OPERATIVE OUTCOMES OF LAPAROSCOPIC SPLENECTOMY FOR MASSIVE VS MODERATE SPLENOMEGALY

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INTRODUCTION

For splenic disorders, Laparoscopic splenectomy (LS) is the gold standard, causing less pain, shorter hospital stay, and faster recovery.*(1)*

Laparoscopic approach for Massive splenomegaly (MS) remains technically challenging, but latest advancement have expanded feasibility of LS and this study compares outcomes of LS in Massive vs moderate splenomegaly.*(2)*

MATERIALS AND METHODS

STUDY DESIGN: Retrospective cohort Study
STUDY POPULATION: All adult (18-65 years) patients who underwent elective Laparoscopic Splenectomy performed by a single surgeon
Group I - Massive Splenomegaly (MS) Group (n=39) comprised patients whose maximal splenic dimension exceeded 20 cm, or whose resected splenic specimen weight was greater than 1000g

Group II - Patients whose spleens did not meet the criteria were classified as the Moderate Splenomegaly Group (n=24)

STUDY DURATION: Between February 2024 and August 2025
STUDY LOCATION: Department of Surgical Disciplines, All India Institute of Medical Sciences (AIIMS), New Delhi.

INCLUSION CRITERIA
Patients were selected by review of the department's electronic database and physical medical records

EXCLUSION CRITERIA
Incomplete medical records.

Open splenectomy (No preselection considering spleen size except one patient who refused to consent to a Laparoscopic procedure.)

STATISTICAL ANALYSIS
Descriptive and comparative statistics using appropriate parametric/non-parametric tests, with $p < 0.05$ considered significant (Stata software).

Perioperative care

Endoscopic Variceal Ligation for significant varices; Vaccination against pneumococcus, H. influenzae, and meningococcus.

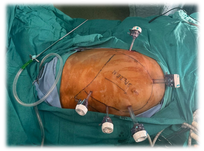
Antibiotics perioperatively; Intermittent Pneumatic Compression device for all patients.

NG tube and Foley catheterization in all; No preoperative splenic artery embolization.

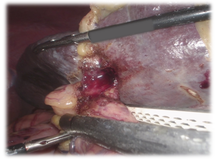
Operative procedure

Positioning & access

Port placement



Hilar dissection



Specimen retrieval

Spleno-renal Shunt

Collaterals in Portal Hypertension

RESULTS

Total patients	63
Mean age (years)	32 ± 14
Female	35 (55.6%)
BMI (kg/m²)	22.2 ± 2.9
Cirrhosis (Child-Pugh), n (%)	A: 6 (9.5%); B: 1 (1.6%)
Haemoglobin (g/dL), mean ± SD	9.1 ± 2.1
Platelet count (×10^3/µL), median ± IQR	86 (45-134)
History of Blood Transfusion, n (%):	41(65%)
Varices on endoscopy, n (%)	17 (27.0%)
Concomitant shunt procedure, n (%)	4 (6.3%)

Indication for splenectomy	Count (%)
– Hereditary spherocytosis	16 (25.4%)
– NCPF (Non-cirrhotic portal fibrosis)	19 (30.2%)
– Thalassemia	8 (12.7%)
– EHPVO (Extra-hepatic portal vein obstruction)	7 (11.1%)
– CLD with portal hypertension	1 (1.6%)
– Myeloproliferative neoplasm with portal hypertension	2 (3.2%)
– Splenic Hemangioma	2 (3.2%)
– Others (Hydatid cyst, ITP, Gilbert Syndrome)	8 (14.3%)

	Moderate (n=24)	Massive (n=39)	p-value
Clinical profile			
Portal hypertension, n (%)	7 / 24 (29.2%)	27 / 39 (69.2%)	0.004
Platelet count (×10³/µL), median (IQR)	132 (68.5-187)	73 (37-101)	0.01
Intraoperative			
Collaterals, n (%)	6 / 24 (25%)	26 / 39 (66.6%)	0.001
Adhesions, n (%)	7 / 24 (29.2%)	26 / 39 (66.6%)	0.003
Operative time (min), mean ± SD	142 ± 55	178 ± 56	0.01
Blood loss (mL), median (range)	80 (50-150)	200 (100-300)	0.001
Intraoperative transfusion, n (%)	6 / 24 (25.0%)	15 / 39 (38.5%)	0.27
Conversion to open surgery, n (%)	1 / 24 (4.2%)	1 / 39 (2.6%)	1.00
Re-exploration for bleeding, n (%)	1 / 24 (4.2%)	3 / 39 (7.7%)	1.00
Postoperative			
Postoperative transfusion, n (%)	2 / 24 (8.3%)	5 / 39 (12.8%)	0.58
Any complication, n (%)	6 / 24 (25.0%)	11 / 39 (28.2%)	0.78
Clavien-Dindo Grade			
– Minor	5 / 24 (20.8%)	8 / 39 (20.5%)	0.97
– Major (≥ III)	1 / 24 (4.2%)	3 / 39 (7.7%)	1.00
Post-op length of stay (days), median (range)	2 (1-8)	2 (1-32)	0.32
Spleen characteristics			
Splenic vein diameter (mm), mean ± SD	11.1± 2.4	12.0 ± 2.2	0.16
Portal vein diameter (mm), mean ± SD	13.5 ± 2.6	14.0 ± 2.2	0.40
Maximum spleen size (cm), mean ± SD	16.2 ± 3.1	23.6 ± 4.3	0.00
Spleen weight (g), median (IQR)	626 (538-812)	1081 (1000-1247)	0.00

Portal hypertension: Presence of peri-splenic varices and extensive hilar collaterals increases operative difficulty and bleeding risk, meticulous intraoperative vascular control allows safe LS with acceptable morbidity.

	Portal Hypertension (n= 34)	Absent (n=29)	p-value
Intraoperative			
Collaterals, n (%)	31 (91.1%)	1 (3.4%)	0.00
Adhesions, n (%)	28 (82.3%)	5 (17.2%)	0.00
Operative time (min), mean ± SD	180 +- 60	146 +- 50	0.01
Blood loss (mL), median (range)	200 (50-1700)	50 (15-800)	0.0001
Intraoperative transfusion, n (%)	15 (44.1%)	6 (20.6%)	0.049
Conversion to open surgery, n (%)	2 (5.8 %)	0	-
Re-exploration for bleeding, n (%)	3 (8.8 %)	1 (3.4%)	0.61
Postoperative			
Postoperative transfusion, n (%)	5 (14.7%)	2 (6.9%)	0.42
Any complication, n (%)	11 (32.3%)	6 (20.6%)	0.29

- Technical challenges:

Reduced working space, dense adhesions, and extensive collaterals increase bleeding risk *(3)*

- Outcomes in MS:

Even very large spleens (up to 30 cm, 4.6 kg) can be managed laparoscopically, and spleen size alone should not mandate open surgery.

- Key technical strategies

Optimized positioning, early arterial control, advanced energy devices, and postoperative thrombosis surveillance.

- Supermassive Splenomegaly (>1,600 g)

Six patients with specimen weights ranging from 1,676 g to 4,600 g (mean: 2,426g ± 1,082g)

- Spleno-Renal shunt

4 patients ; Small subcostal incision after laparoscopic splenic mobilization

LIMITATIONS

- Retrospective single-center design, limited sample size, potential selection bias, and lack of long-term outcome analysis may affect generalizability.
- Future direction: Larger prospective multicentre studies are needed

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