Bariatric surgery: The Options

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Aims

- Information about obesity
- Treatment options; medical vs surgery
- Candidates for surgery
- Surgical options
- Why more is needed
- Become an advocate
Definitions

- Obesity is an **illness** characterized by an excess of body fat.
- BMI = Weight (kg) / Height Squared (m)
  - 18 – 25 Normal
  - 25 – 30 Overweight
  - 30 – 35 Obese
  - 35- 40 + Morbid Obese
  - 50 + Super Obese
Obesity is a disease

- AMA
- AHA
- American Cardiology Society
- Obesity Society

- The American Medical Association classifies obesity as a disease, overriding committees' recommendations that better measurement metrics and research are needed.
NZ Background

• 1977: 10% obese; 2002/3 20%
• Occurred despite increased awareness/education
• No significant gene change
• Diet/Exercise: “Obesogenic environment”
NZ obesity and diabetes

• 1.1 million obese adults in NZ
• 2006 $686 million/annum or 4.5% of health care expenditure
• 250,000 people type II DM in NZ
• 100,000 undiagnosed
• Predicted 400,000 by 2020 and $1 billion/annum
The world's expanding waistline
The shape of things to come
Dec 11th 2003
From The Economist print edition
Why Worry?

• The cost of overweight and obesity to the nation was estimated at $8 billion over the next decade.

• These preventable costs are a mix of costs to the tax payer funded health system (approximately $6 billion).

• Lost productivity due to absenteeism and premature death (approximately $2 billion) to business and society more generally.

• The higher the BMI of the patient; the greater the risk to life.

• Life expectancy 5 to 20 y < Lean population.
# Obesity is our worst pathogen

<table>
<thead>
<tr>
<th>Condition</th>
<th>Condition</th>
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<tbody>
<tr>
<td>Type 2 diabetes</td>
<td>Osteoarthritis</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Lower back pain</td>
</tr>
<tr>
<td>Dyslipidaemia</td>
<td>Infertility</td>
</tr>
<tr>
<td>Ischaemic heart disease</td>
<td>Polycystic ovary syndrome</td>
</tr>
<tr>
<td>Stroke</td>
<td>Fetal abnormalities</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td>Venous thromboembolism</td>
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<tr>
<td>Obesity hyperventilation syndrome</td>
<td>Depression</td>
</tr>
<tr>
<td>Pulmonary hypertension</td>
<td>Cancer: breast, bowel, endometrium, prostate,</td>
</tr>
<tr>
<td></td>
<td>ovarian, oesophageal</td>
</tr>
<tr>
<td>Asthma</td>
<td>Venous and stasis ulcers</td>
</tr>
<tr>
<td>Obstructive sleep apnoea</td>
<td>Accident prone</td>
</tr>
<tr>
<td>Gallstones</td>
<td>Intracranial hypertension</td>
</tr>
<tr>
<td>Non alcoholic steatohepatitis</td>
<td>Gout</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>Skin disorders: acanthosis nigricans, acne,</td>
</tr>
<tr>
<td></td>
<td>intertrigo, hirsutism</td>
</tr>
<tr>
<td>Gastrooesophageal reflux</td>
<td>Obstetric complications</td>
</tr>
</tbody>
</table>
Experts warn being fat is worse than smoking as stats show 1 in 5 UK cancer deaths caused by obesity
Management

• The National Institutes of Health in the United States (2000) based on patients BMI

• First line treatment
  – LCD>VLCD

• Second line treatment
  – Drug: sibutramine, orlistat

• Surgery
Disadvantages of medical treatment

• Most patients (95-97%) regain most or all of the weight that was lost within 2 to 5 years following diet or drug treatment

• The average amount of weight loss is relatively small (4 to 18kg)

• Drug treatment may be associated with severe complications
Diet and behavioural intervention

Weight change (kg) vs. Years after intervention

- Very-low-calorie diet
- Modified diet plus behaviour therapy
- Very-low-calorie diet plus behaviour therapy
The Minnesota Heart Health Program

• A 13 year research and demonstration program
• Included 3 demonstration communities and 3 matched control communities
• Primary end-point was reduction in cardiovascular risk
Impact of education on body weight

Cohort Study
At last!

Surgery the sole solution to obesity, says doctor

BRITAIN: Forget the yo-yo diet and plump for gastric bypass surgery instead, says one of Britain’s experts on weight loss.

The only answer to the western world’s obesity epidemic is to offer surgery to anyone suffering from severe weight problems, he says.

As people put on pounds, the body “accepts” the new weight and tries to restore any losses as quickly as possible.

Nick Finer, professor of obesity medicine at University College London, has found that the average long-term weight loss achieved by obese adults who diet is 2-3 per cent, so small as to be almost irrelevant.

He said: “What these figures

Cutting back: Dieting will not cure the western world’s obesity problem surgery will, says British weight loss expert Professor Nick Finer.

Nick Finer: Wants clinics to perform mass surgeries on the obese.
Effectiveness of Surgery

- Swedish Obese Subject
- Prospective cohort 4000 patients
- Surgery vs No surgery
- 10 years post surgery 16.1% weight loss vs 1.6% wt gain
  - 10 year: 25+/-11%RYGB; 16+/-11% VBG; 14+/-14% GB
- 29% lower risk of death in surgery group
  - NEJM 2007;357:741-52
Who Is A Candidate?

• Obesity is an **illness; it is not a defect in the personality or character**

• Guidelines across the world

• Consideration of the individual

• Multidisciplinary team
  – Doctors, Dietitians, Counsellor
Selection Criteria

- BMI > 40 or BMI > 35 & other co morbidities
- Repeated failure of dietary control
- Well informed
- Motivated and willing to change
- Acceptable operative risks
- Between 18 and 60 years of age
- Acceptance of Lifelong medical surveillance
- Stable adult life pattern
- No or controlled psychiatric illness

Long-term Weight Control

- Less calories - 1200-1400 kcal /day, 3 meals: high protein, low fat and low QI

Role of surgery
- More exercise - 10,000 steps /day

Life style change
- Weekly weighing - active management
Surgery

• Restrictive
• Malabsorptive
The end game is 1500 Kcal

Breakfast
High fibre cereal low fat milk
A piece of fruit

Lunch
Salad with cheese & lean protein
Low fat Yoghurt

Dinner
Lean protein with vegetables
A piece of fruit
Bariatric Surgery Today

Types of Most Commonly Performed Bariatric Surgery Procedures

- Restrictive
  - Adjustable Band Gastroplasty
- Combination
  - Roux en Y Gastric Bypass
- Malabsorptive
  - Biliopancreatic Diversion w/ Duodenal Switch
Vertical banded gastroplasty
Laparoscopic adjustable gastric band
Sleeve gastrectomy
Roux-en-Y gastric bypass
Biliopancreatic diversion/Duodenal Switch
# Bariatric Results

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Results (mean excess weight loss of initial excess weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical banded gastroplasty</td>
<td>58% at 5 years</td>
</tr>
<tr>
<td>Gastric banding</td>
<td>55% at 6 years</td>
</tr>
<tr>
<td>Sleeve gastrectomy</td>
<td>66% at 3 years</td>
</tr>
<tr>
<td>Gastric bypass</td>
<td>68% at 5 years</td>
</tr>
<tr>
<td>Fobi pouch gastric bypass</td>
<td>75% at 5 years</td>
</tr>
<tr>
<td>Biliopancreatic diversion</td>
<td>77% at 8 years</td>
</tr>
<tr>
<td>Biliopancreatic diversion with duodenal switch</td>
<td>70% at 8 years</td>
</tr>
</tbody>
</table>
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

Treatment of co-morbidity

- Diabetes
- Blood pressure
- Lipids
- OSA

- Stop the medicines and observe
## Operative Mortality

<table>
<thead>
<tr>
<th>diet</th>
<th>LAGB</th>
<th>SG</th>
<th>RYGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1/2000</td>
<td>1/1000</td>
<td>1/500</td>
</tr>
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</table>

Buchwald JAMA 2004; 292:1724-1737
# Surgical complications/ re-operations

<table>
<thead>
<tr>
<th></th>
<th>LAGB</th>
<th>SG</th>
<th>RYGB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short term</strong></td>
<td>Perforation &lt;1%</td>
<td>Leak &amp; bleeds 1%</td>
<td>Leak &amp; bleeds 1%</td>
</tr>
<tr>
<td><strong>Long term</strong></td>
<td>Erosion 1-5%</td>
<td></td>
<td>Stomal ulcer 5-10% SBO 2%</td>
</tr>
<tr>
<td></td>
<td>Slippage 5-10%</td>
<td></td>
<td>? Metabolic bone disease</td>
</tr>
<tr>
<td></td>
<td>Reflux/ regurgitation 1-5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food intolerances 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inadequate weight loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reops</strong></td>
<td>5%/ yr</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>30-50% @ 10yrs</td>
<td></td>
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</tbody>
</table>
Surgical costs

- Four published economic evaluations
- Surgery cost effective compared with conventional treatment
- Laparoscopic treatment more cost effective
- No difference in C/E between procedures
Canadian Study
Healthcare costs following surgery

• 1035 patients have bariatric surgery 1996-2002
• 5746 matched patients not having surgery
<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Sleeve gastrectomy</th>
<th>Gastric bypass</th>
<th>LAGB</th>
<th>DS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>889</td>
<td>538</td>
<td>326</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Percentage</td>
<td>61</td>
<td>37</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
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The Sums

- Population of 4 million
- 5% qualify: 200,000
- 30% qualify: 1.2 million
- > $1 billion/annum
- 100,000 undiagnosed diabetics

- Long term weight loss dieting 3 to 5% only (NIH)
- NZ Operate <1000/year
- High rates of resolution
- Increased life expectancy
Central Region Metabolic and Bariatric Service

**Background**
- 47 cases/annum lower North Island
- Case weight led to structure
- Referral by questionnaire
- CPAC scoring tool
- Surgeons, dietitian, counselor, bariatric nurse

**Referral**

1. Information Evening
2. Team present → Weighed
3. Assessment
4. Counselor → Dietitian
5. Assessment
6. MDM → FSA
7. Surgery
Summary

• Number 1 health issue
• Increasing problem
  – Are we doing enough?
• Resolution of comorbidity
• Where to draw the line
  – Do we have it right
• Be an advocate
Conclusion

• Obesity is a disease
  – a costly disease
  – shortens life
• Resolution of co-morbidity
• Return of life expectancy
• Cost effective