Comparative outcomes of Bariatric surgery in patients with Dialysis-dependent ESRD in the modern era of renal transplantation: Analysis using the 2015-2018 MBSAQIP Database

Raul Sebastian MD[1], Jorge Cornejo MD[1], Omar Ghanem MD[2], Thomas Ruttger[1], Christina Li MD[1]

[1]Northwest Hospital, MD. [2]Mayo Clinic, MN.

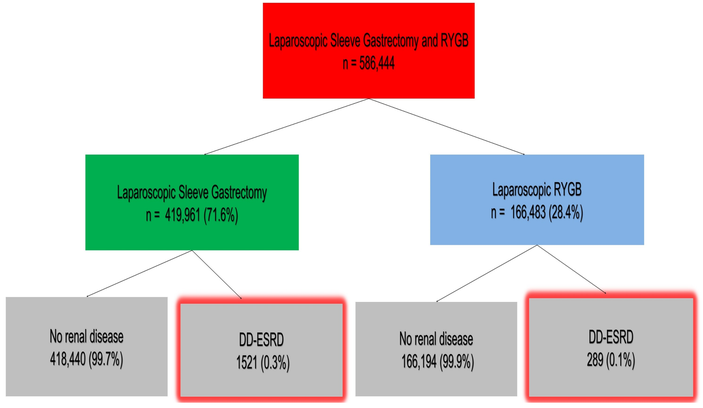
INTRODUCTION

Severe obesity is a relative contraindication for renal transplantation, therefore bariatric surgery is an important option as pre-kidney transplant weight loss strategy. However, comparative data regarding postoperative outcomes of laparoscopic sleeve gastrectomy (LSG) or laparoscopic Roux-en-Y gastric bypass (LRYGB) in patients with or without ESRD on Dialysis are scarce.

METHODS

Patients between 18- and 80-year-old who underwent LSG and RYGB were included. To determine the outcomes in patients with Dialysis-Dependent ESRD (DD-ESRD), a 1:4 PSM was performed between the patients with DD-ESRD and those with no renal disease. The PSM analyses in both groups were performed using 22 preoperative characteristics. Then 30-day postoperative outcomes were assessed.

Figure 1. Conceptual Design



RESULTS

The operative time and postoperative-LOS were significantly longer in DD-ESRD patients compared to those with no renal disease either for LSG (102.58 ± 46 vs. 73.38 ± 36; P < 0.001, 2.22 ± 3 vs. 1.74 ± 1; P<0.0001) or for LRYGB (158.29 ± 65 vs. 120.17 ± 56; P < 0.001, 2.57 ± 1 vs. 2.19 ± 2; P<0.0001).

In the LSG cohort (1461 vs. 5765 matched cases), patients with DD-ESRD showed significant increase in readmissions (9.3% vs. 4.2%; P<0.001), reoperations (3.2% vs. 1.1%; P<0.001), interventions (2.7% vs. 1.2%; P = 0.044), and venous thromboembolism (0.8% vs. 0.3%; P = 0.035) as shown in Table 1.

Table 1. 30-Day outcomes in patients with no renal disease and DD-ESRD after LSG

	No renal disease (n=5765)	DD-ESRD (n=1461)	p*
30-Day outcomes			
Mortality	14 (0.2)	10 (0.7)	0.092
Cardiac complications	15 (0.3)	4 (0.3)	1.000
Pulmonary complications	32 (0.6)	5 (0.3)	0.302
Unplanned ICU admission	83 (1.4)	37 (2.5)	0.156
Blood transfusion	66 (1.1)	32 (2.2)	0.066
Readmissions	245 (4.2)	136 (9.3)	**0.000**
Reoperations	66 (1.1)	47 (3.2)	**0.000**
Interventions	72 (1.2)	40 (2.7)	**0.044**
Venous thromboembolism	17 (0.3)	12 (0.8)	**0.035**
Surgical site infection	5 (0.1)	0 (0.0	1.000
Incisional hernia	0 (0.0)	1 (0.0)	1.000
Wound disruption	3 (0.1)	1 (0.1)	1.000
Sepsis or septic shock	0 (0.0)	1 (0.1)	1.000
Postoperative-LOS (days)	1.74 ± 1.62	2.22 ± 3.09	**0.000**
Operative time (minutes)	73.38 ± 36	102.58 ± 46	**0.000**
Bariatric-specific complications			
Anastomotic/staple line leak	16 (0.3)	5 (0.3)	0.727
Postoperative bleeding	40 (0.7)	10 (0.7)	0.629
Stricture/stomal obstruction	7 (0.1)	4 (0.3)	0.375
Intestinal obstruction	1 (0.0)	1 (0.1)	1.000
Internal hernia	2 (0.0)	0 (0.0)	1.000
Gastrointestinal perforation	1 (0.0)	0 (0.0)	1.000
Anastomotic ulcer	1 (0.0)	1 (0.0)	1.000
Gallstone disease	3 (0.1)	0 (0.0)	1.000

In the LRYGB group (289 vs. 1136 matched cases), patients with ESRD on dialysis showed significantly higher need for interventions (5.9% vs. 3.3%; P = 0.017) as shown in Table 2.

Table 2. 30-Day outcomes in patients with no renal disease and DD-ESRD after LRYGB

	No renal disease (n=1136)	DD-ESRD (n=289)	p*
30-Day outcomes			
Mortality	4 (0.4)	2 (0.7)	0.500
Cardiac complications	7 (0.6)	3 (1.0)	1.000
Pulmonary complications	10 (0.9)	3 (1.0)	1.000
Unplanned ICU admission	27 (2.4)	11 (3.8)	0.052
Blood transfusion	18 (1.6)	7 (2.4)	0.070
Readmissions	84 (7.4)	34 (11.8)	0.106
Reoperations	32 (2.8)	11 (3.8)	0.118
Interventions	38 (3.3)	17 (5.9)	**0.017**
Venous thromboembolism	5 (0.4)	1 (0.3)	1.000
Surgical site infection	1 (0.1)	3 (1.0)	0.250
Incisional hernia	0 (0.0)	0 (0.0)	---
Wound disruption	1 (0.1)	0 (0.0)	1.000
Sepsis or septic shock	0 (0.0)	0 (0.0)	---
Postoperative-LOS (days)	2.19 ± 2.13	2.57 ± 1.70	**0.000**
Operative time (minutes)	120.17 ± 56	158.29 ± 65	**0.022**
Bariatric-specific complications			
Anastomotic/staple line leak	12 (1.1)	1 (0.3)	1.000
Postoperative bleeding	23 (2.0)	4 (1.4)	1.000
Stricture/stomal obstruction	3 (0.3)	1 (0.3)	1.000
Intestinal obstruction	5 (0.4)	0 (0.0)	0.500
Internal hernia	1 (0.1)	0 (0.0)	1.000
Gastrointestinal perforation	0 (0.0)	1 (0.3)	1.000
Anastomotic ulcer	6 (0.5)	2 (0.7)	1.000
Gallstone disease	1 (0.1)	0 (0.0)	1.000

CONCLUSION

Severe and morbidly obese patients with DD-ESRD have significantly longer operative time, increased length of stay, higher rate of interventions, and in LSG patients, higher VTE when compared with patients with normal renal function. However, given the benefit and potential quality of life improvement associated with renal transplantation, the incidence of adverse events is not so high as to preclude surgery, and thus should continue to be offered to eligible patients.