Case report

Surgical Endoscopy

Surg Endosc (1992) 6: 305–308

Laparoscopic splenectomy — technical aspects

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Summary. Since the recent development of endoscopic cholecystectomy various other digestive disorders have been treated endoscopically. Using the endo-GIA stapler the authors report a case of laparoscopic splenectomy. Five trocar sheaths were used. Once detached, the spleen was cut into fragments in a plastic bag intraabdominally, which allowed its removal. Splenectomy was performed for a girl who had an autoimmune thrombocytopenic purpura (ITP). No operative transfusion was required. The patient was discharged after an uncomplicated postoperative recovery. The cosmetic result is good.

Key words: Laparoscopic splenectomy – Endoscopic cholecystectomy – Spleen – Thrombocytopenic purpura

Since the recent development of laparoscopic cholecystectomy, new applications of laparoscopic surgery have been proposed [2–6]. We report a technique for laparoscopic splenectomy [1].

Patient and method

Splenectomy was performed for a girl who had an autoimmune thrombocytopenic purpura. The disease was corticosteroid dependent with enhanced platelet destruction in the spleen. Treated with 100 mg of prednisone daily, the platelet count rose from 20,000 to 145,000 per mm^3 the day before the operation.

Instrumentation

In addition to the standard laparoscopic equipment, we used an endo GIA stapler (Merlin Medical USSC) and a dissector, Babcock forceps, and hepatic retractor (Micro France).

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Technique

Laparoscopy was performed under general anesthesia with endotracheal intubation.

The patient was positioned in double-access position, the surgeon between the legs, the first assistant on the left side of the patient, and the second assistant on the right side. The left arm was adducted and a cushion was placed behind the lower ribs.

The laparoscope was inserted through the umbilicus; a Babcock forceps or a retractor was inserted in the right upper quadrant of the abdomen through a 10-mm trocar sheath (Fig. 1). A 5-mm trocar sheath was inserted in the left paramedian epigastrium for the washing aspirator. Scissors or coagulating forceps were inserted in the left subcostal area.

A 12-mm trocar sheath was inserted in the left upper quadrant for an endo-GIA stapler or Endoclip.

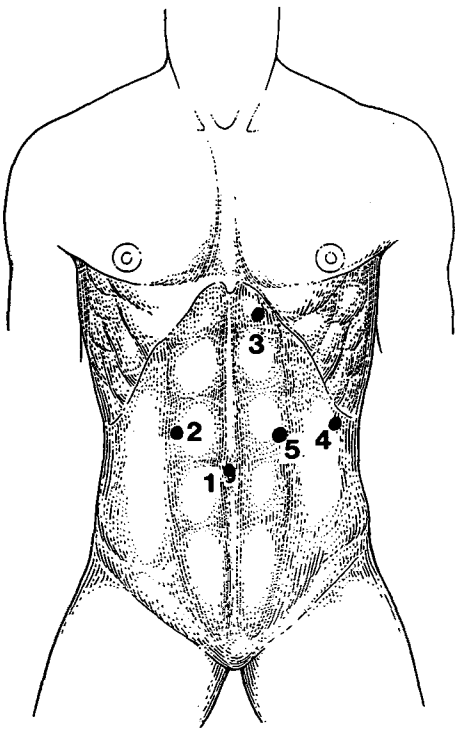
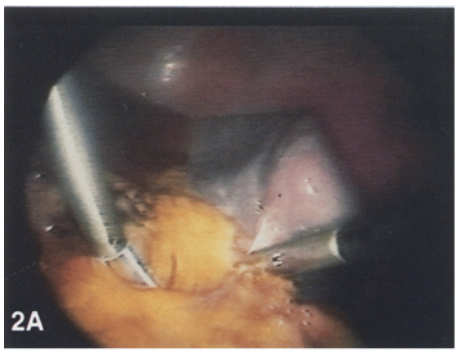
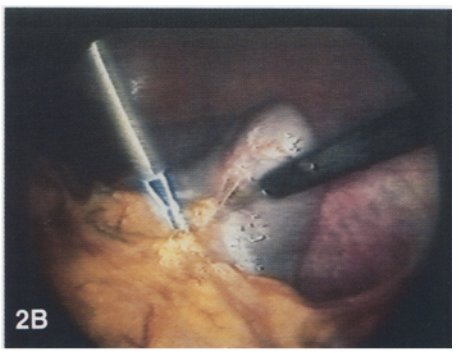
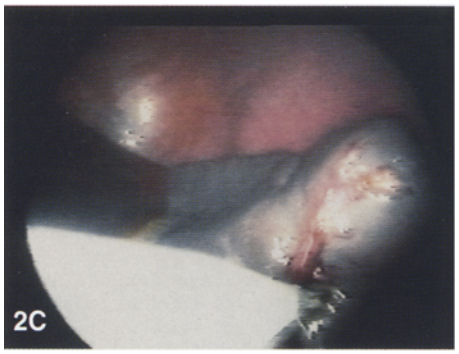
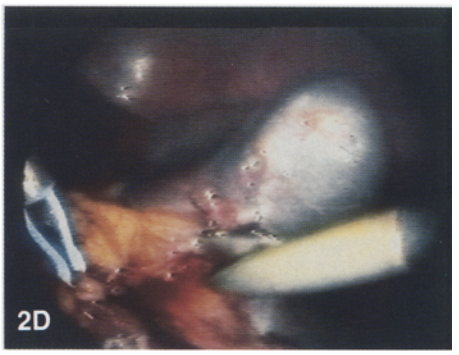


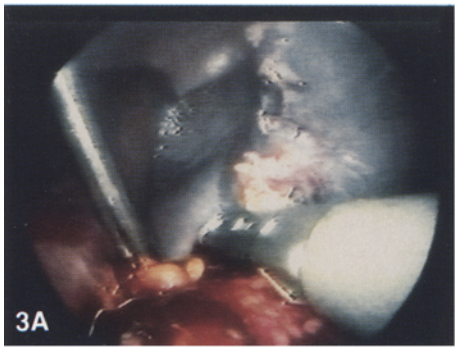
Fig. 1. 1–10-mm laparoscope with video camera. 2–10-mm atraumatic grasping forceps (Babcock). 3–5-mm aspiration and irrigation instrument. 4–5-mm atraumatic forceps or scissors. 5–12-mm endo-GIA stapler or endoclip

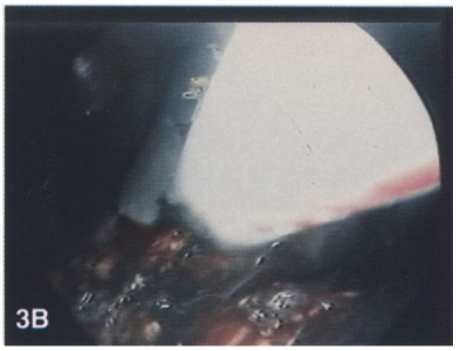


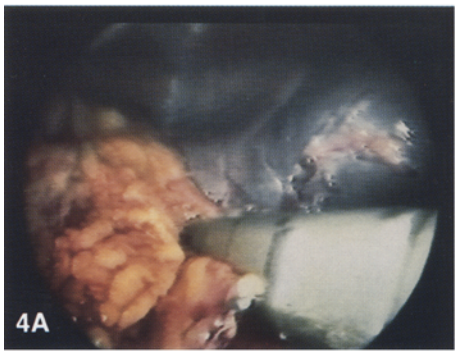


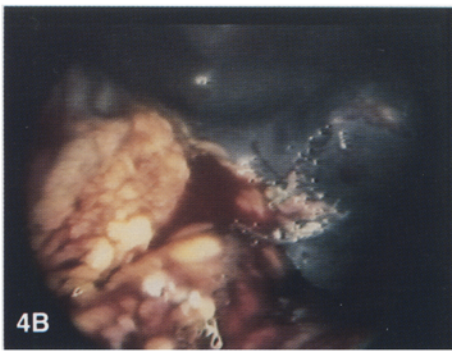


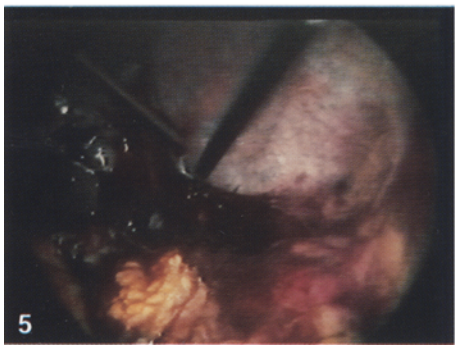












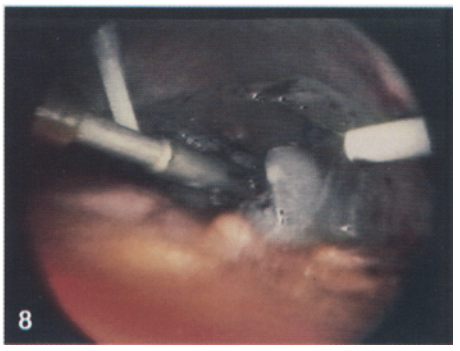


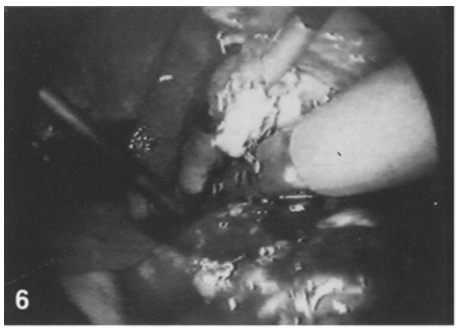
Fig. 2A–D. The polar inferior omentum is divided

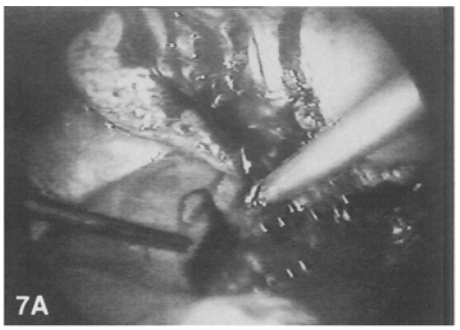
Fig. 3A,B. The pedicle's thickness is measured with an endo-Gauge

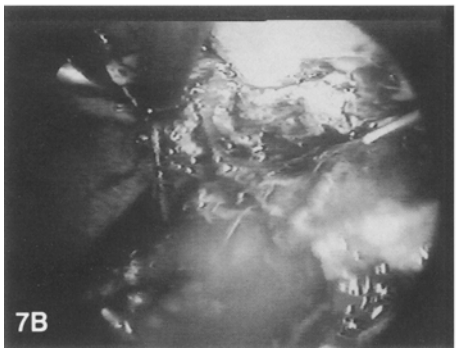
Fig. 4A–B. The stapler is placed around the pedicle

Fig. 5. The splenodiaphragmatic peritoneum is divided with coagulating scissors

Fig. 8. The spleen is placed in a plastic bag







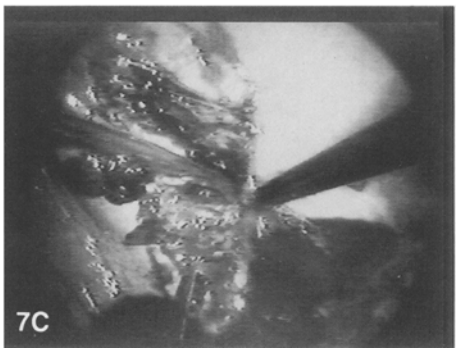


Fig. 6. The superior part of the pedicle is divided with an endo-GIA stapler

Fig. 7A–C. The peritoneum is divided

The lower pole of the spleen was then seen clearly (Fig. 2). The omentum was coagulated with a bipolar forceps and divided. The inferior polar splenic artery was seen and divided between two clips. Hemostasis was achieved by coagulation.

The stomach and splenogastric ligament were retracted to the right with a Babcock forceps. The inferior omentum was divided with straight scissors. The peritoneum covering the inferior part of the splenic pedicle was cut. The pedicle's thickness was measured with an Endo-Gauge (Fig. 3). The gastrosplenic ligament was retracted and the stapler was placed around the pedicle. Prior to division the stapler was rotated to ensure that there were no trapped clips (Fig. 4).

The gastrosplenic ligament was coagulated and divided with the endo-GIA stapler. Clips could be used to section the gastrosplenic ligament.

The peritoneum was cut over the superior part of the splenic pedicle and the pedicle was stapled. The splenodiaphragmatic peritoneum and connective tissue were divided with coagulating scissors (Fig. 5). The superior part of the pedicle was divided with an endo-GIA stapler (Fig. 6).

A superior short gastric vessel was divided between two clips. The spleen was still held by the peritoneum, which was coagulated and divided with coagulating scissors (Fig. 7).

The free spleen was placed in the right abdomen.

Hemostasis was achieved by coagulation. The upper left part of the abdomen was washed.

The spleen was placed in a plastic bag inserted via the left 12-mm trocar sheath: This avoided spillage during extraction. (Figs. 8 and 9).

After removing the trocar sheath, the opening of the plastic bag was pulled through the left abdominal skin incision.

Inside the bag, the spleen was cut into fragments with standard scissors and the fragments were removed. A drain was inserted in the upper left part of the abdomen.

Discussion

The splenectomy was performed on September 25, 1991. No operative blood or platelet transfusion was required. The postoperative recovery was uncomplicated and the patient was discharged after 6 days with a platelet count of 1,100,000 per mm^3. The cosmetic result was good.

A laparoscopic splenectomy was performed at the same time by Gazayerli (Pontiac, Michigan) for familial spherocytosis after splenic artery embolization but the operation was not entirely laparoscopic because the spleen was removed through a 6-cm left subcostal incision. More recently, three laparoscopic splenectomies for ITP in AIDS have been performed in other surgery departments (Pau Hospital, France, and Erasme Hospital, Belgium).

The new endo-GIA stapler allows intestinal and vascular transection and closures. It is our opinion that this instrument permits laparoscopic splenectomy by experienced endoscopic digestive surgeons, although it is a difficult and time-consuming operation. Our plastic bag method, which avoids any intraabdominal loss of spleen fragments, could probably be improved. We think the operation must be restricted to patients having a hematologic splenic disease and nonenlarged spleen (i.e., idiopathic thrombocytopenic purpura). Furthermore, all patients should have normal or lowered preoperative blood cell count and coagulation tests. An autotransfusion is envisaged for the next patient.

In young patients who were often weak, reduction of subphrenic or wound abscess or wound dehiscence was the potential advantage of the endoscopic method. Cosmetic advantages, quicker recovery with less postoperative pain, a shorter hospital stay, and less cost were also expected. We plan to conduct, in selected patients with the respect to the aforementioned indica-

tions, a controlled comparison between laparoscopy and the standard operation.

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