

Hand-assisted laparoscopic splenectomy

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Abstract. Laparoscopic splenectomy is performed routinely in patients with small and moderately enlarged spleens at specialized centers. Large spleens are difficult to handle laparoscopically and hand-assisted laparoscopic splenectomy might facilitate the procedure through enhanced vascular control, easier retraction and manipulation, manual guidance of endostaplers, and clip applicators. A technique of hand-assisted laparoscopic splenectomy is described.

Key words: Hand port—Laparoscopic splenectomy

Splenectomy may be indicated in idiopathic thrombocytopenic purpura (ITP), autoimmune hemolytic anemia (AIHA), Hodgkin's lymphoma, chronic lymphoid leukemia with hypersplenism, and some other conditions. At specialized centers, laparoscopic splenectomy is performed routinely in patients with small and moderately sized spleens [3, 5, 9]. Large spleens, however, are difficult to handle laparoscopically because of the risk of bleeding, fragmentation of the spleen, and the consequent need for conversion [3]. Particularly in these cases, not having the surgeon's hand inside the abdomen makes it very difficult to manipulate and retract the spleen.

Several hand port systems (the Dexterity pneumo sleeve, Pilling Weck, Le Faget, France; the Lap Disc, H.S. Hospital Services SRL, Rome, Italy; the Hand Port, Smith & Nephew, Nederland BV, Hoofddorp, The Netherlands; and the Intromit, Medtech Ltd., Offaly, Clara County, Ireland) are currently available to provide abdominal access for the surgeon's hand through a mini-laparotomy while the pneumoperitoneum is preserved during laparoscopic surgery. When the hand can be inserted into the abdomen, tactile sensation is regained, and palpation, manual identi-

fication, dissection and retraction, and vascular control are possible [1, 6, 7, 10].

Herein we describe our technique for hand-assisted laparoscopic splenectomy.

Surgical technique

All operations are done under general anesthesia. The patient is placed in the French position and draped in order to allow enough room to position the hand port; this is of great importance when a device with an adhesive flange is used. The surgeon stands between the legs of the patient, with the assistant/camera operator on the right side of the patient.

After a standard pneumoperitoneum is established, a 10–11-mm trocar is introduced in the upper midline, high enough to avoid interference with the surgeon's hand. The abdominal cavity is inspected, and the spleen is checked for size and possible presence of perisplenitis. If laparoscopic splenectomy does not seem feasible, an upper midline incision can still be made. Next, a 7–8-cm Pfannenstiehl incision is made, depending on the size of the surgeon's hand. The incision is located far enough above the pubic bone to allow enough room in and outside the abdominal wall for the hand port system. After installation of the hand port, the left hand of the surgeon is inserted. A dark-colored glove should be used because regular surgical gloves are reflective. An additional 10–11-mm trocar is inserted laterally in the left subcostal region with guidance by the surgeon's hand (Fig. 1). Its location is dependent on the size of the spleen; the larger the spleen, the lower the trocar placement. The video-scope is inserted through the upper midline trocar. The left subcostal trocar is used for the introduction of the scissors, ultrasonic scissors, or vascular endostapler.

First, the left colonic flexure is retracted downward by hand in order to dissect the splenocolic ligament with monopolar or ultrasonic scissors (clip 1 online). Then, the stomach is lifted up and the lesser sac is opened by ultrasonic coagulation of the gastrosplenic vessels (clip 2 online). Initially, the upper gastrosplenic vessels and the superior diaphragmatic attachments are spared. Using this so-called hanging spleen technique [4], a good anterior and posterior view of the splenic pedicle is obtained. Next, the splenic pedicle is encircled between the middle finger and thumb (clip 3 online). The index finger is used to lift the left liver lobe. A vascular linear stapler is inserted through the left subcostal port and positioned on the splenic pedicle under guidance by the surgeon's fingers (Fig. 2, clip 4 online). Finally, the superior gastrosplenic vessels and the diaphragmatic ligaments are taken down.

The spleen is grasped by hand and retracted through the hand port. If the spleen is large, it is placed in a bag, morcellated, and extracted through the Pfannenstiehl incision.

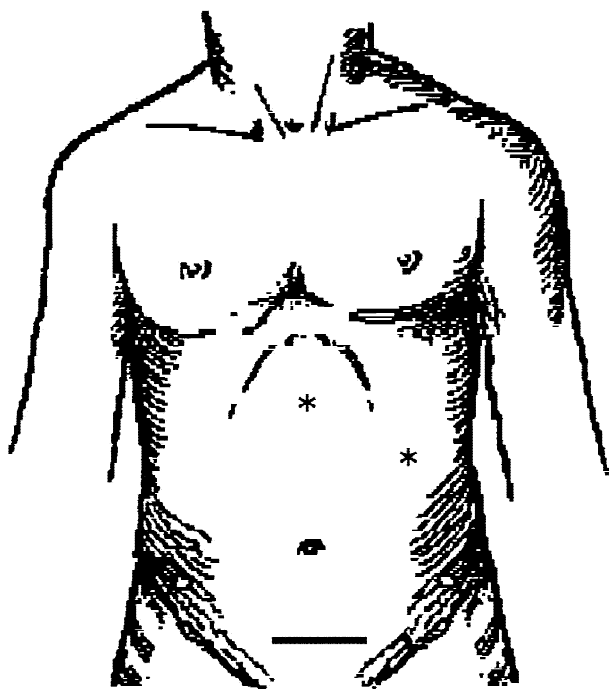


Fig. 1. Position of the hand port (Pfannenstiehl incision, broken line) and the two additional 10–11-mm trocars (*).

Discussion

No laparoscopic instrument can substitute for the abilities of the surgeon's own hand. If manual identification of the dissection planes and anatomical structures, manual retraction, finger dissection and vascular control, hemostasis, and manual guidance of the clip applicators and endostaplers can be done, the surgeon can perform a laparoscopic procedure more safely and rapidly.

Preliminary results of hand-assisted laparoscopy in colectomy and splenectomy have shown shorter operating times and a higher efficacy, as measured by time-motion analysis [2, 7, 8].

Experienced laparoscopic surgeons probably do not need a hand port. However, manual manipulation of the spleen, particularly when it is a large one, is probably safer than manipulation with laparoscopic instruments. The likelihood of capsular tears, with the concomitant risk of bleeding and conversion, can probably be diminished by using a hand port system. Large spleens can be removed safely through the Pfannenstiehl incision with less risk of spillage of splenic tissue. Accessory spleens are found at a rate of ~10–15% [3, 5] and are probably more easily identified by manual palpation.

One drawback to the currently available devices is that they require a lot of space around a relatively small incision. If the introduction site is too close to the operating field, the device and the hand itself may interfere with the laparoscopic view and instrumentation. Another problem is that

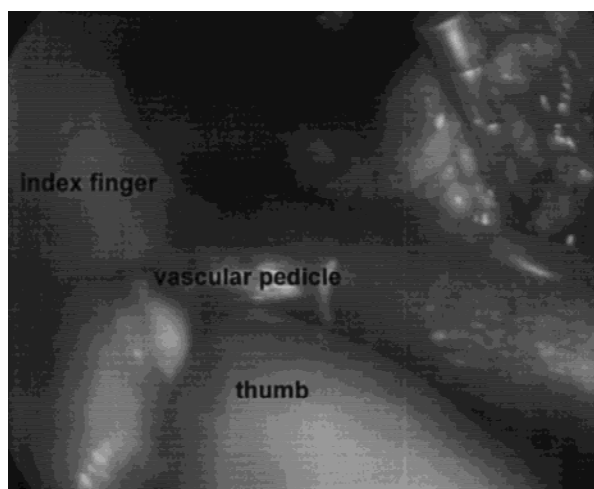


Fig. 2. Encirclement of the splenic pedicle with the index finger and thumb and securing of the splenic pedicle with a vascular endostapler.

gas leakage is typically associated with hand ports that have an adhesive flange.

The main advantage of using the hand port systems in laparoscopic splenectomy is that they permit optimal vascular control when used in combination with new technology, such as ultrasonic scissors and endostaplers. Manual guidance of these instruments ensures a safer and easier application. Hand port systems can facilitate laparoscopic procedures and make laparoscopic splenectomy of large spleens feasible.

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