A COMPREHENSIVE STUDY ON GENITOURINARY TRAUMA IN RGGGH

INTRODUCTION
Trauma is defined as a physical injury or a wound to living tissue caused by an extrinsic agent. Trauma is the sixth leading cause of death worldwide, accounting for 10% of all mortalities. It accounts for approximately 5 million deaths each year worldwide and causes disability to millions more. Genitourinary trauma accounts for 10% of total trauma victims due to various modes of injury like road traffic accidents, blunt injury, penetrating injury, accidental fall and others. Genitourinary trauma is seen in both sexes and in all age groups, but is more common in males.

A trauma surgeon does the initial evaluation and resuscitation. For that it is important to know about the mechanism of injury, its extent and the methods used in the initial resuscitation process and their success rates.

AIMS AND OBJECTIVES
1. To study the clinical and imaging parameters and decide upon the line of management in genitourinary trauma.
2. To study the clinical outcome of patients managed conservatively.
3. To study the profile of various other associated injuries.
4. To study the role of multidisciplinary approach in genitourinary trauma.

MATERIALS AND METHODS
SAMPLE SIZE: 30 cases
STUDY DESIGN: Observational study (Prospective & Retrospective)
STUDY POPULATION: 30 cases
STUDY PERIOD: Oct 2016 to Sep 2017
STUDY CENTRE: Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai

SUBJECT SELECTION:
INCLUSION CRITERIA:
All trauma victims sustaining blunt and penetrating trauma to the genitourinary system with or without associated injuries.

EXCLUSION CRITERIA:
1. Abdominal trauma to all visceral and solid organs without injury to the genitourinary organs.
2. All children less than 13 years of age

ASSESSMENT OF PARAMETERS:
All patients who fit the inclusion criteria were observed and following data collected
1. Routine blood investigations
   • Hemoglobin
   • Hematocrit
   • Renal function test

All these will be done serially

DATA ANALYSIS AND RESULTS
OVERALL SEX RATIO

In our study, in a total population of 30 patients, 24 (80%) were males and 6 (20%) were females.

MODE OF INJURY

Out of 30 patients in our study, 16 were due to road traffic accidents (RTA) (53.3%), 11 due to accidental fall (36.6%), 2 due to wall collapse (6.66%) and one due to assault with knife (3.33)

ORGANS INJURED
Out of 30 patients, 11 had injury to kidney (36.6%). Among them 8 were males (72.7%) and 3 were females (27.27%).

**AGE RANGE**

- Road Traffic Accident was the most common mode of injury in patients with renal injury i.e. 8 patients (72.72%) followed by accidental fall in about 2 patients (18.18%) and wall collapse in 1 patient (9.09%).

**ASSOCIATED INJURIES**

- All the patients were received in our emergency trauma ward. Basic investigations along with FAST, CECT abdomen and pelvis and CT cystogram with delayed films done for all patients. Out of 11 patients, 2 expired (18.18%). Both were hemodynamically unstable at the time of admission and were resuscitated with i.v. fluids and blood products. Both had multiple associated injuries and expired within 24 hrs of admission.

**FRACTURES**

- The most common pelvic fracture is inferior pubic ramus fracture. D12 burst fracture in one case and transverse process of L5 in another case has been observed.

**LUNG**

- Lung injury was present in about 7 patients. Most common lung injury is Left Pneumothorax in about 3 patients Bilateral hemothorax - 1 case Lung contusion- 1 case Rib fracture- 1 case

**LIVER**

- Liver injury was present in 3 cases. Grade 2, 3 and 4 in each case

**SPLEEN**

- Splenic injury was present in 2 cases.

**HEAD**

- Head injury was present in 2 cases. Both were thin SDH managed conservatively

**PANCREAS**

- Distal pancreatic disruption was present in 2 cases.

**MANAGEMENT**

- Of the 30 patients with genitourinary trauma, 16 were managed conservatively (53.33%) and 14 were operated (46.66%)
- Of the 30 patients who had genitourinary trauma 28 survived (93.33%) and 2 patients expired (6.66%)

**RENAL INJURY**

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All patients were discharged with the mean hospital stay of 15 days.

### Urethral Injury

<table>
<thead>
<tr>
<th>Mode of Injury</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>ACCIDENTAL FALL</td>
<td>4</td>
<td>100%</td>
</tr>
<tr>
<td>WALL COLLAPSE</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>IATROGENIC</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>ASSULT WITH KNIFE</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

Out of 30 patients 4, had urethral injury (13.3%). All 4 patients were males (100%).

### Genitalia

<table>
<thead>
<tr>
<th>Sex</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>FEMALE</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

Out of 30 patients, only 3 were had injury to Genitalia. All 3 were men.

### Discussion

The current study includes, the observation made in 30 cases of Genitourinary trauma patients admitted in our hospital.

### Age Distribution

<table>
<thead>
<tr>
<th>Age Range</th>
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<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-25</td>
<td>7</td>
<td>23.33%</td>
</tr>
<tr>
<td>26-35</td>
<td>12</td>
<td>40%</td>
</tr>
</tbody>
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In our study, 7 cases were in the age group of 15 – 25 years which accounts for 23.33% of cases, 12 cases were in the age group of 26 – 35 years which accounts for 40% of cases, 6 cases were in the age group of 36 – 45 years and accounts for 20% of cases, 3 cases were in the age group of 46-55 years which accounts for 10% of cases and , 2 cases were in the age group of 56-75 years which accounts for 6.66% of cases.

The male and female ratio was 24: 6 i.e., 80% of cases were male and 20% of cases were female. The increased incidence of male is probably due to the outdoor nature of their occupation and aggressive behavior in male. The age distribution shows that males of age between 26 – 35 years exhibit maximal number of cases, which is most commonly due to Road traffic accidents and accounts for 53.3% of cases. Followed by Accidental fall which accounts for 36.66% of cases and Wall collapse this accounts for 6.66% of cases.

Regarding the organs injured in the genitourinary system bladder is most commonly injured organ, this accounts for 40% of cases followed by kidney, Urethra and Genitalia which accounts for 36.3%, 13.3%, 10% respectively.

In this study, all the cases were admitted in our hospital emergency ward within 24 hours of injury. At the time of admission only six cases were hemodynamically unstable, this accounts for 20% of cases. They were managed by resuscitation . These unstable patients were associated with other visceral organ injury and Fractures. The hemodynamically stable patients accounts for 80% of cases. Regarding renal injuries penetrating injury is more dangerous than blunt injury. Hematuria is most common presentation along with peritonitis and hemodynamic instability. Decision to operate is mainly based on clinical signs, X rays, ultrasound and CT scan. CT scan study is most commonly used for diagnosis and contrast CT is to observe the patients those managed conservatively. Our foremost aim in surgery for renal trauma is to preserve as much as renal tissue as possible. Nephrectomy rate in our study was 18.18%.

No case of ureteric injury was found in the study group. But most ureteric injuries are due to iatrogenic trauma most commonly during gynecological procedures. When compared to upper urinary tract injuries lower urinary tract injury is most common due to road traffic accidents which are most commonly associated with pelvic bone fractures. Cystogram is most valuable in diagnosing bladder injury followed by CT cystogram which demonstrates site, size and displacement of the bladder resulting from pelvic hematoma.

Closure of the bladder wall with plain catgut or polyglycolic acid suture material will avoid the risk of phosphate encrustation. In urethral injuries diagnostic catheterization is strongly condemned except single gentle catheterization. Retrograde urethrogram is the safest and simplest procedure to provide a diagnosis of urethral injury. With the development of end viewing endoscope, the approach to investigating rupture of urethra has been completely changed.

Turner and Wardwick recommend complete excision of para urethral fibrosis in initial reconstruction procedures. Opinion differs on the relative merits of repeated urethral dilatation or urethroplasty in the management of urethral strictures. Genital injuries are rare due to its relative mobility and are most commonly due to RTA followed by Accidental fall in our study.

### Conclusion

a. The most common cause of genitourinary tract injury is due to road traffic accident.

b. Similar to many large series males are more often affected by road traffic accident than females due to their outdoor nature of work.

c. Middle aged patients are the victims when compared to either extremes of age.

d. Most common injury to the genitourinary system is lower urinary tract injury. Among these, bladder injury is most common and it is commonly associated with pelvic bone fracture.
e. Hemodynamically unstable patients are most commonly associated with other intra abdominal visceral organ or pelvic fractures. Early resuscitation and laparotomy along with methodical exploratory technique is essential for penetrating injuries and blunt injuries.

f. Renal injuries can be managed conservatively unless associated with other injuries.

g. Investigations such as X rays and blood tests are only complimentary to clinical examination.

REFERENCES