

LAPAROSCOPIC SPLENECTOMY IN THE MANAGEMENT OF HEMATOLOGICAL DISEASES

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ABSTRACT

The indications for splenectomy in hematological diseases are well known. In particular, they include idiopathic thrombocytopenic purpura (ITP), hereditary spherocytosis (HS) and Hodgkin's disease (HD) (as a part of subdiaphragmatic staging). We present here our initial experience of 10 cases (6 ITP, 2 HS and 2 HD) managed with a laparoscopic approach as opposed to the traditional laparotomy. Advantages over the open operation include decrease of post-operative pain, pulmonary sequelae and infections, cosmetic advantages, faster recovery and reduced hospitalization.

Key words: splenectomy, laparoscopy, hematological diseases

Laparoscopic surgery was introduced in 1987 for the treatment of gallstones and is currently expanding at a rapid rate. Since then, the feasibility of intrabdominal organ extirpation with this minimally invasive approach has been demonstrated by the success of laparoscopic appendectomy, colectomy, lymph-node dissection, common bile duct exploration, gastric fundoplication and vagotomy. Some of the reasons for the rapid progress in this field include improvements in video technology, the development of high-quality laparoscopic surgical instruments and public enthusiasm for the potential benefits of the minimally invasive surgery.

Laparoscopic splenectomy is a natural evolution of these developments. It was first reported in 1991¹ but to date only a few cases have been described in the literature¹⁻⁷ (Table 1). This paper presents our initial experience with 10 cases of hematological diseases managed with the laparoscopic approach.

Patients and Methods

Since October 1993, 10 patients referred to our Division have been managed with this min-

imally invasive technique: 9 females and 1 male, whose median age was 33 years (range 21-56). Six of them were affected by idiopathic thrombocytopenic purpura (ITP), two by hereditary spherocytosis (HS) and two by Hodgkin's disease (HD) (requiring splenectomy as a part of subdiaphragmatic staging according to the Stanford protocol).⁸

All the patients underwent abdominal ultrasonography before surgery. Single-dose antibiotic prophylaxis and insertion of a nasogastric tube and urinary catheter were routinely performed. The surgical procedure was performed under general anesthesia using five operating ports inserted in the upper abdominal quadrants, including a camera port, two retraction ports and two dissection ports. For details of the surgical technique see Thibault et al.³

Results

Patient characteristics and surgical results are shown in Table 2.

Prior to surgery five of the six ITP patients were treated with prednisone (1 mg/kg B.W. daily for 7 days) until they reached, respectively,

Table 1. Cases of laparoscopic splenectomy reported in literature.

authors	# of cases	diagnosis*	ref. #
Delaitre et al.	1	ITP	1
Carrol et al.	3	1 ITP, 2 HD	2
Thibault et al.	2	1ITP, 1 HS	3
Lefor et al.	4	ITP	4
Tulman et al.	4	2 ITP, 1 HD, 1 HS	5
Zornig et al.	3	ITP	6
Hashizume et al.	4	3 ITP, 1 HS	7
total	21	15 ITP, 3 HD, 3 HS	

*ITP: idiopathic thrombocytopenic purpura; HD: Hodgkin's disease; HS: hereditary spherocytosis.

182, 157, 69, 45 and 30×10^9 PLT/L; the last ITP patient underwent the operation with 36×10^9 PLT/L. A normal number of platelets was observed in the other 4 patients.

No complications were encountered during surgery (in particular no bleeding problems), and conversion to an open operation was never required. Median blood loss during surgery was 200 mL (range 100-400), with no patient requiring blood transfusions. Median operative time was 180 min. (90-300), but this figure was affect-

ed by the increased time required to remove an accessory spleen (cases n. 1 and 3), by the extra time needed to perform complete staging in HD (n. 3 and 6), and by the difficulties encountered in the extirpation of enlarged spleens in HS (n. 5 and 9), cases in which a cholecystectomy was also performed. In fact, in the 5 ITP cases (n. 2, 4, 7, 8 and 10) where only a simple splenectomy was performed, median operative time was only 110 min.

All the patients followed a regular post-operative period: no pulmonary sequelae or infections were observed; the nasogastric tube was removed on day +1 and the drainage tubes on day +2. Eating was encouraged on day +1 and a regular diet was tolerated in all by day +2. Spontaneous canalization was observed between day +2 and day +3 in all cases. Median hospitalization was 4 days (range 2-5).

The six ITP patients were discharged with a median of 357×10^9 PLT/L (159-553); the other 4 patients with a median of 557×10^9 PLT/L (422-653). Of the two HD patients, staged after completing 6 courses of chemotherapy, one (n. 3, nodular sclerosis, stage IIIsB) also had an accessory spleen (which was removed) and was found to be positive for subdiaphragmatic disease (microscopic Hodgkin's infiltrates were found in the spleen and in the nodes of the hepatic hilum

Table 2. Patient characteristics and surgical results.

#	sex/age	diagnosis ¹	spleen diam. ²	surgery	spleen weight (gr)	operating time (min)	day on regular diet	day of canalization	day of discharge
1	F/25	ITP	10	splenectomy	120	175	1	2	4
2	F/42	ITP	11.5	splenectomy	120	110	1	2	4
3	F/30	HD	9	splenectomy ⁴ EAS ³	180	190	1	2	2
4	F/46	ITP	9	splenectomy	200	110	1	2	4
5	M/21	HS	19	splenectomy cholecistectomy	700	300	2	3	4
6	F/25	HD	12	splenectomy ⁴	250	190	2	3	5
7	F/37	ITP	12	splenectomy	270	200	2	3	5
8	F/24	ITP	9	splenectomy	100	120	2	3	4
9	F/39	HS	15	splenectomy cholecistectomy	780	240	2	2	4
10	F/56	ITP	7	splenectomy	120	90	2	2	4

¹ITP: idiopathic thrombocytopenic purpura; HD: Hodgkin's disease; HS: hereditary spherocytosis; ²maximum diameter, in cm, by ultrasonography; ³extirpation of accessory spleen; ⁴and staging according to the Stanford protocol.

and celiac tripod).

Discussion

The indications for laparoscopic splenectomy are the same as those for the open operation and include ITP, HS and HD.

In ITP splenectomy is beneficial because it results in the removal of the major site of platelet destruction and of an important site of antibody production. From 70 to 90% of patients improve after splenectomy, and platelet levels are permanently restored to normal in at least two thirds of them.⁹

In HS splenectomy corrects the hemolytic anemia although red cell survival may remain slightly shortened in some patients. Indications for surgery include severe symptomatic hemolytic anemia or mild hemolytic anemia in association with gallstones.¹⁰

In HD, splenectomy in part of the staging according to the Stanford protocol.⁸

The indications for laparoscopic splenectomy have not yet been defined for other hematological diseases like hairy-cell leukemia, non-Hodgkin lymphomas and chronic myeloproliferative syndromes due to the frequent presence in these conditions of very enlarged spleens.

In fact, in our experience the operation was indeed more difficult in HS due to the technical problems encountered in removing spleens 3 to 7 times normal size. Moreover, gallstones are found in more than 50% of these patients¹⁰ and they must be removed, thus increasing the operating time (Table 2).

Some problems are also encountered in performing biopsies at the iliac level during HD staging. In this regard it must be pointed out that only 3 cases of HD managed in this way have been described in the literature,^{2,5} and the correct surgical technique (i.e. the position of the ports) for this disease probably still must be developed. In ITP the operation itself appears to be simpler, but it is not limited to the splenectomy; in fact, the abdominal cavity must be carefully explored for accessory spleens, which are present in 18-20% of cases⁹ and represent a major cause of sur-

gical failure in this disease.

In conclusion, this minimally invasive approach offers several advantages over the open operation: a) decreased post-operative pain, improved ventilation and fewer pulmonary sequelae; b) reduced incidence of subphrenic and wound abscesses or wound dehiscence; c) cosmetic advantages, especially important for younger patients; d) finally, the decrease in post-operative sequelae allows faster recovery, shorter hospitalization time and lower costs.

Disadvantages are represented by the cost of the operation itself (materials and staff training), longer operating time (which will likely decrease as the experience of the surgical team increases; see our last case, n. 10: only 90 min.), and the need to switch to an open procedure in the event of hemorrhage, which is not easy to visualize or control through the operating ports.

This report provides data for establishing the safety and efficacy of the procedure; the laparoscopic approach may assume increasing importance in the management of hematological diseases.

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