INTRODUCTION:
Head trauma or cranio-cerebral trauma is one of the leading causes of death in age groups of 15-45 years. The primary goal of imaging the trauma patient is to quickly and accurately identify treatable lesions before secondary injury to the brain occurs. CT scan is ideally suited to evaluate patients immediately after trauma. Studies have estimated that nearly 1.6 million head injuries occur in the United States each year, resulting in over 50,000 deaths and significant morbidity and mortality.

AIMS AND OBJECTIVES:
1) To evaluate the role of CT in diagnosing different type of lesions following head trauma.
2) To study the most common etiology causing head trauma in Navi Mumbai.

MATERIALS AND METHODS:
SOURCE OF DATA: Fifty patients presenting to casualty within the study period will be subjected to computed tomography scans which is now the modality of choice. RTA is most common etiology followed by assaults, road traffic accidents and other accidental cases.

Method of collection of data:
a) STUDY DESIGN: prospective study
b) STUDY PLACE: Department of Radio Diagnosis, MGM Hospital, Kamothe, Navi Mumbai
c) STUDY DURATION: July 2017 to December 2017
d) Sample size: 100
e) INCLUSION CRITERIA: All cases referred for C. T. scan with cranio-cerebral trauma amongst the admitted patients at MGM Hospital, Navi Mumbai
f) EXCLUSION CRITERIA:
1. Known hypertensive and diabetic patients receiving anti-coagulant drugs
2. Patients with known bleeding disorders
3. Patients with history of previous cerebro-vascular accidents
4. Patients having major injuries like liver and splenic rupture and flail chest
5. Patients who are coagulopathic and/or have physical evidence of trauma above the clavicles

RESULTS:
The Computed Tomography findings in patients with cranio-cerebral trauma were noted as follows:
- Fractures 51
- Cerebral edema 45
- Mass effect 26
- Subdural hematoma 20
- Extradural hematoma 19
- Intracerebral hematoma 17
- Subarachnoid hemorrhage 12
- Intraventricular hemorrhage 10
- Pneumocephalus 06

Discussion:
The major advantages of CT scan lies in the fact that, the treatable lesions can be diagnosed early and treated accordingly, before it causes secondary lesions like mass effect, brain herniations etc. These secondary lesions can cause significant morbidity and mortality.

Conclusion:
Computed Tomography was found to be more sensitive in detecting basal skull fracture which was not detected on routine plain X-ray skull. Contusions were the most common lesions resulting from cranio-cerebral trauma.
In the present study contusions were noted in 53 patients observed on CT Scan.

### Table No. 1. Incidences of different modes of injury

<table>
<thead>
<tr>
<th>Type of Injury</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA</td>
<td>63</td>
<td>63.00</td>
</tr>
<tr>
<td>FALL</td>
<td>33</td>
<td>33.00</td>
</tr>
<tr>
<td>ASSAULT</td>
<td>01</td>
<td>01.00</td>
</tr>
<tr>
<td>OTHERS</td>
<td>03</td>
<td>03.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td>100.00</td>
</tr>
</tbody>
</table>

* Road Traffic Accident

### Table No. 2. Incidence of the types of fractures as observed on CT Scan

<table>
<thead>
<tr>
<th>Type of Fracture</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear</td>
<td>31</td>
<td>60.70%</td>
</tr>
<tr>
<td>Depressed</td>
<td>10</td>
<td>19.60%</td>
</tr>
<tr>
<td>Skull Base</td>
<td>10</td>
<td>19.60%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>51</td>
<td>100.00</td>
</tr>
</tbody>
</table>

### Table No. 3. Number of patients showing various lesions as observed on CT Scan

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contusions</td>
<td>53</td>
<td>57.60%</td>
</tr>
<tr>
<td>Cerebral Edema</td>
<td>48</td>
<td>48.90%</td>
</tr>
<tr>
<td>Mass Effect</td>
<td>26</td>
<td>28.20%</td>
</tr>
<tr>
<td>Subdural Hematoma</td>
<td>20</td>
<td>21.70%</td>
</tr>
<tr>
<td>Extradural Hematoma</td>
<td>19</td>
<td>20.60%</td>
</tr>
<tr>
<td>Intracerebral Hematoma</td>
<td>17</td>
<td>17.00%</td>
</tr>
<tr>
<td>Subarachnoid Hemorrhage</td>
<td>12</td>
<td>13.00%</td>
</tr>
<tr>
<td>Intraventricular Hemorrhage</td>
<td>10</td>
<td>10.80%</td>
</tr>
<tr>
<td>Pneumocephalus</td>
<td>06</td>
<td>06.52%</td>
</tr>
<tr>
<td>Fractures</td>
<td>51</td>
<td>57.60%</td>
</tr>
</tbody>
</table>

In the present study contusions were noted in 53 patients (57.60%). These contusions were commonly seen in the temporal region 31 (60.20%), followed by frontal 26 (49.05%), parietal 21 (39.50%), occipital 5 (9.40%), cerebellar 4 (7.50%) and other regions. Other lesions which were seen on CT scan are, Fractures 51 (55.40%), Cerebral edema 45 (48.90%), Mass effect 26 (28.20%), Subdural hematoma 20 (21.70%), Extradural hematoma 19 (20.60%), Intracerebral hematoma 17 (18.40%), Subarachnoid hemorrhage 12 (13.00%), Intraventricular hemorrhage 10 (10.80%) and Pneumocephalus 06 (06.52%).

### DISCUSSION:

According to Lindell (1994) the incidence of RTA was 20-50%.

But in the present study it was found that the incidence of RTA was high i.e., 63%. This can be attributed to the reason that MGM Hospital is in close proximity to the National Highway and with rapid urbanization there is increase in the number of vehicles and population with more movement of people (Table No. 1).

The major advantages of CT scan lies in the fact that, the treatable lesions can be diagnosed early and treated accordingly, before it causes secondary lesions like mass effect, brain herniations etc. These secondary lesions can cause significant morbidity and mortality.

Linear fractures of the skull vault can be appreciated on plain X-ray of skull. But basal fractures are difficult to appreciate. In a study conducted by Zimmerman and associates, the plain X-ray failed to appreciate fracture in 4 patients, 3 of which had basal fractures. In the present study plain X-ray skull did not show basal fractures in 9 patients. However in one patient petrous temporal bone fracture extending as hairline fracture in to the parietal bone was seen.

Contusions are one of the commonly seen lesions after cranio-cerebral trauma. Dublin reported an incidence of 40%. In the present study the incidence of contusions was 53%. This high incidence is due to selection of only moderate to severe injury patients for CT scan, few mild injury patients being under observation by neurologist and neurosurgeons (Table No. 3).

Factors influencing poor outcome are patient age, number and size of lesions, rapid rate of subdural hematoma accumulation and delayed surgical evacuation, symptoms of raised intracranial pressure and integrity of brain stem.

### CASES:

![Figure 1: Axial NECT in a patient with trauma shows SUBGALEAL HEMATOMA (Arrows) in the left parietal region](image1)

![Figure 2: Axial NECT scan image shows ACUTE EXTRADURAL HEMATOMA (Arrows) in the left parietal region](image2)
CONCLUSION:

1. Road traffic accidents were found to be commonest mode of injury.
2. Linear fractures were found to be the common type of skull fractures.
3. Cases graded as severe head injury by the Glasgow Coma Scale comprised the bulk of the study.
4. Computed Tomography was found to be more sensitive in detecting basal skull fracture which was not detected on routine plain X-ray skull.
5. Contusions were the most common lesions resulting from cranio cerebro- trauma.
6. Subdural hematoma was the commonest cause of morbidity and mortality in cranio cerebro- trauma.
7. With the availability of spiral/ helical, Multi Detector CT scanning time has been cut down drastically.

Computed Tomography was found to be more sensitive in detecting basal skull fracture which was not detected on routine plain X-ray skull. Contusions were the most common lesions resulting from cranio-cerebral trauma.

REFERENCES: