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Strangulated Inguinal Hernia Containing an Undescended Testis in An Adult: A Case Report and Literature Review

A. Ettaoussi[1], S. Rihane[2], Z Moustaquime[3], K. Kamal[4], A Majd[5], M. Bouali[6], A. El Bakouri[7], K. El Hattabi[8]
[1,2,3,4,5,6,7,8]Visceral emergency department 35, University Hospital ibn Rochd, Casablanca, Morocco University of Medecine and Pharmacie Hassan II Casablanca, Morocco

ABSTRACT:
Background: The coexistence of a strangulated inguinal hernia and an undescended testis in adults is exceedingly rare. Persistence of the processus vaginalis is a key embryological factor implicated in indirect inguinal hernias. When a testis is included within the hernia sac, management becomes more complex, involving both hernia repair and evaluation of testicular viability.
Case Presentation: We report the case of a 28-year-old male presenting with an irreducible painful inguinoscrotal mass. Emergency surgical exploration revealed an indirect inguinal hernia with a patent processus vaginalis containing a congested but viable small-bowel loop and an ectopic testis. The patient underwent Bassini hernia repair and orchidopexy with uneventful recovery.
Conclusion: Strangulated inguinal hernia with testicular involvement is an exceptional presentation in adults. Prompt surgical intervention is essential to prevent bowel or testicular ischemia. Orchidopexy is recommended when the testis is viable; orchidectomy may be required otherwise.

KEYWORDS: Inguinal hernia; Strangulated hernia; Undescended testis; Cryptorchidism; Patent processus vaginalis; Adult; Orchidopexy.

INTRODUCTION

Inguinal hernias involving an undescended testis are uncommon in adults. Cryptorchidism typically presents during childhood, and its persistence into adulthood is unusual, particularly when revealed by an incarcerated or strangulated hernia.
Testicular distress associated with large or strangulated inguinal hernias in adults has been reported by Badji et al. **[1]**, highlighting the need for early recognition and management.
The key etiological factor is persistence of the processus vaginalis, a mechanism well described in embryological studies by Merchant-Larios et al. **[2]** and further discussed by Brainwood et al. **[3]**.
Although inguinal hernia repair in adults is common, hernia sacs containing a testis remain rare and pose additional diagnostic and therapeutic challenges. Early surgical intervention is essential due to the risk of intestinal strangulation and testicular ischemia, and management should follow established case-report recommendations such as the SCARE guidelines **[4]**.
We report a rare case of a strangulated indirect inguinal hernia containing an undescended testis in an adult, together with a review of the literature.

CASE PRESENTATION

A 28-year-old male with chronic tobacco use (16 pack-years) and daily cannabis consumption presented to the emergency department with a painful right inguinoscrotal swelling evolving over 24 hours. He reported vomiting without cessation of stool or gas. He mentioned a history of a “high-riding” testis since childhood, never evaluated.

Clinical examination revealed:

- Soft abdomen without distension
- Irreducible, painful right inguinoscrotal mass
- Negative cough impulse
- No cutaneous inflammatory signs
- Absence of the right testis in the scrotal sac

The diagnosis of strangulated inguinal hernia was made clinically, leading to immediate surgical exploration.

Intraoperative findings:

- Indirect right inguinal hernia (Nyhus type I)

- Persistent processus vaginalis
- Hernia sac containing:
  - a congested but viable small-bowel loop
  - an atrophic but viable ectopic testis
- Thinned spermatic cord with intimate posterior adhesions between the sac and the testis (**Figure1**)

Careful dissection preserved the spermatic vessels, pampiniform plexus, and vas deferens. The testis was mobilized and repositioned in the scrotum, followed by orchidopexy.

The hernia was repaired using Bassini's technique with interrupted silk sutures.

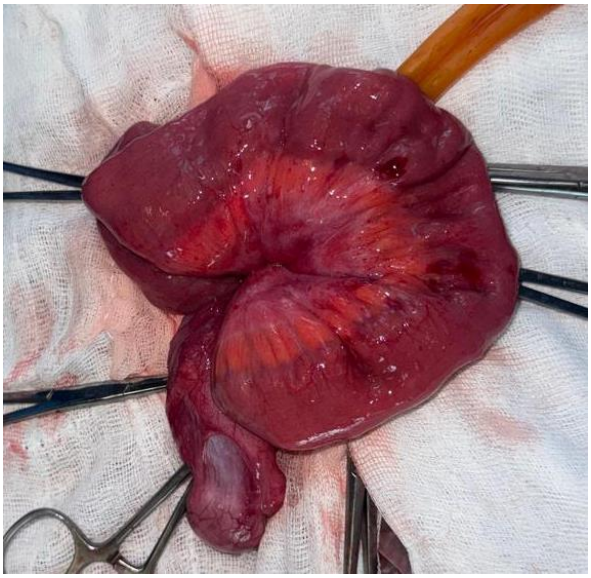

Figure 1: Intraoperative image showing the strangulated indirect inguinal hernia sac containing a congested small bowel loop and an ectopic undescended testis

Postoperative course:

Uncomplicated; the patient was discharged on postoperative day 1.

DISCUSSION

Embryology and Pathophysiology

The processus vaginalis develops during the third fetal month and guides testicular descent. Failure of its obliteration predisposes to indirect inguinal hernia, hydrocele, or spermatic cord cysts **[2]**.

Asymptomatic patency of the processus vaginalis persists in approximately 20% of infants, 9% of children at 12 years, and 6–19% of adults **[5]**. Additional risk factors for hernia formation include chronic cough, constipation, older age, previous prostatic surgery, and family history.

van Wessem et al. demonstrated a predominance of right-sided indirect inguinal hernias in adults, consistent with neonatal anatomy **[6]**.

Diagnostic Considerations

Clinical examination remains the cornerstone of diagnosis. In cases of suspected strangulation, imaging studies rarely alter management.

Several authors have reported the limited usefulness of preoperative imaging in strangulated hernias, emphasizing the importance of prompt surgical exploration **[2]**. When cryptorchidism is suspected outside an emergency context, ultrasound may help identify hernia contents and assess testicular vascularity.

Testicular Ischemia

Although testicular ischemia secondary to strangulated inguinal hernia is rare in adults, it is well documented in pediatric populations. Adult cases have also been reported, particularly in the setting of large or long-standing hernias, with improvement after reduction in most cases **[1]**.

Management of the Testis

The decision between orchidopexy and orchidectomy depends on testicular viability.

When viable, orchidopexy preserves endocrine function and facilitates long-term surveillance. In contrast, orchidectomy is recommended for nonfunctional or severely atrophic testes due to the increased risk of malignancy **[7,8]**.

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Adult cryptorchidism is associated with a 4- to 8-fold increased risk of testicular cancer. Case reports and reviews by Sepúlveda et al. **[9]** and Touati et al. **[10]** indicate that orchidectomy is more frequently performed in adults than in pediatric patients.

Surgical Approach

In emergency strangulated hernias, open surgery remains the standard approach.

Mesh repair is generally avoided in contaminated or ischemic fields because of the increased risk of infection **[4,11]**. However, recent reports describe successful laparoscopic management using the transabdominal preperitoneal (TAPP) approach with simultaneous orchidopexy or orchidectomy in stable, non-strangulated cases **[12]**.

Contralateral Patency

Contralateral patency of the processus vaginalis may be present in up to 50% of men and 90% of women **[3]**. Routine prophylactic exploration remains controversial due to the risk of injury to the vas deferens or spermatic cord structures.

Prevention

Currently, no reliable biomarker can predict which patients with a persistent processus vaginalis will develop an inguinal hernia. Research on molecular mediators such as calcitonin gene-related peptide (CGRP) is ongoing **[11]**. Prophylactic repair of asymptomatic patency is not recommended because of the estimated 10–12% risk of chronic inguinal neuralgia after surgery.

CONCLUSION

Strangulated inguinal hernia containing an undescended testis in adults is a rare but clinically significant surgical emergency.

Prompt diagnosis based on clinical findings and timely surgical intervention are essential to prevent bowel and testicular damage. When the testis is viable, orchidopexy should be performed; orchidectomy should be reserved for nonfunctional or ischemic testes. Awareness of this rare presentation facilitates appropriate intraoperative decision-making and optimizes patient outcomes.

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