Chronic Subdural Hematomas: Single Versus Double Burr Hole Drainage –Results of a Comparative Study.

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ABSTRACT

Background: Subdural hematomas are a well-known entity in neurosurgical practice. The aetiology of subdural hematomas is commonly attributed to head injury in about 50% of the patients The recurrence rates vary from 8-26% ·However, the issue of effect of number of burr holes on the recurrence of subdural hematomas has not been well settled and this study was undertaken to address this issue.

Aims and objectives: To compare single versus double burr hole drainage techniques in terms of hospital stay and recurrence rate.

Methods: We conducted a randomized controlled study over a period of 2 years, from April 2021 to March 2023 in the Department of Neurosurgery at Super speciality Hospital, Government Medical College Srinagar Kashmir, India. All patients with a CT diagnosis of subacute and chronic subdural hematomas were enrolled in the study, however patients with multilocular collections in the chronic subdural hematoma group were excluded in the study.

Results: In this research, we did not find any significant difference in results of single or double burr-hole surgery in terms of hospital stay, or hematoma recurrence. Right-sided, left-sided and bilateral hematoma were found in 48.3%, 40.0% and 11.7% clients of this study respectively, and all patients received irrigation.

Conclusions: There is statistically no advantage of double burr hole drainage over single burr hole drainage in terms of hospital stay and recurrence rate.

Keywords: Subdural Hematoma, Chronic, double vs single ,Burr hole drainage

INTRODUCTION

Subdural hematomas are a well-known entity in neurosurgical practice. The aetiology of subdural hematomas is commonly attributed to head injury in about 50% of the patients.[1] In rest of the patient's definite cause is not known.

Subdural hematomas are classified as acute, sub-acute and chronic depending on the time of diagnosis from the day of injury as acute within 3 days of injury, subacute from 3 days to 3 weeks of injury and chronic more than 3 weeks after injury [(9,19)].

Subdural hematomas can also be classified based on texture of the hematoma on plain CT scan with hyperdense hematoma as acute subdural, iso-dense as subacute and chronic as hypodense [14].

Twist drill craniostomy, burr-hole drainage or craniotomy are the various methods to deal with subdural hematomas [13,17].

The recurrence rates vary from 8-26% [6,20]and various factors have been noted to have a bearing on recurrence rates that include multilocularity of the collection and presence of coagulopathy [7]. However, the issue of effect of number of burr holes on the recurrence of subdural hematomas has not been well settled and this study was undertaken to address this issue.

METHODS

We conducted a randomized controlled study over a period of 2 years, from April 2021 to March 2023 in the Department of Neurosurgery at Super speciality Hospital, Government Medical College Srinagar Kashmir, India. All patients with a CT diagnosis of subacute and chronic subdural hematomas were enrolled in the study, however patients with multilocular collections in the chronic subdural hematoma group were excluded in the study.

We enrolled a total of 176 patients in the study, who were allocated according to the random table to the 2 groups as one receiving single burr-hole and the other, 2 burr-holes. At the end of the study i.e., 24 months period plus the 6-months period after the last patient was operated upon, the results of the study were analysed. We lost 2 patients to follow-up and 2 patients died while in hospital after the evacuation of the subdural hematoma, these 4 patients were excluded from the study and hence at the end of the study we were left with 172 patients. The analysis was done on 172patients. Demographic characteristics, coagulation profile, operative modalities, hospital stay, and recurrence rate was noted. Patients were followed-up in Neurosurgical outpatient-department. CT scan was done in follow-up patients only if patients would become symptomatic for recurrence. Single burr-hole was put on posterior parietal region and double burr hole was put on posterior parietal and posterior frontal regions under local anaesthesia and intravenous sedation. The subdural space was irrigated thoroughly with normal saline by means of a soft silastic catheter in all the patients. The same catheter was left in the subdural space and connected to a collection bag. The drain was put through parietal burr hole and taken out through a separate stab incision about 5cm away from the parietal burr hole site. Patients were nursed in flat position for 48 hours in the postoperative period. The subdural drain was kept for 48 hrs for all the patients.

Statistical analysis was done by SPSS version 21. Dependent variables (Hospital Stay and Recurrence) were cross-tabulated with independent variables via Chi-square; p-value<0.05 was taken as significant.

RESULTS

Table 1:

Variable	Frequency	Hospital Stay	Recurrence

		(Number)	(In days)			No	Yes
			<5	5-10	>10		
Age(years)	<30	02	2	0	0	02	0
	30-50	42	39	3	0	40	2
	50-70	92	86	4	2	86	4
	70-90	34	28	2	2	28	6
	>90	02	2	0	0	02	0
Gender	Male	112	96	11	5	102	10
	Female	60	48	09	3	54	6
GCS Score	3-8	10	1	04	5	07	3
	9-12	28	8	17	3	25	3
	13-15	134	162	30	2	130	4
Hematoma	Right	96	78	12	6	92	4
	Left	52	44	6	2	47	5
	Bilateral	14	9	3	2	11	3
Coagulation Profile	Normal	148	140	10	2	148	4
	Deranged	24	3	12	5	12	8
Burr Hole	Single	86	62	17	7	80	6
	Double	86	62	16	8	79	5

P value by Chi Square method for burr hole drainage, single versus double in terms of recurrence was >0.05 which is statistically not significant.(Table 1).

DISCUSSION

The gradual rise in incidence of CSDH is expected to persist, therefore, it's imperative to pin-point definitive and more refined operative regimes.[5,15] Various surgical procedures are available, nevertheless, optimal technique remains controversial.[10-12,14,16-18] Less invasive procedures like twist-drill craniostomy (TDC) and burr-hole drainage(BHD) often gain priority.[1,2,13,16-18] Among these procedures burr-hole drainage is the commonest procedure undertaken [(2,7)].Literature is replete with retrospective analysis of patient with chronic subdural hematoma management.

Though there are some randomized controlled trials in chronic subdural hematomas which discuss the issue of burr hole irrigation with or without drainage [(5,15)], twist drill drainage for 48 vs 96 hrs [4] till date, to our knowledge, there is no randomized trial that has compared the recurrence rates of single versus double burr-hole therapy in patients with subacute and chronic subdural hematomas. We put a subdural drain in all the patients in view of the low recurrence rates as proved by a previous randomized trial [(15)]. The overall recurrence rate in our present series was low (5.5%), as compared to our previous observational study (6.48%) [(7)]. This low recurrence rate is possibly because of the strict use of subdural drains in all the patients. In our previous study [(7)] we noticed that multilocular collections have high risk of recurrence. The explanation given in the literature for high incidence of postoperative recurrence in such subdural collections is the hyper fibrinolytic activity and tendency to re-bleed from the membrane [(16)]. Since we excluded multilocular collections in the present study, this could also explain why the recurrence in our present series is even less than in our past series in which we have included multilocular collections.

In this research, we did not find any significant difference in results of single or double burr-hole surgery in terms of hospital stay, or hematoma recurrence. Various scientists have documented that type of intervention or number of burr-holes do not alter the outcomes significantly.[3,7,18,20,21] Few scientists proclaimed superiority of single burr-hole in terms of complications and recurrence rates;[22] others categorized double burr-hole as more effective.[10] Right-sided, left-sided and bilateral hematoma were found in 48.3%, 40.0% and 11.7% clients of this study respectively, and all patients received irrigation. Farhat Neto j. et al reported right CSDH in 41%, left in 43% and bilateral in 16% patients.[14] Literature concurred lesser recurrence with irrigation,10,11,18,21 although death rates or other outcomes remained almost the same,[11] few refuted any such associations.[7] Subjects with better GCS-scores depicted shorter hospital stay span Lower GCS antedate poorer prognosis.[1,4]

DECLARATIONS

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Conflict of interest: NONE

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