

Single incision laparoscopic surgery transabdominal pre-peritoneal hernia repair – case report

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Abstract

Single incision laparoscopic surgery (SILS) minimizes perioperative trauma and allows surgical procedures without a visible scar. Here we present a case in which the transabdominal pre-peritoneal method was used in inguinal hernioplasty using a SILS port. The presented case is part of a new trend in surgery to minimize operative trauma. In 2009, when the operation was conducted, it was an innovative procedure.

Key words: single incision laparoscopic surgery (SILS), transabdominal pre-peritoneal hernia repair (TAPP), SILS-TAPP

Introduction

Surgical treatment for inguinal hernia repair has radically changed over the years, which may be undoubtedly associated with simultaneous technological progress. The use of synthetic materials for the procedure resulted in development of tension-free methods and at the same time videoscopic techniques. Although inguinal hernia laparoplasty was described for the first time by Ger *et al.*, it was not until the 1990s, when mesh began to be used, that mini-invasive techniques became appreciated by both patients and surgeons [1]. Currently, laparoscopic inguinal hernia repair is not only widely accepted, but in some cases (recurrent hernia or bilateral inguinal hernia) it has become a method of choice [2]. This is due to the continuous efforts to minimize the invasiveness of any surgical procedure, also connected with the maximum possible efficacy, which is determined by the postoperative recurrence rate. Nowadays, out of all laparoscopic methods, 3 are employed

for inguinal hernia repair: transabdominal preperitoneal (TAPP), the most commonly used, and the less popular totally extraperitoneal (TEP) and intraperitoneal onlay mesh (IPOM). The existing trend to minimize the invasiveness of surgical procedures combined with an attempt to achieve the best therapeutic effects and cosmesis resulted in single incision laparoscopic surgery (SILS) being more and more commonly used. It now represents the next step in the advancement of mini-invasive surgery as it is an innovation which allows a procedure to be performed via a single incision, which reduces intraoperative trauma and provides great cosmetic results [3].

In this report, we would like to present a case of a patient who, in 2009, underwent TAPP inguinal hernioplasty performed via single-port access in the Department of General and Minimally Invasive Surgery, University Hospital and Clinics in Olsztyn. We did not find any reports about SILS being employed in inguinal hernia repair in the international literature at the time the procedure was performed.

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Case report

The 39-year-old patient, case history no. 2634/426/02/09, a manual worker, was admitted electively, without concurrent diseases, with body mass index (BMI) = 25 kg/m². Physical examination revealed a soft tumour with the diameter of 4-5 cm, becoming apparent with tightened muscles, with no palpable pain, reducible into the cavity of the abdomen, inguinal ring widened to 3 cm at the side of the hernia. Laboratory reports included normal values. Preliminary diagnosis was not verified by ultrasound. After the patient had been informed about the suggested technique and his consent obtained, he was qualified for TAPP inguinal hernioplasty performed via a single incision (SILS). The procedure was performed under endotracheal general anaesthesia.

Surgical technique

The procedure, previously performed through 3 ports (a 10-mm port inserted in the lower region of the umbilical fold and two 5-mm ports placed at 1/3 distance between the umbilicus and the anterior iliac spine), this time was performed using the single incision approach with the SILS Port system (Covidien). Two Kocher clamps were used to lift up the umbilical fundus in order to insert the port. After that, the skin in the sagittal section of the everted umbilicus was cut from its upper to lower base and next 2.5 cm incisions of the fascia and peritoneum were made. The SILS port was placed through the incision and three 10-5-5 mm Dexide trocars were inserted through its preplaced spaces. CO₂ insufflation was performed via a special, separate channel and 12-mmHg pneumoperitoneum was established. Then the patient was placed in a 30° Trendelenburg position, which caused the small bowel loop to move up and allowed for complete visualization of the surgical field with 5 mm, 30° scope. After the portion of the greater omentum had been moved, oblique inguinal hernia on the right side was observed. Further procedure did not differ from classic TAPP surgery performed in classic laparoscopy. First, the peritoneal incision was made in an arc from the pubic tubercle towards the iliac spine in order to create a lower flap. Next, the hernia sac was dissected from the spermatic cord with monopolar diathermy scissors, and the hernia ring was covered with a 13 cm × 8 cm polypropylene mesh (Surgical Mesh, Grena LTD), placed in the peritoneal cavity through a 10 mm

channel in the SILS port and attached with titanium screws of Protac by Covidien. Following that, the implanted mesh was covered with the previously created lower flap of the parietal peritoneum. After the haemostasis had been checked, the SILS port was removed from the umbilical incision and the fascia was sewn with a continuous no. 2 non-absorbable suture. Finally, the umbilicus was carefully, from the cosmetic point of view, closed with single 3-0 absorbable sutures. The total time of the procedure from the cutaneous incision to the last suture was 43 min. Ketoprofen was administered twice intravenously during postoperative care. The patient in good general condition was released on the 2nd postoperative day and the follow-up appointment in the surgical out-patient clinic was recommended. Two years after the procedure, the patient does not report any ailments. Painful sensations were present only on the 1st day after the procedure. During the physical examination 2 years after the procedure no hernia recurrence was observed and the cosmesis is exquisite; no scar is visible.

Discussion

Laparoscopy has revolutionized and changed the face of general surgery forever. Due to technological progress laparoscopy assumed an important place in surgery as it is described as “the gold standard” in cholecystectomy and recurrent hernias. Lower invasiveness, which enables faster recovery, and the possibility of good cosmetic results are undisputed advantages of laparoscopy. It is often emphasized that the laparoscopic approach as compared to open surgery generates higher expenditure due to the cost of disposable laparoscopic equipment. However, it is more and more frequently observed that the spending is offset by shorter leave of absence from work after mini-invasive procedures [4]. In 1992 Arregui and Dion described the TAPP technique for inguinal hernia repair [5, 6]. Hernioplasty is performed through 3-trocar access and consists of dissection of the peritoneal flap and mesh attachment at the hernia ring. The possibility to observe other pathologies within the abdominal cavity, visualization and early hernioplasty on the other side are unquestionable advantages of this method. Recently, a new trend has appeared connected with diminishing trauma related to port implementation through the abdominal wall and at the same time with improvement of cosmetic results,

which resulted in gradual reduction of the number of ports. It constituted the basis for scarless SILS. Since 2008 when 100 cases of cholecystectomy performed via a single incision were presented by Curillo during the European Association for Endoscopic Surgery (EAES) congress, the technique has become an integral part of clinical practice [7]. The use of SILS in procedures so far performed by means of “classic laparoscopy” has been described many times. They include SILS sleeve gastrectomy, SILS adrenalectomy, SILS colectomy, and SILS TEP [8-11]. Our SILS procedure complies with the current, surgical trend to minimize operative trauma, but in 2009 it was innovative since we had not found any reports in the international literature about SILS being employed in inguinal hernia repair. Now, a dozen or so cases of SILS TAPP used with good therapeutic results for inguinal hernioplasty have been reported [12-14]. The SILS is undoubtedly more difficult, but the whole idea and course of the TAPP procedure remains the same. In contrast to classic laparoscopy where the positioning, distance and angle between individual ports are extremely significant, in the case of SILS all the instruments are placed in the same area and the angle between them is almost 0°. Not only does it significantly hinder laparoscopic manoeuvring, but it also entails collision with optical instruments. These are, however, technical difficulties which are diminished with the experience of the operator, as studies show. As new laparoscopic instruments, which allow for facilitation of the operator’s work, are introduced to the market, one can assume that SILS will soon have wider application in some cases, where cosmetic results will be of great importance, despite technical difficulties discouraging many surgeons.

Conclusions

1. The SILS combined with TAPP inguinal hernioplasty is surely beneficial for the patient due to good cosmesis and decreased perioperative trauma, which allows for faster recovery.
2. Since there are some technical difficulties connected with manoeuvring through the SILS port, the procedure has to be performed by experienced laparoscopic surgeons.

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