

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: The Longitudinal Assessment of Bariatric Surgery (LABS) Consortium. Perioperative safety in the longitudinal assessment of bariatric surgery. *N Engl J Med* 2009;361:445-54.

Supplemental Table 1: Baseline Health Status of LABS-1 Participants

	Total* (N=4776)	LAGB (N=1198)	LRYGB (N=2975)	ORYGB (N=437)	SG (N=117)	BPD-DS (N=47)	p value**
Hypertension, n (%)	2630 (55.1)	628 (52.4)	1651 (55.5)	248 (56.8)	75 (64.1)	26 (55.3)	0.09
Multiple medication	1172 (45.2)	286 (46.1)	732 (44.9)	104 (43.3)	38 (52.8)	11 (42.3)	0.70
missing, n	39	7	21	8	3	0	
Diabetes, n (%)	1587 (33.2)	309 (25.8)	1064 (35.8)	162 (37.1)	38 (32.5)	13 (27.7)	<0.001
Diabetes medication:							0.002
No diabetes medication	231 (14.6)	39 (12.6)	170 (16.0)	18 (11.1)	4 (10.5)	0 (0.0)	
Single oral medication	486 (30.7)	106 (34.3)	331 (31.2)	32 (19.8)	15 (39.5)	4 (30.8)	
Multiple oral medication	405 (25.6)	86 (27.8)	262 (24.7)	43 (26.5)	8 (21.1)	6 (46.2)	
Insulin (w/ or w/o oral meds)	461 (29.1)	78 (25.2)	299 (28.2)	69 (42.6)	11 (28.9)	3 (23.1)	
missing, n	2	0	2	0	0	0	
Congestive heart failure, n (%)	103 (2.2)	34 (2.8)	55 (1.9)	13 (3.0)	1 (0.9)	0 (0.0)	0.12
Asthma, n (%)	1104 (23.1)	251 (21.0)	705 (23.7)	108 (24.7)	31 (26.5)	9 (19.1)	0.24
Cannot walk 200 ft, n (%)	86 (1.8)	25 (2.1)	39 (1.3)	18 (4.1)	4 (3.4)	0 (0.0)	<0.001
missing, n	3	2	1	0	0	0	
History of DVT or PE, n (%)	166 (3.5)	35 (2.9)	105 (3.5)	19 (4.3)	5 (4.3)	2 (4.3)	0.66
Sleep apnea, n (%)	2334 (48.9)	535 (44.7)	1502 (50.5)	220 (50.3)	54 (46.2)	23 (48.9)	0.02
CPAP, n (%)	1914 (82.0)	447 (83.6)	1227 (81.7)	181 (82.3)	42 (77.8)	17 (73.9)	0.62
Supplemental O ₂ dependent, n (%)	81 (3.5)	14 (2.6)	56 (3.7)	5 (2.3)	6 (11.1)	0 (0.0)	0.01
missing, n	5	0	5	0	0	0	
Ischemic heart disease, n (%)	209 (4.4)	71 (5.9)	113 (3.8)	17 (3.9)	6 (5.1)	2 (4.3)	0.05
Pulmonary hypertension, n (%)	56 (1.2)	15 (1.3)	28 (0.9)	7 (1.6)	4 (3.4)	2 (4.3)	0.03
Venous edema w/ulcerations***, n (%)	180 (4.0)	25 (2.1)	96 (3.4)	48 (13.4)	8 (7.0)	3 (6.7)	<0.001
missing, n	294	21	189	78	3	2	
Number of comorbidities, n (%)							<0.001
Median (25 th , 75 th percentiles)	2 (1.3)	1 (1.2)	2 (1.3)	2 (1.3)	2 (1.3)	2 (1.2)	<0.001
1 or more	3921 (82.1)	926 (77.4)	2481 (83.4)	373 (85.4)	100 (85.5)	39 (83.0)	
2 or more	2574 (53.9)	566 (47.3)	1638 (55.1)	272 (62.2)	72 (61.5)	25 (53.2)	
3 or more	1263 (26.5)	269 (22.5)	811 (27.3)	140 (32.0)	33 (28.2)	10 (21.3)	
4 or more	473 (9.9)	103 (8.6)	298 (10.0)	54 (12.4)	14 (12.0)	4 (8.5)	
missing, n	3	2	1	0	0	0	
Medications in last 90 days:							
Beta-blocker, n (%)	844 (17.9)	202 (16.9)	508 (17.4)	104 (23.9)	24 (20.5)	5 (10.9)	0.007
missing, n	67	6	58	2	0	1	
Statin/lipid-lowering agent, n (%)	1271 (26.6)	302 (25.2)	793 (26.7)	116 (26.5)	41 (35.0)	18 (38.3)	0.07
Therapeutic anticoagulant, n (%)	212 (4.4)	48 (4.0)	118 (4.0)	37 (8.5)	8 (6.8)	1 (2.1)	<0.001
Narcotic, n (%)	770 (16.1)	175 (14.6)	473 (15.9)	106 (24.3)	12 (10.3)	3 (6.4)	<0.001
Anti-depressant, n (%)	1880 (39.9)	429 (36.0)	1195 (41.0)	194 (44.6)	40 (34.2)	20 (43.5)	0.005
missing, n	67	6	58	2	0	1	

Abbreviations: LRYGB = laparoscopic roux-en-y gastric bypass, ORYGB = open roux-en-y gastric bypass; LAGB= laparoscopic adjustable gastric banding; SG=sleeve gastrectomy; BPD-DS = biliopancreatic diversion with or without a duodenal switch

*Includes 1 VBG and 1 OAGB cases.

** Chi-square test for categorical variables, Kruskal-Wallis test for continuous variables

*** A history of venous edema with ulcerations was not collected at start of study and is therefore missing for 6.1% of participants and not included in count of comorbidities for those patients.

Supplemental Table 2: Risk of 30-day Composite Endpoint (death/DVT/PE/intervention/no discharge) by Patient Characteristics (n=4610) with and without adjustment.

Patient Characteristics	Group	n	Incidence n (%)	Unadjusted*		Adjusted (n=4607)***	
				OR (95% CI)	p	OR (95% CI)	p
Age categories (yrs)					0.98		
	<30	491	15(3.1)	1.00	--		
	30-39	1162	48(4.1)	1.25(0.69,2.27)	0.46		
	40-49	1339	56(4.2)	1.19(0.66,2.14)	0.57		
	50-59	1156	50(4.3)	1.26(0.69,2.29)	0.45		
	60-64	301	14(4.7)	1.29(0.60,2.74)	0.52		
	65+	161	6(3.7)	1.24(0.47,3.32)	0.66		
Age per year				1.00(0.99,1.02)	0.62		
BMI (kg/m ²) categories					0.04		
	<40	624	23(3.7)	1.19(0.74,1.92)	0.46		
	40- <50	2462	81(3.3)	1.00	--		
	50 - <60	1139	54(4.7)	1.28(0.89,1.84)	0.18		
	60+	385	31(8.1)	1.94(1.23,3.05)	0.004		
BMI per 1 kg/m ²				1.02(1.01,1.04)	0.006	Effect Demonstrated in Figure 2	Linear (p=0.38), quadratic (p=0.005)
Sex	Female	3659	146(4.0)	1.00	--		
	Male	951	43(4.5)	1.17(0.82,1.67)	0.39		
Race	White	499	27(5.4)	1.00	--		
	Black/Other	4065	161(4.0)	1.31(0.84,2.04)	0.23		
Ethnicity	Non-Hispanic	4330	179(4.1)	1.00	--		
	Hispanic	278	10(3.6)	0.91(0.47,1.78)	0.78		
Hypertension	No	2083	84(4.0)	1.00	--		
	Yes	2527	105(4.2)	0.96(0.71,1.29)	0.78		
Diabetes	No	3075	104(3.4)	1.00	--		
	Yes	1535	85(5.5)	1.46(1.08,1.98)	0.02		
Congestive heart failure	No	4508	182(4.0)	1.00	--		
	Yes	102	7(6.9)	1.48(0.66,3.33)	0.34		
Asthma	No	3546	138(3.9)	1.00	--		
	Yes	1064	51(4.8)	1.13(0.81,1.59)	0.47		
Functional status	Can walk 200 ft	4525	176(3.9)	1.00	--	1.00	--
	Can not walk 200 feet	82	13(15.9)	2.93(1.5,5.72)	0.001	2.24(1.08,4.64)	0.03
DVT/VTE	No	4451	175(3.9)	1.00	--	1.00	-
	Yes	159	14(8.8)	2.28(1.28,4.09)	0.006	2.07(1.14,3.75)	0.02
Sleep apnea	No	2354	77(3.3)	1.00	--	1.00	-
	Yes	2256	112(5.0)	1.49(1.08,2.05)	0.02	1.37(0.99,1.91)	0.06
Ischemic heart disease	No	4409	181(4.1)	1.00	--		
	Yes	201	8(4.0)	0.94(0.45,1.96)	0.87		
Pulmonary hypertension	No	4561	186(4.1)	1.00	--		
	Yes	49	3(6.1)	1.17(0.35,3.95)	0.80		
Venous edema with ulcerations	No	4441	174(3.9)	1.00	--		
	Yes	169	15(8.9)	1.61(0.9,2.88)	0.11		
Number of comorbidities					0.02		
	None	819	18(2.2)	1.00	--		
	1-2	2561	103(4.0)	1.74(1.04,2.91)	0.04		
	3+	1227	68(5.5)	2.19(1.26,3.8)	0.006		
Surgical procedure					<.001		<.001
	LAGB	1198	12(1.0)	1.00	--	1.00	-
	LRYGB	2975	143(4.8)	4.70(2.54,8.69)	<.001	4.77(2.58,8.84)	<.001
	ORYGB	437	34(7.8)	7.36(3.39,15.99)	<.001	5.76(2.61,12.75)	<.001

*Only accounting for site and surgeon

***Adjusting for BMI, procedure, functional status, history of sleep apnea, and history of DVT/VTE and accounting for site and surgeon effect. All other variables appeared statistically insignificant and did not improve model fit in the presence of BMI, procedure, functional status, history of sleep apnea, and history of DVT/VTE and thus are removed from the multivariable model.