

CAN VIDEOLAPAROSCOPIC ACCESS BE USED AS ROUTINE IN SPLENECTOMIES?

A via videolaparoscópica pode ser utilizada como rotina nas esplenectomias?

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ABSTRACT - Background - Laparoscopic splenectomy is an alternative for the treatment of patients undergoing elective splenectomy. One of its main indications is in hematologic diseases non-responsive to pharmacological treatment. Videolaparoscopy presents advantages to patients when compared to laparotomy: less post-operative pain, recovery of the functions of the gastrointestinal tract, better cosmetic results and shorter hospitalization. **Aim** - To present a case series of laparoscopic splenectomy in a university hospital. **Methods** - Were analyzed all the laparoscopic splenectomies between June 2005 and October 2012. The analysis was conducted prospectively divided into pre-, trans-, and post-operative data on: gender, age, indication for surgery, rate of conversion to open surgery, duration of surgery, spleen size, presence of an accessory spleen, time hospitalization and short-term response in eight weeks after the procedure, by analyzing hemoglobin and platelets pre- and post-operative, broken down by gender. **Results** - Were analyzed 44 laparoscopic splenectomies performed in the period. Patients diagnosed with idiopathic thrombocytopenic purpura accounted for 56.8%, non-responsive to pharmacological treatment; autoimmune hemolytic anemia was 13.6%; spherocytosis, 11.3% and 18.3% by other non-hemolytic causes. Six patients had to be converted to open surgery (13.63%), four due to excessive bleeding. The mean operative time was 166.7 (60-319) minutes and the length of hospitalization was 12 days. Only four patients (9.1%) had post-operative complications, and none had bleeding after surgery and the positive response in the short term, after eight weeks of treatment, was achieved by 88% of patients. **Conclusions** - Laparoscopic splenectomy is a safe alternative for all major indications of splenectomy and can be routinely used.

HEADINGS - Splenectomy. Spleen.

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DESCRITORES - Esplenectomia. Baço.

RESUMO - Racional - A esplenectomia laparoscópica é alternativa para o tratamento de pacientes submetidos à esplenectomia eletiva. Uma de suas principais indicações está nas doenças hematológicas que não respondem ao tratamento clínico. A videolaparoscopia apresenta vantagens para os pacientes, quando comparados à laparotomia: menos dor no pós-operatório, recuperação mais célere das funções do trato gastrointestinal, melhores resultados estéticos e menor tempo de hospitalização. **Objetivo** - Apresentar série de casos de esplenectomia videolaparoscópica de um hospital universitário. **Métodos** - Foram avaliadas as esplenectomias realizadas entre junho de 2005 e outubro de 2012. A análise foi prospectiva dividida em pré, trans e pós-operatórios dos seguintes dados: gênero, idade, indicação da operação, taxa de conversão para laparotomia, duração do procedimento, tamanho do baço, presença de baço acessório, tempo de internação e resposta em oito semanas do pós-operatório. **Resultados** - Foram analisadas 44 esplenectomias laparoscópicas realizadas no período. Os pacientes foram com púrpura trombocitopênica idiopática sem resposta ao tratamento farmacológico representaram 56,8%; anemia hemolítica auto-imune foi de 13,6%; esferocitose de 11,3% e 18,3% por outras causas não-hemolíticas. O tempo cirúrgico médio foi de 166,7 (60-319) minutos. Apenas quatro pacientes (9,1%) tiveram complicações pós-operatórias, e nenhum deles teve sangramento pós-operatório. A resposta positiva, em curto prazo, após oito semanas do tratamento foi conseguida por 88% dos pacientes. **Conclusões** - A esplenectomia laparoscópica é alternativa segura para todas as principais indicações de esplenectomia e pode ser utilizada de forma rotineira.

INTRODUCTION

Laparoscopic splenectomy (LS) is an important tool in the treatment of hematologic malignancies and other diseases that affect the spleen, and its removal is effective therapy for patients with refractory, recurrent or chronic disease, in which drug treatment fails or is insufficient². Since the nineties, laparoscopic splenectomy has shown satisfactory results and considerable increase in the number of cases, with consequent standardization of technique and control of hemostasis and preventing the disruption of the body, making it no longer an alternative, but an option to routine therapy for the treatment of splenic diseases^{2,7}.

Among the benefits of the laparoscopic approach are: less postoperative pain, better cosmetic appearance, smaller incisions and less incidence of postoperative complications, resulting in a shorter hospital stay, morbidity and mortality, but is not yet considered a technical "gold-standard" by surgeons^{1,2,7}. This is mainly due to reduction of splenic trauma during access, magnified view of the surgical field and the non-manipulation of the left side of the diaphragm⁴.

The positive results demonstrated for hematological diseases, and with the advent of minimally invasive surgery, with proven success for cholecystectomy and other procedures regarding the open technique, expanded the use of LS for splenic diseases of other causes, such as massive splenomegaly, non-hematologic malignancies and splenic injury, and this is not more surgical contraindication, despite the risk of rupture, excessive bleeding during surgery or conversion^{1,2,7,14}. In addition to idiopathic thrombocytopenic purpura, hypersplenism secondary to cirrhosis and in cases of splenic trauma in emergency situations, when compared to laparotomy, LS has the same efficacy but with better postoperative results^{2,5,14}.

The aim of this study was to present a series of cases to show that the LS can be used as a routine technique for achieving good postoperative results, and hence no longer considered as an exception as therapeutic option.

METHODS

The research project was approved by the Research Ethics Committee of the Hospital de Clinicas de Porto Alegre, Porto Alegre, RS, Brazil.

Between June 2005 and October 2012, 44 patients were included. The analysis was conducted prospectively and divided into pre-, trans-, and post-operative following aspects: gender, age, ASA, indication for surgery, rate of conversion to

laparotomy, operative time, spleen size, presence of an accessory spleen, time hospitalization and short-term response in eight weeks after the procedure through the analysis of hemoglobin and platelets pre-and postoperative, broken down by gender.

Surgical technique

All patients underwent general anesthesia and placed supine with a pad on the left back. Was introduced 10 mm trocar and subsequently the optical 30° to display the puncture site and the abdominal cavity with a view to the existence of an accessory spleen. Operative procedures were: a) dissection of the inferior pole of the spleen with ultrasonic scalpel; b) introduction of midline epigastric (10 mm), midway (5 mm), left upper quadrant (12 mm) and left flank (5 mm) trocars; c) opening of gastrosplenic ligament with ultrasound scalpel; d) ligation of the short gastric vessels with the same instrumental; e) identification and ligation with double splenic clips (hemolock); f) same procedure with the splenic vein; g) dissection and separation of the pancreatic tail from the splenic hilum and release of all adhesions near the spleen.

RESULTS

Forty four LS were performed during the period. The preoperative parameters were: 77.2% were women with a mean age of 35.6 years (14-68), 36 patients were classified as ASA II, III and 5 ASA 3 ASA I, and 17 had comorbidities. The main indications for surgery (Table 1) were: 56.8% had a diagnosis of idiopathic thrombocytopenic purpura, without response to pharmacological treatment; 13.6% autoimmune hemolytic anemia, spherocytosis 11.3%; other non-hemolytic causes 18.3%. In 81.8% of patients other treatment had been done without clinical response, especially corticotherapy (72.2%).

TABLE 1 – Main indications for surgery

Disease	% Number
Idiopathic thrombocytopenic purpura (ITP)	56,8% (25)
Autoimmune hemolytic anemia	13,6% (6)
Spherocytosis	11,3% (5)
Metastatic melanoma	2,27% (1)
Evans syndrome	2,27% (1)
Hemolytic anemia autoimmune	2,27% (1)
ITP secondary to HIV	2,27% (1)
Diffuse non-Hodgkin lymphoma	2,27% (1)
Myelodysplastic syndrome	2,27% (1)
Angiosarcoma	2,27% (1)
Angiomatosis splenic	2,27% (1)

The main trans-operative events (Table 2) were: seven patients (15.9%) with accessory spleen during the revision of the cavity; 13.63% (6) had to be converted to laparotomy, four for excessive

bleeding, one by splenomegaly and the other for bleeding control; 18.2% (8) patients had diffuse bleeding during surgery.

TABLE 2 – Transoperative events

Event	Number, %
Accessory spleen	7 (15,9%)
Conversion to open	6 (13,65)
- Excessive bleeding	4 (66,6%)
- Splenomegaly	1 (16,6%)
- Control of hemostasis	1 (16,6%)

The analysis showed postoperative transfusion requirements for 13.63% (6) of patients. Only four (9.1%) had postoperative complications (hematoma of the rectus abdominal muscle, collection in posterior kidney space, pancreatic fistula and nosocomial pneumonia) and none had bleeding after the operation; positive response in the short term, after eight weeks, was obtained in 88% of patients.

TABELA 3 – Dados pós-operatórios

	Número %
Transusão	6 (13,63%)
Complicações	4 (9,1%)
- Hematoma reto-abdominal	1 (2,27%)
- Coleção no espaço renal posterior	1 (2,27%)
- Fistula pancreática	1 (2,27%)
- Pneumonia nosocomial	1 (2,27%)
Sangramento	0 (0%)
Resposta positiva em curto prazo	39 (88%)
Recorrência da doença de base	5 (11,3%)
- Anemia hemolítica auto-imune	3 (6,81%)
- Anemia hemolítica não auto-imune	1 (2,27%)
- Síndrome de Evans	1 (2,27%)

Laboratory analysis (n = 43) showed: total average platelet and hemoglobin content in the month preceding the operation was 114142,86 μ /L ($1-321 \times 10^3$) and 11.4 g / dL respectively. In the first postoperative month, 376475 and 12.58 g / dL; when analyzed by gender, the mean platelet index was 2128875 μ / L for men and 8543.75 μ / L for women, while the hemoglobin was 9.8 g / dL for men and 11.8 g / dL for women. In the second month after surgery was 459,444.4 μ / L for men and for women 3521166.6, while hemoglobin levels were 12.8 g / dL for men and 12.6 g / dL for women. The average weight of the spleen was 298.2 g.

DISCUSSION

Advances in skill and technology have enabled surgeons to perform laparoscopic procedures^{2,6}. The first description of laparoscopic splenectomy occurred in 1991 and, since then, has been favored over conventional surgery because it allowed a significant reduction in mortality

and morbidity. Therefore, the development of laparoscopic technique has increased the number of splenectomy performed as opposed to continuous medical therapy⁷. Furthermore, the LS provides better access to the spleen, avoiding large laparotomy incision; if necessary open splenectomy¹⁰ is performed.

This surgical approach is preferred especially for young patients who want small scars. It is also of great value to the management of other benign and malignant diseases of the spleen. In addition, LS can be successfully used as a treatment option immediately in hemodynamically stable patients with splenic injury. The laparoscopic approach has the same hemostatic efficacy of the open technique, but with much better results for the patient⁷.

Laparoscopic splenectomy has lower morbidity than open and comparable efficacy in the treatment of hematologic malignancies⁶. Advantages of the laparoscopic approach compared with open cholecystectomy include the possibility of other concomitant abdominal procedures such as cholecystectomy, appendectomy and Meckel diverticulectomy without increasing the surgical incisions⁷.

In addition, recently Rescorla *et al.*¹¹ reported that the LS resulted in lower hospital costs than open. It requires greater investment in equipment, but considering that most instruments is reusable, such costs may be reduced. Based on the improvements of the skills of the surgical team, the operative time and hospital stay are decreased, offsetting the initial expense¹¹.

Further, the hematocrit values seem to recover more efficiently after laparoscopy, suggesting less bleeding compared to open surgery¹². In this series, platelets preoperative compared to postoperative difference was 261,898.68 had μ / L and the difference in hemoglobin was 1.2, showing good progress. Another study showed decreased blood loss during surgery and the reasons for this observation are complex and include improved instrumentation, surgical technique and surgeon experience. Data during open splenectomy suggests that the spleen is directly proportional to blood loss, since the larger the size of the organ is more vascularized the pedicle, requiring greater technical care and attention of the surgeon^{3,14,15}.

In order to minimize the risks and maximize the benefits of splenectomy, minimally invasive surgery was introduced. It is expected that it elicits neuroendocrine activity more modest postoperatively, which explains the faster restoration of gastrointestinal function¹². Currently, many centers have adopted the LS as a viable option, however, the management of splenomegaly and accessory spleens still generates concern⁹. But a meta-analysis showed that LS can be considered an acceptable option, even

in cases of splenomegaly ². The current study had seven cases of accessory spleen, totaling 15.9%.

The learning curve is of great value because it directly influences the rate of surgical conversion, which significantly decreases with increasing number of cases operated on, and varies from 0 to 46.7% ^{8,14}. This study showed six patients (14.3%) who required conversion, four for excessive bleeding. Obesity, hematologic disease and splenomegaly are factors predisposing to conversion ⁶. Splenomegaly is the main technical difficulty in LS. Initially it was considered a contraindication, but the learning curve and improving technical altered this situation ⁹.

The postoperative complications occurred in four patients (9.1%): hematoma of the rectus abdominal muscle, collection in posterior kidney space, pancreatic fistula and nosocomial pneumonia. The reported complication rates vary from 0 to 24% ⁸. The main difference between laparoscopic and open approach studies is the type of complication. Complications of laparoscopic operations are smaller, such as serous collections, hematomas, intra-abdominal and pleural effusion. On the other hand, in patients who underwent open splenectomy, the prevalence of severe complications is greater, showing postoperative liver abscess requiring drainage in 3-5%, bleeding and pulmonary embolism ⁶.

The reported mortality is less than 1%. In the present study, death occurred in three patients (6.8%). Thus, laparoscopy remains safe choice for elective splenectomy, with fewer complications and shorter hospital stay¹.

CONCLUSION

The laparoscopic technique was shown to be safe and effective option for elective splenectomy and can be used routinely.

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