

Laparoscopic Splenectomy versus Conventional Splenectomy

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Objective: Our aim was to compare laparoscopic with conventional splenectomy for haematological indications with regard to duration of surgery, amount of blood loss and hospital stay.

Method: A retrospective study was done from January 1997 to August 2000 on all cases who had undergone splenectomy for haematological indications. These were divided into two groups of 7 patients each, those who had conventional splenectomy and the others who had it done laparoscopically. A comparison between the two groups was done for age, sex, indication for surgery, duration of surgery, amount of blood lost during surgery, drain usage and hospital stay.

Results: Laparoscopic splenectomy patients had longer operative time, less blood loss and less hospital stay compared to the patients who had conventional splenectomy. A drain was kept in all patients except two who had conventional splenectomy.

Conclusion: Laparoscopic splenectomy for haematological indications can be done safely for the properly selected patients with less blood loss and hospital stay but it requires more operative as compared to conventional splenectomy.

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Splenectomy plays an important role in the management of certain haematological conditions that fail to respond to conventional medical therapy and has traditionally been performed through a midline or left subcostal incision with patients requiring 5-7 days in hospital¹. As improvement in laparoscopic instruments and techniques has resulted in more general surgical procedures being performed laparoscopically. Laparoscopic splenectomy was first reported in 1992². We studied our experience with laparoscopic splenectomy and compared it with conventional splenectomy as regards haematological indications, haematological changes, duration of surgery, amount of blood loss and hospital stay.

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METHODS

A retrospective study was done for all splenectomy cases registered in our Hospital (Salmaniya Medical Complex in Bahrain) from 1997 to August 2000. The aim was to study all the splenectomy cases done for haematological indications. We identified 15 cases during this period. Data was collected about age, gender, hematological changes, duration of surgery, amount of blood loss, whether drain was used or not and hospital stay. We divided the patients into two groups. Group 1 for conventional splenectomy and Group 2 for laparoscopic splenectomy.

The patient is positioned in anti-Trendelenburg and the surgeon stands between the patient's legs. Four or five trocars are introduced into the upper abdominal quadrants and the splenic hilum is isolated. Hilar vessels are dissected and ligated with surgical stapler or clips. A plastic bag is introduced into the abdominal cavity and the spleen is slipped inside; it is then extracted through one of the trocar sites after morcellation.

RESULTS

Table 1. Summary of the patients of conventional splenectomy

Age	Sex	Indication for Splenectomy	Duration of op.	Blood loss	Drains	Hospital Stay (days)
28 Y	F	SCD	90 min	700 ml	Not used	7
16 Y	F	Thalassemia	270 min	3005 ml	Not used	6
39 Y	F	SCD	180 min	400 ml	Used	16
29 Y	F	SCD	240 min	1400 ml	Used	9
23 Y	M	SCD	120 min	1000 ml	Used	24
17 Y	M	SCD	135 min	550 ml	Used	20
18 Y	M	Thalassemia	120 min	Minimal	Used	7

Table 2: Summary of the patients of Laparoscopic splenectomy

Age	Sex	Indication for Splenectomy	Duration of op.	Blood loss	Drains	Hospital Stay (days)
47 Y	M	ITP	150 min	Nil	Used	5
34 Y	F	ITP	180 min	Nil	Used	5
52 Y	F	ITP	210 min	Nil	Used	7
23 Y	F	ITP	120 min	750 ml	Used	14
31 Y	F	ITP	270 min	Nil	Used	4
35 Y	F	ITP	105 min	650 ml	Used	9
20 Y	F	SCD	240 min	Nil	Used	7

Fifteen patients had splenectomy in our institution in the period of study. One was excluded from the study because the patient had carcinoma of transverse colon.

Seven patients had conventional splenectomy (Group 1) and the remaining seven had laparoscopic splenectomy (Group 2). The age of patients in the group 1 ranged from 16 to 39 years (mean 24.3), while in group 2 ranged from 20 to 52 years (mean 34.6) (Table 1 & 2). The haematological indications for splenectomy were Sickle Cell disease (6 patients), Thalassemia Minor (2 patients) and Idiopathic Thrombocytopenic Purpura ITP (6 patients). In conventional splenectomy blood loss ranged between 400 to 3000 ml, while in laparoscopic splenectomy there was minimal bleeding except in 2 patients who had loss 650ml and the other 750ml. Drains had been used in all patients except 2 who had conventional splenectomy. The operative time was less in conventional splenectomy ranging between 90 minutes to 240 minutes (mean = 165 minutes), while laparoscopic splenectomy ranged between 105 minutes to 270 min (mean = 182 minutes). The mean of post operative hospital stay for laparoscopic patient was 7.2 days compared to conventional patients 12.7 days (Table 3). We did not find any significant difference in hematological changes between laparoscopic and conventional splenectomy.

Post operatively Liew found patients needed less amount of narcotics compared to open splenectomy⁹. All the patients tolerated a fluid diet at the 1st postoperative day⁵.

Table 3. Comparison between the two groups

	Conventional Splenectomy	Laparoscopic Splenectomy
No. of Patients	7	7
Age	16 to 39y (mean 24.3)	20 to 52y (mean 34.6y)
Sex		
F	4	6
M	3	1
Indication of splenectomy		
SCD	5	1
Thalassemia	2	0
ITP	0	6
Mean time of duration of the operation	165 min	182 min
Mean of blood loss	1007.8 ml	200 ml
No. of Patients drains used in	5	7
Mean of hospital stay	12.7	7.2

DISCUSSION

The indications for splenectomy in hematological diseases are well known. In particular, they include idiopathic thrombocytopenic purpura (ITP), hereditary spherocytosis (HS), thalassaemia and Hodgkins's disease (HD) (as part of subdiaphragmatic staging)³⁻⁵.

Dramatic decrease in the duration of hospital stay and time to complete recovery with laparoscopic cholecystectomy have led to further improvement of laparoscopic instruments and the development of more advanced laparoscopic procedures.

Laparoscopic splenectomy was first reported in 1992². Laparoscopic splenectomy was done for haematological indications, where the majority was for ITP cases, splenic hamartoma and for treatment of gastric varices secondary to portal hypertension^{3,6-9}.

Some surgeons introduced liposucker for retrieval^{10,11}. Liew found the mean operative time was 165 minutes and Pulin founded it to be 215 minutes^{9,12}. In our study the mean of operative time was 182 minutes. Some centers keep Penrose drain for 2 to 3 days. We used drains without suction for not more than 3 days¹³.

In comparison with conventional splenectomy, patients who had laparoscopic splenectomy get the benefit of early discharge from hospital, which in consequence reduced the total hospital cost^{5,9,12,14,15}.

Laparoscopic splenectomy has similar long-term haematological response compared to the standard results that have been observed in open surgery⁶.

From all the data available in the literature review we found that laparoscopic splenectomy for haematological indications is a safe procedure in properly selected patients with acceptable splenic size (11 to 20 cm long), appropriate preparation and meticulous surgical technique. It has the benefit of minimal blood loss, reduces hospital stay, reduces total hospital cost and there is early return to activity with the same haematological impact as conventional splenectomy¹⁶.

CONCLUSION

Laparoscopic splenectomy required more operative time, less blood loss and less hospital stay with early recovery than conventional splenectomy . Laparoscopic splenectomy was found to be treatment of choice for heamatological indications with an acceptable size of spleen.

REFERENCES

1. Wheatley TJ, Johnstone JM, Robertson GS, et al. Laparoscopic splenectomy: a suitable technique for children an adults [Abstract]. Presented at the Annual Scientific Meeting of the Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland on 23-24 September 1999. Br J Surg 2000;87:362-73.
2. Rhodes M, Rudd M, O'Rourke N, et al. Laparoscopic splenectomy and lymph node biopsy for hematologic disorders. Ann Surg 1995;222:43-6.
3. Silvestri F, Russo D, Fanin R, et al. Laparoscopic splenectomy in management of hematological diseases. Haematologica 1995;80:47-9.
4. Den Hoed Pt, van Wessem KJ, Berends FJ. Laparoscopic splenectomy for hematological disease. Ned Tijdschr Geneesk 1999;143:1222-5.
5. Emmermann A, Zornig C, Peiper M, et al. Laparoscopic splenectomy. Technique and results in series of 27 cases. Surg Endosc 1995;9:924-7.
6. Trias M, Targarona EM, Espert JJ, et al. Impact of hematological diagnosis on early and late outcome after laparoscopic splenectomy. An analysis of 111 cases. Surg Endosc 2000;14:556-60.

7. Jaroszewski DE, Schlinkert RT, Gray RJ. Laparoscopic splenectomy for the treatment of gastric varices secondary to sinistral portal hypertension. *Surg Endosc* 2000;14:87.
8. Kitano S, Yoshida T, Bandoh T, et al. Laparoscopic splenectomy. *Ann Acad Med Singapore* 1996.
9. Liew Sc, Storey Dw. Laparoscopic splenectomy. *Aust N Z J Surg* 1995;65:743-5.
10. Terrosu G, Donine A, Silvestri F, et al. Laparoscopic splenectomy in the management of hematological diseases. Surgical technique and outcome of 17 patients. *Surg Endosc* 1996;10:441-4.
11. Lai PB, Leung KL, Ho WS, et al; The use of liposucker for spleen retrieval after laparoscopic splenectomy. *Surg Laparosc Endosc Percutan Tech* 2000;10:39-40.
12. Pulin EC, Thibault C, Mamazza J. Laparoscopic splenectomy. *Surg Endosc* 1995;9:172-6, discussion 176-7.
13. Yu SC, Yuan RH. Laparoscopic splenectomy: preliminary experience. *J Forms Med Assoc* 1996;95:635-8.
14. Rhodes M, Rudd M, O'Rourke N, et al. Laparoscopic splenectomy and lymph node biopsy for hematologic disorders. *Ann Surg* 1995;222:43-6.
15. Yee LF, Carvajal SH, de Lorimier AA, et al. Laparoscopic splenectomy. Initial experience at University of California, San Francisco. *Arch Surg* 1995;130:874-7, discussion 877-9.
16. Gigot JF, de Ville de Goyet J, Van Beers BE, et al. Laparoscopic splenectomy in adults and children: experience with 31 patients. *Surgery* 1996;119:384-9.