THE BARIATRIC SURGICAL TEAM: A 25 YEAR PERSPECTIVE

Bruce Schirmer, M.D.
DISCLOSURES

• I receive no compensation from industry nor have any financial conflicts regarding this presentation.

• I am very honored to be the Schultz lecturer
John H. and Cynthia Schultz

Lectureship in Surgery to honor innovative therapies and multi-disciplinary collaboration
John H. and Cynthia Schultz

• John: U.C. ‘51 UC Law ‘53
• Cynthia: UC Boulder administrator (chancellors)
• Endowed Chair in Surgery held by Dr. Stiegmann
• Also support Law & Grad Schools
GOALS OF TALK

• Examine the role of the multi-discipline team in the evolution of bariatric surgery
• Centers of Excellence Story
• Bariatric surgery as a role model for the introduction of a new operation
• New innovative procedures
MULTIDISCIPLINE TEAM

• Trained surgeon (s)
• Program coordinator
• Nutritionist
• Primary care physician
• Medical subspecialists
• OR team
• Defense lawyer
BARIATRIC SURGERY IN THE 1980s

• Few centers
• Poorly understood
• Disparaged by academics
• Usually single surgeons
• Some elements of multidiscipline team—usually secured by surgeon
BARIATRIC SURGERY IN THE 1990s

• More defined community of surgeons, ASBS
• More groups, larger teams
• Increased role of multidiscipline care of patients
• Evolution of MIS approaches
THE BARIATRIC REVOLUTION

• WHY REVOLUTION?
• Number of cases up nearly 8 fold from 1999 to 2003
• ASBS membership tripled from 1998 to 2003
THE BARIATRIC REVOLUTION

• Began around 1998
• Combination of factors:
  – Laparoscopic alternative
  – Mass communication/internet
  – Industry and mass media
  – Public/medical opinion
BARIATRIC REVOLUTION

• Difficulty of the operation and the patient population caused these procedures to be delayed from easier laparoscopic ones

• Required better technology and surgeons
By 2004 had become the single largest expense code for all of General Surgery for Anthem in Virginia

True for most other states as well
LAPAROSCOPIC BARIATRIC SURGERY “EXPERIMENTAL”

Ruling by Blue Cross & Blue Shield Assoc. Technology Evaluation Center 2003

www.bluecares.com

Assessment program 18
INSURANCE COVERAGE FOR BARIATRIC SURGERY

- State of Florida: almost all coverage denied by 2004
- State of Virginia: most employers told by 2005 only available through “riders”
BARIATRIC SURGEONS RESPOND

- Document safety and efficacy of field once again
- Set up Centers of Excellence
- Emphasized publication of excellent results
CENTERS OF EXCELLENCE

- COE programs by ASBS and ACS: 2004-5
- Requirements for volume, surgeons, facilities, process, data reporting, and monitoring outcomes
- Required and financed multi-discipline practice
BARIATRIC SURGERY IN THE 1980-90s

- Patients were often end-stage and high risk patients
- Much higher number of comorbid medical problems
- Larger in size
21st CENTURY BARIATRIC PATIENTS

• Typically well-informed
• Usually know other patients
• Usually internet acquainted
• Usually have researched
• Usually want surgery now
UVA: LAPAROSCOPIIC VERSUS OPEN GASTRIC BYPASS 1994-2004

• Review of ten year experience in which gastric bypass performed from open to laparoscopic
• Statistical analysis of outcomes
• Technical differences: retrocolic Roux limb and linear stapling
# UVA GASTRIC BYPASS: PATIENT CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>OPEN</th>
<th>LAP.</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>363</td>
<td>765</td>
<td>ns</td>
</tr>
<tr>
<td>Age</td>
<td>41.8</td>
<td>42.1</td>
<td>ns</td>
</tr>
<tr>
<td>% male</td>
<td>19.6%</td>
<td>17.8%</td>
<td>ns</td>
</tr>
<tr>
<td>Wt lbs</td>
<td>357.4</td>
<td>315.6</td>
<td>$&lt;0.001$</td>
</tr>
<tr>
<td>BMI</td>
<td>57.5</td>
<td>50.9</td>
<td>$&lt;0.001$</td>
</tr>
<tr>
<td>Comorb</td>
<td>3.6</td>
<td>2.7</td>
<td>$&lt;0.001$</td>
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## POSTOP COMPLICATIONS

<table>
<thead>
<tr>
<th></th>
<th>OPEN</th>
<th>LAP</th>
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<tbody>
<tr>
<td>Wound infection</td>
<td>27 (7.4%)</td>
<td>14 (1.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Incisional hernia</td>
<td>123 (33.9%)</td>
<td>13 (1.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pulmon.</td>
<td>16 (4.4%)</td>
<td>16 (2.1%)</td>
<td>&lt;0.03</td>
</tr>
<tr>
<td>DVT/PE</td>
<td>13(3.6%)</td>
<td>4 (0.6%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>OPEN</td>
<td>LAP</td>
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</tr>
<tr>
<td>LEAKS</td>
<td>10 (2.8%)</td>
<td>12 (1.6%)</td>
<td>ns</td>
</tr>
<tr>
<td>STENOsis</td>
<td>54 (14.9%)</td>
<td>16 (2.1%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Internal hernia</td>
<td>2 (0.6%)</td>
<td>18 (2.4%)</td>
<td>&lt;0.04</td>
</tr>
<tr>
<td>Other SBO</td>
<td>20 (5.5%)</td>
<td>22 (2.9%)</td>
<td>&lt;0.03</td>
</tr>
</tbody>
</table>
# UVA RYGB POSTOP OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>OPEN</th>
<th>LAP</th>
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</thead>
<tbody>
<tr>
<td>Reop.</td>
<td>150 (41.3%)</td>
<td>67 (8.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overall complic.</td>
<td>208 (57.3%)</td>
<td>111 (14.5%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30 day mortality</td>
<td>6 (1.7%)</td>
<td>2 (0.3%)</td>
<td>&lt;0.02</td>
</tr>
</tbody>
</table>
REASONS FOR IMPROVEMENT

• Different access
• Lower risk patients
• Multidiscipline Team much more in effect due to COE system
• Hawthorne effect
• Higher volume
MULTIDISCIPLINE TEAM

• Surgeon (s)
• OR personnel
• Office personnel
• Program Coordinator
• Nutrition support
• Nursing support
• Referral support
SURGEONS

- Quality affects entire program
- Bad OR performance cannot be overcome by excellence elsewhere
- When all is said and done, this IS surgery
- Team leadership
SURGEONS

• Adequate training & experience
• Initial stable team
• Best with two surgeons. If only one, must have able technical assistant
OR PERSONNEL

• Critical to be consistent in the beginning
• Cuts down OR time, OR errors, and learning curve
• Same circulator, nurse, camera person (machine?), anesthesiologist if possible or limited variability
OFFICE PERSONNEL

• Initial contact for patients and referring physicians
• Must be informed
• Must be helpful
• Must be patient
• Must be loyal (or they will leave)
• Hugely important for your life
PROGRAM COORDINATOR

• Must be enthusiastic
• Must be dedicated
• Must be competent
• Must have leadership capacity
• Must have educator, leadership skills
NUTRITIONIST

• Focus on bariatric essential
• Make integral part of team
• Needs to feel part of the success
• Competent
• Patient
NURSING SUPPORT

- In the OR
- In the post-op floor unit
- In the SICU
- In the clinic
- In the ER
- In the Endo unit
- All bariatric oriented and sensitive
REFERRAL SUPPORT

• Primary care doctors essential for
  – Long-term follow-up
  – Immediate post-op screening of complaints
  – Post-op management of medication changes

• Must communicate, united approach
REFERRAL SUPPORT

• Pre-op assessments for cardiac, pulmonary (including sleep study), endocrine function
• Psychological testing
• Hypercoagulable states, DVT risk
FACILITIES

• Overall theme is “bariatric friendly” facilities (doors, toilets, chairs, gowns, BP cuffs, beds)

• Includes personnel awareness training, special equipment, special devices for transport, special consideration for imaging and diagnostic studies
OR FACILITIES

• High capacity weight OR tables
• Table attachments for width
• Extra long external retractor sets
• Lift equipment (Hover Mat)
• Step stools on which to stand
OR EQUIPMENT

• Laparoscopic and open extra long instruments
• Extra long trocars and staplers
• High flow insufflators
• Wide BP cuffs, anesthesia equipment (intubation)
• Sterile powder cords for very small medical students
FACILITIES CHECKLIST

• OR, both Surgery and Anesthesiology
• Recovery Room, ICU
• Inpatient Units
• Radiology, Endo, ER, Dialysis
• Outpatient clinics / offices
INSTITUTIONAL SUPPORT

• Administration needs to support the program
• Capital expenses for equipment and renovations/upgrade for bariatric capable
• COE criteria for reimbursement
INSTITUTIONAL SUPPORT

• Salary support for nutritionist, program coordinator, data manager
• Space support as needed for inpatient beds and special rooms
• Space support as needed for outpatient clinics
PROCESS: SELECTION

• Multi-discipline input
• Ultimately surgeon decision
• Listen to red flag signs
• Refer for formal psych testing by reliable psychiatrist if you have one and there is doubt
VOICE OF EXPERIENCE

• Your office manager is more likely to be able to tell you who to avoid operating on than anyone

• Avoid physiologically old, immobile, and dependent patients
PROCESS: INSURANCE

• Someone on staff or specialist who can advise and communicate with patients regarding insurance requirements

• Responsible for securing insurance approvals
PROCESS: DATA

• COE requires data submission on all patients undergoing surgery

• Database choices:
  – NSQIP
  – COE databases
  – Commercial databases
  – Home developed databases
BEST PRACTICES

• Review data for improvement
• Review protocols periodically
• Data driven changes based on outcomes
• Periodic team meetings for issues and improvement purposes
• CME for all team members
• Communicate with other providers involved in care of patients
INTRODUCTION OF A NEW OPERATION

• Usually associated with a “learning curve” of improving outcomes

• Bariatric surgery COE and multidiscipline approach has minimized this process
SLEEVE GASTRECTOMY

- Originally proposed as first of two step procedure for high risk patients undergoing eventual Duodenal Switch
- Gagner: High mortality with lap DS, proposed first stage
SLEEVE GASTRECTOMY

- Review paper: 36 studies
- 2 RCT, 1 match case control
- 33 uncontrolled case series
- 3 multi-institutional
- 2570 patients

Brethauer S et al, SOARD 2009; 5:469-75
SG: OUTCOMES

- Preop BMI 35-69
- 3/4/5 yr follow: 123/26/8
- Excess wt loss: 55% (33-85)
- Mortality: 0.19%
- Morbidity: to 24%, larger 15%

Brethauer S et al  *SOARD* 2009; 5:469-75
SG: OUTCOMES

- Leak rate: 2.1%
- Bleeding: 1.2%
- Stricture rate: 0.63%
- Resolution of co-morbidities: comparable to other restrictive

Brethauer S et al  *SOARD* 2009; 5:469-75
SG: OUTCOMES (RCT)

■ SG vs. LAGB: 66 vs. 48% EWL at 3 years
  Himpens J et al. SOARD 2006; 16:1450-6

■ SG vs. RYGB: 70 vs. 61% EWL at 1 year
ACS BSCN DATA

7/07-9/10  3/10-9/10

■ LRYGB:  14,491  44%
■ LAGB:    12,193  46%
■ ORYGB:   988    2.2%
■ LSG:     944    7.8%
### RISK ADJUSTED OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>LAGB</th>
<th>LSG</th>
<th>LRYGB</th>
<th>ORYGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>12,193</td>
<td>944</td>
<td>14,491</td>
<td>988</td>
</tr>
<tr>
<td>30d mort</td>
<td>0.05%</td>
<td>0.11%</td>
<td>0.14%</td>
<td>0.71%</td>
</tr>
<tr>
<td>1yr mort</td>
<td>0.08%</td>
<td>0.21%</td>
<td>0.34%</td>
<td>1.11%</td>
</tr>
<tr>
<td>30d mob</td>
<td>1.44%</td>
<td>5.61%</td>
<td>5.91%</td>
<td>14.98%</td>
</tr>
<tr>
<td>30d read</td>
<td>1.71%</td>
<td>5.40%</td>
<td>6.47%</td>
<td>9.41%</td>
</tr>
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</table>
BMI LOSS AT 1 YEAR

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>BMI loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAGB</td>
<td>7.05</td>
</tr>
<tr>
<td>LSG</td>
<td>11.87</td>
</tr>
<tr>
<td>LRYGB</td>
<td>15.34</td>
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</table>
**% IMPROVED OR RESOLVED**

<table>
<thead>
<tr>
<th>Condition</th>
<th>LAGB</th>
<th>LSG</th>
<th>LRYGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>44</td>
<td>55</td>
<td>83</td>
</tr>
<tr>
<td>HTN</td>
<td>44</td>
<td>68</td>
<td>79</td>
</tr>
<tr>
<td>OSA</td>
<td>38</td>
<td>62</td>
<td>66</td>
</tr>
<tr>
<td>Hyperlipidia</td>
<td>33</td>
<td>35</td>
<td>66</td>
</tr>
<tr>
<td>GERD</td>
<td>64</td>
<td>50</td>
<td>70</td>
</tr>
</tbody>
</table>
INVESTIGATIONAL PROCEDURES

- Endoluminal sleeve
- Duodenojejunal bypass
- Ileal transposition
- All relatively aimed at treating diabetes as part of obesity
- Increased concept of metabolic surgery, not just bariatric surgery
DUODENOJEJUNAL BYPASS
ENDOLUMINAL SLEEVE

• Has been studied more carefully and thoroughly in a rat model
• Showed many of the same benefits of weight loss and glucose metabolism as RYGB in this rat model

Aguirre V et al *Obesity* 2008; 16:2585-92
ENDOLUMINAL SLEEVE

Be careful what you swallow!
ILEAL INTERPOSITION WITH SLEEVE GASTRECTOMY

• Patients had BMI 21-29, avg 25.7, n=69, 47 males
• All with DM2 for 3+ yrs, mean 11 yrs
• Insulin by 44%
• Dyslipidemia 73%, HTN 67%, neuropathy 25%, retinopathy 26%

DePaula AL et al Surg Endosc 2009; 1313-20
ILEAL INTERPOSITION WITH SLEEVE GASTRECTOMY

- All procedures done lap.
- 7% complication rate
- 22 month follow-up avg.
- Mean postop BMI 21.8
- 96% adequate glycemic control without diabetic meds
- Hgb A1C <6% by 65%

INTESTINAL DIVERSION AS A METABOLIC SURGICAL TREATMENT

• Stems from original observations of efficacy of RYGB in treating DM2
• Diverting food stream from proximal gut important
• Mechanisms include distal ileal brake, GLP-1 in proximal gut
GASTRIC PLICATION

• Plicate greater curvature with sutures, no staples

• Cleveland Clinic Experience:
  – Anterior: 23% EWL 1 yr
  – Greater curve: 54% EWL 1 yr
Greater-curvature plication mimics sleeve gastrectomy in terms of reduction in stomach volume.
GASTRIC PPLICATION
SUMMARY

• Multidiscipline team approach is well exemplified in bariatric surgery

• COE concept, nature of procedures, and evolution of field have embraced it
SUMMARY

• Multiple factors have contributed to the improvement of outcomes for bariatric surgery, including increased use of multidiscipline teams

• Sleeve gastrectomy exemplifies improved outcomes
SUMMARY

• New procedures will hopefully continue to be well monitored for safety and efficacy

• Sometimes it is important to have a non-surgeon tell you who to avoid operating on