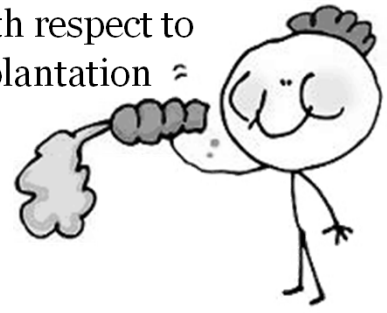
Bariatric Surgery Before and After Kidney Transplantation

Evan Nadler, M.D.
Co-Director, Children's National Obesity Institute
Children's National Health System

American Society of Pediatric Nephrology
Multidisciplinary Symposium
October 2018

Overview

- Review bariatric surgical outcomes in adolescents and children
- Review adult literature with respect to Bariatric surgery and transplantation
- Case studies
- Conclusions

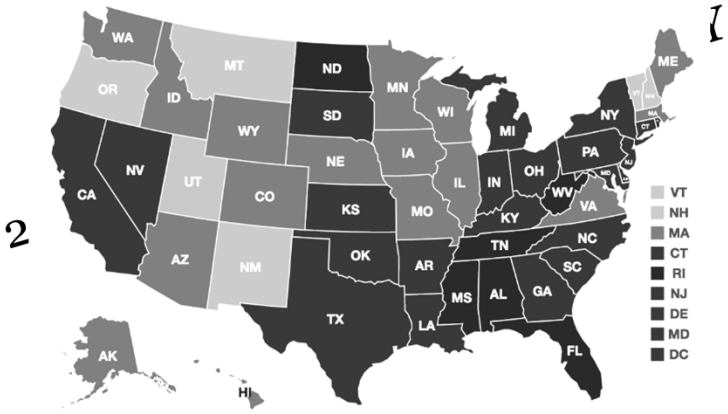


Overweight & Obese Children 10-17, 2016

Select years with the slider to see historical data. Hover over states for more information. Click a state to lock the selection. Click again to unlock.

Combined overweight and obese rates, children ages 10 to 17

0 - 9.9% | 10 - 14.9% | 15 - 19.9% | 20 - 24.9% | 25 - 29.9% | 30 - 34.9% | 35%+



Children's National

4

Teen-LABS Results

- 3 year follow-up data published December 2016.
- 150 patients <18 years of age (113 RYGB, 47 LSG)
- 68 patients 18-19 included in study (48 RYGB, 20 LSG)
- Baseline wt 149kg, 108 kg after 3 years (entire cohort)
- Mean BMI decreased from 53 to 38.
- Small uptick in weight after year one.
- Small increase in height during study.
- Expected resolution of comorbidities.
- Expected complication rates
- NO EVIDENCE THAT AGE IMPACTS OUTCOME

Children's National

NIH Guidelines for Surgery

- BMI > 40 kg/m2

  -OR-

- BMI > 35 kg/m2 and co-morbid illness

  -AND-

- Failed to have sustained weight loss on supervised weight-reduction programs. (3-12 months)

Children's National

Demographics

Total Case Number	269 (263 LSG, 2 LAGB, 4 re-LSG)
Age at Surgery	17.1 ± 2.4 (range 4.5-24)
Gender	205 F:58 M
Race/Ethnicity	152 AA: 45 H: 49 C: 17 other
Length of Stay	>95% 1 or 2 days
Comorbidity:	Percentage of Population
Obstructive sleep apnea	~60
Hypertension	~20
Polycystic Ovarian Disease	~15
Depression	~15
Diabetes	~15
NAFLD	~10
	~10

2018 ASPN MULTIDISCIPLINARY SYMPOSIUM

Thirty-Day Perioperative Complications

Characteristic	Number
Deaths	0
Staple line leak	2
Trocar injury to small bowel	1
Splenic parenchymal laceration	1
Epigastric artery bleed	1
Staple line bleed	1
DVT/PE	1
Submucosal hematoma requiring TPN	1
Edema requiring IVFs and/or steroids	3

Early Sleeve Outcomes

Time	# at F/U Time	Weight (kg)	BMI (kg/m2)	%EBL
Pre-op	**278**	**139 ± 28**	**50 ± 9**	**NA**
3 months	**207**	**115 ± 25**	**41 ± 8**	**37 ± 15**
6-months	**148**	**107 ± 26**	**38 ± 8**	**50 ± 20**
1-year	**112**	**104 ± 28**	**37 ± 9**	**55 ± 24**
2-year	**47**	**111 ± 28**	**39 ± 9**	**50 ± 27**

Children's National

Adult Experience

- Bariatric surgery tends to normalize GFR across different categories of renal impairment (hyperfiltration and CKD patients). (Bilha et al., Obes Surg., July 2018)
- In small cohorts, results after transplant suggest:
  - Weight loss surgery can be performed with few complications and typical weight loss. (Viscido et al. Obes Surg., June 2018)
  - Sleeve gastrectomy does not alter immunosuppressive regimen.(Gazzetta et al., Transplant Proc., May 2017)

Adult Experience

- Largest series is 22 patients with stable graft function who were compared to 44 obese patients with medical management as control.
  - (Gheith et al., Exp Clin Transplant, Feb 2017)
- At 6 months post bariatric surgery there was better graft function and less BK viuria in the surgical cohort, but other outcome variables were comparable.

Our Case

- 14 yo male with BMI 49 (123.4 kg) first assessed in June 2013 (pre-CRT) and then again in May 2015 (post-CRT).
- CRT performed April 2014 without incident. Had significant weight loss prior to transplant, but then excessive weight gain post-transplant.
- Attempted inpatient weight management among a myriad of other interventions with limited success.

Our Case continued

- Underwent uncomplicated LSG in October 2016 at age of 15.
- Lost 23 kg at 3 months, 29 kg at 6 months, 35 kg at one year and at 18 mos, but now has re-gained 16 kg over past 6 months.
- Now weighs 109 kg with BMI of 41. Graft function? Stage 2 CKD.

Pre-Transplant Adult Experience

- Bariatric surgery is effective in patients with ESRD and improves access to renal transplantation.
  - (Al-Bahri et al, Obes Surg, Nov 2017)
- Referrals of transplant candidates with obesity for bariatric surgery should be considered early in the course of ESRD.

Pre-Transplant Adult Experience

- Survey of Kidney Transplant Specialists in Canada revealed: (Chan and Soucisse, Can J Kidney Health Dis., Nov 2016)
  - BMI limit of 40 kg/m2 (68%) or 35 kg/m2 (36%).
  - Few centers (38%) reported having a weight management program.
  - The reported experience with bariatric surgery was small, though nearly all replied that they would refer to a bariatric specialist in the future.

Case Study

- 16 year old female with BMI 60, T2DM, dilated cardiomyopathy, and multiple episodes of CHF. (October 2013)
- Had AICD placed. Too obese for transplant or ventricular assist device.
- On continuous Milrinone as outpatient via PICC for heart function.
- Underwent uncomplicated LSG in April 2014 (BMI 57, 151 kg).

Case Study continued

- Uneventful recovery in CICU and then cardiac floor.
- Was able to wean some meds while in hospital but still required Milrinone drip.
- Discharged from the hospital 6 weeks after LSG (BMI 45, 123.4 kg).
- Seen in clinic June 2014, weighed 120 kg.
- Still too obese for VAD or transplant according to cardiac team.

Case Study continued

- Seen by Cardiologist in July 2014, weight stable.
- Admitted emergently to the hospital in August 2014 for mental status changes.
- Hyponatremic, hypokalemic, dehydrated. Eventually placed on ECMO.
- Yeast grew from PICC.
- Met brain death criteria after cannulation.
- Died hospital day number 2.

Summary and Future Directions

- Obesity can impact candidates for transplantation and patients post-transplant, kidney or others.
- Most published experiences with sleeve gastrectomy after kidney transplant, and results have been favorable.
- Patients with obesity with chronic kidney disease should be referred for surgical evaluation sooner rather than later.

Thank you!

2018 ASPN MULTIDISCIPLINARY SYMPOSIUM

Questions?

Evan P. Nadler, MD
enadler@childrensnational.org