

“Evaluation and Management to Urinary Bladder and Urethra Trauma with Special Reference To Conservative Management V/S Surgical Intervention”

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ABSTRACT – The effects and complications associated with conservative management and surgical intervention in bladder and urethral trauma.

Aims and Objective - To evaluate the evaluate and establish the effective guidelines for appropriate diagnosis and intervention strategies in setting of bladder and urethral trauma

Results -Prompt and early diagnosis, detailed examination to determine the site,severity, nature of injury and associated injuries. Control of shock , prevention of infection , repair of injury and measures to maintain adequate urinary functions are the important factors responsible for reducing the complications of lower urinary tract injuries .Complications may be persisted infection , UTI and stricture at bladder neck and urethra.

Keywords- urethral trauma, urinary bladder trauma, hematuria, pelvic fracture, SPC

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I. Introduction

Trauma is defined as a physical injury or wound to living tissue caused by an extrinsic agent. Trauma is a 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 million more. About half of all deaths due to trauma are in people ages 15-45 years and in this age it is the leading cause of death. Death from injury is twice as common in males as females, especially from motor vehicle accidents and interpersonal violence. Trauma is therefore a serious public health problem with significant social and economic cause.

Urologic trauma is seen in both sexes and in all age groups but is more common in males. Urological Trauma account for 10% of abdominal trauma. The kidneys are the most commonly injured genitourinary organ. Civilian renal injury occurs in up to 5% of trauma victims, and accounts for 24% of traumatic abdominal solid organ injuries. The kidney is particularly vulnerable to deceleration injuries (e.g., falls, motor vehicle collisions) because it is fixed in place only by the renal pelvis and the vascular pedicle. Flank ecchymosis and broken ribs are signs suggestive of renal injury. Computed tomography scan with intravenous [1v] contrast enhancement including delayed imaging remains the most common method of evaluating for extravasation of urine from the collecting system.

Over the past few decades, management of traumatic renal injuries has changed from operative exploration to non-operative management in the vast majority of cases. Much of the impetus for this change comes from the recognition that in many cases, urgent surgical exploration of renal injuries leads to nephrectomy for the injured kidney. Percutaneous angioembolization is increasingly accepted for treating ongoing bleeding without surgical exploration. While non-operative management of the vast majority of blunt renal injuries is now firmly established, non-operative management of penetrating and high-grade renal injuries continues to inspire debate.

Ureteral injuries are rare. Accounting for 1% of urologic injuries. Distinct from other urologic organs, ureteral injuries. Tend to be iatrogenic occurring during gynecologic urologic or colorectal surgery the majority of ureteral injuries originating outside of the operating room are a result of penetrating trauma. Investigated Treatment may include placement of ureteral stent or surgical repair. Depending on the severity and location of injury.

Bladder injuries occur in approximately 1.6 % of blunt abdominal trauma victims. Because the bladder is well protected within the pelvis, the vast majority rupture can occur into the peritoneal cavity [intrapertoneal

bladder rupture]. Bladder injuries are extra peritoneal approximately 60. Intraperitoneal in approximately 30 % and the remaining injuries are both intraperitoneal and extra peritoneal ruptures. Gross hematuria is the most common sign, present in 77 -100% of injuries. Retrograde cystography [CT or conventional] is critical as it can determine the presence of. An injury and whether it is intraperitoneal or extra peritoneal. Since the 1980s. Clinicians manage most extra peritoneal bladder ruptures non- operatively with catheter drainage, while intraperitoneal ruptures are surgically repaired.

Prevalence of urethral injuries is 10-15% of urethral trauma. Urethral injuries to the male urethra are divided into injuries to the posterior urethra [at or above the membranous urethra] or the anterior urethra [penile or bulbar urethra]. Posterior urethral injuries are almost exclusively associated with pelvic fractures; injuries occur between 1.5 and 10 % of pelvic fractures; concomitant bladder injuries are present in 15 % of such urethral injuries. 18-20 Urethral

Injuries may be partial or complete disruption of the urethra. Anterior urethral injuries may be blunt [e.g.; straddle injuries. Where the urethra is crushed between the pubic bones and a fixed object] or penetrating and the urethra may be lacerated, crushed, or disrupted. Blood at the urethral meatus is the most common finding, although highly variable, present in 37- 93 % [21]. Other clinical findings include inability to urinate, perineal/genital ecchymosis, and / or a high-riding prostate on physical exam. Diagnosis is made by urethra by retrograde urethrography. Immediate surgical closure of urethral injuries is recommended primarily in penetrating injuries of the anterior. Straddle injuries of the anterior urethra are initially treated with suprapubic or urethral urinary drainage and are at high risk for delayed stricture. Urethral injury is associated with unacceptably high rates of erectile dysfunction and urinary incontinence. Regardless of the bladder is the immediate goal of treatment. In females, urethral injuries occur almost exclusively as a result of pelvic fracture and should be suspected in patients having labial edema and/ or blood in the vaginal vault during pelvic exam.

Aim and Objective – To evaluate the strategies in management of bladder and urethral trauma and compare the effects and complications associated with conservative management and surgical intervention.

Material and Methods – This prospective study was conducted on patients of bladder and urethral trauma. This study was conducted in the post graduate department of surgery, Subharti medical college and associated CSSH hospital, Meerut in 30 cases over a period of 2 years.

INCLUSION CRITERIA – All Cases of Bladder injury and Urethral injury admitted in Subharti Hospital with informed consent during September 2015 to July 2017 (23 months).

EXCLUSION CRITERIA- Infective pathologies involved with trauma, Hematuria with no history of trauma and Patient lost in follow up.

PRE-OPERATIVE SCANNING -Blood should be cross matched for transfusion, if there is evidence of hypovolemic shock or continuing hemorrhage. Intravenous access should be established.

Patient should stay in bed while there is macroscopic hematuria and activity must be curtailed for a week after urine clears.

Appropriate analgesics should be used.

Hourly pulse and BP charts must be kept, antibiotics must be given to prevent infection.

Each sample of urine passed should be checked for hematuria and the result charted. Blood and radiological investigations should be performed urgently to assess the damage to the urological system and its functions. The patients were worked up thoroughly and subjected to - detailed history and clinical examination, routine hematological investigation :Hb, PT, APTT, INR, TLC, DLC; Biochemical investigation: RFT, S. Amylase, S. Lipase, RBS; Liver function test: Serum Bilirubin, SGOT, SGPT, Serum Alkaline phosphatase; Viral marker :HCV, HBsAG, HIV;

OPERATIVE PROCEDURE- Interventional techniques:

- SPC – In this operation, a tube is placed in the bladder for drainage or as part of operation on bladder or urethra. The operation can be performed openly or percutaneously under local anesthesia. By open technique, this allows correct positioning of the tube and exploration of bladder. The bladder is exposed and a small incision is made in it as high as possible between two forceps or stay sutures. The bladder is emptied by suction and its interior explored. A self-retaining catheter of Malecot or Foley type is introduced and the bladder wall is sutured around it with one or two catgut stitches. The catheter is brought through a stab wound in the upper skin flap and anchored with a stitch prior to wound closure.
- Bladder repair- It is done in cases of extra peritoneal rupture more than 2cm by giving Pfannenstiel incision or lower vertical midline incision, tear repaired with vicryl suture and in case of intraperitoneal rupture anterior bladder wall is opened and intraperitoneal rupture and anterior wall is sutured and supra pubic catheter is inserted and fixed. The rest of wound is closed in layers and the retro pubic or prevesical space is drained for 48 hours or sometimes longer.

- Urethral alignment – to achieve this bladder is opened and soft catheter is passed through bladder neck and down the urethra until it emerges at the site of injury. A silastic catheter is passed up urethra from external meatus. When its tip emerges from site of injury it is tied to the tip of catheter passed from above. By withdrawing the upper one out of urethra and out of the bladder the Foley catheter is negotiated into bladder and its balloon inflated. By applying traction to the catheter the balloon pulls the prostate down to the perineal membrane apposing cut ends of the urethra.
- Urethral repair is done in cases of incomplete rupture of urethra by giving perineal incision through vertical incision and primary repair of extra pelvic urethra is done
- Urethroplasty done in selected cases after 6 weeks in cases that are managed conservatively.



Trocar with suprapubic catheter



Self-retaining Foley's Catheter

POST OPERATIVE CARE- Patient will be kept nil per oral for 24 hours

- Antibiotic coverage with painkiller and proton pump inhibitors will be given.
- Dressing will be routinely checked after 48 hours and changed prior to discharge

DISCHARGE: Three months follow up of patients shall be ensured for improvement of symptoms

- Data collected will be tabulated and the same will be subjected to statistical analysis as per Performa.

II. Results And Discussion

Prevention and treatment of trauma has become a major problem in all advanced countries of the world. Till the end of the nineteenth century most wars were professional encounters between enemies away from the city. Modern wars with mortars, rockets, missiles and nuclear weapons have exposed civilians to trauma during their course. Further the concentration of population in to larger and larger cities, faster modern of travel, access to high speed automobiles and giant industrial projects account for the rising incidence of trauma to people is evident from the organization and establishment of institutions and units for the care of persons inflicted with trauma in all geographical areas of the world.

Traumatic injuries are on the increase in India today. The population of Meerut having increased 5-10 times during the past two decades has created innumerable problems in its wake. One of these is the rising incidence of serious and fatal accidents in areas of Meerut, and its neighborhood. The problem existing in this city is in no way different from those prevailing in other big cities in Asia and Middle East. However, the problem of trauma has not engaged the attention of medical investigators in this part of the world.

Injuries of urinary tract form a major part the traumatic emergencies. Traumatic lesions of bladder and urethra along with associated injuries have an increasing incidence today, due to mechanism of travel and industry. Because of its frequent association with other severe bodily injuries the symptoms of urinary tract are often masked. Often our attention is drawn towards the associated injuries and urological trauma is forgotten. The urinary tract injury is noticed only when the pt. does not pass urine or voids blood stained urine. Major urologic trauma demands immediate diagnosis and proper management. Delay in diagnosis may add to the facilities which severe trauma causes and may lead to complications, undesirable for any good management. The present study was undertaken with object to evaluate management strategies in bladder and urethral trauma.

Lower urinary tract was more often involved in trauma than the upper urinary tract. The relationship of injury to bladder and urethra to fractures of pelvis has been recorded in the literature. The incidence of such injuries in fracture of pelvis was determined in the hospital. (Table no. 22).

Table No.1 Incidence of bladder and urethra injury in fracture pelvis cases.

| PERIOD | FRACTURE PELVIS | BLADDER INJURY | URETHRAL INJURY |
|------------|-----------------|----------------|-----------------|
| 2015-2017 | 26 | 12 | 14 |
| PERCENTAGE | 86.6% | 40% | 46.6% |

Rupture of bladder was seen in 40% of fracture pelvis and urethral injury in 46.6%. The incidence of urethral rupture in the literature has been reported as varying from 30-35% (Brant maher et al 2001). Our figures of ruptured urethra are in confirmatory with Brant maher (2001).

AGE INCIDENCE:

The age distribution of bladder and urethral injury in study showed that maximum involvement was in the age group 21-30 yrs. i.e. 40-53.3% (table no. 1 and 11) which is in general agreement with(Fires G.Petrous et al 2008)²⁹.

SEX INCIDENCE:

Bladder and urethral injury was found predominantly in males. Urethral injury however, was found exclusively in the males .Female urethra is rarely injured except during child birth. In the female, the bladder is more mobile and the pelvis is more commodious. As such rupture of the bladder is less common in adult female.

MODE OF INJURY:

In absence of any statistics based on the causes of trauma admitted to hospital or from the civic authorities including the police, it is difficult to form any opinion on the relative incidence of various modes of injuries in the local population. Taking the mode of injury in the fatal causes of trauma as an index (table 2 and 12); it was found that road traffic accidents were the most frequent factors in our population. The high incidence of road traffic accidents is explained by the rapid increase in the number of automobiles and heavy vehicles on the roads of Meerut which are also freely used by the pedestrians of all age groups and about a million cyclists every day. Fall from a height was the next common cause of trauma to bladder and urethra. Road and traffic accidents have been mentioned as the most frequent mode of bladder and urethral injury in the literature. According to this 46.6% -80% of all lower urinary tract injuries .In our study RTA accounted for 46.6% urethral injuries in clinical group (table no.12). Falls resulting in 40% of bladder and urethral injuries as compared to the figures in literature. On the other hand urethral injury due to kicks and blows and industrial accidents were insignificant in numbers. In the literature more than 70% of injuries to bladder have been reported to have

caused by automobile accidents (Bradley C Gill et al 2017)¹⁶. In our study 80% of the injuries to the bladder caused by RTA. Intrapelvic rupture of urethra was invariably associated with fracture of pelvis and followed RTA in 46.6% of cases. Extra pelvic rupture of urethra followed a fall from height or direct trauma to perineum in 60% of cases. This observation agrees with the findings of J.Kelvin Smith et al (2017)⁷⁶.

NATURE OF INJURY:

Contusions of bladder were mentioned in 4 cases of bladder injury out of 15 cases (table no.4). The diagnostic features were mainly transient hematuria or retention of urine in association with pelvic injury. A similar history was also obtained in cases with contusion of intrapelvic urethra associated with pelvic trauma. 2 cases were diagnosed clinically as contusion of intrapelvic urethra during same period. From study of these cases it appeared that the main differentiation from contusion of the bladder was made when pt. complained of pain during catheterization or where a little blood followed by clear urine was obtained on catheterization. In few of these cases some obstruction to the passage of the rubber catheter was also noted but it was successful in all of these and hematuria cleared within a day or two. However, for our analysis the site as mentioned by clinician was accepted otherwise such differentiation could not have been possible in a study. From the impression gained from studying some of these cases in the recent period of study, it appeared that though theoretically such differentiation was possible, clinically it was difficult to differentiate contusion of Intrapelvic urethra with contusion of bladder. Both these injuries presented almost the same clinical features and such fine differentiation on basis of complaints of pain during catheterization or blood stained urine followed by clear urine was hardly possible. Even this differentiation may not be possible in all the cases with diagnostic methods like cysto-urethrogram. Because in cases of fracture of pelvis some contusion of bladder or intrapelvic urethra is always to be expected. According to EUA (2015) contusion and superficial lacerations are seldom recognized by radiographic studies except when associated with hematoma formation. Only cystoscopy in such cases may help to differentiate, but then it is hardly necessary to make such fine distinctions when line of treatment is similar in either case. We had 6 cases of contusion of bladder and urethra amongst 26 cases of pelvis fracture (table no.21), an incidence of 23%.

Among 10 cases of rupture bladder in group intraperitoneal rupture constuted 46.6% which was almost in confirmatory with figures given by bailey and love (2015). In 6 of these 7 cases, rupture of the bladder was associated with fracture of pelvis in 85.5%. There was fracture of pelvis in 6 cases of extra peritoneal rupture of bladder. This was roughly in confirmatory with findings of Fringes G. Petro's et al (2008)²⁹. There was no case of intraperitoneal rupture of the bladder in females.

Urethra – the site and nature of urethral injury given in table no.13. Among the cases of rupture urethra, 8 were Intrapelvic and 7 extra pelvic. Out of these 15 cases 3 (20%) were complete and rest incomplete. J.Kelvin Smith et al (2017)⁷⁶ reported 14 cases of partial rupture in 20 cases of Intrapelvic urethra in fracture of pelvis. In some cases where exact nature of rupture of urethra was not mentioned in the operative findings, we included them in to the group of incomplete rupture. This may account for the low incidence of complete ruptures in our study compared to other authors. In the extra pelvic rupture 1 case was complete (13.3%) and 33.3% were incomplete (table no.13). The complete or incomplete rupture of extra pelvic urethra depending on severity of local trauma. Whereas intrapelvic rupture of the urethra occurred only when the severity of trauma caused distortion of pelvic architecture. The difference in ratio of complete to incomplete ruptures observed at two anatomical sites depend on the incidence of pelvic fractures.

ASSOCIATED INJURY:

Fracture of the pelvis was associated in 12 cases of rupture of bladder (table no.4) and RTA were responsible for 80% of the cases. In Brant Maher et al (2001)⁸⁷ there was associated fracture of pelvis in 70% cases and traffic accidents cause 71% of rupture of bladder. Almost a similar finding was observed in rupture of intrapelvic urethra where associated fractures of pelvis were found in 14 cases and rta accounted for 46.6% of these injuries. In fracture of pelvis frequent association of rupture of bladder and urethra is reported. The presence of associated injuries would also effect the line of management and prognosis of lower urinary tract trauma.

CLINICAL FEATURES:

BLADDER – Inability to void or retention, suprapubic pain, tenderness and rigidity were the main symptoms and signs of the bladder injury in our cases (table no.7). These were usual signs and symptoms described in literature (S.JosephPhiliprai, 2010)⁷⁶. It was observed that patients of extra peritoneal rupture after initial subsidence of shock usually complained of inability to void though they had intense urge to void. Pts of intraperitoneal rupture did not complain of such urge for micturition. Hematuria was observed in 8 pts. 20% pts of extra peritoneal rupture had hematuria. Shock was one of the most important presenting feature in rupture of bladder associated with fracture of pelvis. Suprapubic pain, tenderness, and guarding or rigidity help to localize the injury to bladder and pelvic region



Intra peritoneal rupture of bladder

Catheterization in most of the cases (8 cases) obtained blood or blood mixed urine.

The symptoms of bladder injury may be masked in pelvic or closed intra-abdominal injury complicated by severe shock.

Early detection of injury to the bladder is essential because the extravasation of urine is irritating and toxic to the pt. Undiagnosed pts soon progress into uraemia, paralytic ileus and toxemia.

RADIOLOGIC INVESTIGATION:

Plain x-ray abdomen – All the cases of fracture of the pelvis associated with rupture of the bladder in this study had fracture dislocation of the anterior segment of bony pelvis. In one case of combined intra and extra peritoneal rupture of bladder, obliteration of the soft tissue planes in the pelvis seen.

Cystogram – It was undertaken in 6 cases only but gave a correct diagnostic evidence of rupture of bladder. This is one of the best diagnostic aids for localization the injury to the bladder (Bradley C Gill, 2017)¹⁶. Needless to emphasize that such investigations should be undertaken as a routine if the radiological facilities permit. The infrequent use of this investigation was more due to lack of realization of its importance by the residents than its non-availability.

Management – Contusion of bladder can be successfully treated by indwelling urethral catheter drainage for a few days. Prompt diagnosis and immediate surgery are of outmost importance in the successful management of rupture of bladder. Partial thickness laceration or laceration less than 2 cm in extra peritoneal bladder can be managed successfully by urethral catheter drainage only. Extra peritoneal rupture more than 2cm and intraperitoneal rupture require immediate surgical intervention. Surgical treatment in these cases consists of exploration by Pfannenstiel incision or lower midline incision, removal of extravasated urine and blood, closure of the wound in the bladder, urinary diversion by a wide –bore suprapubic tube and drainage of the perivesical spaces. If there is no associated injury to the intra pelvic part of urethra, a self-retaining latex or silicon catheter can be passed per urethra. Any bleeding from injured pelvic vessels is also controlled. An indwelling urethral catheter even when negotiated easily is hardly going to prevent further extravasation of urine in the presence of an open wound in the bladder wall.

Complications - Urinary infection and wound infection were inevitable sequel of bladder rupture (table no.9). Some complications may be attributed to delay in treatment, inadequate closure of the bladder wound and drainage of the perivesical spaces. The stricture of urethra or the bladder neck have been described after rupture of intrapelvic urethra and rupture near bladder neck. These occurred in 1 case of extra peritoneal rupture that was managed conservatively. These pts require subsequent dilatation or bladder neck revision.

INJURY TO URETHRA

Clinical features – On comparison of the signs and symptoms presented in table no.16, shock was seen in 1 case as it was associated with multiple injuries. Retention of urine or inability to void with pain were characteristic features in both types of rupture urethra. A distended bladder could be palpated in about a third of the cases. A palpable bladder helps to distinguish urethral injury from bladder injury.

Bleeding per urethra was more marked in rupture of the anterior urethra as compared to injury to the intrapelvicurethra. Lalit Singh et al (2012)⁴ had also pointed out that blood at external meatus was not always present in case of rupture of the intra pelvic urethra on first examination. Absence of urethral bleeding however, should not be taken to exclude urethral rupture.

When urethral injury is suspected, presence of suprapubic pain,tenderness, rigidity and distended bladder with signs of fracture of the pelvis often indicated injury to the intra pelvic urethra. In extra pelvic rupture of the urethra pain and tenderness over perineum were important presenting features. There is usually considerable pain and extravasation of blood into the perineum in extra pelvic rupture of urethra. Perineal hematoma is frequently seen in such cases.

There may not be any external evidence of injury in anterior urethral injury, but bruising over perineum if present indicated some injury to the urethra (Brant Maher , 2001)⁸⁷. The diagnostic triad of symptoms of rupture of the bulbous part of urethra i.e. urethral hemorrhage, perineal hematoma retention of urine are well known (bailey,2015).

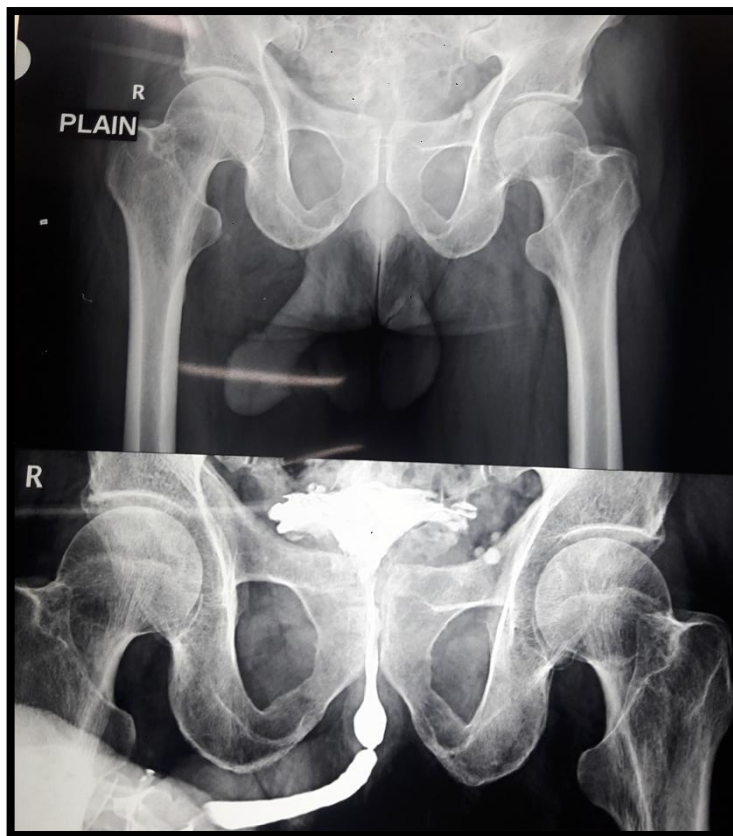
Catheter examination – We favored catheterization using a soft rubber catheter under strict asepsis. It was helpful in diagnosing rupture of urethra as recommended by Brant Maher (2001)⁸⁷, S.JosephPhiliprai (2010)⁷⁶ and others. In most of cases obstruction to the passage of catheter was noted with frank blood and pain. This was considered diagnostic of rupture of urethra.

Radiologic examination – Routine radiographic studies are helpful not only in excluding fractures of the bony pelvis but the nature and extent of the fractures may throw some light on the type of urinary tract injury. In fracture –dislocation of the anterior segment of pelvis, there is greater likelihood of injury to the intrapelvic urethra. While a fracture of the pelvis was present in all the cases of injury to the intrapelvicurethra.

RGU-MCU – urethrography, safe and satisfactory method of localizing urethral injury (J.Kelvin Smith et al, 2017)⁷⁶. It would not only localize the site of urethral rupture but also help to distinguish complete and incomplete ruptures. It’s wider and more frequent use would help in undertaking planned and definitive surgery in these cases. Our limited experience encourages us to recommend its use in all the cases in future.



RGU-MCU IN PATIENT WITH PELVIC FRACTURE (ORIF DONE)



Stricture at bulbomembraneous urethra

Management –When a soft rubber or latex catheter is negotiable with or without anesthesia, it usually denotes incomplete injury. It is then retained for 5-10 days. Usually healing takes place within this period and the catheter can be safely removed. For rupture of the intra pelvic urethra, a suprapubic cystostomy with evacuation of extravasated blood and urine and drainage is imperative. If the condition of pt.permits, it is recommended that the displaced ends of urethra should be brought together and splinted over latex or plastic catheter introduced in retrograde manner. Opinions vary on the utility of suturing the two ends which may be extremely difficult on account of persistent bleeding and inaccessibility of the injury. But in cases with marked displacement and a complete rupture perfect realignment is seldom possible and stricture may follow. Further these pts are in a state of shock and bleeding prevents prolonged surgery in such cases during an emergency. In rupture of extra pelvic urethra suprapubic cystostomy is undertaken in the presence of complete rupture or badly lacerated urethra, hematoma and extravasations into the perineo-scrotal spaces. At times, it is possible to insert a urethral catheter within minimal effort or trauma. The evacuation of blood and urine and multiple drains are the only insurance against infection and stricture formation. Some authors do advocate an end to end repair of the severed urethra in early cases but better results occur after delayed repair, after

Period of 6 weeks urethroplasty yields best results and very less complication rates (Pankaj N Maheshwari et al, 2005)¹².

Complications – In the immediate post-operative period urinary tract infection and wound infection with stricture is common complication. Stricture occurred more commonly after injury to membranous or prostatic urethra.

It is possible that the associated fracture of pelvis with displacement and extravasations in the prevesical space, though drained after operation, prevented proper alignment of the urethra and infected hematoma get organized and resulted in fibrosis. On other hand, in rupture of bulbous urethra direct drainage of hematoma was carried out and collection of extravasate in the per urethral tissues was less. It is also possible that because the pts of rupture of extra pelvic urethra were discharged early and subsequent follow up was done through outpatients department. Whereas, pts of intrapelvic urethra were hospitalized for longer period because of associated fracture of the pelvis. Thus stricture formation was more evident during their stay and always recorded.

The treatment of fracture of the pelvis was always conservative and many of these pts had persistent pelvic bone displacement. This could also have contributed to the poor results due to distortion of the bony pelvis.



Primary repair of bulbomembraneous ruptured part of urethra

III. Conclusion And Summary

- Although no age is exempted, lower urinary tract injuries (bladder and urethral injuries) are most frequently seen in the third decade of life.
- Lower urinary tract injuries are found predominantly in males. The long pendulous urethra of male was more vulnerable to direct as well as indirect trauma.
- Road traffic accidents were most frequent causes of bladder and urethral injuries, followed by fall from height.
- Minor contusions, bladder and urethra are common but do not present a problem during their management. But most cases have laceration, rupture or other severe injuries to bladder and urethra. Identification and accurate assessment of the nature of injury is essential for proper treatment.
- Injuries to the bladder and intrapelvic part of the urethra were invariable associated with fracture of pelvis. Distribution nature and magnitude of associated injury determined the prognosis of these cases.
- Inability to void urine, suprapubic pain, tenderness and rigidity in a pt. with fracture pelvis is suspicious of injury to the bladder or Intrapelvicurethra. Injury to extra pelviculturethra was characterized by bleeding per urethra, painful swelling over the perineum and retention or extravasation of urine.
- Radiology is of great help indirectly by revealing the site of skeletal injuries which have a bearing on the nature of urological trauma suspected .For localization of trauma to the lower urinary tract,cystogram and RGU-MCU is recommended. These are simple, safe and sufficient in majority of cases. Routine use of radiography is advocated for improvement and rational treatment of such injuries.
- In lower urinary tract trauma introduction of soft catheter may give valuable information especially if cystourethrography is not available.
- Contusion and partial rupture of extra peritoneal bladder treated successfully with urethral catheter drainage whereas extra peritoneal rupture >2cm ,with extravasation of urine , intra peritoneal rupture required bladder repair and spc along with it yielded better outcome .
- Urethral contusion are managed conservatively, when a soft rubber or latex catheter is negotiable with or without anesthesia, it usually denotes incomplete injury. It is then retained for 5-10 days. Usually healing takes place within this period and the catheter can be safely removed. For rupture of the intra pelvic urethra, a suprapubic cystostomy with evacuation of extravasated blood and urine and drainage is imperative. If the condition of pt.permits, it is recommended that the displaced ends of urethra should be brought together and splinted over latex or plastic catheter introduced in retrograde manner. In cases with marked displacement and a complete rupture perfect realignment is seldom possible and stricture may follow. Further these pts are in a state of shock and bleeding prevents prolonged surgery in such cases during an emergency. In rupture of extra pelvic urethra suprapubic cystostomy is undertaken in the presence of complete rupture or badly lacerated urethra, hematoma and extravasations into the perineo-scrotal spaces. At times, it is possible to insert a urethral catheter within minimal effort or trauma. The evacuation of blood and urine and multiple drains are the only insurance against infection and stricture formation. Better results occur after delayed repair, after period of 6 weeks urethroplasty yields best results and very less complication rates.

Prompt and early diagnosis, detailed examination to determine the site, severity, nature of injury and associated injuries. Control of shock, prevention of infection, repair of injury and measures to maintain adequate urinary functions are the important factors responsible for reducing the complications of lower urinary tract injuries.

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