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Case Report

Rare Case of Traumatic Bladder Herniation and Incarceration Managed Conservatively

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Abstract

Pelvic fractures constitute a moderate proportion of blunt force traumas with known connection to genitourinary injuries. Injuries range from urethral injury, prostatic injury to complete bladder rupture. Bladder Herniation is a rare complication of pelvic trauma with only 10 cases documented in the literature with varying degrees of bladder damage. Bladder herniation and subsequent incarceration is typically associated with pubic diastasis and unstable pelvic fractures. Management has reportedly nearly always been operative intervention with pelvic fixation to reduce herniation. We report a case of significant bladder herniation secondary to pubic diastasis from a motor vehicle accident.

Keywords: Surgical management; Traumatic bladder herniation

Summary

Traumatic bladder herniation is a sparsely documented phenomenon. With management being variable according to extent of injury and specialist availability. We report a case of traumatic bladder herniation and incarceration secondary to pelvic trauma and pubic diastasis.

Background / Introduction

Pelvic fractures constitute a moderate proportion of blunt force traumas with known correction to genitourinary injuries. Injuries range from urethral injury, prostatic injury to complete bladder rupture. Bladder Herniation is a rare complication of pelvic trauma with only 10 cases documented in the literature with varying degrees of bladder damage. Bladder herniation and subsequent incarceration is always associated with pubic diastasis and unstable pelvic fractures. Management is nearly always operative intervention with pelvic fixation to reduce herniation.

Case Presentation

A man in his 40s suffered a high-speed motor vehicle incident sustaining multiple traumatic injuries. He was hemodynamically unstable on scene and rapidly taken to a multi trauma quaternary hospital. Initial primary survey demonstrated concerns for pelvic injury, open Left forearm fracture and potential thoracic injuries. No mention of concern for urogenital trauma was documented on primary survey. Initial radiology inclusive of a trauma PAN scan (head, neck, chest abdomen and pelvis) demonstrated an unstable pelvis with pubic symphysis diastasis f 12mm along with bilateral superior and inferior pubic rami fractures. The urinary bladder was reported as intact with peri pubic symphysis tracking hematoma (Figure 1). Specialist team consults were sought to address patient primary issues and an Indwelling Catheter (IDC) was inserted. It was noted on insertion of 14 French IDC there was haematuria but no documented blood at the meatus. Due to extensive pelvic injuries a urology consult was called, on table urethrogram demonstrated patent anterior and posterior urethra but a concern for impingement at the level of the pubic symphysis. A formal CT cystogram was requested to complete the traumatic urological emergency work up. The bladder was found to have herniated through and was incarcerated between the pubic symphysis (see Figures 2 and 3). Discussion between orthopaedic and Urological teams led to the decision to intraoperatively assess the stability of the pelvis, remove pelvic binder, and perform on table cytogram

to assess ability to reduce bladder with removal of pelvic binder.

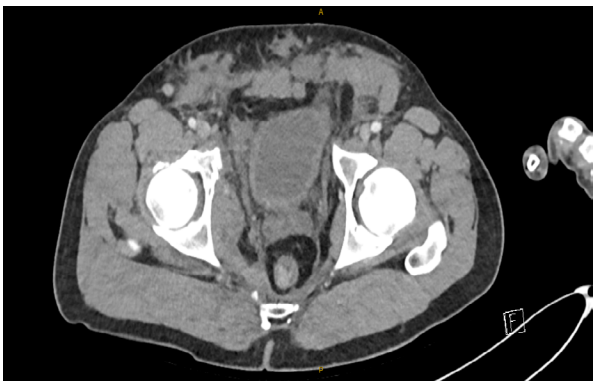

Figure 1: Portal venous phase initial trauma scan, no clear bladder herniation seen.

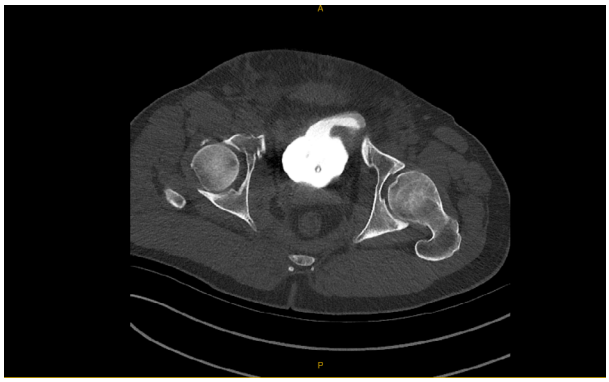

Figure 2: CT cystogram demonstrating herniation through pubic symphysis.

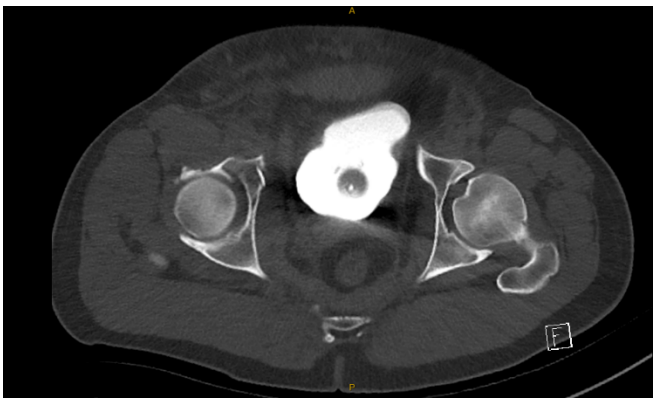

Figure 3: CT cystogram demonstrating herniation through pubic symphysis.

Investigations

On admission; Haemoglobin 153g/L, White cell count 25.6x10^9/L, estimated glomerular filtration rate 38ml/min, Creatinine 116umol/L, pH 7.33, lactate 2.5 mmol/L. Subsequent imaging performed; CT Abdomen and pelvis, CT cystogram, Image intensifier on table cystogram, Rigid cystoscopy

Treatment

The decision to take the patient to the operative theatre for assessment was made between Orthopaedic and Urology specialties. Pelvic binder was removed and pelvic stability assessment under image intensifier was undertaken. Intra operative on table cystogram post pelvic binder had been removed and gentle pelvic manipulation showed the bladder had been appropriately reduced (Figure 4) and no contrast extravasation was seen. The pelvic binder was replaced, and patient was taken back to the ward. The following day the orthopaedic team decided to perform formal pelvic fixation with urology intraoperative consult to perform on table cystoscopy to assess integrity of bladder. On macroscopic assessment from Orthopaedic team reported a contused bladder with no obvious breach in detrusor. Formal on table rigid cystoscopy demonstrated a diffusely contused bladder mucosa with two focal spots of hematoma on the anterior bladder wall likely corresponding to site of pubic symphysis impingement. The blader mucosa was entirely intact with no urethral injury identified. An IDC was placed and advised to remain in situ for a minimum of 2 weeks.

Figure 4: Intraoperative cystogram demonstrating reduction of herniation.

Outcome and Follow Up

The patient had no further Urological injury throughout their admission unfortunately the individual had multiple complications including a perforated sigmoid colon requiring emergent Hartmann procedure and intraabdominal sepsis and currently remains an inpatient. Pelvic hardware was removed to prevent bone sepsis. An IDC has remained during admission with no further haematuria noted. No further urological input or follow up is required.

Discussion

Pelvic rim fractures are well known to be associated with genitourinary injury however, it is relatively rare to have bladder incarceration and herniation associated with the injury. As far as the authors are aware there are only 10 documented cases within the literature. [1] The majority of these cases are reported from an orthopaedic viewpoint with focus on pelvic rim management. The author presents a case of bladder incarceration in the setting of pubic diastasis managed conservatively. Trauma represents 10% of all mortalities being the sixth most common cause of death in the world. With urological trauma occurring in roughly 10 % of these cases, the kidneys are the most commonly injured. [2] The bladder is considered to be relatively protected and thus is less commonly injured in traumas however occurs more commonly in blunt traumas with associated pelvic fractures. Pubic diastasis or sacroiliac joints are more commonly associated with bladder rupture. [3] The AAST grade bladder trauma from 1- contusion to 5-intra or extraperitoneal rupture with bladder neck or ureteric orifice involvement. [4] Signs of urogenital injury include blood at the meatus on primary survey, haematuria or microscopic haematuria, a high riding prostate. [2] Brewer et all found haematuria after blunt injury had a 100% sensitivity and 98% specificity for bladder injury. [5] If any of these signs are present trauma guidelines strongly recommend combined urethrogram and CT cystogram. In this case macroscopic haematuria was only noted on insertion of a 14Fr foley catheter prompting urology consultation. Bedside urethrogram was performed with an abnormal contrast pattern at bladder neck this was not entirely clear at the time. Formal diagnosis was made 12 hours later on formal CT cystogram with bladder herniation and incarceration being demonstrated. Suspicion for bladder rupture was concerning at the time due to significant extraperitoneal fluid surrounding anterior bladder wall. As mentioned above the AAST would classify this as a grade one non operative injury. Notably all cases in the literature have been managed operatively Stenquist et al suggests a new category to bladder trauma guideline be instituted to account for bladder herniation. [6] In our case adequate reduction of the bladder was achieved with examination and manipulation under anaesthesia of pelvic fractures in a joint case with urology and orthopaedics. This was confirmed with intraoperative on table cystogram and repeated rigid cystoscopy port formal pelvic fixation. Review of the literature indicates that bladder herniation is often a delayed diagnosis and is not widely considered a complication of pelvic trauma [7,8].

Learning Points

In the setting of blunt pelvic trauma and pubic diastasis one should consider bladder herniation and incarceration as a potential complication. Consideration to alter bladder trauma guidelines to include bladder herniation and operative intervention. Traumatic Bladder Herniation should be managed in conjunction with orthopaedic surgeons to ensure appropriate pelvic fixation and prevent reoccurrence.

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