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SURGICAL OUTCOME OF CRANIOTOMY AND MEMBRANECTOMY FOR ORGANISED CHRONIC SUBDURAL HAEMATOMA.

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ABSTRACT… Chronic subdural hematoma (CSDH) is a common neurosurgical condition in elderly population that a neurosurgeon comes across in his neurosurgical practice. The purpose of the study is to find out the best possible surgical treatment option for the organised chronic subdural hematoma. **Study Design:** Retrospectively study. **Setting:** Neurosurgery Department, Hayatabadad Medical Complex, Peshawar. **Period:** 15 March 2009 to 14 March 2017. **Materials and Methods:** All patients with OCSDH irrespective of their ages and gender being previously operated twice for CSDH via two burholes or single boreholes aspirations, were enrolled in the study. Frequency and percentage were calculated for variables like age, sex, mechanism of trauma, clinical features, CT scan findings, complications and postoperative outcome. **Results:** Total 17 patients were operated, there were 13 men and 4 women, and the mean age was 66 years (61 ± 12.1), with a range of 28–87 years. The commonest presentation of our study population was persistent headache followed by altered consciousness. Per operatively we noted Age related brain atrophy in 8 (61.54%) patients. Three patients (23.07%) with recurrence were also having evidence of some pneumocephalous. We noted bony calcified membrane in 4 patients (23.53%). Thick membrane with straw coloured sludge and debris was found in 13 patients (76.47). The commonest post complication in our study population was postop seizure which was noted in 4(23.53%) patients. One patients who also had Basal ganglion bleed died due to status epileticus. Wound infection was was seen in one patient (7.70%). **Conclusion:** Craniotomy with membranectomy produce very good results in patients with organised CSDH. However the surgeon should be ready to aggressively treat the post complication like seizures which may lead to dreadful con sequences if not treated appropriately and well in time.

Key words: Craniotomy, Chronic Subdural Hematoma, Outcome, Membranctomy.

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INTRODUCTION

Chronic subdural hematoma (CSDH) is a common neurosurgical condition in elderly population that a neurosurgeon comes across in his neurosurgical practice. There are more than one treatment options for this condition depends on the hematoma size, patient's clinical condition, recurrence, organization and associated comorbids.[1,2,3,4,5,6,7,8,9] So unanimous treatment option for CSDH has yet to be established.[10,11,2,12,13,14,6,8,15,16,17]

The mechanism of making of encapsulated chronic subdural hematoma involves the proliferation of mesenchymal cells of the inner dural layer and making of an inflammatory capsule or membrane which constitute the outer membrane of haematoma. This layer is one kind of granulation tissue containing inflammatory cells, immature vessels and connective fibres. The inner membrane of haematoma consists of collagen fibres and less number of vascular structure. Thus, the outer membrane has gap junction like microcapillary and absent or incomplete basement membrane which causes exudation of intravascular contents. Growth factors appear in the outer membrane which is responsible for neovascularisation and vascular proliferation. The exudation from macrocapillaries in the outer membrane of CSDH may play an important role in lesion enlargement.[18,19,20,21]

Surgical treatment has good outcome in

appropriate cases. Two burr-hole drainage with irrigation of the hematoma cavity is right option in initial cases. Craniectomy is considered to have a relatively higher recurrence rate. In recurrent cases craniotomy and membranectomy is more suitable treatment strategy.[22]

The purpose of the study is to find out the best possible surgical treatment option for the organised chronic subdural hematoma.

PATIENTS AND METHODS

We retrospectively reviewed a series of consecutive patients suffering from OCSH in neurosurgery department, Hayatabadad Medical Complex, Peshawar from 15 March 2009 to 14 March 2017. Prior approval of the study was taken from the ethical committee of Hayatabad Medical complex Peshawar.

All patients with OCSDH irrespective of their ages and gender being previously operated twice for CSDH via two burholes or single boreholes aspirations, were enrolled in the study. Those patient who refused to be enrolled into the study or those with coagulopathies or with moribond comorbids were not considered for this study as these confounders may bias the study results.

The OCSDH was diagnosed on CT scan brain. Patients previous surgeries record were carefully reviewed. The patients were admitted optimized before surgery and operated either in emergency or on elective list depends on patients clinical conditions.

Written informed consent was taken from patients or relatives prior to enrolment into the study.

Baseline post-operative CT scans on the next day was performed in all patients and then subsequently any time CT scans were taken if the patients showed neurological deterioration. Patients clinical and radiological findings were documented during their hospital stay and then on their subsequent visits at one month and six months follow up visits. Their data were stored in semi structured porforma and analysed in SPSS. Frequency and percentage were calculated for variables like age, sex, mechanism of trauma, clinical features, CT scan findings, complications and postoperative outcome.

RESULTS

Total 17 patients were operated during the five years study period. Out of these 17 patients in which we did craniotomy, there were 13 men and 4 women, and the mean age was 66 years (61 ± 12.1), with a range of 28–87 years. Age distribution is shown in Table-I.

These 17 patients had various presentations. The commonest presentation of our study population was persistent headache followed by altered consciousness. Various clinical features of study population are given in Table-II.

Per operatively we noted Age related brain atrophy in 8 (61.54%) patients. Three patients (23.07%) with recurrence were also having evidence of some pneumocephalous. We noted bony calcified membrane in 4 patients (23.53%). Thick membrane with straw coloured sludge and debris was found in 13 patients (76.47).

The commonest post complication in our study population was postop seizure which was noted in 4(23.53%) patients. Three out of them responded to well to anticonvulsant treatment. One patient who also had Basal ganglion bleed died due to status epileticus. Wound infection was seen in one patient (7.70%).

Sr. No	Gender	Number of Patients	Percentage
1	Male	13	76.47%
2	Female	4	23.53%

Table-I. Gender distribution

No	Clinical Features	No of Patients	Percentage
1	Headache	8	61.54 %
2	Altered consciousness	5	38.46%
3	Fits	3	23.07%
4	Motor deficits	3	23.07%
5	Dysphasia	1	7.70%

Table-II. Clinical presentations of our study population

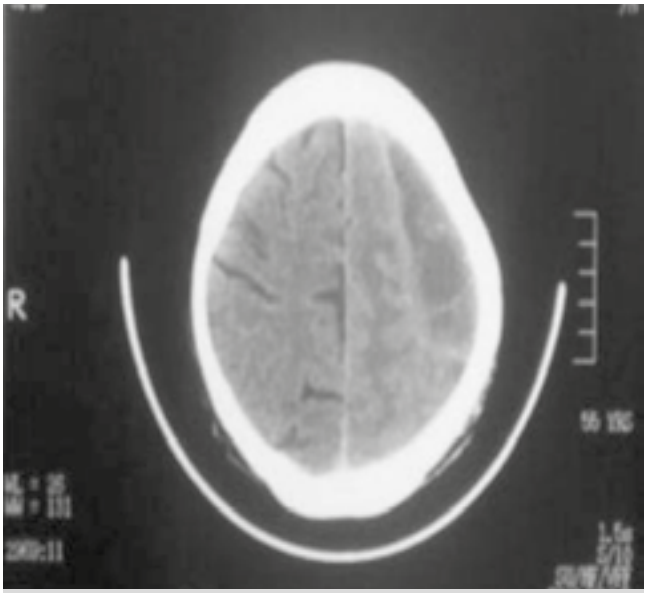

Figure-1. Pre op CT Brain of OCSDH

Figure-2. Dural opening after bone flape elevation

DISCUSSION

Chronic subdural haematoma is a dural inflammatory disease which start as a local inflammatory process of the dura matter due to external stimuli like blood contents or cerebrospinal fluid etc. There are more than one way to treat this condition.

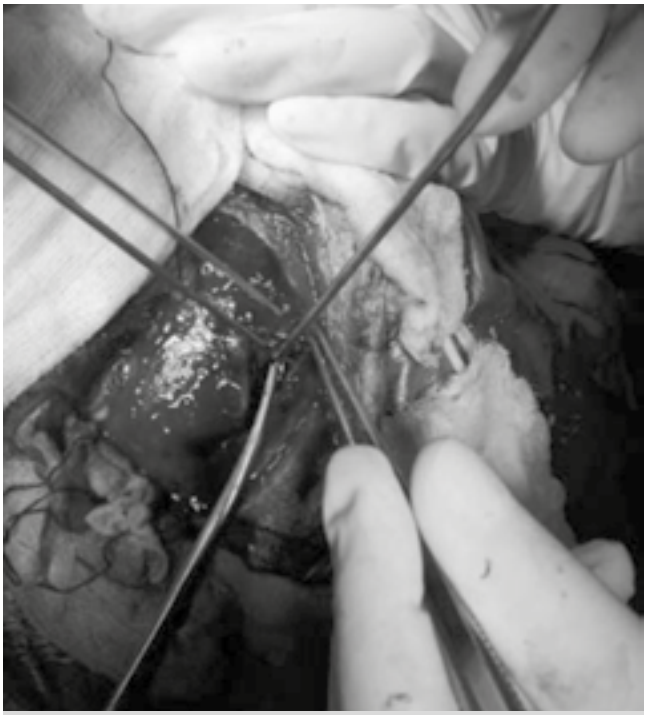

Figure-3. Removal of OCSDH

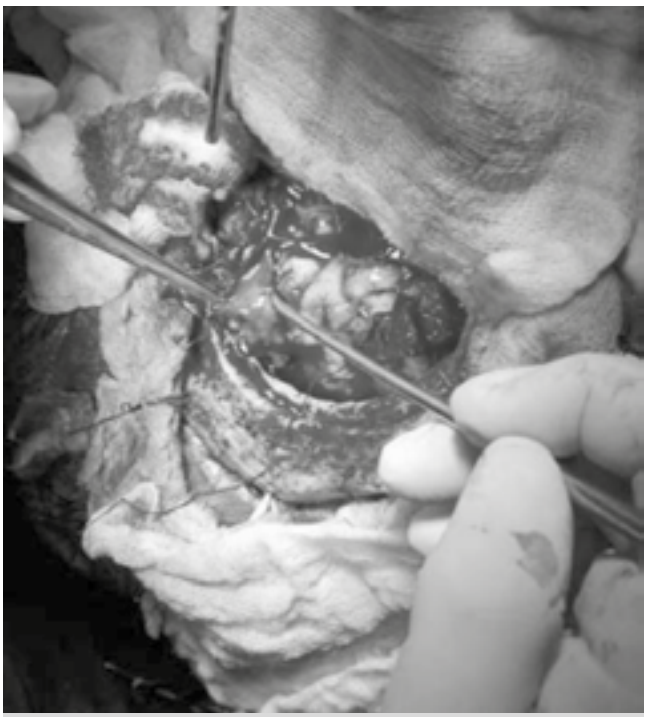

Figure-4. Brain after removal of OCSDH

These include simple twist craniostomy, single burr hole aspiration with or without closed drainage system, two burr hole aspiration, craniectomy and extended craniotomy and membranectomy.

The Choice procedure procedure varies from patient to patient and is individualized according to age of the patient, mechanism of trauma , size of hematoma etc.[18] Extended craniotomy with membranectomy is performed only few cases as described in the inclusion criteria.[18,23,24]

We operated 17 cases for extended craniotomy and membranectomy in a duration of 9 years. The mean age in the present study is 61 + 12.1 years. Other local studies studies.[25]

Age range was 63 years in a study conducted by Fisching et al, and 60 years of Jin Yal Lee et al. The incidence in a particular age group is usually influenced by road traffic incidences, awareness of public regarding this condition, the way initial surgery was done for the same condition and the overall life span of a population in a particular country.[18,24]

The male population predominates the study population. The very reason is their exposure to various physical insults as the working population in our society is predominantly male. Ali M et al also found out similar gender distribution in his study (7:1).Studies carried out elsewhere in the west either shows equal or female predominance in their research.[23,24]

We noted in our study that seizures is the commonest complication after craniotomy and membranectomy for organised chronic subdural hematoma. Four out seventeen 4(23.53%) patients are having fits. This incidence has been similar to other studies. The reason for post op fits is cortical irritation due to removal of membrane, excessive wash intracerebral bleeds or metabolic abnormalities that may occur of craniotomy. These patients needs aggressive management as uncontrolled fits may lead to permanent brain damage.

One patient (7.70%) has got wound infection. Though we routinely put patients on intravenous antibiotics but the reason for infection was probably decreased immunity of the patient due excessive use of steroid before the surgery was decided in that elderly patient. We followed all the patients and found none of them have recurrence of the hematoma. So the overall results of the present stud are in line with the research work of other authors.[25]

This study has been conducted on limited number of patients due to the rare nature of the pathology. We recommend large randomised controlled trials are required over a prolonged period to establish more reliable recommendations.

CONCLUSION

Craniotomy with membranectomy produce very good results in patients with organised CSDH. However the surgeon should be ready to aggressively treat the post complication like seizures which may lead to dreadful con sequences if not treated appropriately and well in time.

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