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You Need Not Operate Every Case of Compound Depressed Skull Fracture

Manjul Tripathi, Ankur Kapoor, Ankur Bajaj, Rupinder Kaur and Kanchan K Mukherjee*

Department of Neurosurgery, Institute of Medical Education and Research, India

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Introduction

Compound depressed fractures (CDF) account for a significant share in the mortality and morbidity of patients with head injury (HI). Over last few decades, there have been major milestones achieved in the diagnostic evaluation and management of CDF with the advent of computed tomography (CT) and development of new generations of antibiotics. Incidence of CDF accounts for 11%-90% among all cases of depressed skull fractures and are associated with infection rate of 1.9-10.6%, an average rate of neurological morbidity of approximately 11%, incidence of late epilepsy up to 15% and mortality rate of 1.4% to 19% [1]. In our evaluation, road traffic accidents accounted for the major share of 48%, followed by assault 22.9%, and fall from height 19.7%. Lesser number was also contributed by animal bites, Industrial accidents and missile injuries (4.1%, 3.8% and 1.5% respectively), which correlate well with the literature from developing countries [2]. One of the important contributors in the outcome of such patients is the development of intracranial infection. This assumes even more significance considering nature of multiple injuries suffered by these patients adding further to the poor initial presentation as well as the final outcome [3,4].

Theoretically, surgical intervention benefits the patient by secluding cerebrospinal fluid compartment (curtailing infections), relieves pressure from the brain by elevating the bony fragments and provides a cosmetically aesthetic contour. But, these indications suffer from lack of enough surgical backing. The available class III literature argues against the surgical management of all cases of CDF [1,5,6]. Most of the literature review supporting surgical management suffers from methodology bias being retrospective, non-randomized, uncontrolled observational studies. To operate a patient of CDF or not, is a frequent controversy in borderline cases. Traditional management over the years has been operative debridement in the operation theater with thorough lavage and removal of necrotic and contaminated tissues. But with advent of better imaging modalities, there is significant increase in the number of patients being diagnosed with minor injuries. Consideration is now being given to conservative management in a subgroup of such patients. There are studies being conducted evaluating the need for antibiotics in selected subgroup of the patients with CDF. Traditionally, there are several factors in consideration for deciding the management options viz. dural tear, herniating brain matter, underlying brain contusions, soiled matter or presence of infected wound. Literature remains fractured by conflicting reports of superiority of an approach over the other [1-6]. In our personal experience, we have observed that presence of dural tear, and internal compounding of the fracture were not found to be associated with development of meningitis or brain abscess. Usage of antibiotics is another controversial topic and literature partially supports short-term use of antibiotics. However, there are studies (including our), which report no significant benefit of systemic antibiotic in all cases of CDF [2-5]. We have observed that, simple suturing had a better outcome in most subgroups, except in those with brain matter herniation and GCS 5–8, which showed non-significant benefit with surgical intervention.

HI is a multi-pronged attack on the homeostasis of the body. There is no doubt that surgical management aims to restore that fine balance but surgery is an added insult, which needs to be weighed against its indications. We would like to highlight the lack of confirmative evidence based on ideal management of CDF. The indications of surgical intervention as well as that of antibiotic usage and duration are still a matter of debate. Investigations as CT can now reveal exact status of cranial insult and guide a conservative management for selected number of cases. Patients with CDF with significant brain edema/ dural tears /herniating brain matter usually on admission have poor neurological status. Dhandapani S et al have shown correlation between grade of compound injury and Glassgow coma scale. "Patients in Grades 3- 5 had significantly lower admission GCS compared with the rest ($P < 0.001$)".The patients with significant brain matter herniation have large dural tears, higher risk of developing fatal intracranial infection while those with poor GCS frequently have significant mass effect, which itself adds upon the secondary brain injury [2]. An early surgical intervention seems necessary for these patients. The focus of current paper is in identification of those potential patients with CDF but minimal contamination and associated intracranial injuries who need not be subjected to operative debridement. We conclude that simple suturing seems to be an equally good option in patients with compound depressed fracture with no significant mass effect or brain matter herniation [1].

Disclosure

No conflict of interest/ authorship

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***Corresponding author:** Kanchan Kumar Mukherjee, Professor, Department of Neurosurgery, Neurosurgery Office, Nehru Hospital, 5th Floor, Post Graduate Institute of Medical Education & Research, Chandigarh, India- 160012, Tel: +917087009711; Email: kk_mukherjee@hotmail.com

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