Bariatric Surgery Before and After Kidney Transplantation

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Overview

• Review bariatric surgical outcomes in adolescents and children

• Review adult literature with respect to Bariatric surgery and transplantation

• Case studies

• Conclusions
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
NIH Guidelines for Surgery

- BMI > 40 kg/m²
- BMI > 35 kg/m² and co-morbid illness
- Failed to have sustained weight loss on supervised weight-reduction programs. (3-12 months)

Demographics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total Case Number</td>
<td>269 (263 LSG, 2 LAGB, 4 re-LSG)</td>
</tr>
<tr>
<td>Age at Surgery</td>
<td>17.1 ± 2.4 (range 4.5-24)</td>
</tr>
<tr>
<td>Gender</td>
<td>205 F:58 M</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>152 AA: 45 H: 49 C: 17 other</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>&gt;95% 1-2 days</td>
</tr>
<tr>
<td>Comorbidity:</td>
<td>Percentage of Population</td>
</tr>
<tr>
<td>Obstructive sleep apnea</td>
<td>~60</td>
</tr>
<tr>
<td>Hypertension</td>
<td>~20</td>
</tr>
<tr>
<td>Polycystic Ovarian</td>
<td>~15</td>
</tr>
<tr>
<td>Disease</td>
<td>~15</td>
</tr>
<tr>
<td>Depression</td>
<td>~15</td>
</tr>
<tr>
<td>Diabetes</td>
<td>~10</td>
</tr>
<tr>
<td>NAFLD</td>
<td>~10</td>
</tr>
</tbody>
</table>
## Thirty-Day Perioperative Complications

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>0</td>
</tr>
<tr>
<td>Staple line leak</td>
<td>2</td>
</tr>
<tr>
<td>Trocar injury to small bowel</td>
<td>1</td>
</tr>
<tr>
<td>Splenic parenchymal laceration</td>
<td>1</td>
</tr>
<tr>
<td>Epigastric artery bleed</td>
<td>1</td>
</tr>
<tr>
<td>Staple line bleed</td>
<td>1</td>
</tr>
<tr>
<td>DVT/PE</td>
<td>1</td>
</tr>
<tr>
<td>Submucosal hematomata requiring TPN</td>
<td>1</td>
</tr>
<tr>
<td>Edema requiring IVFs and/or steroids</td>
<td>3</td>
</tr>
</tbody>
</table>

## Early Sleeve Outcomes

<table>
<thead>
<tr>
<th>Time</th>
<th># at F/U</th>
<th>Weight (kg)</th>
<th>BMI (kg/m²)</th>
<th>%EBL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op</td>
<td>278</td>
<td>139 ± 28</td>
<td>50 ± 9</td>
<td>NA</td>
</tr>
<tr>
<td>3 months</td>
<td>207</td>
<td>115 ± 25</td>
<td>31 ± 8</td>
<td>37 ± 15</td>
</tr>
<tr>
<td>6-months</td>
<td>148</td>
<td>107 ± 26</td>
<td>38 ± 8</td>
<td>50 ± 20</td>
</tr>
<tr>
<td>1-year</td>
<td>112</td>
<td>104 ± 28</td>
<td>37 ± 9</td>
<td>55 ± 24</td>
</tr>
<tr>
<td>2-year</td>
<td>47</td>
<td>111 ± 28</td>
<td>39 ± 9</td>
<td>50 ± 27</td>
</tr>
</tbody>
</table>
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., 2016)
  - BMI limit of 40 kg/m² (62%) or 35 kg/m² (36%).
  - Few centers (32%) 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

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