Surgical Options for Obesity
Operations

Case studies

- Outcomes
- Eligibility
- Follow up
CASE

Female 49 Maori Weight 140 (down from 190)
DM2 (Dx 10yrs ago, Protophane 30U, retinopathy)
HT, Hchol
Referred by Diabetologist

November 2009 Lap Gastric Bypass

May 2010 SB Diabetologist Weight 110
Normal HbA1C off DM2 meds
Meds for HT and Hchol also stopped
CASE

Male 46 Maori BMI 45 Weight 145
HT, HChol, GORD
Osteomyelitis R Tibia, OA L Hip

June 2009 Lap Gastric Bypass

December 2009 BMI 33 Weight 109
HT, HChol, GORD resolved

March 2010 “70 kg weight loss”
To Plastics pre hip replacement
CASE

Female 54 European
BMI 43 Weight 106

T2DM on metformin
HT
OA, R THJR
Snorer
Strong family history of T2DM, IHD

Insured
Prefers Sleeve Gastrectomy
Strong family history of T2DM, IHD
CASE

Dietetic consult

Lap Sleeve Gastrectomy

4 months post op
81 kg
Off metformin
Sleeping like a baby
Greatly improved mobility
CASE

Male 49 Fijian Indian
BMI 29 Weight 110

Type Diabetes 10 years
  20 + 20 protophane + Metformin
  HbA1c 8.2
  Retinopathy
  Microalbumiuria
  Bilateral neuropathy
  Charcot foot + R toe amputation

Strong family history of IHD and CVA
Endocrinology, dietetic consult

Lap Sleeve Gastrectomy

2 weeks post op
98 kg
Off insulin
Off antihypertensive
BSL 4-6
HbA1c 6.1
CASE

Male 60 NZ Maori
BMI 59 Weight 167

Type 2 Diabetes 10+ years
HT
Hypercholesterolemia
COPD exsmoker
IHD AF on warfarin
?Pulmonary sarcoidosis
Early renal impairment
GORD

Strong family history of T2DM, IHD and Cancer
CASE

Female 38 European BMI 35

December 2004 Lap Band placed BMI 38 Weight 101
BMI 27 Weight 71
February 2009 port removed for infection
May 2009 new port
August 2009 repair hernia near port
September 2009 further surgery on port

January 2010 Band erosion
April 2010 Band removed BMI 34.9
What do patients struggle with?

Most serious complications occur within 48H

Nausea
Dehydration
Regurgitation
Low energy
Constipation
Hair loss
Follow Up

Discharge post op day 2-4
Some see GP at 1 week for check up
Rooms: 2, 6 weeks, then 3, 6, 9, 12 months
Review medications at 6 weeks, 3 months, 6 months
Review exercise at each follow up
Dietician review – in hospital, 6 weeks, 3/6 months
Support Group
NIH Selection Criteria

BMI > 40 or BMI > 35 & other co morbidities
Between 18 and 60 years of age
Repeated failure of dietary control
Well informed, Motivated and willing to change
Accept lifelong medical surveillance
No or controlled psychiatric illness
Acceptable operative risks
Case series at CMDHB

253 Patients

- 73% female
- 21% Maori
- 14% PI

Mean Age 44 (20-64)
Mean BMI 50 (32-73)
Median stay = 2

Complication Rate 7% (n=17)
- Clavien-Dindo classification utilised

Mean EWL 56%

Follow up exceeds 1 year in 171

- Mean EWL in this group 65%

Submitted for publication Feb 2010.
Case series at CMDHB

Table 2- Comorbidity Resolution

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Improved</th>
<th>Resolved</th>
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</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>33 (29%)</td>
<td>54 (48%)</td>
</tr>
<tr>
<td>n= 113; 45%</td>
<td></td>
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<tr>
<td>Diabetes</td>
<td>7 (9%)</td>
<td>66 (81%)</td>
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<tr>
<td>n= 81; 32%</td>
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<tr>
<td>Hyperlipidaemia</td>
<td>6 (5%)</td>
<td>56 (48%)</td>
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<tr>
<td>n= 117; 46%</td>
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<tr>
<td>OSA</td>
<td>19 (49%)</td>
<td>15 (38%)</td>
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<tr>
<td>n= 39; 15%</td>
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</tr>
</tbody>
</table>

OSA: Obstructive Sleep Apnoea

90% improvement

## Complications: ASMBS v CMDHB

<table>
<thead>
<tr>
<th></th>
<th>ASMBS (%)</th>
<th>CMDHB (%)</th>
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</thead>
<tbody>
<tr>
<td>Leak</td>
<td>2.2</td>
<td>2.4</td>
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<tr>
<td>Bleeding</td>
<td>1.2</td>
<td>1.6</td>
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<tr>
<td>Stricture</td>
<td>0.6</td>
<td>1.2</td>
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<tr>
<td>Mortality</td>
<td>0.19</td>
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</table>
### LSG: Systematic review of results

Table 2
Co-morbidity remission and improvement after sleeve gastrectomy

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Patients (n)</th>
<th>Follow-up (mo)</th>
<th>HTN (%)</th>
<th>Hyperlipidemia (%)</th>
<th>Sleep apnea (%)</th>
<th>DJD/joint pain (%)</th>
<th>GERD (%)</th>
<th>Peripheral edema (%)</th>
<th>Depression (%)</th>
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<tbody>
<tr>
<td>Cottam et al.</td>
<td>126</td>
<td>12</td>
<td>78 R</td>
<td>73 R</td>
<td>80 R</td>
<td>85 R</td>
<td>70 R</td>
<td>91 R</td>
<td>67 R</td>
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<tr>
<td>[9], 2006</td>
<td></td>
<td></td>
<td>7 I</td>
<td>5 I</td>
<td>7 I</td>
<td>6 I</td>
<td>8 I</td>
<td>3 I</td>
<td>9 I</td>
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<tr>
<td>Hamoui et al.</td>
<td>118</td>
<td>24</td>
<td>15 R</td>
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<td>16 I</td>
<td>—</td>
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<tr>
<td>[10], 2005</td>
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<td>Moon Han et al.</td>
<td>60</td>
<td>12</td>
<td>93 R</td>
<td>45 R</td>
<td>100 R</td>
<td>76 R</td>
<td>80 R</td>
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<td>[19], 2005</td>
<td></td>
<td></td>
<td>7 I</td>
<td>30 I</td>
<td>24 I</td>
<td>20 I</td>
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<tr>
<td>Silecchia et al.</td>
<td>41</td>
<td>18</td>
<td>62.5 R</td>
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<td>56.2 R</td>
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<td>[14], 2006</td>
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<td>25 I</td>
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<td>31.2 I</td>
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<tr>
<td>Weiner et al.</td>
<td>120</td>
<td>60</td>
<td>42 R</td>
<td>5 R</td>
<td>39 R</td>
<td>36 I</td>
<td>57 R</td>
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<td>[6], 2007</td>
<td></td>
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<td>55 I</td>
<td>77 I</td>
<td>61 I</td>
<td>43 I</td>
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<td>Gan et al. [26],</td>
<td>21</td>
<td>11.4</td>
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<tr>
<td>Ou Yang et al.</td>
<td>138</td>
<td>24</td>
<td>29 R</td>
<td>48 R</td>
<td>52 R</td>
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<td>[18], 2008</td>
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<td>48 I</td>
<td>39 I</td>
<td>33 I</td>
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<td>Kasalicky et al.</td>
<td>61</td>
<td>18</td>
<td>65 R</td>
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<td>[31], 2008</td>
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<td>23 I</td>
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<tr>
<td>Vidal et al. [5],</td>
<td>39</td>
<td>12</td>
<td>50 R</td>
<td>50 R</td>
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<td>Tagaya et al.</td>
<td>30</td>
<td>18</td>
<td>56 R</td>
<td>33 R</td>
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<td>[36], 2008</td>
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<td>44 I</td>
<td>33 I</td>
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</table>

T2DM = type 2 diabetes mellitus; HTN = hypertension; DJD = degenerative joint disease; GERD = gastroesophageal reflux disease; R = remission; I = improved.

Adapted, with permission, from Brethauer et al. [2].

Who Would Have Thought It?
An Operation Proves to Be the Most Effective Therapy for Adult-Onset Diabetes Mellitus


From the Departments of Surgery and Biochemistry of the School of Medicine and the Human Performance Laboratory of East Carolina University, Greenville, North Carolina
**Figure 4.** The correction of the hyperglycemia occurs rapidly. Patient 1 had an fasting blood glucose level of 495 mg/dL on the day before surgery despite the administration of 90 U of insulin. By the end of the 1st postoperative day, her fasting blood glucose level fell to 281 mg/dL and her insulin requirement dropped to 8 U. By the 6th postoperative day, she no longer required insulin.
Bariatric Surgery
A Systematic Review and Meta-analysis

Conclusions Effective weight loss was achieved in morbidly obese patients after undergoing bariatric surgery. A substantial majority of patients with diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea experienced complete resolution or improvement.

JAMA. 2004;292:1724-1737
Lifestyle, Diabetes, and Cardiovascular Risk Factors 10 Years after Bariatric Surgery

Lars Sjöström, M.D., Ph.D., Anna-Karin Lindroos, Ph.D., Markku Peltonen, Ph.D., Jarl Torgerson, M.D., Ph.D., Claude Bouchard, Ph.D., Björn Carlsson, M.D., Ph.D., Sven Dahlgren, M.D., Ph.D., Bo Larsson, M.D., Ph.D., Kristina Narbro, Ph.D., Carl David Sjöström, M.D., Ph.D., Marianne Sullivan, Ph.D., and Hans Wedel, Ph.D., for the Swedish Obese Subjects Study Scientific Group*
**Figure 1.** Mean Percent Weight Change during a 15-Year Period in the Control Group and the Surgery Group, According to the Method of Bariatric Surgery.
Figure 2. Unadjusted Cumulative Mortality.

The hazard ratio for subjects who underwent bariatric surgery, as compared with control subjects, was 0.76 (95% confidence interval, 0.59 to 0.99; P = 0.04), with 129 deaths in the control group and 101 in the surgery group.
A Prospective Randomized Trial of Laparoscopic Gastric Bypass Versus Laparoscopic Adjustable Gastric Banding for the Treatment of Morbid Obesity

Outcomes, Quality of Life, and Costs

Ninh T. Nguyen, MD, Johnathan A. Slone, MD, Xuan-Mai T. Nguyen, PhD, Jaimee S. Hartman, BS, and David B. Hoyt, MD

Annals of Surgery • Volume 250, Number 4, October 2009
FIGURE 1. Mean percent of excess weight loss, gastric bypass versus gastric banding. *$P < 0.05$ versus gastric banding (2-sample $t$ tests).
FIGURE 4. Category of weight loss according to percent of excess weight loss, gastric bypass versus gastric banding.
The Diabetes Surgery Summit Consensus Conference

Recommendations for the Evaluation and Use of Gastrointestinal Surgery to Treat Type 2 Diabetes Mellitus

Francesco Rubino, MD,*† Lee M. Kaplan, MD, PhD,‡ Philip R. Schauer, MD,§ and David E. Cummings, MD,¶ on behalf of the Diabetes Surgery Summit Delegates
Adjustable Gastric Banding and Conventional Therapy for Type 2 Diabetes
A Randomized Controlled Trial

John B. Dixon, MBBS, PhD
Paul E. O’Brien, MD
Julie Playfair, RN
Leon Chapman, MBBS
Linda M. Schachter, MBBS, PhD
Stewart Skinner, MBBS, PhD
Joseph Proietto, MBBS, PhD
Michael Bailey, PhD, MSc(stats)
Margaret Anderson, BHealthMan

**Conclusions** Participants randomized to surgical therapy were more likely to achieve remission of type 2 diabetes through greater weight loss. These results need to be confirmed in a larger, more diverse population and have long-term efficacy assessed.

**Trial Registration** actr.org Identifier: ACTRN012605000159651

*JAMA. 2008;299(3):316-323*

mean BMI of those recruited to the study was 37.1.
nosed with clearly documented type 2 diabetes within the previous 2 years,
glycemic control at 2 years:
Differential Changes in Dietary Habits after Gastric Bypass Versus Gastric Banding Operations

Barbara Ernst • Martin Thurnheer • Britta Wilms • Bernd Schultes

gastric bypass patients consumed more frequently fresh fruits, eggs, and diet soft drinks but strikingly less chocolate than gastric banding patients.
A Prospective Randomized Study Between Laparoscopic Gastric Banding and Laparoscopic Isolated Sleeve Gastrectomy: Results after 1 and 3 Years

Jacques Himpens, MD; Giovanni Dapri, MD; Guy Bernard Cadière, MD, PhD

Department of Gastrointestinal and Obesity Surgery, European School of Laparoscopic Surgery, Saint-Pierre University Hospital, Brussels, Belgium
Table 2. Median decrease of BMI and %EWL after 1 and 3 years

<table>
<thead>
<tr>
<th></th>
<th>1 year</th>
<th>3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAND BMI</td>
<td>15.5 kg/m² (5-39)</td>
<td>18 kg/m² (0-39)</td>
</tr>
<tr>
<td>SLEEVE</td>
<td>25 kg/m² (0-45)</td>
<td>27.5 kg/m² (0-48)</td>
</tr>
<tr>
<td>BAND %EWL</td>
<td>41.4% (-11.8 - +130.5)</td>
<td>48% (0-124.8)</td>
</tr>
<tr>
<td>SLEEVE %EWL</td>
<td>57.7% (0-125.5)</td>
<td>66% (-3.1 - +152.4)</td>
</tr>
</tbody>
</table>

%EWL = percent of excess weight lost, using the Metropolitan Tables.

Figure 1. Loss of hunger sensation after 1 and 3 years.