Case Report

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An unusual case of intra-abdominal testicular torsion: Role of laparoscopy

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ABSTRACT

The authors report a case of intra-abdominal testicular torsion, where laparoscopy has been useful for diagnosis and surgical management. A boy was presented with a left impalpable testis. Laparoscopy revealed a twisted spermatic cord at the inlet pelvis, which ended in a testicular remnant located in the sub-umbilical area. After orchiectomy, the pathologist confirmed testicular atrophy. Diagnosis of intra-abdominal testicular torsion should be considered in patients with impalpable testis and abdominal pain, but could not be excluded in those with no symptoms.

Key words: Cryptorchidism, laparoscopy, non palpable testis, testicular intraabdominal torsion

INTRODUCTION

The torsion of an intra-abdominal testicle was first reported by Gerster in 1898[1] and by Ormond in 1923.[2] Recently, there are almost 60 reported cases in the literature. Generally, a twisted intra-abdominal testis is recognised as an emergency in young men, and is associated in most cases with abdominal pain and is often related to malignant degeneration.[3] Laparoscopy has been largely used in the diagnosis, surgical evaluation and treatment of impalpable testis.[4] The role of diagnostic tools such as ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI) have been discussed in localising a non palpable testis and it has been associated to false positive and low sensitivity rate.[5] As European Society for Paediatric Urology (ESPU) guidelines on paediatric urology and cryptorchidism states that "there is no reliable examination to confirm or exclude an intra-abdominal, inguinal or absent/vanishing testis except for diagnostic laparoscopy (according level of evidence 1B – grade of recommendation A)".[6] We report the case of a patient with non-palpable testis, where laparoscopic exploration showed a twisted intra-abdominal testis abnormally located in the median umbilical region.

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CASE REPORT

A 12-year-old boy was presented to our department with a left non palpable testis that was never localised even through an ultrasound and an MRI evaluation that was performed at another institution. The right testis was normal in size and position. The patient was carefully examined again under general anaesthesia, before laparoscopy, to confirm the absence of a testis or a remnant in the scrotum or in the groin. A sub-umbilical incision was made and a Hasson trocar was inserted into the abdominal cavity by an open approach. After pneumoperitoneum at 10 mm/Hg, a 5 mm/0°degree laparoscope was introduced for intra-abdominal exploration. The left inguinal ring was closed and there were no vas and spermatic vessels entering in, while the aspect of the right was normal. A grasper was introduced through an accessory trocar and the abdominal cavity was completely explored; the inspection of the pelvis revealed a twisted spermatic cord [Figure 1] at the inlet, which ended in a testicular remnant located in the sub-umbilical area and enveloped in an omental pouch [Figure 2]. After evaluating its position and mobility, we decided to extrapolate it from the umbilical orifice and an orchiectomy was performed. The abdominal cavity was laparoscopically inspected again and the testicular remnant was sent to the pathologist for histological evaluation. Macroscopically, the surgical sample had a dimension of 5.5 × 2.5 cm. Microscopical examination showed a testicular atrophy characterised by residual tubular portion of the epididymis and vessels with large lumen, plugged of red blood cells. The postoperative course was uneventful and the patient was discharged the day after surgery.

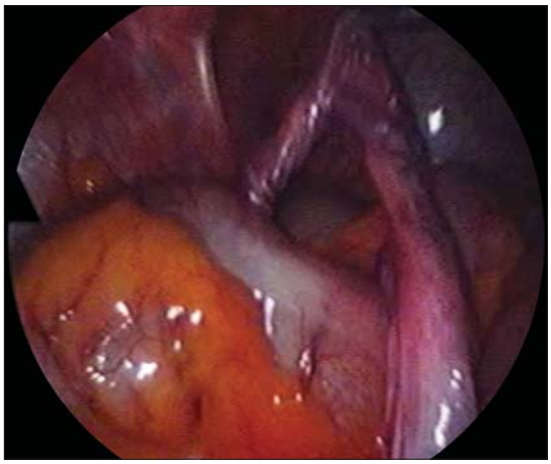


Figure 1: Twisted spermatic cord at the inlet of pelvis

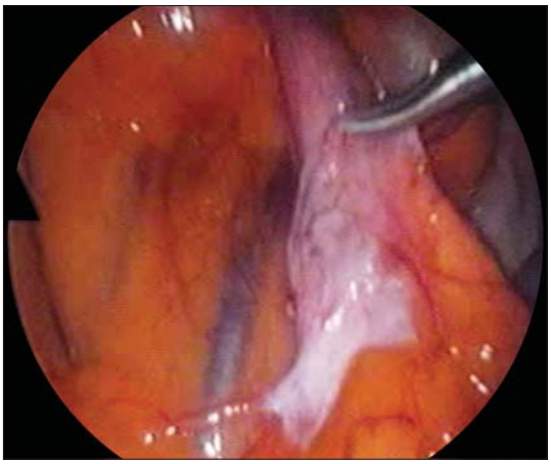


Figure 2: Testicular remnant located in the sub umbilical area

DISCUSSION

Intra-abdominal testicular torsion has been reported for the first time in 1898.[1] The usual clinical presentation is characterised by abdominal pain; an intra-abdominal mass could be palpated or incidentally found. Only few presented with completely absent symptoms.[7]

Laparoscopy may be used in the diagnosis and in treatment of several urological pathologies such as impalpable and intra-abdominal testis. Its use has been largely debated. Snodgrass et al. affirmed that[8] for unilateral non palpable testes, the size of the controlateral scrotal testis has a positive predictive value of 90% for definitive diagnosis. A testes ≥ 1.8 cm predicts intrauterine testicular loss on the other side, and remnants from these events are mainly found in the scrotum. Because most of these are distally located in the inguinal canal or scrotum, an initial scrotal incision identifies these nubbins without laparoscopy. These authors hope a more rational and selective use of laparoscopy for diagnosing non palpable testis and affirm that this technique should be used only when scrotal and inguinal exploration is negative. If we consider our case report, we have to be very cautious in accepting this very simple paradigm that a scrotal exploration is all we need. We have to be sure that the tissue found at inguinal exploration is a testicular nubbin. Our case report shows that if a nubbin could be not palpated clearly, diagnostic laparoscopy is indicated. As reported by ESPU guidelines on cryptorchidism "there is no reliable examination to confirm or exclude an intra-abdominal, inguinal or absent/vanishing testis except for diagnostic laparoscopy".

Barqawi *et al*.[5] have conducted a retrospective review on patients that underwent laparoscopy after prior incomplete or "questionable" negative inguinal exploration for impalpable testis. In their series (27 patients), they found in 18 cases a viable testis, intra-abdominal remnants or inguinal gonads. They affirm that laparoscopy has an important role in the diagnosis of presence or absence of the testis. In our opinion, the use of laparoscopy in patients with non-palpable testis and negative inguinal exploration emphasizes the importance of this technique because many of those received an incomplete diagnosis in the past. If the surgeon can't appreciate clinically a controlateral testis hypertrophy or a nubbins and/or ultrasound examination is negative, laparoscopic intra-abdominal exploration is mandatory. In our case report, laparoscopy was fundamental not only for the diagnosis of the atypical location of the remnant but also for surgical management. Franco in his editorial comment to this paper affirms that "open exploration by way of a small groin incision is an inadequate means of exploring for intra-abdominal testis" and that "performing laparoscopy would have prevented these cases". We remind that in this series a seminoma was present.

The association of increased risk of testicular tumour and cryptorchidism has been well recognised. Thorup *et al*.[9] reported in their study that the patients with an intra-abdominal testis as well as those with abnormal sexual differentiation have an increased risk of cancer. Clinically, most cases that were reported of intra-abdominal testicular tumours have histological evidence of torsion, but some of these had no associated systemic or abdominal symptoms. The presence of a neoplasia does predispose to testicular torsion, but the potential effect of ischaemia on tumour regression or progression has not been established.[10] Therefore, the risk of neoplasia for an intra-abdominal testis and the ischaemia related to torsion emphasizes the value of

this diagnosis.

There are multiple theories surrounding the phenomenon of testicular descent, where physical and endocrine factors are important,[3] such as gonadotropin production and androgen synthesis. It is also well known that gubernaculum testis is mechanically involved in the descent of the testis as well as hormonal target. Any event that modifies this multi-factorial model can induce cryptorchidism and arrest testicular descent.[3] In our case, the testicle, which was intra-abdominal located, was characterised by the absence of gubernaculum with the internal inguinal ring closed and a laxity of the spermatic vessels that were several times twisted. In our experience, the intra-abdominal testes located at the inlet or deep in the pelvis present this feature and usually a closed ipsilatel internal inguinal ring; furthermore, it's possible to observe a raising and laxity of the spermatic vessels from the posterior retroperitoneal floor. We may speculate that these anatomical features and the lack of mechanical traction on the testis by the gubernaculums could have induced the intra-abdominal testicular torsion in this patient.

In conclusion, we consider mandatory the laparoscopic exploration in all patients with non palpable testis where a remnant could not be palpated, even if there has been report of prior open exploration. The diagnosis of intra-abdominal testicular torsion should be considered in patient of any age with recurrent or acute abdominal pain and of non palpable testis, but could not be excluded in those with no symptoms

The rule and the effect of the torsion on the testicular risk cancer have not been established and should be more investigated.

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