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Original Research Paper

Neurosurgery

DOES DECOMPRESSIVE CRANIOTOMY HAS BETTER OUTCOME- AN EXPERIENCE OF LEVEL 2 TRAUMA CENTER

Dr Dinesh kumar Rajput — Assistant Professor ,department Of Surgery ,M.L.B Medical College ,jhansi

Dr Neeraj singh Rajput* — Senior Resident ,department Of Surgery ,m.l.b Medical College ,jhansi *Corresponding Author

Dr Sucheta Rajput — Assistant Professor, Department Of Obstetric And Gynecology, M.l.b Medical College ,jhansi

ABSTRACT Severe head injuries are managed with conservative treatment but in refractory cases, decompressive craniotomies are indicated t as a last resort to reduce raised intracranial pressure. In present study, we tried to know functional outcome of decompressive craniotomies(1), severe head injury patients.

KEYWORDS : Decompressive craniotomy, craniotomy, traumatic brain injury, severe head injury.

INTRODUCTION-

Severe head injuries are associated with significant financial and health burden on society. These cases are having lots of complications in terms of mortality and morbidities, in spite of best intensive care and dedicated medical team. About 10 % of severe head injuries cases have refractory intracranial pressure(1), who does not respond to medical treatments like osmotic diuretics, hyperventilation and sedation. Such patients need decompressive craniotomy to reduce intracranial pressure.

In decompressive craniotomy, a part of calvarium is removed with or with duraplasty, so that edematous brain get herniated through craniotomy defect and intracranial pressure is reduced. This helps in optimizing brain circulation better and preventing brain from secondary type of injuries(2-4).

Several studies showed that in spite of decompressive craniotomy, functional outcome in severe head injury is not so good. Though, there is paucity of such data, in developing world(5). The objective of this study is, to know outcome of decompressive craniotomy in severe head injury cases.

METHODOLOGY-

This is a retrospective study , in which all patients of severe head injury, who underwent decompressive craniotomy were included between January 2015 to December 2018. Exclusion criteria were age below 18 years and above 60 years and if patients have other systemic trauma. All pateints were operated in emergency department vs trauma centre level 2, of maharani Laxmi Bai Medical college Jhansi. All patients were managed in dedicated emergency intensive care unit. Data was collected from bed head tickets and follow up discharge cards and phone calls.

PROCEDURE-

A standard decompressive craniotomy were done in all these cases and international standards were followed(3). In aseptic conditions, all decompressive craniotomies were done under general anesthesia. A large question mark incision was given covering, frontal, temporal and parietal lobe. Scalp flap was raised laterally. After meticulous dissection of temporal muscle, burr hole were made one on key point and other on temporal region and bone flap was raised with the help of Manman drill.Duramater was opened based anteriorly and decompression was done of extradural ,subdural hematoma or hemorrhagic contusions and lax duraplasty was done with the help of facsia lata or perisoteum or artificial duramater. In intensive care unit, all patients were electivel ventilated for atleast 24 hours and further according to need. Temperature was maintained around 20 to 22 degree centigrade. None of the patients were hyperventilated . Patients, who could not extubated after 05 days of surgery, elective tracheostomy were done. In all patients, parenteral nutrition was started after 24 hours of surgery and gradually feed were increased. All patients , who were operated(6-8), NCCT head was done after 12 hours and repeat ncct head if any deterioration of GCS score , seizures, or before discharge of patients. Outcome of all patients were recorded as per Glasgow outcome score, at the time of discharge, after one month and after 03 months of follow up. All data were interpreted by SPSS version. Factors like, age of patients, mode of injury, gcs at the time of admission, time interval before reaching to hospital, pupillary reaction to light were analysed in outcome of patient(GOS). Chi square test and binary logistic regression ere used(8-11).

RESULTS-

Total 100 patients were operated in emergency department of MLB medical college Jhansi during this duration, out of which 12 patients were excluded of this study. Rest 88 patients were included in this study. This study showed mean age of 30.6. Males 79.56%were affected more than female20.44%. Mean GCS at the admission was 7 . The mean duration of stay was20_+ 5.Road traffic injury was the most common mode of injury followed by fall from height. Most of patients developed anisocorea before surgery. And 50% patients required tracheosomy. Tracheostomy was negatively associated with functional outcome.

The Glasgow outcome scale was mortality in 18 ,severely disabled in 18,moderately disabled and good recovery in 45. Patients. they were followed in one month ,and 2 patients were improved from severely disabled to moderately disabled.

DISCUSSION-

In our study we evaluated 88 patients who underwent decompressive craniotomy for traumatic brain injury. Though decompressive craniotomy is associated with decrease in intracranial pressure and also associated with decrease in morbidities and mortalities. We do not have facilities to monitor intracranial pressure in pre or post-operative period.
In a study by Jagannathan et al , which was a retrospective review of prospectively acquired data for decompressive craniotomy in children . All patients who underwent decompressive craniotomy , mortality rate were high But they reported that functional outcome were much better than outcome reported by several other control cohorts in literature.
In our study,we observed good functional outcome in younger age group. GCS of patients befor surgery is also a good

determinant in outcome after decompressive craniotomy. Functional outcome is better in GCS > 8 and poor in lower GCS at time of surgery. Other factors, who negatively affect the outcome are, polytrauma, pupillary abnormalities(12-13). But GCS is only factor which has statistically significant association. Our results are comparable with results of other studies in developed world. Which means that clinical monitoring in dedicated intensive care unit also comparable results, even without icp monitoring? Other noninvasive methods for monitoring intracranial pressure in traumatic head injury patients are Rotterdam score and optic nerve sheath diameter. These are associated predictors of functional outcome and mortality. After decompressive craniotomy, optic nerve sheath diameter is no relationship with outcome. However Rotterdam score for head injury had strong association with outcome after decompressive craniotomy.

Limitation of our study is , this retrospective study and so we could not able make comparison group. Secondly sample size is also relatively small so results can not generalized. Decompressive craniotomy patients are associated with increased riskof having second injury(14-15). These patients need cranioplasties after 3-6 months, which are also have some complications. Which should be considered and discussed with family at the time of decompressive craniotomy.

Furher large prospective, multicentric randomized control trails must be planned to conclude further.

Comparison of GCOS at different periods of follow up

At discharge	
Dead	**18**
Vegetative state	**7**
Severely disabled	**18**
Moderately disabled	**19**
Good recovery	**26**
Total	**88**
At 1month	
Dead	**18**
Vegetative state	**7**
Severely disabled	**17**
Moderately disabled	**20**
Good recovery	**26**
Total	**88**

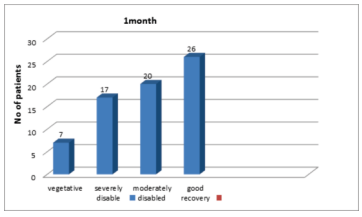

Fig-1

At 2month	
Dead	**18**
Vegetative state	**7**
Severely disabled	**17**
Moderately disabled	**19**
Good recovery	**27**
Total	**88**

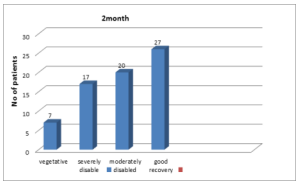

Fig-2

At 3month	
Dead	**18**
Vegetative state	**7**
Severely disabled	**16**
Moderately disabled	**18**
Good recovery	**29**
Total	**88**

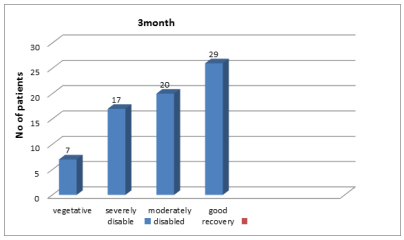

Fig-3

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