



# USE OF IDEAL BODY WEIGHT FOR CALCULATION OF GRAFT-TO-RECIPIENT BODY WEIGHT RATIO

## “iGBWR”: A NEW TOOL TO PREDICT SFSS AND GRAFT LOSS AFTER LDLT

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### Introduction

The minimum graft size required to perform safe living donor liver transplantation (LDLT) is not well established.

Studies have shown adequate graft and patient survival in patients with GBWR between 0.6 and 0.8. However, it has been difficult to identify the patients in this group that will do poorly.

Many factors influence pre-transplant recipient lean body weight (ascites, body fluid and nutritional status). Their effect on the prediction of LDLT outcomes is not well established.

### Objectives

The aim of this study was to analyze the use of ideal body weight (IBW) as an alternative to actual body weight (ABW) in the estimation of GBWR, and determine its utility in predicting small-for-size syndrome (SFSS), graft loss and need for re-transplantation after LDLT.

### Methods

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

GBWR estimations were compared using recipient's actual body weight (GBWR) and ideal body weight (iGBWR)

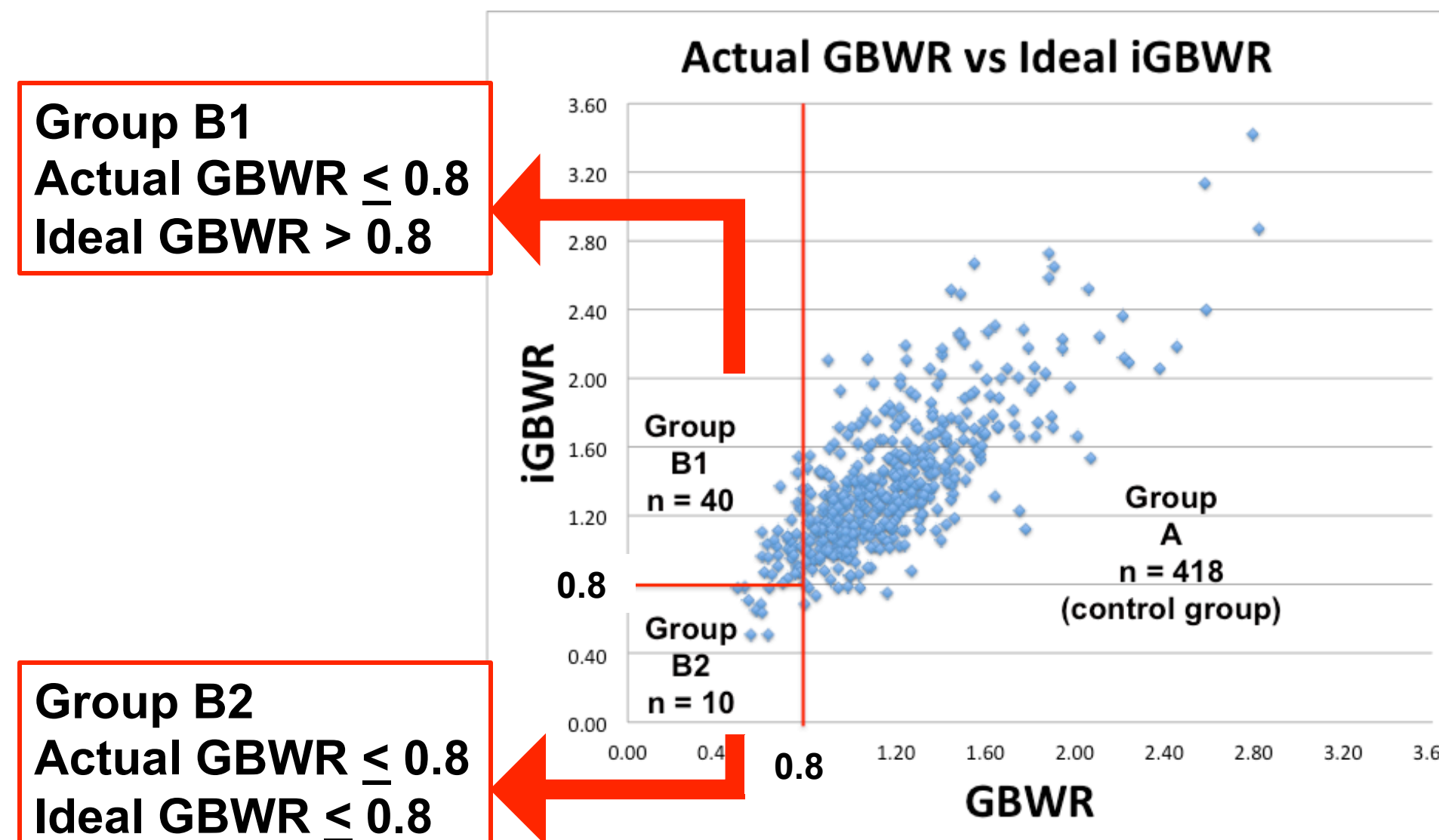
Patients with GBWR < 0.8 were classified according to their ideal GBWR:

- Group A (actual GBWR > 0.8) n=418 - Control Group
- Group B1 (actual GBWR < 0.8, ideal GBWR > 0.8) n=40
- Group B2 (actual GBWR < 0.8, ideal GBWR < 0.8) n=10

SFSS was diagnosed 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.

### Results

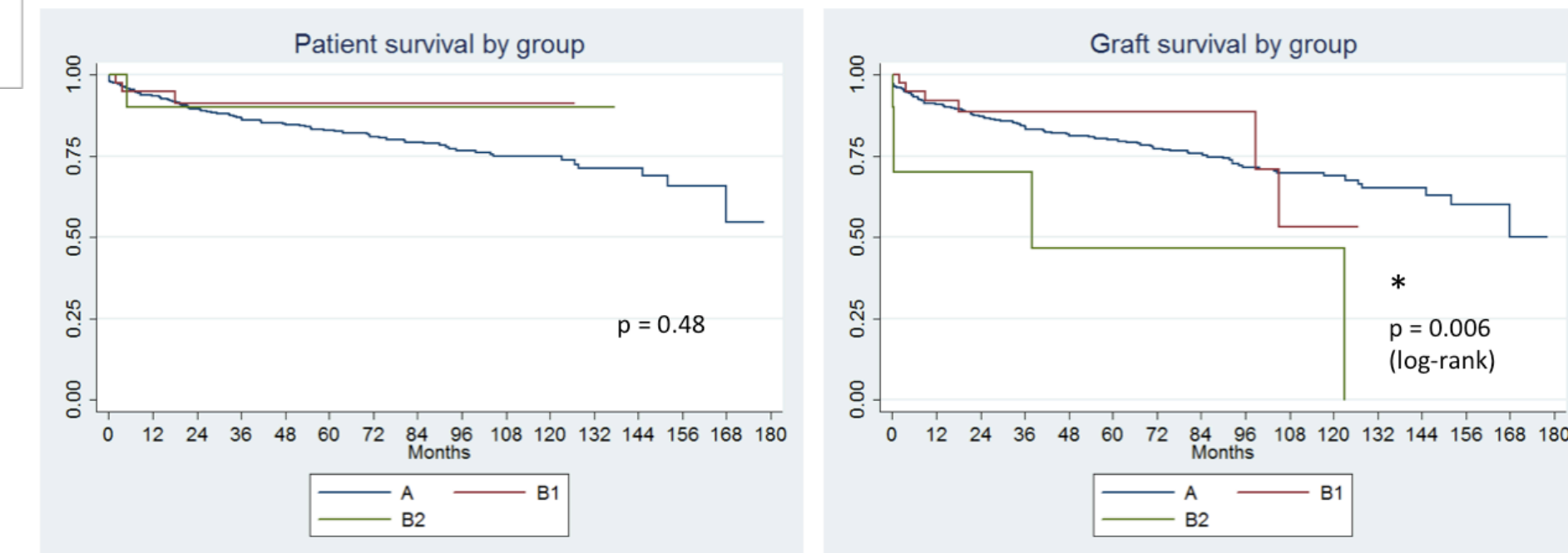


**Group B1**  
Actual GBWR < 0.8  
Ideal GBWR > 0.8

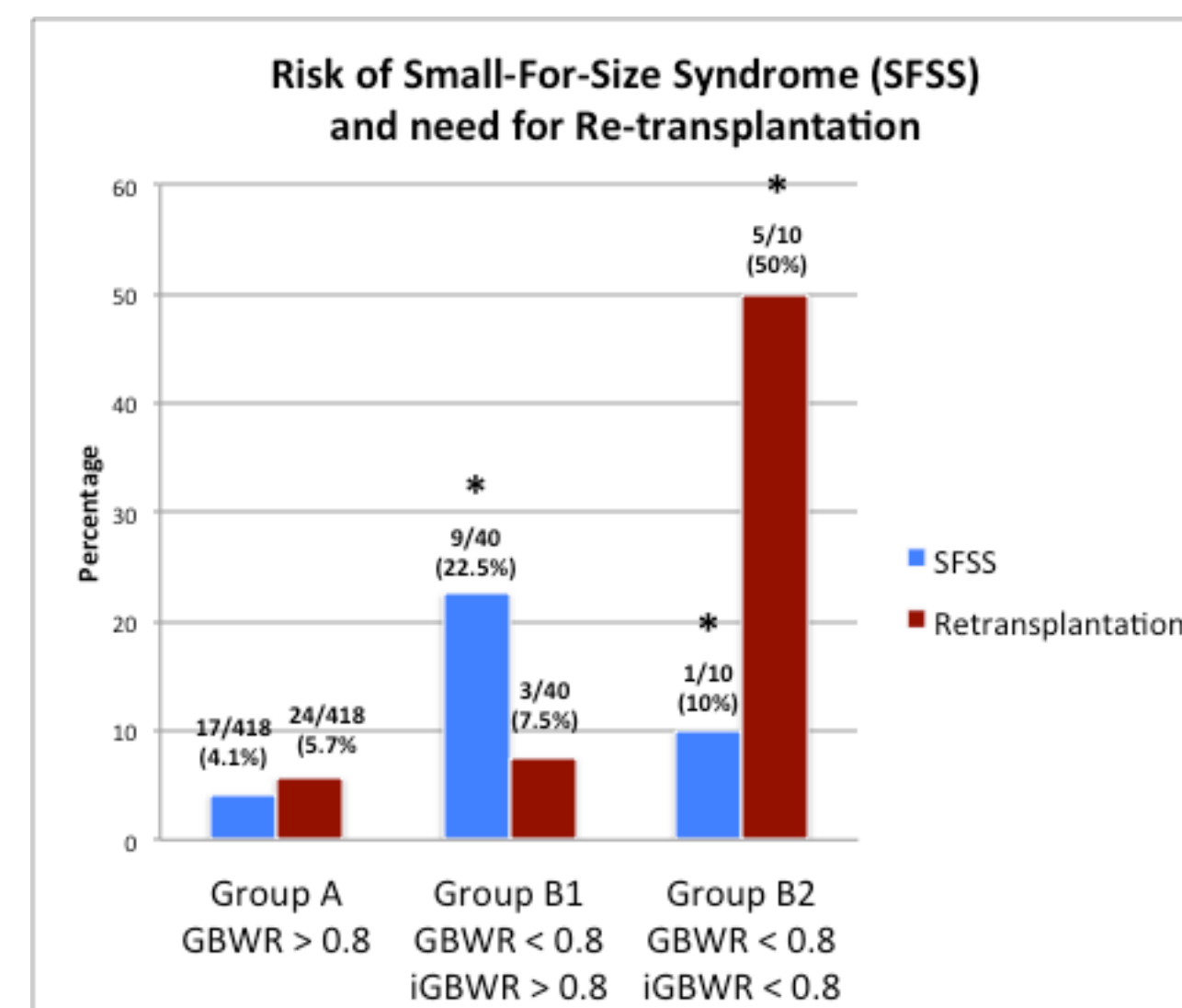
**Group B2**  
Actual GBWR < 0.8  
Ideal GBWR < 0.8

Demographics and Characteristics	GBWR > 0.8 (Group A) Control Group	GBWR ≤ 0.8 (Group B)		p-value
		iGBWR > 0.8 (Group B1)	iGBWR ≤ 0.8 (Group B2)	
N of patients	418	40	10	
Age	52.5 ± 11.1	53.7 ± 8.7	53.6 ± 15.6	0.04
Gender (Male)	252 (60.3%)	34 (85.0%)	7 (70.0%)	0.008
BMI	26.1 ± 4.8	32.2 ± 5.4	26.7 ± 7.1	0.1
HCV	138 (33.0%)	15 (37.5%)	3 (30.0%)	0.8
HCC	112 (26.8%)	18 (45.0%)	5 (50.0%)	0.02
MELD pretx	16 ± 7	17 ± 8	12 ± 4	0.09
Donor age	37 ± 11	38 ± 12	38 ± 14	0.6
Donor gender (male)	202 (48.3%)	6 (15.0%)	2 (20.0%)	<0.001
Donor BMI	27 ± 5	26 ± 5	23 ± 3	0.5
Graft weight	896 ± 197	690 ± 130	441 ± 92	<0.001
GBWR	1.2 ± 0.03	0.7 ± 0.06	0.6 ± 0.08	<0.001
iGBWR	1.4 ± 0.4	1.0 ± 0.2	0.7 ± 0.1	<0.001
Hospital stay (post-tpx)	17.5 ± 20.6	22.9 ± 26.5	30.5 ± 44.8	<0.001

OUTCOMES	GBWR > 0.8 (Group A) Control Group	GBWR ≤ 0.8 (Group B)		p-value
		iGBWR > 0.8 (Group B1)	iGBWR ≤ 0.8 (Group B2)	
N of patients	418	40	10	
SFSS	17 (4.1%)	9 (22.5%)	1 (10.0%)	<0.001
Modulation of PV flow intraop	8 (1.9%)	6 (15.0%)	1 (10.0%)	<0.001
Modulation of PV flow postop	6 (1.4%)	3 (7.5%)	0 (0%)	0.03
Complications within 30 days	175 (41.9%)	17 (42.5%)	4 (40.0%)	1
HAT	15 (3.6%)	0 (0%)	4 (40.0%)	<0.001
PVT	10 (2.4%)	4 (10.0%)	0 (0%)	0.02
Biliary complications	98 (23.4%)	9 (22.5%)	2 (20.0%)	1
Retransplantation	24 (5.7%)	3 (7.5%)	5 (50.0%)	<0.001



Graft survival at 5y was 79.7% (A), 88.5% (B1) and 46.7% (B2) [p<0.006]



### Conclusions

Patients with actual GBWR < 0.8, but ideal iGBWR > 0.8 have a higher risk of SFSS requiring modulation of PV flow, but achieve excellent long-term outcomes.

Patients with both actual GBWR < 0.8, and ideal iGBWR < 0.8 have a higher risk of SFSS, HAT, with poor graft survival and a 50% need for retransplantation. LDLT should be avoided in this setting.

The use of ideal body weight in GBWR helps to identify a subgroup of patients with the highest risk of graft loss and retransplantation. This novel index should be considered in the preoperative assessment of patients with low graft weight.