

Outcome of Lateral Approach Laparoscopic Splenectomy: Review Article

Mohamed Ashraf Mohamed Nasr Refaie, Wesam Mohammad Amr, Islam Mohammad Ibrahim, Mostafa Mohamed Mostafa Elaidy

General Surgery Department, Faculty of Medicine, Zagazig University

Corresponding author: Mohamed Ashraf Mohamed Nasr Refaie

Email: Mohamed.refaie.surg@gmail.com

Abstract:

Although laparoscopic splenectomy is considered superior to open splenectomy, the recommended approach among different described approaches is still a controversial issue. Our review is put to trigger on the laparoscopic approach for splenectomy supposed to be more advantageous than traditional ones.

Keywords: Lateral Approach, Laparoscopic, Splenectomy.

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Introduction:

The rapid advance of technology has led to a struggle for an even more “scarless techniques”. In that principle, single-incision laparoscopic procedures have been introduced, which have been tested successfully in various operations. Laparoscopic splenectomy has been also reported that can safely and successfully be done through a single incision, using a single port through which the working trocars are inserted in the abdominal cavity. The basic concepts of laparoscopy are also followed in single-incision laparoscopic splenectomy (SILS); an umbilical or periumbilical incision is made and a specific port system is applied; either 2 or 3 single ports through this incision only, or 1 single-incision port (*e.g.*, SILS™ port of Covidien, Mansfield, MA) are applied. Then the operation is continued just like standard laparoscopic splenectomy. (1)

Undoubtedly, a SILS is considered to be more technically challenging; Barbaros et al compared SILS *vs* standard laparoscopic approach in patients with ITP, and they found that operative time was statistically significant longer in SILS compared to standard laparoscopy, and the blood loss during SILS was also more. These technical difficulties come as a result of the proximity of surgical tools, which are not specially designed for SILS. Nevertheless, SILS has almost the same conversion rate, morbidity and mortality rate as standard laparoscopy and patients who underwent SILS seems to have less postoperative pain. Further technological evolution and more experience on single-incision procedures can make SILS more popular. (2)

Outcomes

Intraoperative complications

It is widely accepted that laparoscopic splenectomy is safe, however does not lack intraoperative complications. Bleeding is the main intraoperative complication, and the main reason to convert the operation to open. It usually comes as a result of injuries of the hilar or short gastric vessels, the splenic capsule, and/or splenic parenchyma during the surgical procedures and especially during the ligation of the vessels mentioned above, or during the dissection and ligation of the splenic hilum. When an intraoperative bleeding cannot be safely and promptly managed, conversion should be considered. Through a converted to open approach bleeding is easily managed, however, the postoperative complications of every open procedure are found also here (3)

Laceration of adjacent organs and structures, especially the pancreas and gastric or diaphragmatic wall damage can occur. The incidence of these complications seems not to be associated with the experience of surgeons, however, an enlarged spleen may be responsible for technical difficulties which can lead to injuries. In a large review of possible complications after laparoscopic splenectomy by Chand et al the incidence of pancreatic injury was 15%, which in most cases resulted in pancreatic fistula. Therefore, it is important to place a drainage tube when a pancreatic injury is suspected; otherwise it can be placed postoperatively through a CT-guided cannulation. As we mentioned above, a HALS in cases of splenomegaly can significantly reduce the incidence of injuries. (4)

Postoperative complications

Early postoperative complications after laparoscopic splenectomy may include postoperative *bleeding*, subphrenic collections or abscess, deep vein thrombosis, thrombosis of the splenoportal axis, pneumonia and atelectasis, pancreatitis, ileus, abdominal wall infections, abdominal wall hematomas and abdominal wall hernias. These are treated according to general standards.

Special consideration should be made for portal or splenic vein thrombosis (PSVT), which may occur even within months after surgery and can be proved lethal. (5)

It is a potentially life-threatening complication that can occur within months after surgery. Consequences of PSVT are intestinal infarction/intestinal ischemia and portal hypertension. The incidence rate of PSVT reported varies, from 0.7% to 14% , but it can reach up to 80%. It is unclear whether the minimal invasive approach is associated with high incidence of PSVT; nevertheless, there are some underlying diseases which are correlated with PSVT, these are myeloproliferative disorders, hemolytic anemia, hypersplenism or hematologic malignancy and splenomegaly. Interestingly the bigger the size of the spleen, the higher the incidence of PSVT. (6)

Diagnosis of PSVT may be challenging as its symptomatology is unspecified. Therefore it is recommended that patients with high risk of PSVT should receive postoperatively anticoagulation therapy as prophylaxis. When the diagnosis of PSVT is secured, immediate

anticoagulant therapy with intravenous administration of heparin should be started, in order to achieve best treatment outcomes. (7)

Another splenectomy-associated postoperative complication is the overwhelming postsplenectomy infection (OPSI). OPSI is suspected when a patient after splenectomy presents with sudden systemic infection, occasionally dermatorrhagia and DIC, whereas no obvious site of the infection is present. (8)

Although the pathogenesis of OPSI remains unclear, it has a fast, overwhelming onset. It starts as a simple respiratory infection, but it rapidly progresses to hyperpyrexia, headache, shivering, jaundice, anuria, septic shock, acute respiratory distress syndrome (ARDS), multiple organ dysfunction syndrome (MODS), coma, and death. The primary pathogenic bacteria of OPSI are *S. pneumoniae*, *N. meningitidis*, and *H. influenzae*. (9)

In a prospective study by Theilacker et al it was shown that *S. pneumoniae* was the most important cause for severe sepsis development. They also showed that due to proper vaccination of patients after splenectomy, incidence of OPSI has been substantially reduced compared to the past. Although laparoscopic splenectomy is clearly superior to standard laparotomy in terms of postoperative infections, incidence of OPSI remains similar because this complication is related more to spleen removal than to the surgical approach. (10).

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