than burr-hole evacuation is indicated were excluded.

**Results:** The age range was 20-60 years with mean±SD was 55.43±5.16 years. There were 68% males in Group A and 60% in Group-B while females in Group A were 32% and 40% in Group B. There statistically significant difference in both groups ( $\leq 0.05$ ).

**Conclusion:** There are less chances of recurrence of haematoma in patients treated with burr hole craniostomy with tube drainage as compared to burr hole with one time drainage.

**Key words:** Recurrence, Chronic subdural haematoma, Hole craniostomy, Burr hole craniotomy

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## INTRODUCTION

Chronic subdural haematoma is generally defined as a collection of blood or blood breakdown products between the brain and dura that has been present for at least 21 days<sup>1</sup>. The incidence of chronic subdural haematoma is 1-2 cases per 100,000 population per year and more common in the old age group after minor head injury<sup>2</sup>. The most frequent presenting symptoms are headache, deterioration in the neurological status (Glasgow coma scale) and haemiparesis.<sup>3</sup> Diagnosis is readily facilitated by brain computerized tomography (CT)<sup>2</sup>.

There are many surgical techniques for the treatment of chronic subdural haematoma. One or two burr hole craniostomy with or without saline irrigation and closed system drainage, twist drill craniostomy with or without irrigation and with or without drainage, craniostomy and excision of the subdural membranes, replacement of the haematoma with oxygen via percutaneous subdural tapping without irrigation and drainage, continuous subgaleal suction drainage, etc<sup>2,3,4</sup>.

One of the most commonly used method of treatment is burr hole craniostomy with closed system drainage. This method of evacuation is considered to be the least invasive form of surgical

management<sup>1</sup>. Comparison of the two treatment options with post-operative hospitalization, recurrences and re-operation, burr hole continuous drainage has a shorter hospitalization period compared with burr hole one time drainage method and has a lesser recurrence rate and need for re-operation. Therefore we suggest that the burr hole continuous drainage is better in the treatment of chronic subdural haematoma<sup>4</sup>. An international study shows that recurrence occurred in ten of 108(9.3%) people with a drain and 26 of 107(24%) without ( $p=0.003$ ; 95% CI 0.14-0.70). Medical and surgical complications were much the same between the study groups.<sup>6</sup>

This study was designed to evaluate the most effective method for the treatment of chronic subdural haematoma by comparing the two most widely used methods; Burr hole craniostomy with one time irrigation versus burr hole craniostomy with continuous tube drainage system to avoid the recurrence of chronic subdural haematoma and repeat surgeries.

## SUBJECTS AND METHODS

A total of 50 cases (25 in each group) were enrolled in the study with aged between 20 to 60 years and both sexes presenting with symptomatic chronic subdural haematoma having headache, change in personality or haemiparesis proven by CT scan while recurrent cases and the patients in whom surgery

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other than burr-hole evacuation is indicated were excluded. All patients fulfilling the inclusion criteria were admitted through the out patients and Emergency Department of Neurosurgery Unit-1 LGH Lahore. A detailed history was taken including demographic data (age, sex, address) and clinical presentation. They were assured regarding confidentiality and expertise used for the particular procedure and was educated for an anticipated better outcome. Two groups (A & B) were made after randomization using lottery method on the basis of technique adopted for their surgery.

In group A, the procedure for burr hole one time drainage was as follows: under local or G/A a single burr hole was made, dura matter and external membrane of the haematoma was incised. Using a soft catheter located at the subdural space irrigation with warm normal saline was continued until a limpid liquid discharge. Wound was closed in layers. In group B, burr hole with tube drainage, same procedure was carried out but when irrigation was completed, the catheter was not removed. Instead the free end of the drain was connected to close drainage system. All the surgeries were done by a single surgeon. Patient's position was kept flat after surgery. The drain was removed after 48 hours and patient was discharged after the improvement of symptoms and when they no longer need specialized neurosurgical care. They were followed for next six months, initially weekly for 1 month then monthly for next five months. Both techniques were assessed in terms of recurrence during follow up. The collected information was entered in SPSS version 16.0 and analyzed through it. Age was presented as Mean±SD. Gender and recurrence was presented as frequency and percentage. Both groups were compared for frequency of recurrence of haematoma by using chi-square test taking P-value ≤0.05 as significant.

**RESULTS**

We recorded age range was 20-60 years. In Group-A, 6(24%) patients were between 20-40 years of age and 19(76%) patients were 41-60 years of age while in Group-B, 9(36%) were between 20-40 years and 16(64%) were between 41-60 years of age, mean and SD, was recorded as 55.43±5.16 years (Table 1). Gender distribution of the subjects is presented in Table 2. Male were 17(68%) in Group-A and 15(60%) in Group-B. Females in Group-A were 8(32%) and 10(40%) in Group-B. Comparison of frequency of recurrence of chronic subdural haematoma in both groups was done which shows 8(32%) in Group A and 3(12%) in Group B. A test of significance (Chi square) was applied to know the significance difference which shows p value as 0.040 i.e. ≤0.05 (Table 3).

Table 1: Age distribution (n=50)

Age (years)	Group A		Group B	
	n	%age	n	%age
20-40	6	24.0	9	36.0
41-60	19	76.0	16	64.0
Total	25	100.0	25	100.0

Table 2: Gender distribution (n=50)

Gender	Group A		Group B	
	n	%age	n	%age
Male	17	68.0	15	60.0
Female	8	32.0	10	40.0
Total	25	100.0	25	100.0

Table 3: Comparison of frequency of recurrence of chronic subdural haematoma in both groups (n=50)

Recurrence	Group A		Group B	
	n	%age	n	%age
Yes	8	32.0	3	12.0
No	17	68.0	22	88.0
Total	25	100.0	25	100.0
P value	0.00			

**DISCUSSION**

In our study, common age was recorded as 55.43±5.16 years, male were in majority in both groups while frequency of recurrence of chronic subdural haematoma in both groups was done which shows 32% (n=8) in Group A and 12% (n=3) in Group B. The findings regarding common age are in accordance with another local study,<sup>7</sup> which shows 59.98±13.7 as the common age. Gender distribution shows that majority of the patients were male in both groups, and these findings are in accordance with Santarius and the local study as well<sup>7,8</sup> which shows that male are at maximum risk of subdural haematoma. Khanzada and workers<sup>9</sup> also found male to female ratio of 4:1.

Comparison of frequency of recurrence of chronic subdural haematoma in both groups shows that one time drainage had more chances of recurrence of subdural haematoma, as we found 30% (n=15) while the group treated with continuous drainage had 12% (n=6) recurrence, and it was significantly lesser than the one time drainage, as the P value was recorded as 0.048 i.e. ≤0.05.

Santarius et al<sup>8</sup> investigated the effect of drains on recurrence rates and clinical outcomes and found recurrence in ten of 108 (9.3%) people with a drain, and 26 of 107 (24%) without (p=0.003; 95%, CI 0.14–0.70), the results are close to the current study.

Another retrospective study by Lind and co-workers<sup>12</sup> who identified recurrence rates of 10% for drain and 19% for no drain, and that of Mori and Maeda<sup>13</sup> who showed a recurrence rate of 9.8% for use of drains. These results are consistent with a positive effect of drains in prevention of postoperative

recurrent collections, and their use could avoid repeated operations and additional time in hospital.

## CONCLUSION

There are less chances of recurrence of haematoma in patients treated with burr hole craniostomy with tube drainage as compared to burr hole with one time drainage and this technique reduces the hospital stay and cost of operation theatre and medicines which is beneficial for the patient as well as the state.

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