

CONSERVATIVE TREATMENT FOR INTRAPERITONEAL BLADDER INJURY

Ingrid Verçosa Albuquerque Cruz Oliveira

Cibelle Marion Bartolli

Carina Vitória Paradas Dias

Thaiza Malheiros

Ana Carolina Cerutti

Bruno Bignardi

Felipe Marcondes de Oliveira

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Abstract: Traumatic injuries to the lower urinary tract occur in approximately 10% of abdominal trauma. Bladder injuries can be divided into: extra peritoneal, intraperitoneal and combined. Intraperitoneal trauma has been the basis for surgical treatment, but conservative treatment, with bladder catheterization, has been shown to be advantageous in selected cases.

Degree	Description
1	I Harmony -contusion, intramural hematoma. Laceration -partial thickness
2	Laceration -Bladder wall laceration< 2cm
3	Laceration -Extra-pentoneal (>2cm) or intraperitoneal (<2cm) bladder wall laceration
4	Laceration -Intra-peritoneal bladder wall laceration >2 cm
5	Laceration -Laceration of the intra-peritoneal or extraperitoneal bladder wall,extending to the bladder neck or ureteral orifice (trigon)

INTRODUCTION

Injury to the lower urinary tract can be caused by blunt, penetrating or iatrogenic trauma. The bladder is protected by the bony structure of the pelvis, and for this reason, traumatic injuries to this organ are rare and occur in around 10% of abdominal traumas, with a morbidity and mortality rate between 10-22%. Approximately 70% of patients with bladder injuries caused by blunt abdominal trauma have associated pelvic fractures.

The bladder is an extra peritoneal organ, which in men is superior and posterior to the prostate and in women it is located anterior to the uterus. The peritoneum is superior and posterior to the bladder.

Bladder injuries can be divided into: extra peritoneal (approx. two thirds of cases), with frequent conservative treatment; intraperitoneal (approx. one third of cases) and combined (intra and extra peritoneal), the minority of cases.

Below is a table on the classification of the degrees of bladder injury, according to "American Association for The Surgery of Trauma(AAST)":

OBJECTIVE

The objective of this report is to discuss conservative treatment in intraperitoneal bladder injury (IBP), the most appropriate diagnosis, as well as to discuss conservative management in the treatment of IBP in blunt trauma.

MATERIALS AND METHODS

For the case report presented, due to the change in the LIB approach, a bibliographic review was carried out, using the databases: MEDLINE, LILACS-BIREME and COCHRANE, with articles selected, addressing the topic of bladder injury in blunt abdominal trauma with treatment conservative.

CASE REPORT

21-year-old female patient, admitted to the emergency room of the secondary emergency hospital in greater São Paulo, victim of blunt abdominal trauma, due to aggression in the pelvic region, with complaints of vaginal bleeding that stopped spontaneously. First treatment was performed with the patient conscious and hemodynamically stable, but abdominal examination revealed pain in the hypogastric region and sudden positive decompression in the hypogastrium. Laboratory tests and abdominal and chest x-rays were requested. After a few hours, she developed worsening abdominal pain and

an inability to urinate spontaneously. After the possibility of pregnancy was ruled out, a computed tomography (CT) scan with intravenous contrast was requested, which revealed free fluid in the abdominal cavity, distributed in the four quadrants and a full bladder. Absence of pneumoperitoneum or injuries to other abdominal organs.

Bladder catheterization was performed, with the output of a large volume of hematuric urine (2000 ml), with consequent improvement in abdominal pain. The decision was made to maintain the indwelling urinary catheter with clinical improvement. After 3 days, as the patient had no abdominal pain, it was decided to remove the bladder catheter, but the patient developed a recurrence of abdominal pain, requiring a new bladder catheterization, with clear urine output and relief of symptoms.

Given the change in the clinical picture, a new CT scan was requested with intravenous and oral contrast, showing small foci of extra and intraperitoneal contrast in the pelvis; bladder with normal morphology and dimensions, smooth and thin walls.

An evaluation was requested from the urologist, who observed a small extravasation of contrast from the bladder, suggesting bladder floor injury. It was then decided to maintain conservative treatment, with bladder catheterization and antibiotic therapy.

During hospitalization, serum levels of hemoglobin, hematocrit, urea and creatinine remained stable. The patient was discharged after 6 days of hospitalization, with an indwelling urinary catheter and an outpatient follow-up visit after 1 week, in which the urinary catheter was removed. It did not present any new complications.

DISCUSSION

A force directed directly to the abdomen can rupture a completely distended bladder, as it increases intra-abdominal pressure, causing rupture of the bladder dome, but an empty bladder is rarely injured.

Macroscopic hematuria in multiple trauma patients is a strong indicator of urinary tract injury (95% of cases). The Foley catheter must not be introduced without first ensuring urethral integrity. Other signs and symptoms of lower urinary tract injury are: urinary retention, abdominal pain, scrotal or perineal hematoma, abdominal distension, absence of bowel sounds and increased urea and serum creatinine.

When the patient presents hematuria, retrograde cystography is indicated, with a sensitivity of almost 100% for diagnosing bladder injury. If hematuria is associated with a pelvic fracture, this test is absolutely recommended.

CT is the method of choice for evaluating multiple trauma patients, which demonstrates extra and intraperitoneal fluid, but does not differentiate urine from ascites or blood. CT cystography is an excellent alternative, as it saves time by evaluating associated abdominal injuries.

In intraperitoneal lesions, the contrast leaks into the parietocolic gutters and between the intestinal loops. In extraperitoneal rupture, contrast extravasation is seen in the retropubic space, anterior peritoneal space, and between the soft tissues of the superficial layers of the thigh.

For more than 30 years, the treatment for intraperitoneal lesions has been a surgical approach, with rifting of the lesion in two layers of absorbable suture and extraperitoneal suprapubic cystostomy. The treatment for extraperitoneal lesions is conservative, with bladder catheterization lasting 10 days, associated with the use of

antibiotics. The surgical approach is reserved for cases with bladder injuries associated with open pelvic fractures, rectal perforation and bladder entrapment.

In the 1970s, three cases were reported on conservative treatment of LIB and since 2002, specific cases have been treated conservatively, either with an indwelling bladder catheter associated with abdominal drainage or just isolated bladder catheterization and antibiotic therapy, in patients without other associated injuries, without clinical signs of sepsis and hemodynamically stable, with significant improvement observed after 48 hours of bladder catheterization.

In the case described, the patient was diagnosed with LIB, demonstrated by the clinic and imaging examination. She remained hemodynamically stable, with no associated injuries or signs of sepsis. Therefore, we opted for conservative treatment with a Foley catheter, antibiotic therapy and serial CT, until she no longer presented hematuria and abdominal pain.

Current guidelines indicate surgical treatment in LIB, with a lesion generally found in the bladder dome, as this is the most fragile region of the organ, and if necessary, enlarging the lesion itself to access the other walls of the bladder, followed by extra-peritoneal suprapubic cystostomy.

Below are images of the tomography performed, showing free liquid between intestinal loops (figure 1) and free liquid in the cul-de-sac (figure 2).

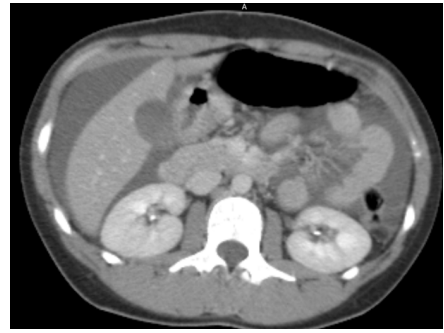


figure 1



figure 2

CONCLUSION

LIB's classic treatment is surgery, with the aim of preventing chemical peritonitis and sepsis secondary to it. However, recent studies demonstrate success in conservative treatment, with a Foley catheter and/or intra-abdominal drain, applied to selected patients.

The number of reported cases is still scarce and further work is needed to establish a management protocol.

REFERENCES

1. JAIDANE, Mehdi. Nonoperative Treatment of Intraperitoneal Bladder Rupture: Is It Feasible? *Curr Urol* 2010;4:104–106 DOI: 10.1159/000253423
2. IBRAHIMI, Ahmed et al. Successful conservative management of a spontaneous intraperitoneal urinary bladder rupture secondary to benign prostatic hyperplasia: a case report. *Pan African Medical Journal*. 2021;38(268). 10.11604/pamj.2021.38.268.26684
3. GENG, Jiun-Hung. Nonoperative treatment for intraperitoneal bladder rupture. 1879-5226 Copyright 2013, Taiwan Urological Association. Published by Elsevier Taiwan LLC. <http://dx.doi.org/10.1016/j.urols.2013.05.012>
4. MAHAT, Yashmi. A contemporary review of adult bladder trauma. Department of Urology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA. *J Inj Violence Res*. 2019 July; 11(2): 101-106.doi: 10.5249/ jivr.v11i2.1069
5. BIGONGIARI, Lawrence R. TRAUMA DE BEXIGA E URETRA – Revisão de literatura. Critérios de Adequação do ACR. *Colégio Brasileiro de Radiologia. Imagem Urológica*. 2017; 893-898.
6. Cury J, Mesquita JLB de, Pontes J, Oliveira LCN de, Cordeiro M, Coelho RF. Trauma urológico. *Rev Med (São Paulo)*. 2008 jul.-set.;87(3):184-94.
7. N. Djakovic, Th. Lynch, L. Martínez-Piñeiro, Y. Mor, E. Plas, E. Serafetinides, L. Turkeri, R.A. Santucci, M. Hohenfellner *Eur Urol* 2005;47(1):1-15. DIRETRIZES PARA O TRAUMA UROLÓGICO (Texto atualizado em Março de 2009)