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Corresponding Author
S.R. Eashwar Maniyen,
Department of General Surgery Sree Mookambika Institute of Medical Sciences College Kanyakumari, Tamil Nadu, India

Author Designation
[1]Professor
[2]Junior Resident

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A Study on Analysis of Urological Injuries in Blunt Injury Abdomen: A Cross Sectional Study

[1]Alex Arthur Edwards and [2]S.R. Eashwar Maniyen
[1]Department of General Surgery, Sree Mookambika Institute of Medical Sciences Kanyakumari, Tamil Nadu, India
[2]Department of General Surgery Sree Mookambika Institute of Medical Sciences College Kanyakumari, Tamil Nadu, India

Abstract
Trauma is evolving as the leading cause of death in the world. It is also a major mortality next to coronary artery disease in India. Urological trauma accounts for 10% of total trauma and trauma is currently the sixth leading cause of death in the world. Advancement of Radiological imaging helps to evaluate the patient needed for intervention. This is a prospective study of various aspects of Urological Trauma encountered in sree mookambika institute of medical sciences at urology department from marchn 2023 to dec 2024 .27 numbers of cases have been recorded in the study. The age varied from 12-70 years. Inclusiln criteria are All the patients admitted with blunt injury abdomen above 12 yrs, In our study, most commonly affected were fourties of about 33.3%.Teens, twenties ,thirties were about 18.5 % affected each The male and female ratio was 25:2 i.e., 92% of cases were male and 8% of cases were female. Closure of the bladder wall with vicryl suture material. 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. The commonest cause of genitourinary tract injury is due to road traffic accident. Similar to many large series males are more often affected by road traffic accident than females due to their outdoor nature of work. Middle aged patients are the victims when compared to either extremes of age. Most common injury to the genitourinary system is lower urinary tract injury.

INTRODUCTION

Trauma is evolving as the leading cause of death in the world. It is also a major mortality next to coronary artery disease in India. Urological trauma victims due to various modes of injury like RTA, penetrating injury, blunt injury, accidental fall and others[1-3]. The initial evaluation of the patient to know about the mechanism of injury and its extent. Early resuscitation is needed to improve the outcome. The signs and symptoms of urological trauma is often masked by associated injuries and hence requires, careful and repeated evaluation. Urological trauma accounts for 10% of total trauma and trauma is currently the sixth leading cause of death in the world. Advancement of Radiological imaging helps to evaluate the patient needed for intervention[4].

Aims and Objectives of the Study:

- To study the various modes of injury and their presentation.
- To arrive the age, sex, etiology and other distributions of urological trauma patients.
- To evaluate the urological trauma patients attending our casuality.
- To evaluate the various associated injuries and their influence on the outcome.
- To evaluate the value of available investigation tools for diagnosis of urological trauma.
- To discuss about the various treatment patterns.
- To study about the prognosis of the patients who underwent various treatment modalities
- Conclusions drawn as a result of this study.

MATERIALS AND METHODS

This is a prospective study of various aspects of Urological Trauma encountered in sree mookambika institute of medical sciences at urology department from marchn 2023 to dec 2024. 27 numbers of cases have been recorded in the study. The age varied from 12 to 70 years. Inclusiln criteria are All the patients admitted with blunt injury abdomen above 12 yrs. Patients havingclinical, radiological evidence of urological injuries in blunt injury abdomen, intaoperative evidence of urological injuries in blunt injury abdomen. Exclusion criteria are Age group below 12 yrs, All the data's from the time of presentation of urinary tract injuries, to the definitive surgical treatment have been collected and processed in the form of tabular columns. Various aspects of Urological Trauma are discussed in the study including their presentation, evaluation and management. The time intervals between sustaining of injury and that of admission have been noted and their significance also studied. The various modes of injury causing Urolgical Trauma and their surgical treatment were studied. The hemodynamic status and associated injuries were assessed and noted and they are managed accordingly. Routine biochemical testing for sugar, urea, creatinine and hemoglobin estimation was done for all patients prior to surgery. Radiological evaluation of the patient to rule out the associated injuries has been done. Statistical analysis was done using the statistical package for social sciences (SPSS). Different statistical methods were used as appropriate. Mean±SD was determined for quantitative data and frequency for categorical variables. The independent t-test was performed on all continuous variables. The normal distribution data was checked before any t-test. The Chi-Square test was used to analyze group difference for categorical variables. In logistic regression models, age was adjusted for estimation of each or all the independent effects of hypertension, ischemic heart disease and diabetes mellitus . A p- value<0.05 was considered significant.

RESULTS AND DISCUSSIONS

Table 1: Causes of Renal Injury

Mode of injury	No of Cases
Road traffic accident	9
Accidental fall	1
Wall collapse	-
Total	10

All the ten cases were received in our Emergency department within 24 hrs of sustaining injury. Among them few cases were presented with severe abdominal pain, distension, hematuria and urinary retention. The patient admitted due to road traffic accident was unstable on admission. He underwent resuscitation and catheterization. Blood stained urine drained through the catheter. After resuscitation with IV fluids and blood transfusion, emergency ultrasound and CT taken. Ultrasound showed contusion in the upper pole of right kidney along with free fluid in the abdomen, CT shows right kidney contusion with perinephric collection and liver laceration with collection in the peritoneal cavity and hence emergency laparotomy was proceeded intraoperatively found to have liver laceration and non expanding retroperitoneal hematoma. Liver laceration was primarily sutured and kidneys not explored as suggested by urologist. The case due to accidental fall injury also received in unstable condition. Patient presented with Swelling in the left hypochondrium and left loin. Patient was resuscitated and CT taken. It shows lacerated left Kidney and spleen laceration with fluid collection in the peritoneal cavity and hence patient was taken up for emergency laparotomy and found to be spleen lacerated into two parts active bleeding from the splenic vessels, laceration at the Gerota's fascia with active bleeding and hence left kidney explored and found to be avulsion of left renal artery and vein from the hilum. Then we proceed with splenic artery ligation, splenectomy, left renal artery and vein clapped and ligated followed by left Nephrectomy. DT

kept and abdomen closed. The other patient admitted with history of RTA. Emergency Ultrasound shows perinephric collection in the Left kidney, CT shows left kidney contusion with perinephric collection and normal right kidney. Since the patient was stable, the case was managed conservatively. Patient managed postoperatively with IV fluids, Ryle's tube aspiration, antibiotics. The conservatively managed patient followed up with CT which showed 1cm size of nonexpanding perinephric hematoma. Hematuria resolved after 8 days of injury. And patient discharged in tenth POD.

Bladder Injury: In our study, five patients had bladder injury. Three patients were due to Road traffic accident, among of them, two cases associated with pelvic bone fracture. Another one case was due to wall collapse

Table 1: Causes of Bladder Injury

Organ injured	Mode of Injury	No of Cases
Bladder	Road traffic accident	3
Bladder	Accidental fall	1
Bladder	Wall collapse	1

Urethral Injury: In our study, 8 patients had urethral injury. All cases were male, mode of injury follows.

Table 2: Cause of Urethral Injury

Mode of Injury	No of Cases	Percentage
Road traffic accident	4	50%
Accidental fall	2	25%
Wall collapse	-	-
Train traffic accident	2	25%
Total	8	100%

Out of 8 cases of urethral injury,6 cases were managed with supra pubic cystostomy initially and 2 cases managed with gentle catheterization. Evaluation of urethra by retrograde urethrogram after stabilization of pelvic bones, urethroplasty reconstruction done in 3 cases later. Other cases managed with optical internal urethrotomy.

Genital Injury: In our study, 3 patients had genital injury. All of them were male. Among these patients 2 patients had penile hematoma, 1 patient had scrotal injury with retracted testis, penile laceration.

Table 3: Causes of Genital Injury

Mode of Injury	No of Cases
Road traffic accident	3
Accidental fall	-
Wall collapse	-
Train traffic accident	-
Total	3

Among these three, one patient had buck's fascia tear and penil hematoma, sutured and hematoma treated conservatively. The another patient due to RTA and had swelling in the right inguinal region with penile laceration and empty scrotum on right side. Inguinal region explored and testis found to be in the right inguinal region and right orchidopexy done, penile laceration sutured. Patient voids urine freely in post operative period. In our study, most commonly affected were fourties of about 33.3%. Teens, twenties, thirties were about 18.5 % affected each The male and female ratio was 25:2 i.e., 92% of cases were male and 8% of cases were female. The increased incidence of male is probably due to the outdoor nature of their occupation and aggressive behavior in male[5-7]. The age distribution shows that males of age between 41-50 years exhibit maximal number of cases, which is most commonly due to Road traffic accidents and accounts for 70% of cases. Followed by accidental fall this accounts for 18.5% of cases and train traffic accident accounts for 7.5% and wall collapse accounts for 4% of cases Regarding the organs injured in the genitourinary system kidney is most commonly injured, this accounts for 37% of cases followed by urethral, bladder, external genitalia this accounts for 29.5%, 18.5%, 11% 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 five cases were hemodynamically unstable, this accounts for 18.5% of cases. They were managed by resuscitation and surgery .these unstable patients were associated with visceral organ injury and vascular injury[8-12]. The hemo dynamically stable patients accounts for 81.5% of cases. These cases were most commonly associated with pelvic bone fractures. It accounts for 37% of total cases. These patient most commonly had urethral injury. Regarding renal injuries blunt injury is more dangerous. Hematuria is most common presentation. Decision to operate is mainly based on CT abdomen. CECT is investiagation of choice. Our foremost aim in surgery for renal trauma is to preserve as much as renal tissue as possible. Nephrectomy rate in our study was 7.5%. 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[13-18]. Closure of the bladder wall with vicryl suture material. 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[19]. With the development of end viewing endoscope, the approach to investigating rupture of urethra has been completely changed. Turner and Ward wick recommend complete excision of para urethral fibrosis in initial reconstruction procedures. Urethroplasty

done in after three months. Genital injuries are rare due to its mobility[20,21].

CONCLUSION

The commonest cause of genitourinary tract injury is due to road traffic accident. Similar to many large series males are more often affected by road traffic accident than females due to their outdoor nature of work. Middle aged patients are the victims when compared to either extremes of age. Most common injury to the genitourinary system is lower urinary tract injury. Among these, urethral injury is most common and it is commonly associated with pelvic bone fracture. Hemodynamically unstable patients are most commonly associated with other intra abdominal visceral organ or vascular injury. Early resuscitation and laparotomy along with methodical exploratory technique is essential for penetrating injuries and blunt injuries. Investigations such as X ray, CT scan and blood tests are useful to diagnose urological trauma.

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