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Inguinoscrotal Hernia in an Elderly Patient Caused by a Persistent Patent Processus Vaginalis with an Atrophic Testis: A Case Report

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Abstract **Case Report**

Introduction: Indirect inguinal hernia in males is usually congenital and results from failure of obliteration of the processus vaginalis. Presentation is expected in childhood, and a lifelong, untreated inguinoscrotal hernia diagnosed in an elderly man is uncommon. ***Case presentation:*** A 60-year-old man with no medical or surgical history was admitted for a left inguinoscrotal swelling present since birth. Examination revealed a left inguinoscrotal hernia with an estimated neck of 3 cm. After pre-anesthetic assessment, he underwent surgery through a left inguinal incision with opening of the external oblique aponeurosis. Exploration showed an inguinoscrotal hernia classified as Nyhus type IIIb, associated with multiple epididymal cysts and an atrophic left testis, all attributable to a persistent patent processus vaginalis. The sac, which contained omentum, was resected and ligated, a Lichtenstein tension-free mesh repair was performed under spinal anesthesia, and the atrophic testis was preserved. The postoperative course was uneventful and the patient was discharged on postoperative day 1. ***Discussion:*** Persistence of the processus vaginalis explains the congenital nature of the hernia, and may be accompanied by hydrocele, cysts of the cord or epididymis, and testicular anomalies. In adults, an atrophic testis found within the sac raises the question of orchiectomy versus preservation, given the risks of malignancy, torsion and infertility attributed to the maldescended or atrophic gonad. ***Conclusion:*** In adults operated on for a long-standing inguinoscrotal hernia, the surgeon should systematically assess the testis and the other contents of the sac, and plan the management of the gonad and the posterior wall repair accordingly; a Lichtenstein repair with preservation of the atrophic testis was uneventful in our patient.

Keywords: Inguinoscrotal hernia; patent processus vaginalis; atrophic testis; epididymal cyst; Nyhus classification; case report.

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INTRODUCTION

Inguinal hernia repair is one of the most frequent operations in general surgery, yet the anatomical variants encountered at exploration can still be surprising. In males, indirect inguinal hernia is usually congenital: the testis descends into the scrotum during fetal life carrying a peritoneal diverticulum, the processus vaginalis, which normally closes at the deep ring and then distally above the testis, leaving the tunica vaginalis [1,2]. Failure of this obliteration leaves a patent channel that may present as a congenital indirect hernia, a communicating hydrocele, an encysted hydrocele of the cord, or may coexist with an undescended testis [1]. Because these lesions are classically symptomatic in infancy or childhood, a patent processus vaginalis revealed only in late adulthood is unusual.

When a large hernia is neglected, it can reach considerable dimensions; the term giant inguinoscrotal hernia is reserved for a hernia extending below the midpoint of the inner thigh in the standing position [3]. Even without reaching this size, a long-standing inguinoscrotal hernia may be associated with changes in the testis and cord. Adult cases of inguinal hernia revealing a cryptorchid or atrophic testis have been reported, some discovered only at the time of surgery, in patients aged 24 to 68 years [4–6,12,13]. We report the case of a 60-year-old man with a lifelong left inguinoscrotal hernia, classified as Nyhus type IIIb at surgery, in whom a persistent patent processus vaginalis was associated with epididymal cysts and an atrophic ipsilateral testis.

Case Presentation

A 60-year-old man, father of children, with no medical or surgical history and no comorbidities, was admitted to our department for a left inguinoscrotal swelling present since birth, which had never been investigated or treated. On clinical examination, a left inguinoscrotal hernia was found, with a neck estimated at 3 cm. His general condition was good. The patient was seen in a pre-anesthetic consultation, found fit for surgery, and was scheduled for repair.

The patient was taken to the operating theatre and operated on under spinal anesthesia. A left inguinal incision was made, and the aponeurosis of the external oblique muscle was opened, exposing the inguinal canal. Exploration found an inguinoscrotal hernia, classified as Nyhus type IIIb, with an indirect sac extending into the scrotum whose wide neck communicated with the peritoneal cavity through a persistent patent processus vaginalis. The sac was opened and contained omentum. The left testis was atrophic, and multiple epididymal cysts were present. These findings were attributed to persistence of the processus vaginalis (Figures 1–3).



Figure 1: Intraoperative view of the left hernial sac delivered through the inguinal incision, held with clamps, with the atrophic left testis at its distal portion



Figure 2: Hernial sac opened longitudinally, showing its wide neck, estimated clinically at 3 cm, communicating with the peritoneal cavity through the persistent patent processus vaginalis



Figure 3: Inguinal canal exposed after opening of the external oblique aponeurosis, showing the sac and the cord structures dissected and controlled with tapes and clamps

The sac was resected and ligated, the hernia was repaired by a Lichtenstein tension-free mesh repair, the atrophic left testis was preserved and the epididymal cysts were excised. The postoperative course was uneventful, and the patient was discharged on postoperative day 1.

DISCUSSION

The patient presented with an inguinoscrotal hernia that had been present since birth, which strongly supports a congenital mechanism through a patent processus vaginalis. Normally, the processus vaginalis closes first at the deep inguinal ring and then distally, and this process may be arrested at any level, producing hernia, hydrocele or an undescended testis depending on the site and extent of the persistence [1]. Testicular descent itself depends on a hormonally regulated sequence involving the gubernaculum, and its disturbance may produce structural defects of the inguinal region [2,5]. In our patient the sac extended into the scrotum and the left testis was atrophic, but the exact cause of the atrophy cannot be established from the operative findings alone: chronic compression or vascular compromise of the cord by a large sac over six decades, an underlying maldescent or dysgenesis of the gonad, or a combination of these mechanisms are all plausible.

Late-presenting hernias with an abnormal testis have been described. Kassir *et al.,* reported a 50-year-old man in whom a left inguinal hernia revealed an atrophic cryptorchid testis in the sac, treated by orchiectomy and Lichtenstein repair, with histology showing no germ cell tumor [4]. Arslan *et al.,* described an adult in whom the testis and spermatic cord formed part of the wall of an indirect hernia sac, so that the cord could not be separated from the sac and orchiectomy was performed together with a Lichtenstein repair [5]. Wakabayashi *et al.,* treated a 68-year-old man with an inguinal hernia and an intracanalicular undescended testis by laparoscopic transabdominal preperitoneal repair and simultaneous orchiectomy, and the specimen showed an atrophic testis without malignancy [6]. More recent reports confirm that this situation is still encountered. Ungureanu *et al.,* treated three men aged 24 to 34 years with an inguinal hernia and an undescended testis by laparoscopic TAPP repair and orchiectomy in the same session; the specimens were atrophic without malignancy, and the authors recommend routine histological examination [12]. Patil *et al.,* described a 28-year-old man operated on in an emergency for an obstructed inguinoscrotal hernia whose sac contained omentum and a testis with a thinned vas deferens; the testis was removed and a Lichtenstein repair completed [13]. Most published adult cases concern patients younger than ours, which makes a first diagnosis at 60 years, after a lifelong hernia, particularly uncommon. These reports share a message that applies to our case: in adults the testis should be sought and assessed whenever a hernia is explored, and its fate should be decided in the same operative session.

The management of the gonad is the main specific question raised by an atrophic testis in an adult. Orchiectomy is generally preferred in adults because of the risks of malignant transformation, torsion and impaired fertility, whereas orchidopexy is the standard in children [6], and all the adult cases cited above were treated by orchiectomy [4–6,12,13]. The risk of testicular cancer is related to the age at which a maldescended testis is corrected: in a large Swedish cohort the relative risk was about 2.2 when orchidopexy was performed before 13 years and about 5.4 when performed at 13 years or later [9]. In our patient the atrophic testis was nevertheless preserved. Preservation spares the patient an additional procedure and keeps the scrotal contents and any residual endocrine function of the gonad, since interstitial Leydig cells can persist in an atrophic testis [4]; this choice, however, does not remove the oncological concern and requires informed discussion with the patient and regular clinical and ultrasound surveillance of the scrotum, as emphasised in the literature [4]. The epididymal cysts found in our patient are common benign lesions; their coexistence with the persistent processus vaginalis may be coincidental, and we do not claim a causal link.

The Nyhus classification remains widely used to describe groin hernias at operation [7,8]. Type III denotes a defect of the posterior wall of the inguinal canal, and type IIIb corresponds to a large indirect hernia with a dilated deep ring and involvement of the posterior wall, a category that includes scrotal hernias [7]. Classifying our hernia as IIIb has practical consequences, since it implies that the posterior wall is weakened and that a simple high ligation of the sac would be insufficient: the 2023 update of the HerniaSurge guidelines recommends a mesh-based repair for the majority of patients and lists scrotal hernia among the situations in which an open anterior (Lichtenstein) repair is preferable to a laparo-endoscopic approach [10], which is the repair we performed. In a recent retrospective series of 51 giant inguinoscrotal hernias, Lichtenstein repair was feasible and safe, although complications such as urinary retention were more frequent than in standard inguinal hernias [11]. An inguinoscrotal hernia with a neck of 3 cm does not carry the risk of loss of domain that complicates giant hernias, in which reduction of the contents may raise intra-abdominal pressure and require adjunctive measures [3]; this allowed a conventional inguinal approach, with an uneventful course and discharge on the first postoperative day.

Finally, the very late presentation of a lifelong hernia deserves comment. Delayed consultation of patients with undescended testis or hernia has been related to ignorance, limited access to health care and socio-economic factors in developing countries [6]. Encouraging earlier consultation for congenital inguinal and scrotal anomalies would avoid the combination of a large hernia and an atrophic gonad observed in this case.

CONCLUSION

A persistent patent processus vaginalis can remain unrecognized until the seventh decade and may be associated with an inguinoscrotal hernia of Nyhus type IIIb, epididymal cysts and testicular atrophy. In an adult operated on for a long-standing inguinoscrotal hernia, the surgeon should examine the testis and the contents of the sac, decide on the management of an atrophic gonad during the same procedure, and repair the posterior wall according to current guidelines. Preservation of the atrophic testis, as in our patient, is a possible option provided that the patient is informed and followed up.

Declarations

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