

# Examine the Outcome of Surgical Management in patients presented with Chronic Subdural Hematoma

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## ABSTRACT

**Aim:** To analyze the outcomes of surgical management in patients of chronic subdural hematoma.

**Study design:** Descriptive/Observational

**Place and duration of study:** Department of Neurosurgery, Bahawal Victoria Hospital, Bahawalpur from 1<sup>st</sup> October 2019 to 31<sup>st</sup> March 2020.

**Methodology:** Forty patients of both genders with ages 30 to 80 years presented with chronic subdural hematoma were included. Patients detailed medical history including age, sex and residence were recorded. Patients with previous history of surgical management were excluded. Patients were categorized according to the Markwalder Grading System. CT scan was done before and after surgery and the discharge time. Outcomes were recorded according to the Glasgow outcome scale.

**Results:** There were 32(80%) male patients and 8(20%) were female patients. Six (15%) patients were ages between 30 to 45 years, 14(35%) patients had ages 46 to 60 years, 15(37.5%) patients were ages 61 to 75 years and 5 (12.5%) were ages above 75 years. Most of the patients had Markwalder Grade 2 and Grade 3 17(42.5%) and 13(32.5%) respectively. Recurrence rate was 15%. 2(5%) had excellent, 20 (50%) had good and 14 (35%) had fair and 4(10%) had poor outcome as GOS at final follow up. 2(5%) patients were died.

**Conclusion:** Early treatment of chronic subdural hematoma is very effective with high rate of favorable outcomes.

**Keywords:** Chronic subdural hematoma, Surgical management, Markwalder Grade, Outcomes, GOS

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## INTRODUCTION

Chronic subdural hematoma (CSDH) is the accumulation of blood in between the coverings of the brain between arachnoid and dura matter in subdural space. It is the common neurosurgical entity that clinicians seen in routine neurosurgical practice. Chronic subdural hematoma commonly occurs in the old peoples, may be several weeks after traumatic brain injury<sup>1</sup>. A rise in life expectancy in developing countries resulted in an increase in the incidence of that condition<sup>2-5</sup>. Its incidence is very high in the 7th and 8th decade of life is; however no age is exempt. In earlier decades the incidence rate of 1.72/100000 per year was estimated, but due to increasing age of 70-79 years the incidence rate became increased up to 7.35/100000 per year<sup>6</sup>. The clinical presentations of CSDH are variable. They could vary from no symptoms to headache, seizures, decline in memory and confusion. Patients could have difficulty in speech and walking. There may be weakness or numbness of any part of body such as arms, legs, and face as well as swallowing difficulties<sup>7</sup>.

Surgical evacuation is the best treatment in most of patients having CSDH. However some of these patients could be treated without surgery, especially when small hematomas develop after antiplatelet drug use. There are many observations of the normal mean pressure in subdural space in CSDH<sup>8</sup>. The indications for surgery are: patients who are symptomatic with neurological deficit and having GCS between 5–15, midline brain shift more than

0.5cm, thickness of hematoma more than 1.5cm and haematoma volume more than 25 ml. The main procedure remains the evacuation through burr hole (evacuation by one burr hole or by two burr holes, or by craniostomy) along with deep sedation by using infiltration of local anesthetic agent, and some time with general anesthesia. The method of evacuation of haematoma when done with local infiltration and sedation minimizes the risks of general anesthesia and surgery, and it can be performed when other co-morbid illnesses are present<sup>9,10</sup>.

The main purpose of this study was to examine the outcomes such as favorable and poor outcome after the surgical management of chronic subdural hematoma patients.

## MATERIALS AND METHODS

This descriptive/observational study was conducted at Department of Neurosurgery Bahawal Victoria Hospital, Bahawalpur from 1<sup>st</sup> October 2019 to 31<sup>st</sup> March 2020. A total of 40 patients of both genders with ages 30 to 80 years presented with chronic subdural hematoma were included in this study. Patients detailed medical history including age, sex and residence were recorded after taking written consent from all the patients. Patients with previous history of surgical management were excluded from the study. Patients were categorized according to the Markwalder Grading System i.e. Grad I, II, III, IV at the time of admission and recorded as patients baseline details. All the patients underwent surgical management of CSDH, CT scan was done before and after surgery and the discharge time. Outcomes were recorded according to the Glasgow

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outcome scale such as excellent. Good, fair and unfavorable as poor. Mortality was also recorded. All the statistical data was analyzed by SPSS-21.

## RESULTS

Thirty two (80%) patients were males and 20% were females. Six (15%) patients were ages between 30 to 45 years, 14(35%) patients had ages 46 to 60 years, 15(37.5%) patients were ages 61 to 75 years and 5(12.5%) were ages above 75 years. 22(55%) patients had urban residency while 18 45% patients had rural residency (Table 1).

According to the Markwalder Grading System, 3(7.5%) patients had Grade I, 17(42.5%) and 13(32.5%) patients had Grade II and III and 7(17.5%) patients had Grade IV. According to the CT scan we found isodense, hypodense, hyperdense and mixed hematomas in 16(40%), 12(30%), 8(20%) and 4(10%) patients respectively. 30(75%) patients had brain atrophy. Recurrence was found in 6(15%) patients. According to the Glasgow outcome scale, 2(5%) had excellent, 20(50%) had good and 14(35%) had fair and 4(10%) had poor outcome as GOS at final follow up. 2(5%) patients were died (Tables 2-4).

Table 1: Demographic information of the patients (n=40)

Variable	No.	%
<b>Gender</b>		
Male	32	80.0
Female	8	20.0
<b>Age (years)</b>		
30 – 45	6	15.0
46 – 60	14	35.0
60 – 75	15	37.5
>75	5	12.5
<b>Residence</b>		
Urban	22	55.0
Rural	18	45.0

Table 2: Frequency of Markwalder Grade, CT finding, brain atrophy and recurrence in all the patients

Variable	No.	%
<b>Markwalder Grade</b>		
I	3	7.5
II	17	42.5
III	13	32.5
IV	7	17.5
<b>CT Scan</b>		
Isodense	16	40.0
Hypodense	12	30.0
Hyperdense	8	20.0
Mixed	4	10.0
<b>Brain Atrophy</b>		
Yes	30	75.0
No	10	25.0
<b>Recurrence</b>		
Yes	6	15.0
No	34	85.0

Table 3: Outcomes according to the Glasgow Outcome Scale (GOS)

GOS	No.	%
Excellent	2	5.0
Good	20	50.0
Fair	14	35.0
Poor	4	10.0

Table 4: Mortality rate after surgical management

Mortality	No.	%
Yes	2	5.0
No	38	96.0

## DISCUSSION

Chronic subdural hematoma is one of the most malignant disorders among neurological disorders. The mortality rate is high among these patients due to delay in treatment. Early and better treatment modality may effective to gain a favorable outcomes.<sup>11-13</sup>Recent study was conducted aimed to examine the outcomes of surgical management of chronic subdural hematoma patients. During the study period 40 patients were undergone surgical treatment for chronic subdural hematoma, in which majority of patients 80% were males and 20% patients were females. In our study majority of patients were ages 46 to 75 years 73%. These results were similar to study conducted in Pakistan in which male patients population was high 83% as compared to females 17% with mean age of 72 years<sup>14</sup>. 55% of patients had urban residency in our study population.

In present study, we analyzed patients according to the Markwalder Grading System at the time of admission and we found 3(7.5%) patients had Grade I, 17(42.5%) and 13(32.5%) patients had Grade II and III and 7(17.5%) patients had Grade IV. These results were similar to some other studies in which majority of patients had Grade II and Grade III at the time of admission<sup>15,16</sup> In our study we found 40% patients were isodense hematomas and 30% patients had hypodense hematoma followed by hyperdense and mixed hematomas 20% and 10%. These results were correlates to a study conducted by Rovlias et al<sup>17</sup>.

In our study recurrence was occurred in 15% patients. These results were comparable to some other studies in which recurrence rate was 6 to 20%<sup>18,19</sup>. In this study we found brain atrophy in 75% patients, 12.5% patients were on anti-platelet and anticoagulant therapy, 10% patients had seizures postoperatively. These results were correlates to some previous studies regarding surgical management of chronic subdural hematoma<sup>20,21</sup>.

In current study, we found 90% patients had favorable outcomes while 10% patients showed unfavorable outcomes. 2(5%) patients were died during 12 weeks of follow-up. These results showed similarity to some other studies in which favorable outcomes were reported 88% to 95% with low rate of mortality<sup>22,23</sup>.

The present study will be helpful for future surgeons to provide better and effective surgical management to the patients presented with chronic subdural haematoma.

## CONCLUSION

Chronic subdural hematoma is one of the most commonly found morbidity in neurological conditions. Early surgical treatment for this malignant disorder is very effective with high rate of favorable outcomes with lesser complications also it is very helpful to reduce the morbidity and mortality.

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