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CASE REPORT

Management of an elderly patient with retention of a steel nail in the scrotum: A case report

Iacopo Meneghetti [1], Novella Cesta [2], Luca Mosillo [1], Simone Belli [1], Daniele Bianchi [1], Maurizio De Maria [1]

[1] Urology Department, Hospital Apuane, Massa, Italy;
[2] Infectious Diseases Department, Hospital Apuane, Massa, Italy.

Summary *Background: The retention of foreign bodies inside the body during ludic/sexual procedures or for traumatism represents one of the causes of visits to accident and emergency departments that often requires surgical removal of the foreign body. However, there are cases where the discovery of such foreign bodies takes place after many years, as in patients that are slightly compromised from a neuro-sociological point of view.*

Case presentation: A 76-year-old male presented to an outpatient urological examination due to an increase in scrotal volume. At the ultrasound check, an acoustic interference from a solid object was detected, for which computed tomography was requested. The computed tomography scan revealed the presence of an elongated metal body in the perineum.

The removal of the foreign body in the operating theatre was then scheduled. A 10 cm long stainless-steel nail located within an abscessed foreign body granuloma was identified and removed via a scrotal access.

Four days later, a new surgical toilet was performed due to minimal necrosis of the skin flaps. The patient then performed three more dressings in the operating theatre during the following week. Healing took place by secondary intention until a perfect healing of the surgical wound was obtained.

Conclusions: Removal of foreign bodies from the perineum in case of infection can be challenging. Careful attention and postoperative dressings are crucial for the success of the case.

KEY WORDS: *Abscess; Foreign body; Infection; Perineal wound.*

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INTRODUCTION

The choice of access, strategy, and timing for the removal of foreign bodies is determined by their shape, size, location, and potential mobility. They often require careful and sometimes multidisciplinary planning for strategy optimization. Although it remains uncommon in everyday practice, a rapid surgical exploration of penetrating scrotal injury is nevertheless required to accurately evaluate the involvement of genitourinary and reproductive organs (1).

In this paper, we describe the sensitive management of a patient with a rare finding of a nail of about 12 cm lodged in the scrotum and enclosed within an abscess.

CASE REPORT

A 76-year-old man presented as an outpatient at Apuane Hospital (Massa, Italy) in January 2022, having noticed a volumetric increase in the scrotum for some years (Figure 1).

His past medical history was significant only for a remote history of childhood exanthematous diseases and a picture of initial decline in cognitive function. The patient did not report recent trauma or episodes of scrotum-perineal pain.

On physical examination, an enlarged scrotum with a firm mass that was not tender to palpation was noted. An in-office ultrasound identified uneven tissue and the presence of a reflective foreign body. An abdominal-pelvic CT scan confirmed the presence of a radio-opaque, 'beaded' foreign body in the scrotum (Figure 2) with testicles in place and uninjured.

One week later, he was admitted to the hospital. Under assisted spinal anesthesia in the lithotomy position, a scrotoperineal access was performed using a cruciate 'Mercedes-like' incision.

The median incision of the cross allowed the opening of the scrotal bags and the vaginal tunics, with isolation of the right and left spermatic cords, and of the testicles, bilaterally. The spermatic cords were isolated and the testicles secured and lateralized with a wider exposure of the operative field.

Surgical exploration revealed the presence of an abscess with a capsule adherent to the surrounding tissues that was clearly identifiable. The capsule was gently detached from the surrounding planes where it had created strong adhesions. The detachment was guided by the finger with tactile perception of the foreign body retained inside the abscess. During the procedure, the abscess capsule burst open, causing brown pus to ooze out; liquid cultures were sent. The foreign body was kept in place until complete excision of the sheath to create a guide for the direction of the abscess capsule in order to completely excise it.

The foreign body was found to be a 10-cm stainless steel nail (Figure 3).

Once the abscess and the foreign body were removed, a surgical toilet was performed, including multiple washings of the field with povidone iodine and hydrogen peroxide. The final washing was carried out with abundant saline solution. A povidone iodine gauze and two suction

Figure 1.
Aspect of the preoperative clinical picture of the case. Note the increase in scrotal volume due to the retention of the foreign body.

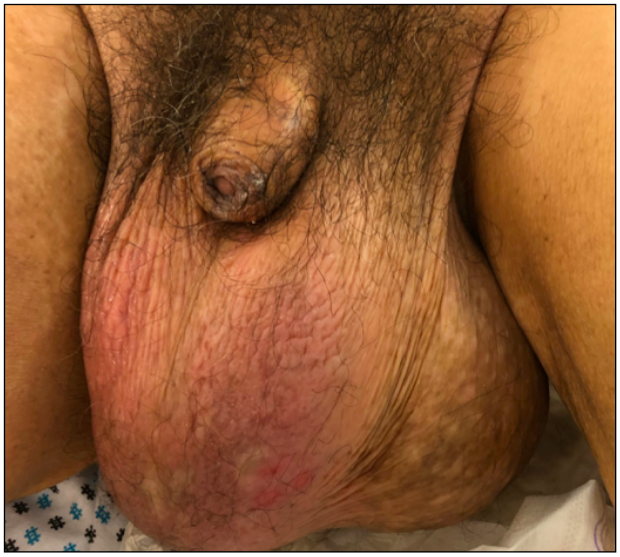


Figure 3.
Extracted stainless steel nail and capsules of the abscess surrounding the foreign body.

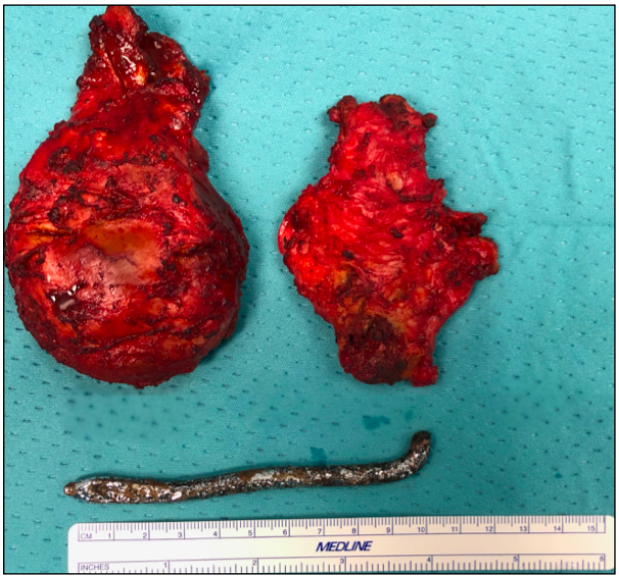
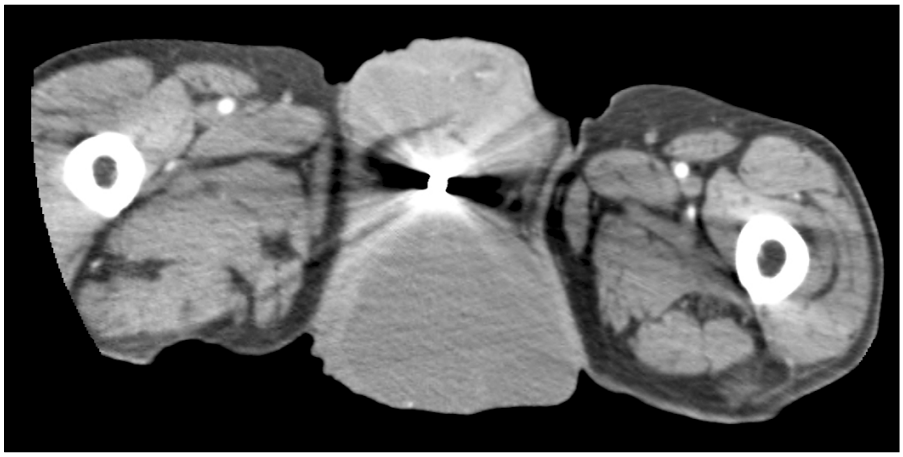


Figure 2.
CT scan evidenced the presence of an abundant, apparently biloculated effusion in the scrotal area which cranially reached the left gluteal region. In the scrotal area, the presence of a linear metallic image was also noted.



drains (airtight) were left in place with partial closure of the superficial planes. A second look was scheduled on the fourth postoperative day.
During the second look, the tips of the skin flaps appeared blackish as a sign of ischemic suffering for a few millimeters from the free edge, so they were trimmed with a cold knife until bleeding vital tissue was reached. The wound was again cleaned with povidone iodine, and one suction drain was again applied. Two days later, a third look found vital tissues, so deep-tissue debridement of the wound was performed. At fourth and fifth look in the operating theatre on the eighth and tenth days, respectively, a deep disinfection of the field was performed and the skin flaps were brought together so that there was no tension, leaving a very small space in the center of the star with the aim of healing by secondary intention.

During the remaining hospitalization, the patient was treated daily with povidone iodine disinfection. He was discharged on the 16th postoperative day with a bladder catheter.
Antibiotic therapy with intravenous ceftriaxone 2gr q24h was empirically started. A blood culture was negative for bacteria, and no microbiological growth was detected in the samples collected during surgery.
Because of the persistence of elevated serum C-reactive protein (17 ng/ml), on the third postoperative day, the therapy was modified in piperacillin/tazobactam 4.5 gr q8h by the infectious diseases consultant and continued for three weeks.
The patient removed the bladder catheter on the 30th day as an outpatient, with clear urine output and no post-voiding residue. Dressings were applied at home by the patient daily and every week in the clinic for six weeks.
At the final check-up at two months, the wound was completely healed and the patient was fine.

Discussion

An operation to remove a foreign body must always be planned in detail. A CT is essential to evaluate the location of the foreign body and associated abscess structures and the organs involved. The surgeon also needs a CT to be able to choose the best access to ensure adequate exposure of the fields, as not completely cleaning of an infected area is the first step for the therapeutic failure.

The 'Mercedes-like' scrotal incision was a winning choice, as it allowed a wide exposure of the field on the perineal plane with the incision on the scrotal raphe, along with bilateral exposure of the testicles with a single median cut. Each arm of the cross measured approximately 5 cm, with vertical midline incision on the scrotal raphe to the base of the scrotum, the point at which the center of the cross was therefore located. The other two arms were directed laterally, thus distancing themselves from the anus. In our opinion, a strong point of the procedure was the complete removal of the surrounding abscess capsule, thanks to the use of the tactile sensation, which, in following the nail, allowed a delicate and relatively safe excision. Unfortunately, with the opening of the abscess cavity, the surrounding tissues became contaminated.

These were promptly washed thoroughly in order to reduce the risk of spreading the infection to the surrounding field.

A key concept for the healing all wounds, with particular attention to dirty areas such as the perineal region, is keeping them clean and uncontaminated (2).

Also, Hartz et al. reported that in their experience of 100 patients with perineal wounds, those who received primary closure with immediate suction drainage had the best outcomes compared to those left open with simple packing and those who had non-suction perineal drainage (3). We used hydrogen peroxide in the first procedure and the two following daily dressings in the ward due to its action on anaerobic bacteria. However, its aggressive action on the tissues prompted us to limit its use in subsequent dressings for fear of injuring the tissues and delaying their healing. In fact, uncontrolled hydrogen peroxide generation in tissues can result in chronic inflammation, which could contribute to delayed healing of the wound (4).

In our centre, we tend to use and prefer the use of povidone iodine both for the dressing of infected wounds and for the dressing of ordinary surgical wounds, due to its broad antimicrobial spectrum, lack of resistance, efficacy against biofilms, good tolerability, and effect on excessive inflammation (5).

The prompt identification and cleaning of the ischemic flaps were crucial for a speedy recovery and improved survival. During the first three postoperative days, there were no signs of local or systemic worsening of the picture, and for this reason, we waited until the fourth postoperative day when the ischemic flaps were promptly identified. An earlier debridement, in our opinion, would not have allowed us to identify the affected areas where curettage should be carried out. *Kline et al.* suggested a low threshold for returning to the operating room for examination under anesthesia and additional surgical debridement within 24 to 48 hours, especially in patients with extensive initial debridement (6).

We extended the antibiotic therapy from the time of the procedure until discharge on day 21.

In principle, it is recommended that antibiotic therapy be interrupted when operative procedures other than a dressing are no longer indicated and control of the infectious source has been achieved. *Lauerman et al.*, evaluating antibiotic duration and outcomes in Fournier's gangrene, showed no difference in outcomes in patients receiving fewer than seven days of therapy compared with longer durations (7).

Conclusions

The management of patients with foreign bodies inserted into the perineum must be guided by common sense and cardinal principles, as each case is a story unto itself. When the case is complicated by an infection, great attention and care must be taken to prevent it from evolving into a situation of extensive or systemic infection that is much more complex to manage.

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Correspondence

Iacopo Meneghetti, MD, FEBU (Corresponding Author)
iacopo.meneghetti@tiscali.it
Luca Mosillo, MD
luca.mosillo@uslnordovest.toscana.it
Simone Belli, MD
Daniele Bianchi, MD
Maurizio De Maria, MD
Urology Department, Hospital Apuane, Massa, Italy

Novella Cesta, MD
Infectious Diseases Department, Hospital Apuane, Massa, Italy

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