



Case report

A peculiar variety of indirect inguinal hernia (juxtacordal indirect inguinal hernia)



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HIGHLIGHTS

- Juxtacordal indirect inguinal hernia is encountered every now and then in the theater.
- Precise and meticulous dissection help identifying the neck of the hernial sac.
- Clarifying the site of the sac appearance will decrease the chance of inferior epigastric vessels injury.
- Dealing correctly with the sac will reduce the recurrence rate of hernia.

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ABSTRACT

Background: Indirect inguinal hernias are usually congenital, forming a sac in the core of the spermatic cord covered by the internal spermatic, cremasteric, and external spermatic fasciae^{1–3}. Direct inguinal hernias are acquired; the sac lies beside/behind the cord^{1–3}. A rare third type is a combination of indirect and direct sacs on both sides of inferior epigastric vessels^{1–3}. We describe a rare fourth type, juxtacordal indirect oblique inguinal hernia (Fig. 1), in which the sac emerges through a weakness in the deep inguinal ring, lateral to inferior epigastric vessels, and passes into the inguinal canal beside and in contact with the cord but outside of its covering fasciae.

Objective: Describes a very rare variety of inguinal hernia.

Design: Case reports.

Setting: Tikrit Teaching Hospital/Salahuddin/Iraq.

Participants and presentation: The first case; a 5-year-old male with right inguinal hernia, the second case; a 25-year-old man with right inguinal hernia, the third case; a 60-year-old man with right inguinal hernia.

Interventions: Surgery has been done electively for all.

Results and discussion: Because the sac emerges through the deep inguinal ring and passes through the inguinal canal, it is an indirect type and because it passes beside the spermatic cord we call it juxtacordal hernia. Because of the thick extraperitoneal fat layer over the sac, we think this hernia is acquired.

Conclusions: Knowing this type of hernia might reduce the risk of inferior epigastric vessels injury and lower the rate of recurrence.

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1. Introduction

The factors leading to the development of a hernia are traditionally divided into two categories: congenital origins and acquired defects. Congenital factors are responsible for the majority of groin hernias [1–3].

Many hernia classifications have been proposed in the last 4 decades, the most commonly used are, Casten, Halverson & Mcvay, Panka, Nyhus (Table 1) and Gilbert (Table 2). Nyhus classification is one of the mostly used classifications by the American Hernia Society members. It is designed for the posterior approach based on the size of the internal ring and the integrity of the posterior wall [4,5], categorizing the hernial defect by location, size, and type (Table 1) [6].

Gilbert designed a classification for primary and recurrent groin hernias done through an anterior approach (Table 2). It is based on

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Table 1
Nyhus classification system of groin hernias.

Type I Indirect hernia; internal abdominal ring normal; typically in infants, children, small adults
Type II Indirect hernia; internal ring enlarged without impingement on the floor of the inguinal canal; does not extend to the scrotum
Type IIIA Direct hernia; size is not taken into account
Type IIIB Indirect hernia that has enlarged enough to encroach upon the posterior inguinal wall; indirect sliding or scrotal hernias are usually placed in this category because they are commonly associated with extension to the direct space; also includes pantaloon hernias
Type IIIC Femoral hernia
Type IV Recurrent hernia; modifiers A–D are sometimes added, which correspond to indirect, direct, femoral and mixed respectively.

Table 2
Gilbert classification system of groin hernia.

Type 1 Indirect inguinal hernia, tight internal ring through which passes a peritoneal sac of any size.
Type 2 Indirect inguinal hernia moderately enlarged internal ring that measures no more than 4 cm.
Type 3 Indirect inguinal hernia, patulous internal ring of more than 4 cm.
Type 4 Direct inguinal hernia, essentially the entire floor of the inguinal canal is defective.
Type 5 Direct inguinal hernia, diverticular defect of no more than 1 cm or 2 cm in diameter.
Type 6 both indirect and direct inguinal hernias (pantaloon hernia).
Type 7 Femoral hernia.

evaluating three factors [5]:

1. presence or absence of a peritoneal sac
2. size of the internal ring
3. integrity of the posterior wall of the canal

The indirect hernia (oblique) is usually congenital type [1–3]. In this hernia the sac is derived from the peritoneum passing through the deep inguinal ring inside the internal spermatic fascia of the cord adjacent to the vas deferens and pampiniform plexus lateral to the inferior epigastric vessels [6,7]. It can be (a) bubonocoele where the sac and its contents are limited to the inguinal canal, or (b) funicular where the sac and its contents pass beyond the superficial inguinal ring, or it may reach down to the scrotum called (c) vaginal or complete hernia [1].

The direct inguinal hernia, where the sac emerges through a weakness in the posterior wall of the inguinal canal (Hesselbach's triangle) medial to the inferior epigastric vessels in contact with cremasteric fascia of the spermatic cord, it rarely reaches the scrotum [1–3,6,7].

A rare type is called pantaloon or saddle-bag hernia, which is a combination of indirect and direct sacs on both sides of the inferior epigastric vessels [1,2,7].

We described another very rare type of inguinal hernias, the juxtacordal indirect oblique inguinal hernia (Fig. 1) in which the sac emerges through a weakness in the lateral part of the deep inguinal ring lateral to inferior deep epigastric vessels (on the contrary to the direct inguinal hernia which emerges medial to the vessels) and passes into the inguinal canal beside and in contact with spermatic cord but outside of its covering fasciae (on the contrary to the usual indirect hernial sac which passes inside the spermatic cord within its contents).

Within the last three years we have encountered five cases of this type in our centre and documented the following three ones:

2. The cases

In Case One, a 5-year-old boy presented with a right inguinal hernia of 1 year's duration. The hernia was reducible and occasionally painful. He experienced constipation due to a recurrent anal fissure. A right inguinal incision was made under general anesthesia, the inguinal canal was opened by incision of the external oblique aponeurosis, and the cord was revealed; the

proximal half was markedly thickened. Dissection of the cord layers was performed anteromedially. The hernial sac was not found inside the cord. Dissection was conducted from the anterolateral side of the cord, where the sac was identified beside the cord outside of the cremasteric fascia, covered by a thick layer of fat. Sac isolation was performed upward to the deep inguinal ring, from which the sac emerged through the upper lateral border, lateral to inferior epigastric vessels. The sac was opened, found connected to the peritoneal cavity, and treated classically by transfixation, neck ligation, and excision of the excess. The stump was pushed back through the deep inguinal ring, which was slightly dilated but not patulous, narrowing was done for it by a single stitch of number 0 vicryl suture (Lytle's stitch).

In Case Two, a 25-year-old blacksmith presented with a right inguinal hernia of 3 years' duration. The hernia was reducible but increasing in size and symptoms, reaching the scrotal neck. A right inguinal incision was made under general anesthesia. The external oblique aponeurosis was incised, opening the inguinal canal and the cord was revealed. Because of the thickening there, the sac was separated from the cord without opening the layers (Fig. 2). This was treated as in Case 1, following the sac upward and laterally to the deep inguinal ring, lateral to inferior epigastric vessels (Fig. 2). The internal inguinal ring was wide, its narrowing was done by two Lytle's stitches of number 0 vicryl suture, the posterior wall of the inguinal canal was strengthened by Shouldice repair by number 0 nylon suture.

Case Three involved a 60-year-old retired military officer with a non-complicated right inguinal hernia of 5-years' duration, reaching the scrotal neck. Surgical findings and managements were identical to those for Case Two regarding the sac and internal inguinal ring (Fig. 3), but the posterior wall of the inguinal canal was strengthened by a polypropylene mesh patch.

3. Discussion

Is the juxtacordal indirect oblique inguinal hernia congenital or acquired? Because the lateral portion of the deep inguinal ring is weaker [6], the sac protrudes through this site, likely due to laxity and widening of the deep inguinal ring or increased intra-abdominal pressure; for this reason, we regard it as acquired. There could be congenital predisposition in the form of a wide deep inguinal ring, widening gradually owing to increased intra-abdominal pressure [1,4]. The sac elongates/enlarges into the

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