

ORIGINAL ARTICLE

Outcome of Surgically Managed Depress Skull Fracture in a Tertiary Care Hospital

RAMZAN HUSSAIN, BILAL KHAN, FAROOQ AZAM

Zahid Khan, Ikram Alam, Mumtaz Ali

Department of Neurosurgery, PGMI / Lady Reading Hospital, Peshawar

ABSTRACT

Objective: To know about the outcome of depress skull fracture (DSF) in a tertiary care hospital.

Material and Methods: This study was conducted at the department of neurosurgery PGMI/LRH from 20th December 2012 to 19th June, 2013. A total of 83 patients operated during this time were reviewed and the data including age, sex, location of fracture, timings of surgery, post operative status of the patient, presence or absence of any neurological deficit as well as post operative complications was enlarged.

Results: In this study there were 64 males and 19 females with a male to female ratio of 4: 1. Age range was 1 to 58 years commonest decades were 5 – 10 years 36.10% (group 2) and 10 – 20 (16.9%) and 20 – 30 (15.7%) years (group 3 and 4) comprising respectively. The most common region was the parietal 30 (36.1%) followed by frontal 26 (31.3%). The right side was more affected than the left side (60.2% vs. 39.8%). The time of surgery was mostly in the interval between 9pm to 6am. More than 90% has good outcome with minimal neurologic deficit, while three patients expired who initially had a very low GCS score. One patient has dysphasia post operatively and 2 had weakness of the upper limbs who were operated for the frontoparietal fracture.

Conclusion: DSF is a common emergency encountered in a neurosurgical unit and the timely management of these patients is crucial to avoid any complication. If managed timely they have very gratifying results.

Keywords: Depress skull fracture, outcome, surgically managed.

Abbreviations: DSF: Depressed Skull Fracture.

INTRODUCTION

Skull fractures are common sequel after road traffic accident, trauma, fall from height, physical assault and other injuries¹⁻³ Skull fractures are classified into linear, depressed and comminuted type.³⁻⁶ A depressed skull fracture (DSF) is the one whereas the fractured fragment is driven inwards from the outer fragment or a displacement of greater than 0.5 to 1 cm.^{1,4} They are diagnosed on X ray skull and the CT scan which is the gold standard.^{1,3} The DSF is common after low speed trauma. Depress skull fracture could be either managed conservatively or surgically.⁵ The indications for the surgical management of depress skull fracture are severe contamination of the wound, cosmetic reasons, CSF leak or brain matter oozing out, presence of focal

neurologic symptoms and displacement of more than 1cm.^{1,2}

The complications following surgery of a depress skull fracture are wound infection, cosmetic deformity, CSF leak, seizures, focal neurologic deficit and post traumatic hydrocephalus. The patient having DSF mostly enjoy a normal life and the cases rate of complications are less.¹⁻⁶

MATERIAL AND METHODS

This study was conducted in the department of neurosurgery PGMI / LRH from 20th December 2012 to 19th June, 2013. A total of 83 patients operated during this time were reviewed and their data including age, sex,

location of fracture, compound or simple, level of the post graduate resident who performed the operation, as well as the time of surgery and also the post operative status of the patient her stay in the hospital following his / including presence or absence of any neurological deficit, presence or absence of CSF leak, infection, post traumatic hydrocephalus or not. Age range was from 1 to 58 years and was further stratified into 6 groups and they group 1 includes 5 – 10 years, group 2 includes 10 – 20 years; group 3, 20 – 30 years; group 4, 30 – 40 years; group 5, 40 – 50 years; and group 6 included 50 – 60 years.

RESULTS

Sex Incidence

There were total 83 patients operated in the six month period. There were 64 males and 19 females and the male to female ratio was approaching 4:1.

Age Range

Age range was from 1 year to 58 years. The age group most affected was the school going age and included 41 patients (46.4%) followed by the age group 10 – 20 years and 20 – 30 years having 16.9% and 15.7% respectively. The group 2 represents the teenage and the group 3 represented the working age group.

Table 1: *The age distribution and the relative frequencies of the patients with DSF.*

Age Group	Frequency	Percent
0 – 10 years	41	46.4
10 – 20 years	14	16.9
20 – 30 years	13	15.7
30 – 40 years	10	12.0
40 – 50 years	4	4.8
50 – 60 years	1	1.2
Total	83	100.0

The most common region was the parietal 30 (36.1%) followed by frontal 26 (31.3%). Temporal area was affected in 10 (12%), occipital in 5 (6%) fronto-parietal in 5 (6%) fronto-temporal in 4 (4.8%)

and temporo-parietal in 3 (3.6%). The right side was involved in 60.2% (50 patients) and the left side was involved in 39.8% (33 patients).

Outcome

68 patients had very good outcome and 3 patients died. The wound infection occurred in 2 patients as well as seizures which were present pre-op. post traumatic hydrocephalus was not observed in any patient. Meningitis was observed in 3 patients CSF leakage was present pre-op in patient for which fascia lata graft was taken and he had no leak in the follow up. One patient had dysphasia which improved in 3 months follow up; he had a large fronto-temporal fracture simulating a formal craniotomy. Three patients developed motor weakness.

DISCUSSION

Our series contained 83 patients operated during six months period. This is a large amount and reflects the enormous trauma load on the department because it's the major neurosurgical facility for the population of about 40 million people which encompasses the whole Khyber Pakhtunkhwa¹¹ excluding Hazara Division,¹¹ FATA¹² and major part of the patients referred from the neighbor country Afghanistan.¹¹ We only reviewed cases operated while Derazi TA⁴ showed that 70% of patients with depressed skull fracture could be managed conservatively this means that the patients treated conservatively were almost twice. The male to female ratio was approaching 4:1 which coincides with the local study by Alim et al. it represents the cultural norm of our society and the females in our society are not exposed to the external environment as frequently as males. The ratio is even further high for the age above 10 years. But this ratio is even high in study by Haddad A et al in Liverpool who showed a male to female ratio of 9:1. So it is agreed that males are more at risk for head trauma compared to females.

The age group most commonly affected was the age group from 0 – 10 (46.4%) years which represent the school going age. This group is more liable to road traffic accidents. The next age group affected was from 10 – 20 years and from 20 – 30 years constituting 16.7% and 15.9% respectively. In a study by Haddad A et al² pediatric population (below the age of 16 years) constituted the largest group (52.1%) with the 16 – 29 – year – old age group the next largest (26.0%). Mehdi SA⁹ also showed 44% of his patients to be in the school going age.

The most common region was the parietal 30 (36.1%) followed by frontal 26 (31.3%). The incidence of the depress skull fracture by location was temporal in 17.64%, parietal in 29.4%, occipital in 10.78%, and frontal in 13.7% in his series by Ali et al.¹

Most of the patients i.e. 68 (81.92%) haven't any significant complications needing a special treatment or readmission; 3 (3.61%) patients in our series died and they had a very low GCS on admission; infection rate in our series was in 2 (2.40%) patients; in his series by Haddad A et al² mortality was 1.4% while overall infection rate was 8% but major infection was observed in 3 (4.1%). Rehman L et al⁴ showed 5.35% rate of wound infection in compound DSF.

The seizures were observed in 2 patients; Ali M et al¹ reported in the seizures in 11% of his patients while Haddad et al² showed 12.3%; no patient in his series was put on prophylactic anticonvulsants. Hossain MZ³ reported 0% incidence of seizures in his series. All patients in our series were put on prophylactic anticonvulsants. Hydrocephalus (HC) was not observed in any of our patients and there was no shunt placement in our patients post operative post traumatic. Meningitis was observed in the 4 (4.81%) patients and it was observed during hospital stay and the patients were put on antibiotics. The incidence of meningitis was 2.8% in a series by Haddad A et al.³ One patient (1.2%) had dysphasia and the patient pre-operative had a large depress skull fracture which simulated a formal frontal craniotomy having underlying contused brain; the bone was replaced, he did not had any motor weakness or seizures. Ali et al,¹ showed 2.94% of dysphasia rate in his patients. Motor weakness was in one (1.2%) of patients, it was the left hand and he showed improvement in the follow up with exercise and rehabilitation. Motor weakness in his series by Ali et al¹ was in 2.94% of his cases. They were all hemiparetic. Syed AA⁶ reported paraparesis in a patient with DSF while Tammimi⁷ reported superior sagittal sinus (SSS) thrombosis in his patient while Fuentes S¹⁰ showed the both the association of the DSF and SSS thrombosis as well as benign intracranial hypertension.

CONCLUSION

Depress skull fracture is a neurosurgical emergency and surgical intervention should be ensued whenever possible as the results are not dismal and the patient

most of the times has a very good outcome. Males are more at risk for depress skull fracture compared to females.

Address for Correspondence:

Dr. Bilal Khan

*Post Graduate Resident, Department of Neurosurgery,
PGMI / Lady Reading Hospital, Peshawar*

E-mail: Bkafri675@yahoo.com

Cell: 0314 – 9192558

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