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Case Report

Five-Millimetre Trocar Site Herniation as a Late Complication After Six Years Following Laparoscopic Appendectomy in Nine-year-old Boy

Hasan Özkan Gezer* and Semire Serin Ezer

Departments of Pediatric Surgery, Başkent University Faculty of Medicine, Ankara, Turkey

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ABSTRACT

Trocar site hernia (TSH) is a type of incisional hernia occurring at the trocar sites after minimal invasive surgeries, most often in adult patients with non-sutured trocar sites. This is a case report of a 5 mm trocar site omental herniation six years after laparoscopic appendectomy in a nine-year-old boy to emphasize that incisions should be closed using fascial and cutaneous sutures, regardless of trocar size and localization, to prevent TSH. We conducted a brief review of the literature on this topic.

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Introduction

Trocar site hernia (TSH) is defined as an incisional hernia, which occurs after minimal invasive surgery on the trocar incision site and is a well-known post-operative complication associated with adult laparoscopic surgery; some authors also define this condition as a port site hernia [1]. The overall incidence of TSH is 0–5.2% and occurs most often (96%) in trocar sites that are located umbilicus region (82%) [2]. The incidence of incisional hernias increases with trocar size, when the trocar site fascia was not sutured and in preschool children [2–4]. In 2004, TSH was classified into three types for better management, early onset, late onset and special type [1].

Case Report

A nine-year-old boy presented with a swelling in the right lower abdomen for about two days. Pain has developed at the same time as the swelling after an abdominal trauma (a kick to the abdomen). On examination, the patient had a spherical, sensitive mass, approximately 8 cm in size, in the right iliac fossa, matching with 5 mm trocar site scar. We learned from his history that he had undergone laparoscopic appendectomy via three pieces of 5-mm ports in another center 6 years

ago. Port sites, except the umbilical one, had not been sutured for all layers. Subsequently he had undergone cholecystectomy openly in a different centre three years ago. Abdominal US revealed a solid mass, measuring 8x4.5 cm in diameter, in one cm depth below the skin. Abdominal CT revealed a mesenteric fat tissue herniation through an approximately 1x1.5 cm fascial and peritoneal defect (Figure 1). He was diagnosed as 5 mm port site hernia and underwent surgery. With a transverse incision through the former port incision scar, the herniated omentum was pushed back to the abdomen and the defect was closed separately as follows: peritoneum 3/0 vicryl; fascia 1/0 polypropylene; subcutaneous tissues with 3/0 vicryl; skin with 4/0 polypropylene. Recovery was uneventful and the patient was discharged within two days (Figure 2).

Discussion

Features that make our case report interesting are the 5 mm trocar site herniation, after a trauma that increased intra-abdominal pressure, the emergence time of herniation — six years after an operation in which the patient underwent a laparoscopic appendectomy at the age of three (preschool child), omental herniation via fascial and peritoneal defect without a peritoneal sac. In recent years, minimal invasive surgeries have

*Correspondence to: Hasan Özkan Gezer, Department of Pediatric Surgery, Başkent University Faculty of Medicine, DadaloğluMah 39 sokak, No: 6, Yüreğir, Adana 01210, Turkey; Tel: +90 322 4586868; Fax: +90 322 4599197; E-mail: hozkangezer@yahoo.com.tr; Orcid ID: 0000-0002-4635-2613

gained widespread popularity as the surgical approach of choice for a variety of surgical disorders in pediatric patients as well as in adults. To date, TSH's relatively high incidence in relation to other post-operative complications in infants has been demonstrated in some reports [4]. Several factors contribute to the development of a TSH, such as wound infection, obesity, the diameter and the location of the port and non-closure of port sites [5]. In adult surgery, trocar sites are usually closed by single suturing of the peritoneum and deep fascia with absorbable sutures, whereas the skin is sutured separately with absorbable or non-absorbable sutures, although, incisions smaller than 5 mm are not closed by separate fascial sutures [6, 7]. It is recommended for midline incisions that the fascia should always be closed using separate sutures [4]. Although there is some evidence that oblique trocar insertion at the lateral abdominal wall exclusively prohibits herniation, in younger children the abdominal wall is quite thin, and the muscles are weak so oblique trocar insertion passes nearly straight through and cannot prevent herniation [4, 7]. Additionally, in younger children 2, 3 or 5 mm trocars are usually used and often only the umbilical insertion wound is closed separately, whereas the tiny incisions in the lateral abdomen are closed by one stitch that catches only the cutaneous layer [4]. As is mentioned above, our patient's records showed that incisions at the lateral abdomen had been closed by one stitch that caught only the cutaneous layer.

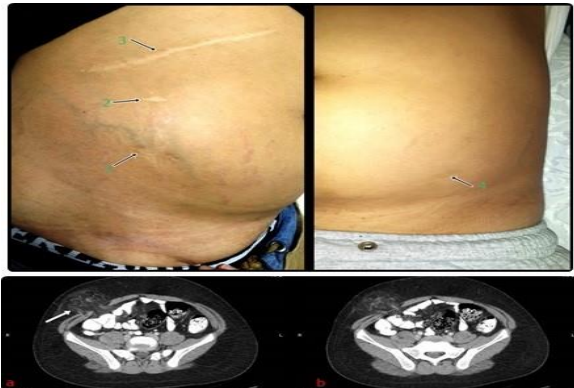


Figure 1: A & B Abdominal CT revealed that a mesenteric fat tissue herniation had formed an approximately 1x1.5 cm fascial and peritoneal defect under the skin without a peritoneal sac and with no intestinal segment

1. Left iliac fossa 5 mm port site incision scar
2. Cholecystectomy drain incision scar
3. Cholecystectomy incision scar
4. Right iliac fossa 5 mm port site incision scar

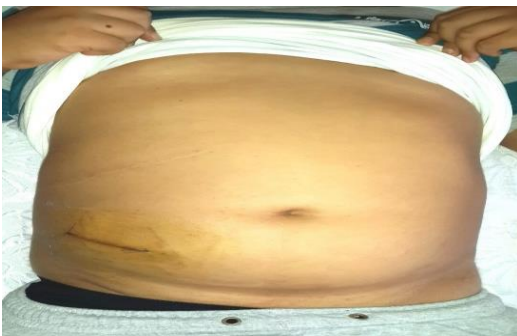


Figure 2: Postoperative photograph of patient

Tonouchi et al. stress that the type of TSH should be clearly classified for better management. Classification is as follows – early onset type: dehiscence of anterior and posterior fascial plane and peritoneum; late onset type, usually develop several months after surgery : dehiscence of anterior and posterior fascial plane, except peritoneum that constitutes the hernia sac; special type, onset is very early, immediately after surgery : dehiscence of the whole abdominal wall with intestine and/or omental protrusion [1]. It is interesting that our patient does not match exactly one type, because, omental herniation was detected, which is a component of a special type, dehiscence of anterior and posterior fascial plane and peritoneum was detected, which is a component of the early onset type, and also the time elapsed before the patient became symptomatic was as long as six years, which has not been previously reported in the literature for pediatric patients.

Conclusion

Trocar site herniation, such as omental herniation may also be an expected post-operative complication of laparoscopic surgery for young children, which can occur at any time. In adult surgery, although incisions smaller than 5 mm are sometimes not sutured at all and is acceptable in limit, in younger children incisions should be closed using fascial and cutaneous sutures, regardless of trocar size and localization, to prevent TSH.

Conflict of Interest

All authors declare that they have no conflict of interest.

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