Morbid Obesity
A Curable Disease?

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Morbid obesity
– an epidemic
Morbid obesity – a magnitude of the problem

Americans spend $33 billion annually on weight-reduction products and services.

An estimated cost of obesity to American society has been estimated at $100 billion annually.
Morbid obesity – a magnitude of the problem

NHANES Studies

OBESITY* TRENDS AMONG U.S. ADULTS


*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person

Accelerating Worldwide Problem
Morbid obesity – a magnitude of the problem

according to “surgeon’s general call to action”

• Obesity is a number 1 cause of preventable deaths in the USA.

• An estimated 400,000 annual deaths (Mokdat JAMA 2000) in the US is attributable to obesity and poor diet.
Morbid obesity

In 1997 World Health Organization (WHO) and in 1998 National Institute of Health (NIH) endorsed the BMI as a measure of obesity.

• BMI < 18.5 kg/m² – underweight
• BMI 18.5-24.9 kg/m² – normal range
• BMI > 25 as “overweight” with 3 classes of “obesity”
  • Class I = BMI 30 - 34.9 kg/m² - moderate
  • Class II = BMI 35 – 39.9 kg/m² - severe
  • Class III = BMI > 40kg/m² – very severe
• Class IV = BMI > 50 kg/m² – super-obesity
Morbid obesity

Definitions:

• >100 Lbs over the ideal body weight
• BMI >35 with weight related comorbidities
• BMI > 40 without comorbidities
• Double the ideal body weight
Surgery for Morbid Obesity

Indications (NIH endorsed)

BMI > 35 with obesity related comorbidities
BMI > 40 without comorbidities
Dietary attempts at weight control have been ineffective
Multiple Factors Influence the Disease

- Genetic
- Environmental
- Behavioral
The relative risk of death and disease for a person of BMI 40 kg/m² compares with that of normal BMI 20-25 kg/m². All risks are approximations compiled from cited literature.

<table>
<thead>
<tr>
<th>Relative Risk &gt;5.0</th>
<th>Relative Risk &gt;2 - 5</th>
<th>Relative Risk 1-2</th>
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</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>Mortality</td>
<td>Cancer mortality</td>
</tr>
<tr>
<td>Obstructive Sleep</td>
<td>Hypertension</td>
<td>Prostate Cancer</td>
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<tr>
<td>Apnea</td>
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<tr>
<td>Dyslipidaemia</td>
<td>Myocardial Infarction</td>
<td>Breast Cancer</td>
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<tr>
<td>Breathlessness</td>
<td>Stroke</td>
<td>Colon Cancer (Men)</td>
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<tr>
<td>Excessive Daytime</td>
<td>Gallstones and</td>
<td>Obstetric complications</td>
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<tr>
<td>Sleepiness</td>
<td>complications</td>
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<tr>
<td>Obesity Hypoventilation Syndrome</td>
<td>Endometrial carcinoma</td>
<td>Impaired fertility</td>
</tr>
<tr>
<td>Idiopathic Intracranial Hypertension</td>
<td>Gallbladder cancer</td>
<td>Fetal abnormalities</td>
</tr>
<tr>
<td></td>
<td>Polycystic ovary syndrome</td>
<td>Asthma</td>
</tr>
<tr>
<td></td>
<td>Osteoarthritis (knees)</td>
<td>Gastroesophageal reflux</td>
</tr>
<tr>
<td></td>
<td>Gout</td>
<td>Anaesthetic risk</td>
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</tbody>
</table>
Severe obesity is a major health risk. Dietary, lifestyle modifications, exercise programs and medical therapy are all unsuccessful in providing patients with a significant and sustained weight loss.

The natural history of morbid obesity is continuing weight gain, development of comorbidities and premature death.
Modern Surgery For Morbid Obesity

• Restrictive procedures (Lap Band, Sleeve Gastrectomy)
• Malabsorbtive procedures (BPD)
• Mixed - restriction and malabsorbtion (RYGB)
1000 Consecutive Bariatric Patients

Operated at NYMH August 2001 – April 2011
Consecutive 1000 Bariatric Operations At NYMH

Operated at NYMH August 2001 – April 2011

- 641 Laparoscopic RY Gastric Bypass
- 359 Lap Adjustable Gastric Bands
- No Mortality
- No Conversions to Open
- No Intraoperative Blood Transfusion
- No Major Intraoperative Complication
Preoperative evaluation

Clinical Pathways

- All patients met NIH criteria for Bariatric Surgery
- All were evaluated in the multidisciplinary setting
- Therapeutic options were given (RYGB vs Lap-Band)
- Extensive informed consent was obtained
- Understanding of the surgery documented in the form of a test
- Conference with family
- Prospective database – severity of symptoms, comorbidities and QOL
- Support group
- Intensive follow-up
641 Consecutive Morbidly Obese Patients RYGB

Patient demographics

Males 14.1%
Females 85.9%

Average age – 38 years (range 18 – 67)
Patient demographics
434 Consecutive Patients

Preoperative BMI

BMI Distribution in 434 Patients

- BMI 35-39 (4.8%)
- BMI 40-49 (56%)
- BMI 50-59 (33.6%)
- BMI 60-69 (5.3%)
- BMI >70 (0.2%)

BMI Distribution in 434 Patients

N=13
N=131
N=88
N=17
N=1
Complications

All data collected and recorded prospectively

1000 Consecutive Bariatric Patients
Complications

Laparoscopic Bariatric Surgery - 1000 Consecutive Patients

• No mortality
• No permanent disability
Outcomes of Bariatric Surgery

• Surgical complications
• Weight loss
• Resolution of comorbidities
• Quality of life
• Reduction of mortality
• Reduced cost to health care
Weight Loss

Laparoscopic Roux-en-Y Gastric Bypass and Adjustable Gastric Band are effective weight loss operations

1000 Consecutive Patients
22 Year old female

1 year later – lost 200 Lbs
Laparoscopic Roux-en-Y Gastric Bypass - 250 patients

Average weight loss – 12 month data

Initial BMI 48.5 kg/m²

Excess BMI lost – 76%

BMI

Initial 1 M 3 M 6 M 12 M

BMI

0 10 20 30 40 50

Excess BMI lost – 76%

48.5 kg/m²

31 kg/m²
Laparoscopic bariatric surgery LAGB v.s. LRYGB
1000 consecutive patients

Average weight loss (Lbs) 60-months data

Lbs

Initial 1 W 1 M 3 M 6 M 9 M 1 Y 2 Y 3 Y 4 Y 5 Y

N=641
N=582
N=359
N=310
N=409
N=213
N=14

N=41
Laparoscopic AGB - 1000 patients total

Average weight loss 5-Year data

Lbs

Initial | 1 M | 6 M | 1 Y | 3 Y | 5 Y
---|---|---|---|---|---
Weight Lbs LRYGB | Weight Lbs LAGB
**RYGB Distribution of weight loss at 1 year (IBW)**

- **99.6%** lost more than 25% of EWL,
- **85.5%** lost more than 50% of EWL

N = 228

P Gorecki 434 patients
Laparoscopic RYGB
Improves Quality Of Life

Analysis of Consecutive 434 Patients
Patient Satisfaction and Quality of Life

Laparoscopic Roux-en-Y Gastric Bypass

434 Consecutive Patients
Patient satisfaction

434 Consecutive Laparoscopic RYGB Patients

Are you satisfied with your decision to undergo weight reduction surgery?

(first postoperative visit 4-43 days)

Yes - 431 patients (99.3%)

No – 3 patients

At 6-moth follow up all patients admitted the benefit of surgery.
Laparoscopic Roux-en-Y Gastric Bypass - 250 patients

Quality of life – 12 month data

QOL – General well being score

(1-2 excellent, 3-4 good, 5-6 acceptable, 7-8 not acceptable, 9-10 very poor)
Quality of life SF – 36 health survey
434 patients (280 patients)

P<0.003

1 month
Male 9, Female 40

6 months
Male 7, Female 47

12 months
Male 9, Female 92
Quality of life SF–36 health survey
434 patients

Physical Component Summary  Mental Component Summary

Population mean = 50

P<0.003
Diabetes
Prevalence of Diabetes

434 Consecutive Morbidly Obese Patients

No DM 75.8%
DM 24.2%

N=105
Resolution of Diabetes

434 Consecutive Morbidly Obese Patients

N=105 - 24.2 % of patients, 49 available for 1 year follow up
Glucose levels – elevated pre op

- Pre op
- 3 months post op
- 12 months post op

Abnormal glucose, >110

Paired t-test
P<0.001
(n=102)
Hb A1C levels elevated pre op, > 6

(n=78)
Insulin levels – elevated pre op, >16

(n=37)
Insulin levels – normal vs abnormal pre op

- Pre op
- 3 months post op
- 12 months post op

(n=34)
Resolution of Diabetes
434 Consecutive Morbidly Obese Patients

Diabetes was resolved in 87.7% of patients and improved in 12.3% of patients.

100% of patients who underwent laparoscopic RY gastric bypass had resolved or improved diabetes.
<table>
<thead>
<tr>
<th>Comorbidities</th>
<th>Resolved %</th>
<th>Improved %</th>
<th>Resolved or improved %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>87.7</td>
<td>12.3</td>
<td>100</td>
</tr>
<tr>
<td>HTN</td>
<td>61</td>
<td>35</td>
<td>96</td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>87.1</td>
<td>10</td>
<td>97.1</td>
</tr>
<tr>
<td>GERD</td>
<td>89</td>
<td>7.5</td>
<td>96.5</td>
</tr>
<tr>
<td>Asthma</td>
<td>53</td>
<td>34.8</td>
<td>87.8</td>
</tr>
<tr>
<td>Arthritis</td>
<td>69.4</td>
<td>24.7</td>
<td>94.1</td>
</tr>
<tr>
<td>Urinary SI</td>
<td>90.2</td>
<td>8.5</td>
<td>98.7</td>
</tr>
<tr>
<td>Depression</td>
<td>71.3</td>
<td>23.6</td>
<td>95.3</td>
</tr>
<tr>
<td>Hypercholesterolema</td>
<td>65.1</td>
<td>27.9</td>
<td>93</td>
</tr>
<tr>
<td>Back Pain</td>
<td>63.2</td>
<td>30.3</td>
<td>93.5</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>Resolved %</td>
<td>Improved %</td>
<td>Resolved or improved %</td>
</tr>
<tr>
<td>---------------------------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>Difficulty walking n=209</td>
<td>90%</td>
<td>9.1%</td>
<td>99.1%</td>
</tr>
<tr>
<td>Shortens of breath n=36</td>
<td>94.4%</td>
<td>5.6%</td>
<td>100%</td>
</tr>
<tr>
<td>Dysmenorrhea n=23</td>
<td>87%</td>
<td>4.3%</td>
<td>91%</td>
</tr>
</tbody>
</table>
Managing Bariatric Patient

Important pitfalls for primary care physicians

Internal hernias
Marginal ulceration
Anastomotic strictures
Bowel obstructions/adhesions
Gallstones
Gastric prolaps – band slip
Band erosion
Tight band
Loose band

VS.

Gastritis
Dyspepsia
Gas pains
Back pains
Kidney stones
Pancreatitis
IBS
GERD
Managing Bariatric Patient

Important pitfalls for primary care physicians

**Maintenance**

- Good quality solid food - protein rich
- Avoidance of liquid calories
- Avoid snacking
- Multivitamins twice a day
- Calcium 1 gm a day/Vit D
- Extra iron for menstruation woman
- B12 (injections i.m. Q1-6 months?)
- H2 blockers daily?
- No smoking (marginal ulcers)
- Physical activity
- Long term goal – change in life habits
Managing Bariatric Patient

Important pitfalls for patients and primary care physicians

Common deficiencies that require supplements:

- Iron
- B12
- Calcium

VS.

Uncommon deficiencies:

- Calorie malnutrition
- Protein malnutrition
Medicare Advisory Panel Concludes Weight Loss Surgery Safe and Effective for Morbidly Obese patients

Nov 5, 2004 - The Medicare Coverage Advisory Committee

“The Medicare Coverage Advisory Committee (MCAC) concluded that there is significant evidence supporting the safety and effectiveness of weight loss surgery and its ability to improve a number of life-threatening obesity related conditions including diabetes, high blood pressure and high cholesterol.”
COMPONENTS OF EFFECTIVE WEIGHT-MANAGEMENT PROGRAMS

- Behavior Modification
- Diet
- Medications and/or Surgery
- Physical Activity
Conclusions

There is sufficient scientific evidence to suggest that morbid obesity is a severe, chronic, lifelong disease that has profound impact on life expectancy, morbidity and quality of life.

Medical therapy is ineffective.

Surgery has been shown to produce a significant and durable weight loss averaging 60 – 80 % of excess body weight.
Conclusion

Surgically induced weight loss results in:

• Significant and sustained weight loss
• Improved quality of life
• Significant reduction of mortality
• Reduction or elimination of co morbidities
• Overall reduction of the health care costs.
Risks/Benefits
Obesity Surgery - Risks/Benefits

**Benefits**
- Significant weight loss
- Longer life
- Better quality of life
- Reduction or elimination of obesity comorbidities
  - Diabetes
  - High blood pressure
  - Heartburn
  - Joint pains
  - Sleep apnea
  - Depressions

**Risks**
- Mortality
- Anesthesia
- Bleeding
- Leak/Infection
- Wound problems
- Hernias
- DVT/PE
- Pulmonary problems
- Bowel obstruction
- Pains
ASBS
Bariatric Centers of Excellence Program

To protect and serve our patients to the best of our ability.
To provide a platform for continuous improvement in our discipline.
To reward excellence.
To promote research and pursuit of knowledge.
Thank You