

Anterior Skull Base Trauma: Management and Outcomes at a Single South African Neurosurgery Centre

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Introduction

Anterior skull base trauma (ASBT) is associated with complex fractures and intracranial hematomas (ICHs). The purpose of this study is to report on the Inkosi Albert Luthuli Central Hospital (IALCH) management algorithm and outcomes of this pattern of injury over a 13-year period.

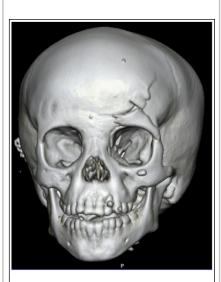
Methods

We retrospectively reviewed the medical records of patients with diagnosis of ASBT admitted to the Department of Neurosurgery from January 2003 to December 2015. Data was analyzed for demographics, clinical presentation, mechanism of injury (MOI), neuro-radiology findings, management and outcomes.

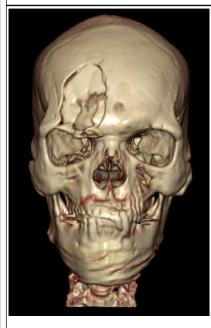
Results

Two Hundred patients were recruited into the study, with a mean age of 28 ± 12 years, of which 175 (87.5%) were males. Focal neurological deficits (coeff. = -0.28, p < 0.001), associated injuries (coeff. = -0.30, p < 0.001), and neuroradiology findings (coeff. = -0.17, p = 0.02) showed negative correlations to discharge Glasgow Outcome Scale (GOS).

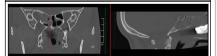
Novel Classfication of Anterior Skull Base Trauma



IV A Frontal and Orbital Roof Fractures

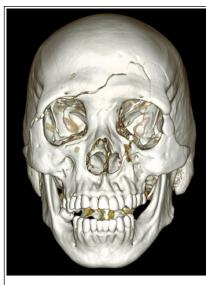


IV B Frontoethmoidal and Orbital Roof Fractures

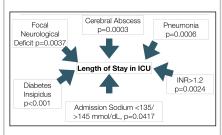


IV C Sphenoidal and Ethmoidal Fractures

Mechanisms of injury were motor vehicle collisions [60, 30%], blunt assaults [51, 25.5%], low velocity penetrating injuries [41, 20.5%], gunshot injuries [36, 18%], and falls [12, 6%]. Ninety patients (45%) presented with early cerebrospinal fluid rhinorrhea, while it was delayed in 12 (6%) patients. Associated intracranial injuries included intra-cerebral [97,48.5%], acute subdural [22, 11%] and extra-dural hematomas [17, 8.5%]. Twenty-eight (14%) patients had associated facial bone fractures.



IV D Frontoethmoidal, Sphenoidal and Orbital Roof Fractures

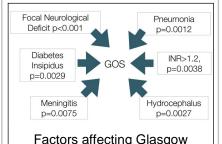


Anterior skull base repair was performed in 87 patients (43.5%); via craniotomy [85, 42.5%] and endoscopic transphenoidal approach [3, 1.5%]. Thirty-five (17.5 %) patients developed septic complications, which included meningitis [30, 15%] and intra-cerebral abscess [5, 2.5%]. Seven (3.5%) patients sustained vascular injuries. Admission Glasgow Coma Scale showed significant correlation to GOS on discharge (coeff. = 0.49, p < 0.001). The overall mortality rate was 9.5%.

Variables/Outcomes based on Specific Types of Fractures from ASBT

	CSF Leak	Pneumocephalus	Na	Mortality	GOS 4/5
- 1	33%	67%	33%	0%	100%
II	41%	76%	6%	6%	94%
III	46%	81%	22%	5%	92%
IV A	46%	80%	27%	0%	88%
IV B	48%	67%	26%	13%	74%
IV C	80%	80%	40%	20%	80%
IV D	51%	65%	35%	9%	83%
p value	P=0.851	p=0.631	p=0.34	P=0.032	p=0.030

Type 1 to III well described by Sakas et al. whilst Types A to D are a Novel classification proposed



Factors affecting Glasgow Outcome Scale at Discharge

Learning Objectives

By the conclusion of the session, one should:

in outcomes of patients with ASBT based on mechanisms of injury, cerebrospinal spinal fluid rhinorrhea, pneumocephalus and neuroradiology subtypes;

1) Understand the differences

2) Identify those patients with ASBT that require early operative management via craniotomy as opposed to endoscopic skull base repairs;3) Identify prognostic variables on admission to better prepare

Conclusions

management

for effective patient

ASBT is associated with significant morbidity, thus a multidisciplinary approach with standardized treatment protocols is crucial in improving outcomes.

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