

Indirect Inguinal Hernia in an Elderly Male, an Incidental Observation During Routine Cadaveric Dissection

Vasudha V. Saralaya¹, Y. Lakshmisha Rao¹, B.V. Murlimanju¹, Mamatha Tonse¹, Akarsha Gupta²

¹Department of Anatomy, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India

²Medical Student, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India

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ABSTRACT

Introduction: during the routine dissection procedure of anterior abdominal wall in a 75 years male cadaver, an inguino-scrotal swelling was observed. The anterior wall of the inguinal canal was dissected by reflecting, external oblique aponeurosis and internal oblique muscle. As soon as anterior wall of inguinal canal was reflected intestinal loop along with transverse mesocolon was seen inside the canal and loop was extending till the scrotum. Length of the loop was 5.5cm and transverse mesocolon was 13cm in length. The dissection was further continued to explore the deep inguinal ring. Deep inguinal ring was identified 1.5cm above the mid-inguinal point. Inferior epigastric artery was located medial to the deep inguinal ring. Here hernia sac was entering through the deep inguinal ring which confirmed the diagnosis. These observations were suggestive of indirect inguinal hernia. This is a rare observation of indirect inguinal hernia in an elderly individual. Usually direct inguinal hernia is observed in elderly individuals.

Keywords: Direct Inguinal Hernia; Indirect Inguinal Hernia; Intestinal Obstruction.

Introduction

The hernia is a protrusion of internal viscera through the space provided by the weakness of body wall. The prevalence of inguinal hernia is about 5% and around 7 lakh people will undergo herniorrhaphy surgery every year in the United States¹. The literature search did not reveal the prevalence of inguinal hernia in Indian population. The open and laparoscopic herniorrhaphy are the treatment of choice for inguinal hernia. Though there are many surgical methods for hernia repair, classical method and pre-peritoneal methods are widely followed surgical procedures¹. Invention of various new methods for hernia surgery is a continuous process in order to minimize the postoperative complications like pain, hematoma and recurrence. In order to improve the surgical techniques, understanding the anatomy of inguinal canal and mechanism of hernia and difference between direct and indirect hernia are very essential. The source for studying the inguinal canal and hernia is only from patients having hernia and cadaveric dissection in medical schools. The study of inguinal hernia in a cadaveric model will be the best source for the medical students, postgraduate students of surgery and surgeons. Cadaveric study of inguinal canal is routinely done in medical colleges but study of inguinal hernia in cadavers is rarely done because the cadavers with inguinal hernia are rarely reported.

Case Report

During the routine dissection procedure of anterior abdominal wall in a 75 years male cadaver, an inguino-

scrotal swelling was observed. The anterior wall was dissected carefully to explore the inguinal canal. Oblique incision was put across the swelling. Skin and superficial fascia were reflected carefully. The inguinal ligament was measuring 12.5 cm. Superior crus of the superficial inguinal ring was 3cm in length. Then anterior wall of the inguinal canal was dissected (Fig. 1) by reflecting, external oblique aponeurosis and internal oblique muscle. As soon as anterior wall of inguinal canal was reflected intestinal loop along with transverse mesocolon was seen (Fig. 2) inside the canal and loop was extending till the scrotum. Length of the loop was 5.5cm and transverse mesocolon was 13cm in length. The dissection was further continued to explore the deep inguinal ring. Deep inguinal ring was identified 1.5cm above the mid-inguinal point.

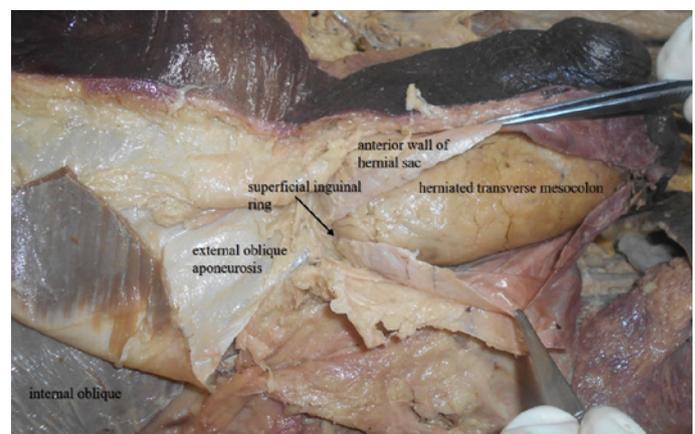


Figure 1. Cadaver showing the dissection of the anterior wall of hernia sac and herniated transverse mesocolon.

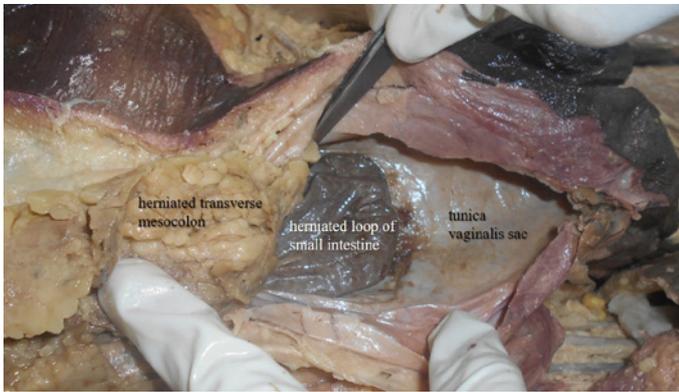


Figure 2. Cadaver showing the herniated loops of small intestine (herniated transverse mesocolon is retracted).

The inferior epigastric artery was identified and this was located medial to the ring. The hernia sac was entering through the deep inguinal ring and this was lateral to the inferior epigastric artery (Fig. 3). Since this hernia was not through the Hesselbach's triangle, the diagnosis of indirect inguinal hernia (Fig. 3) was confirmed.

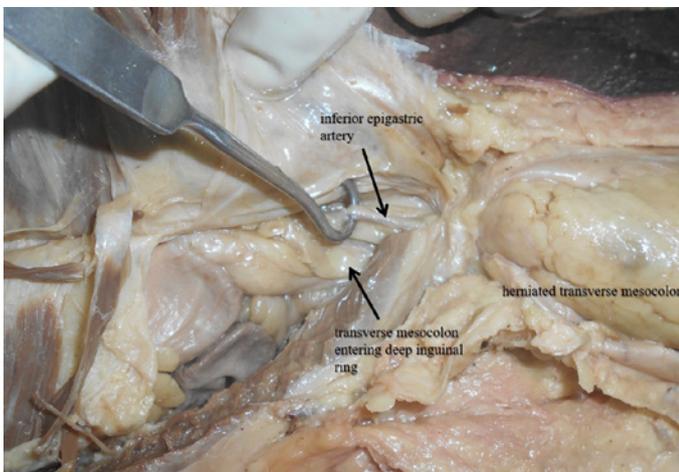


Figure 3. Hernia was observed lateral to the inferior epigastric artery, which confirmed the diagnosis of indirect inguinal hernia.

When anterior abdominal wall was removed, it was observed that the ascending colon was distended (Fig. 4). This was due to the pull of the transverse mesocolon in the hernial sac. The transverse colon was also pulled inferiorly and might have got obstructed, which was leading to the distension of the ascending colon (Fig. 4).

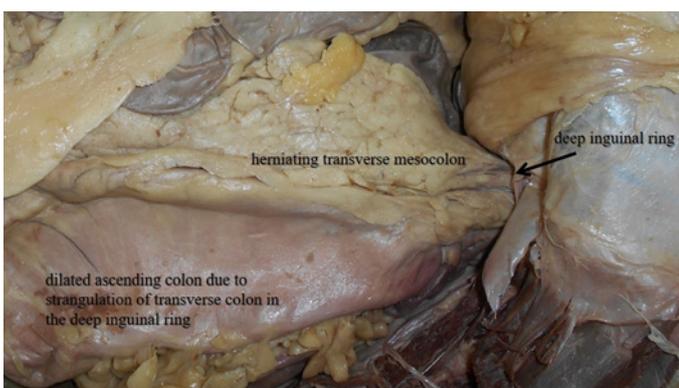


Figure 4. Cadaver showing the distended ascending colon due to strangulation of transverse colon in the deep inguinal ring due to herniation.

Discussion

Developmentally the inguinal canal is formed during the differential growth of the body wall. The inguinal canals develop in both sexes due to indifferent morphological state of sexual development. During the 8-10 weeks of intrauterine life, the foetus shows anatomical structures forming the walls of inguinal canal². The diseases related to the inguinal canal can be due to congenital, infectious, neoplastic or iatrogenic causes³. Though there are many clinical examination and tests to diagnose the inguinal lump or pain in the inguinal region, the radiological evaluation is one of the promising tool for the surgeons to confirm the diagnosis. There are several muscular layers, their modifications and neurovascular structures which make the anatomy of inguinal canal complex. Hence thorough knowledge of anatomy and pathology of inguinal canal is essential prior to the radiological evaluation³. The study of anatomy of inguinal canal is also helpful to the orthopaedic surgeons, while performing the surgery on acetabular fracture through the inguinal approach⁴.

About 1/3rd of males will be affected by inguinal hernia in their life time⁵. It can be diagnosed either in the childhood life or in the old age. The diagnosis is possible with the local examination of the swelling. Surgical treatment is the only best available treatment. This procedure is known as herniorrhaphy, which involves inserting a polypropylene mesh in the posterior wall of the inguinal canal⁵. Among the inguinal hernias, indirect variety is congenital and passes through the deep inguinal ring to superficial inguinal ring. The hernia is considered as complete if it reaches till the bottom of scrotum. The direct hernia passes through Hesselbach's triangle and this reaches the scrotum by passing through superficial inguinal ring only. Direct inguinal hernia will not enter the deep inguinal ring. The indirect inguinal hernia is rarely seen in the old individuals. In old individuals, the direct hernia is common.

Here in this case, the indirect inguinal hernia is seen in the elderly individual. This is an extremely rare case and this supports the opinion of Jiang *et al.*⁶. They opined that the most of the indirect inguinal hernias are acquired. In their study, it was observed that the neck of the hernia had a focal thickness which contained smooth muscle fibers. This focal thickness was suggestive of remnants of processus vaginalis in 55% of their cases⁶. According to their description, processus vaginalis is not persisting in the indirect inguinal hernia. So the indirect inguinal hernia cannot be congenital always.

In this case, the cadaver also showed the dilatation of the ascending colon. This was due to the herniation of the transverse mesocolon and pulling of the transverse colon. This might have caused the intestinal obstruction leading to the dilatation of ascending

colon. It was reported that the combined hernias are common in the elderly individuals. Sometimes both indirect and direct inguinal hernias can be observed unilaterally. The combined hernias represent long-term degenerative changes in the elderly individuals⁷. It was reported that 26.4% of the abdominal hernias are associated with intestinal obstruction⁸. This is more frequent in males and may lead to gangrenous bowel.

Conclusion

We believe that this reporting this case is enlightening to the operating surgeon. Here we report this rare case of indirect inguinal hernia of an elderly male in a cadaver model. The observations of this case study will be of help to the postgraduate students of surgery and also undergraduate students.

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Corresponding author
B.V. Murlimanju
E-mail: flutesnowmm@gmail.com