



LONG-TERM OUTCOMES AFTER SPLENECTOMY FOR SMALL-FOR-SIZE SYNDROME (SFSS) IN LIVE DONOR LIVER TRANSPLANTATION (LDLT)

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Introduction

The use of lower volume liver grafts has the potential to expand the donor pool in adult-to-adult live donor liver transplantation (LDLT), but is associated with an increased risk for small for size syndrome (SFSS).

The pathogenesis of SFSS involves the relationship between graft volume, portal inflow and venous outflow.

Splenectomy is one of the strategies to modulate portal vein inflow of these grafts.

Objectives

The aim of this study was to analyze the long-term outcomes of LDLT recipients who developed SFSS and evaluate the efficacy of splenectomy as a strategy to modulate portal venous inflow in this patients

Methods

From April 2000 to June 2015, 520 adult-to-adult LDLT transplants were performed at Toronto General Hospital.

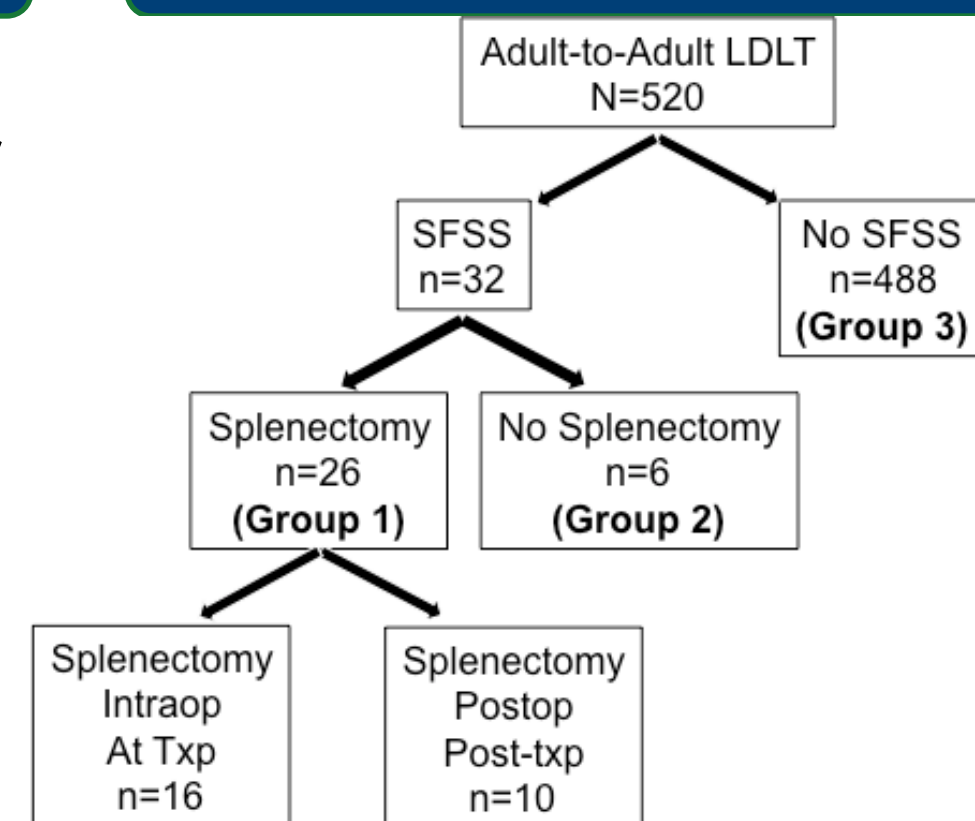
Small-for-size syndrome was defined by either:

- Graft dysfunction (persistent Bili >60µmol/L and moderate/severe ascites) without an identifiable cause.
- Presence of intraoperative parenchymal congestion requiring modulation of PV flow.

Splenectomy was the preferred method of portal venous flow modulation. Decision of modulating flow was based on a high Portal Venous Pressure (PVP) > 15 mmHg or evidence of parenchymal congestion in the setting of SFSS.

Patients were divided into 3 groups:

- 1- Pts who developed SFSS and underwent splenectomy
- 2- Pts who developed SFSS and did not undergo splenectomy
- 3- Patients who did not develop SFSS

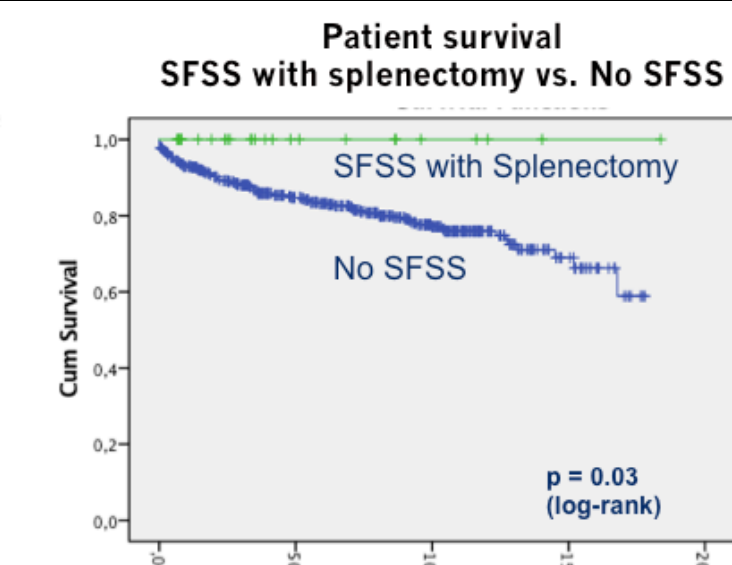
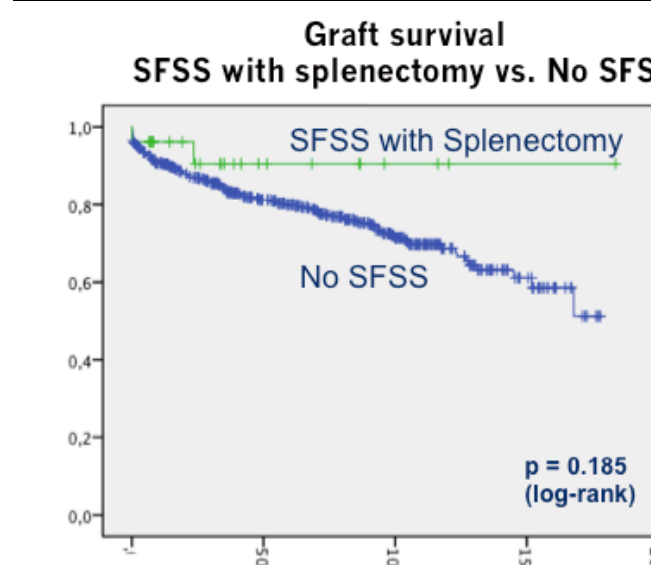
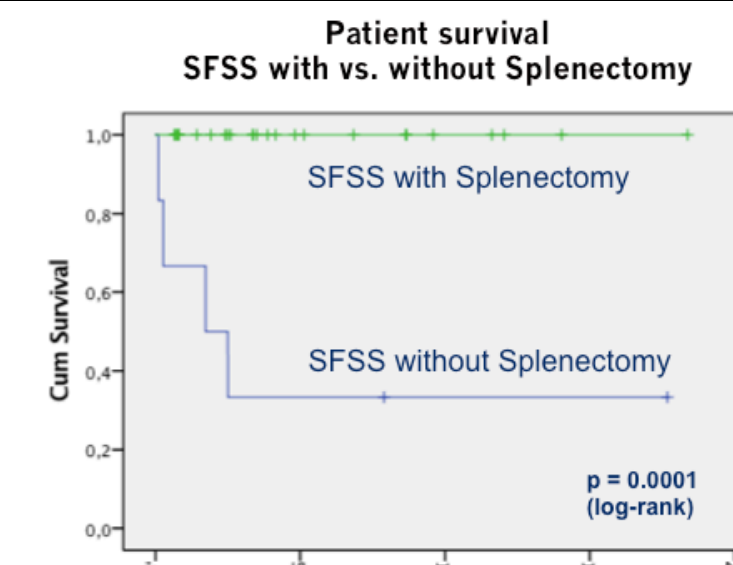
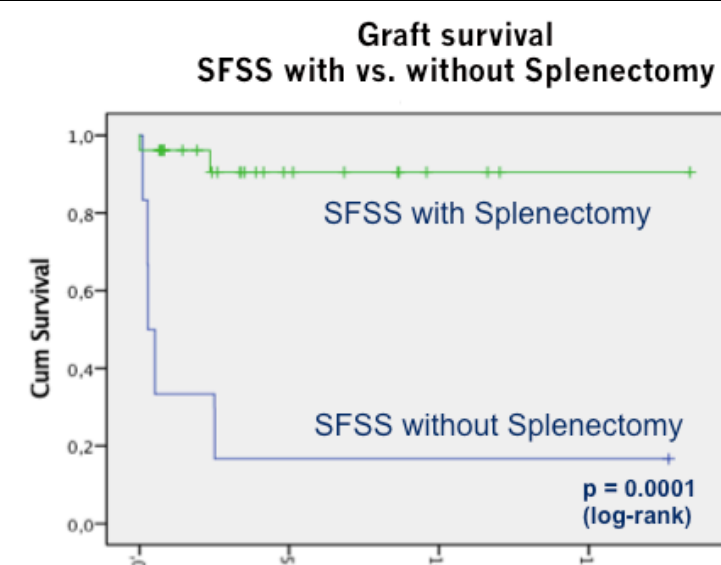
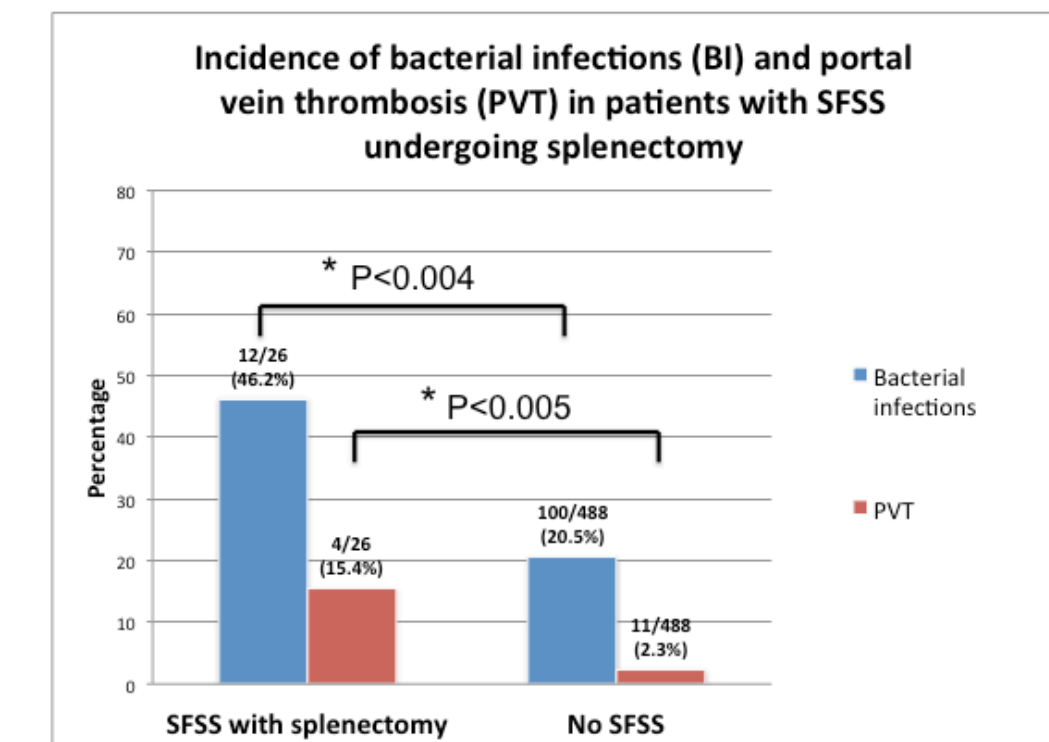


Demographics and Characteristics	SFSS with splenectomy (n=26)	SFSS without splenectomy (n=6)	No SFSS (n=488)	p-value
Age	46.0 + 14.4	46.9 + 11.0	52.8 + 10.9	0.03
Gender (Male)	19 (73.1)	6 (100%)	298 (61.1%)	0.15
BMI	27.6 + 5.1	26.6 + 6.7	26.6 + 5.2	0.37
Cr pretx	86.6 + 25.7	165.7 + 145.5	91.5 + 63.0	0.69
INR pretx	1.8 + 1.1	1.6 + 0.4	1.9 + 1.5	0.61
T.Bili pretx	76.0 + 99.1	191.0 + 208.6	93.1 + 140.7	0.55
MELD at listing	14.8 + 4.2	25.4 + 11.1	15.2 + 5.7	0.76
MELD pretx	15.6 + 5.4	27.8 + 9.1	16.7 + 7.6	0.47
Time on waitlist	186.4 + 186.6	288.6 + 227.8	192.4 + 270.2	0.91
Donor age	41.6 + 12.7	50.1 + 7.3	37.2 + 11.4	0.06
CIT	124.1 + 138.8	68.0 + 32.7	93.7 + 55.0	0.40
WIT	53.1 + 18.5	49.2 + 14.7	50.5 + 17.7	0.56
Follow-up time	1537.2 + 1425.3	1507.9 + 2044.7	2045.6 + 1423.1	0.56

➤ Similar demographics and Characteristics

Outcomes	SFSS with splenectomy (n=26)	SFSS without splenectomy (n=6)	p-value
Complications within 30 days	20 (76.9%)	2 (33.3%)	0.060
Clavien score 3b/4/5 within 30 days	15 (57.7%)	2 (33.3%)	0.270
Bacterial infections	12 (46.2%)	0 (0%)	0.043
HAT	2 (7.7%)	0 (0%)	0.650
PVT	4 (15.4%)	0 (0%)	0.420
Biliary complications	8 (30.8%)	2 (33.3%)	0.630
Rejection	6 (23.1%)	1 (16.7%)	0.610
Re-transplantation	2 (7.7%)	2 (33.3%)	0.150

Outcomes	SFSS with splenectomy (n=26)	No SFSS (n=488)	p-value
Complications within 30 days	20 (76.9%)	200 (41.0%)	0.000
Clavien score 3b/4/5 within 30 days	15 (57.7%)	111 (22.7%)	0.000
Bacterial infections	12 (46.2%)	100 (20.5%)	0.004
HAT	2 (7.7%)	19 (3.9%)	0.290
PVT	4 (15.4%)	11 (2.3%)	0.005
Biliary complications	8 (30.8%)	113 (23.2%)	0.250
Rejection	6 (23.1%)	119 (24.4%)	0.550
Re-transplantation	2 (7.7%)	30 (6.1%)	0.490



On pts with SFSS, pts with splenectomy had significantly higher:
 - Graft survival (96.2/90.5/90.5% vs 33.3/16.7/16.7%)
 - Patient survival (100/100/100% vs 66.7/33.3/33.3%)
 at 1/3/5 years respectively

Pts who had splenectomy for SFSS had:
 - Higher risk of PVT and bacterial infections
 - Similar rate of retransplantation (7.7% vs. 6.1%)
 - Similar graft and patient survival
 Compared to pts without SFSS

Conclusions

Patients with SFSS after LDLT who undergo splenectomy achieve long term outcomes comparable to LDLT without SFSS.

Splenectomy for SFSS after LDLT is associated with a higher risk of PVT and bacterial infections which can be successfully treated with good long term outcomes.

Patients with SFSS after LDLT who do not undergo splenectomy have a high risk of graft failure and decreased survival. This highlights the importance of performing splenectomy as a method to modulate portal flow in these grafts.