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Urogenital Trauma by Pelvic Impalement: A Case Reported at Bouake University Hospital

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Abstract

Urogenital impalement trauma is a particular form of penetrating trauma to the pelvis. They are rare, spectacular or dramatic because they can be responsible for serious vascular and/or visceral lesions. This study reports a case of hypogastric impalement in a 19-year-old young man that caused musculoaponeurotic and urogenital lesions. Emergency surgical exploration was carried out urgently by a multidisciplinary team.

Keywords

Urogenital Trauma, Impalement, Emergency, Surgery, Cystorrhaphy

1. Introduction

Impalement trauma is a special form of penetrating trauma and is usually related to direct impact or falling onto a sharp or blunt object [1].

These lesions are rare and spectacular, but also dramatic because they can be responsible for serious vascular and/or visceral lesions that can be life-threatening [2] [3].

We report a case of hypogastric impalement in a young subject that caused musculoaponeurotic and urogenital lesions.

The rarity of this serious accident deserves our attention. We are interested in the mechanism of occurrence of this accident and the visceral lesions it caused. We report our therapeutic attitude and the postoperative follow-up of the lesions treated.

2. Our Observation

This is a 19-year-old patient, a student, evacuated by the Regional Hospital Center of Yamoussoukro to the surgical emergencies of the Hospital and University Center of Bouake for an open trauma of the abdomen by impalement following an accident from the public road.

The accident would have occurred 8 hours before his admission. The patient, the motorcyclist would have left the road following a false maneuver. It would have collided head-on with a pile of wood piled up in bundles. One of the branches of the antlers would have traumatically penetrated him from the pelvis to the gluteal region from front to back. He would have felt a sharp pain in the pelvis and presented a little peri-lesional bleeding. He would have been evacuated to the regional hospital which then referred him to the surgical emergencies of the university hospital for better care.

The examination on admission revealed a patient in good general condition with colored conjunctivae and hemodynamically stable. The urogenital examination revealed an absence of suprapubic swelling. We noted the presence of a branch of wood inserted at the level of the hypogastrium (**Figure 1** and **Figure 2**) and coming out at the level of the right buttock (**Figure 3** and **Figure 4**). There was a urine outlet at the hypogastric portal of entry. The external genitalia were unremarkable and on digital rectal examination, the anal margin was healthy, the anal sphincter toned, the prostate looked normal but tender, and the finger cot was clean.

Figure 1. Gateway to trauma.

Figure 2. Gateway of trauma.

Figure 3. Way out of trauma.

Figure 4. Branch section before surgery.

Examination of the digestive system was normal (no signs of peritoneal irritation) as well as that of the other systems.

We concluded at the end of our clinical examination to a hypogastric impalement with probable bladder pinning in a hemodynamically stable patient. And we put the indication of a surgical exploration.

After a satisfactory preoperative assessment, the patient was admitted to the operating room for surgical exploration and therapeutic management of his lesions. A multidisciplinary team composed of urologists, digestive and general surgeons, vascular surgeons and traumatologists was brought together for the intervention.

We proceeded to the partial ablation of the branch at the level of the exit orifice to allow the positioning of the patient in the dorsal decubitus position (**Figure 4**). This branch measured 122 cm in length and 4.8 cm in diameter.

On surgical exploration, after enlargement of the portal of entry and rigorous control of haemostasis, we proceeded to remove the foreign body. There was a hypogastric oval wound 6 cm long, slightly hemorrhagic, which was stained with urine. This wound (entrance orifice) communicated with a wound in the right buttock (exit orifice) also oval and measured 5 cm long axis. This wound was located 3 cm from the anal margin and was not very hemorrhagic.

The laparotomy allowed us to objectify that the intestinal loops were normal

with no lesion of the rectum. On the other hand, there was a bladder breach of around 5 cm on the right side, a deteriorating, hemorrhagic wound in the bladder neck with prostatic involvement and a lesion of the prostatic urethra (**Figure 5**). The gestures performed were to make hemostatic stitches at the level of the bladder neck with a crimped wire, then a cystorrhaphy on the bladder wound and a difficult repair of the prostatic urethra (**Figure 6** and **Figure 7**). Then, we put in place a 3-way transurethral catheter associated with irrigation, bladder washout, abdominal washing and abdominal closure. Then, we carried out a trimming of the entrance and exit doors associated with dressings.

Postoperatively, the patient was put on tri-antibiotic therapy, analgesics, low molecular weight heparin therapy associated with dressings every 2 days. The immediate post-operative follow-up was simple (**Figure 8**). The AP pelvic X-ray performed on D3 of surgery did not show any osteoarticular lesions (**Figure 9**).

Then, on D4, the patient presented with parietal suppuration at the level of the hypogastric wound and the gluteal wound followed by an exteriorized urinary fistula at the level of this wound (**Figure 10** and **Figure 11**). This fistula was treated with daily dakin dressings until drying up on D17 combined with a secondary suture (**Figure 12**). In view of the good clinical evolution, the patient was discharged on D20 postoperatively. The retrograd uretrocystography with permictionnal cliches was normal (**Figure 13**).

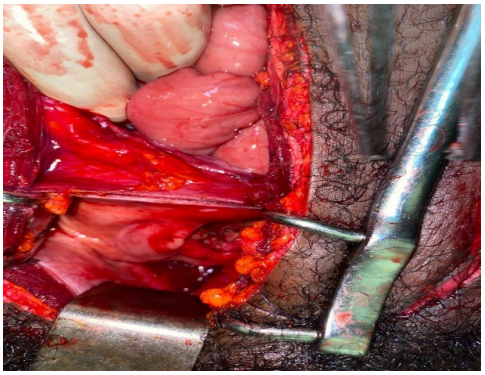

Figure 5. Bladder breach + desintegration of bladder neck + healthy digestives loop.

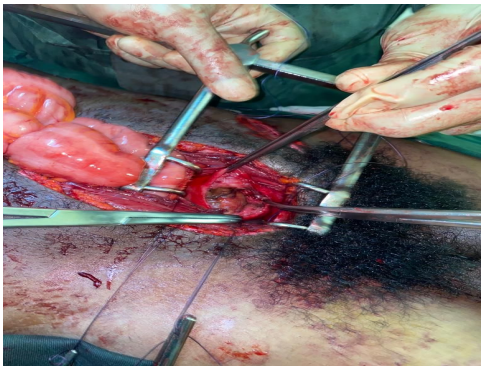

Figure 6. Hemostatic suture.

Figure 7. Cystorraphy.

Figure 8. Suppuration at Day 4.

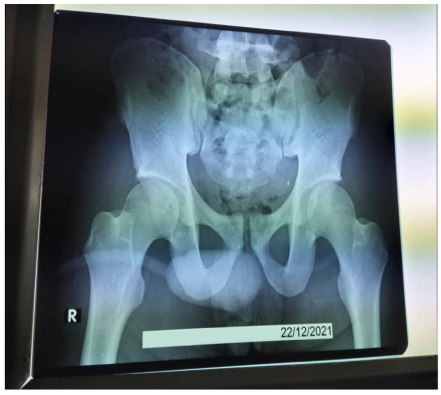

Figure 9. Normal X-ray of the bony pelvic.

Figure 10. Good evolution at Day 10.

Figure 11. Suppuration and urination.

Figure 12. Closing of fistula + secondary suture.

Figure 13. Normal retrograd uretrocystography.

3. Discussion

Impalement wounds have been documented since the beginning of history, particularly in ancient Egypt [4].

According to Eachempati [5], impalement trauma is of two types: in type I, the lesions result from the fact that the body is impaled against a stationary ob-

ject such as in the case of a collision. It is common in adults as reported in our case. In type II, the lesions result from the fact that a fast object comes to penetrate a stationary body. This is common in children in the pelvic, anorectal and vaginal region in cases of sexual assault or rape [6].

Several regions of the body can be affected by an impalement lesion, but that of the hypogastric region is very rare or even exceptional. It can be responsible for bladder, anorectal and even vascular lesions that can be life-threatening.

The quality of the initial care will condition the evolution of the lesions encountered during the exploration, which must be cautious and attentive. The first steps must be meticulous at the site of the trauma followed by evacuation in a qualified center. This was the case of our patient.

Whatever the region of the impalement and in particular the hypogastric region, the object must not be mobilized or removed outside an operating room [7] [8] [9].

Most authors agree on a buffer effect of the injuring object. If the removal of the object is not controlled, it can result in a cataclysmic hemorrhage that is uncontrollable [10].

In our case, the impaled object was removed in the operating room under careful vascular control.

Intraoperative lesion diagnosis must be precise. Bladder and urethral wounds are rarely isolated in penetrating trauma to the pelvis [11]; as in our case where we objectified a bladder wound of 5 cm, a hemorrhagic deterioration of the cervico-prostatic block associated with a wound of the prostatic urethra. Urethral wounds are serious because of potential sequelae: urinary incontinence, erectile dysfunction and urethral stricture.

The treatment of these lesions is based on bladder drainage associated with trimmings and sutures. Immediate urethral repair is always desirable but it can be delayed [12]. It was possible in our observation to perform cystorrhaphy after haemostasis and trimming of the lesions. Management of urethral lesions has been deferred, and we were able to place a bladder catheter via the transurethral route.

However, some authors argue in favor of immediate repair because the severity and rate of secondary stenosis would be lower [13].

Postoperative follow-up must be rigorous because of the high risk of local complications such as suppuration and fistulas [13]. Also, during this strict monitoring, disorders such as urinary incontinence, erectile dysfunction and urethral stenosis will be sought. It will be based on clinical and paraclinical signs, in particular, retrograde urethrocystography

4. Conclusions

Pelvic impalement responsible for urogenital lesions is rare and exceptional. Its management is essentially surgical and allows precise lesion diagnosis and effective treatment.

Our observation allowed us to understand bladder, urethral and prostatic lesions, their therapeutic approach and prognosis.

Urinary incontinence, erectile dysfunction and urethral stricture constitute the pejorative evolution of these lesions; hence, the multidisciplinary management of this trauma to obtain a convincing result.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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