

## COMPARATIVE STUDY OF EVACUATION OF CHRONIC SUBDURAL HAEMATOMA BY TWO BURR HOLE TECHNIQUE VERSUS SINGLE BURR HOLE WITH PARTIAL EXCISION OF MEMBRANE TECHNIQUE

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### ABSTRACT:

**OBJECTIVES:** Present study was planned to compare the postoperative outcome of surgical evacuation of chronic subdural haematoma (SDH) through two burr hole technique versus single burr hole with partial excision of membrane technique. **METHODS:** All patients admitted in neurosurgery ward of Geetanjali Medical College and Hospital, Udaipur were evaluated by taking detailed history, clinical examination and investigations. After confirmation of chronic SDH by CT/MRI scan patients were operated. Initial 50 patient were operated by two burr hole technique and last 50 patient were operated by using single burr hole with parted excision of membrane technique. **RESULTS:** 50 patients were operated by Two Burr Hole technique and the duration of operation ranged from 15 to 40 min. Most of the symptoms relieved postoperatively within 6 hours to 6 days. Hospital stay found with average of 6.5 days. During follow-up 3 patients showed recurrence. The results after 3 months follow up were excellent in 86 %. 50 patients were treated with Single burr hole with partial excision of membrane technique. The duration of operation ranged from 10-30 minutes. Most of the symptoms relieved within 6 hours to 6 days. Hospital stay of patients was with average of 5 days. Two patients, showed re-accumulation of chronic SDH during follow up. The results after 3 months follow up were excellent in 90 %. **CONCLUSIONS:** With this study, we have reached to the conclusion that single burr hole evacuation of chronic SDH with partial excision of membrane technique is simple, safe, less time consuming and effective treatment of chronic SDH.

**Keywords:** Chronic subdural haematoma, two burr hole technique , single burr hole technique.

### INTRODUCTION

Chronic subdural haematoma (Ch. SDH) is a well-known entity and common surgical disorder managed by neurosurgeon and if not recognized and treated timely, may prove fatal. It can be

non traumatic or post traumatic and all of them need urgent attention irrespective of etiology. (1) It manifest with progressive neurologic deficit that occur later than 2 weeks following head

injury.(2) Besides clinical suspicion various modalities has been used to diagnose Ch. SDH but CT scan of head is the investigation of choice. CT scan has changed the ways in which patients with Ch. SDH may best be managed. (3) Some Ch. SDH will resolve spontaneously as suggested by the existence of calcified "haematomas". Medical management has been advocated for the patient with Ch. SDH included bed rest, steroids and mannitol but it needs prolonged hospitalization for these patients. (4) It would appear that operative treatment would be more quickly, safely and effectively remove the mass. (5) Most current authors prefer to place two or three burr holes on the side of lesion and to irrigate through small red rubber catheters to wash out the subdural space with or without use of sterile closed drainage system.(6)

Few authors have suggested the use of a single burr hole and thorough irrigation for evacuation of Ch. SDH. Instead of evacuation through a burr hole, evacuation through a twist drill hole was found to be equally satisfactory by some surgeons.(7) Evacuation of Ch. SDH by craniotomy is also indicated in certain situations and there are few surgeons who feel craniotomy has still a definite role in management of Ch. SDH. Endoscopic evacuation of Ch.SDH can also be done.(8)

In the light of current knowledge, there are various methods for surgical evacuation of Ch. SDH. Described by different authors, all the methods have its merits and demerits. Debate is still on that which is the best method. This study is planned to compare the postoperative outcome of evacuation of Ch. SDH by two different techniques in the same set up.

## MATERIAL AND METHODS:

All patients admitted in neurosurgery ward of Geetanjali Medical College and Hospital, Udaipur were evaluated by taking detailed history, clinical examination and investigations. Diagnosis of Ch. SDH was confirmed by CT scan or MRI scan head. Incidence of the Ch. SDH was recorded out of all admitted patients in a particular time period. After confirmation of Ch. SDH by CT/MRI scan patients were operated. Initial 50 patient were operated by two burr hole technique and last 50 patient were operated by using single burr hole with parted excision of membrane technique. Case selection for operation- This study Includes:-

- CT/MRI proved symptomatic cases of Ch. SDH.
- Patients of both sex and all age groups (except children less than 5 years) irrespective of etiology.
- All the patients were operated for the first time for the disease (Ch. SDH).

### Exclusion Criteria:-

This study excludes:-

- Children less than 5 years.
- Patients with recurrent disease after previous operation.
- Asymptomatic patients with very thin Ch. SDH

Operations by "Two burr hole technique" and "Single burr hole with partial excision of membrane technique" were done under local anesthesia with or without IV sedition as emergency basis. After achieving proper homeostasis scalp stitched in layers. Duration of surgery was noted.

### **Postoperative Management:-**

Careful record of postoperative progress was kept in both of the groups as per standard format along with any postoperative complication. Early mobilization of patient was encouraged postoperatively. Patients were discharged at appropriate time and advised for regular follow up. Total duration of hospital stay and the mortality was noted. Follow up of the patients done for three months.

### **RESULTS:**

The study was done on 100 patients of Ch. SDH admitted in neurosurgery ward during year 2000-2003. Out of these 100 patients most of the patients belonged to 6<sup>th</sup> and 7<sup>th</sup> decade of life. 17 % of Patients were in 8<sup>th</sup> decade of life and ranged from 8 to 92 years,

20 % of the patients were female as compared to 80 % males. 60 % of patients were from urban population while 40 % patients were rural. The cause of urban preponderance is probably easy availability of CT scan and early approach to doctor in urban areas. Most of the patients presented with headache followed by weakness and paralysis, irrelevant talk, mental slowing fluctuating drowsiness etc. Eight of our patients presented with COMA. Previous head injury was found to be most common etiology in 68 patients.

### **Two Burr Hole technique :**

50 patients were operated by this technique the duration of operation ranged from 15 to 40 min average of 30 min. 43 patients showed dramatic relief in symptoms postoperatively and most of the symptoms relieved within 6 hours to 6 days.

Early mobilization of patients was encouraged in 3 patients showed partial improvement and 4 did not show any improvement. Hospital stay ranged from 2 to 24 days with average of 6.5 days. Four patients died postoperatively who presented with coma and did not show any improvement postoperatively.

During follow-up 3 patients showed recurrence. Needle aspiration was done but patients repeatedly returned back even after several re-aspiration of haematoma fluid. Finally, decision of membranectomy was taken and following membranectomy no any patient showed recurrence.

The results after 3 months follow up was excellent in 86 % in which, most of the symptoms relieved and patient showed no recurrence ,fair 6% in which patients showed recurrence and 8 % poor in which patients did not improved and died.

### **Single burr hole with partial excision of membrane technique**

50 patients were treated with these techniques. The duration of operation ranged from 10-30 minutes, with average of 20 minutes. 45 patients showed dramatic improvement and most of the symptoms relieved within 6 hours to 6 days. Early mobilization was encouraged. 2 patients showed partial improvement and 3 patients did not show any improvement in symptoms.

Hospital stay of patients was ranged from 1 to 23 days with average of 5 days. Three patients died postoperatively; 2 of them were those who presented in deep coma with a prolonged history and found to have re-bleed following membranectomy. During follow up two patients

showed re-accumulation of Ch. SDH, which were treated by needle aspiration of haematoma fluid and later cured.

The result after 3 months follow up was excellent in 90 % in which most of the symptoms were relieved and no recurrence was seen. Fair in 4 % in which recurrence was seen and later relieved by re-aspiration of haematoma. Poor 6 % in which patient did not show any improvement and died Delayed recovery was seen Post-operatively in few patients due to trapping of air in frontal region causing delayed recovery.

## DISCUSSION:

This study was designed to compare the operative and postoperative results of surgical evacuation of Ch. SDH by two burr hole technique versus single burr hole and partial excision of membrane technique and to know the incidence of disease among the patients admitted in Neurosurgery Ward.

100 patients were included in this study and most of the patient belonged to 6<sup>th</sup> and 7<sup>th</sup> decade of life ,the mean age 57.86 years and ranged from 8 to 92 years. Kim G H et al found mean patient age 68.6 years (range, 31–94) (9) The higher incidence among the older age group is because of cerebral atrophy and slow accumulation of blood.

All authors ascertain the predominance of male patients in their series. Young-Joon Rho et al and Shameem A et al also found a predominance of male patient, 2.9 and 7.5 respectively to every female patient in Ch. SDH. (10,11) In our study, there were 80 % males as compare to 20 % Females. Cause of male preponderance could be

because they are more prone to injuries because of more outing.

Okada Y. et al reported average postoperative hospital stay of 14.1 days by Burr hole and closed drainage system group and 25.5 days in Burr hole irrigation group. In our study, postoperative hospital stay was 5 days in single burr hole with partial excision of membrane technique and 6.5 days in Two burr hole technique. (12)

Different authors observed different rate of recurrence by different techniques. Nayil K et al treated 254 Patients with single and double-burr-hole technique and found recurrence rate of 6.15% and 4.83% respectively, which was not statistically significant.(13) Kansal R did a retrospective study of 267 patients with chronic subdural hematomas and the patients managed surgically by either single or double burr. Recurrence rates of both techniques were not significantly different. (14) Kutty SA et al shows recurrence rate of 15.7%, two burr holes technique and in a single burr hole craniostomy 2.8 % recurrence rate was seen. The difference was statistically significant.(15) Kuroki T et al (2001 ) noted recurrence in 1.8% in strict closed system drainage group versus 11.1% in closed system drainage with irrigation group.(16) In our study recurrence rate was 6% in two burr hole technique and 4 % in single burr hole with partial excision of membrane technique.

A meta-analysis by Weigel et al observed no significant difference in mortality in three techniques, namely twist drill craniotomy, burr hole or craniotomy. (17) Smely et al reported 9 % mortality rate in Burr hole craniotomy and 6% in twist drill trephination technique. (18) In

our study, mortality rate was 6% in single burr hole partial excision of membrane technique and 8% in two-burr hole technique. Mortality was because of haematoma.

A retrospective study made by Benzel et al on 111 patient using single burr hole irrigation technique and postoperative outcome at 6 weeks was excellent in 90%. Fair 5.5 % and poor 4.5 %.(19) In our study, the post of outcome after 3 months was excellent 90%o fair 4 % and poor 6 % in single burr hole and partial excision of membrane technique and excellent 86%, fair 6%, and poor 8% in two burr hole technique.

#### CONCLUSION:

With this study, we have reached to the conclusion that single burr hole evacuation of Ch. SDH with partial excision of membrane technique is simple, safe, less time consuming and effective treatment of Ch SDH. Only one burr hole is required in this technique postoperative hospital stay is less and less re-accumulation of blood as well as number of aspiration with this technique, of course partial excision of membrane helps in it.

Other significant factors in the study were early mobilization of patient and no drain was used which most of authors recommend. Because of this reasons we have shifted from two-burr hole technique to single burr hole with partial excision of membrane technique.

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**Ethical approval:** The study was approved by the institutional ethics committee

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