Kaiser Permanente 3rd Annual National Surgical Symposium

Bariatric Surgery
(in 20 minutes or less)

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Kaiser SSF Bariatric Surgery

History

- Bariatric Surgery program initiated at Kaiser South San Francisco for the Kaiser Northern California region in 1999
- Approximately 1900 gastric bypasses performed from 1999-2007 at this institution
- Since 2003-4, two additional Kaiser Bariatrics programs added in Northern California
- 2006 all Kaiser Northern California Health Plan member’s bariatric surgery care internalized to one of 3 regional centers
Kaiser Bariatric Surgery

- Northern California region
  - Kaiser South San Francisco
  - Kaiser Richmond
  - Kaiser Fremont
- Programs undergoing SRC/ACS Bariatric Surgery Centers of Excellence process
- Busiest individual bariatric program in the Bay Area and largest aggregate bariatric program in California
Kaiser South San Francisco
Department of Bariatric Surgery

- Longstanding institutional/regional commitment
- Large HMO-> tremendous resources
- Exceptional physician extender staff
  - 2 Health Educator, 2 RN Case Managers, 2 Bariatric Dieticians
- Full-time Bariatric Medicine physician
- 3 bariatric psychiatrists
- 3 board-certified bariatric surgeons
- Model pre-operative/post-operative program
Kaiser South San Francisco
Department of Bariatric Surgery

- Referred by primary MD through eConsult
- Average 70-120 new consults per month per facility
- Average 1000 bariatric cases/yr for Northern California region
- Average length of stay 1.6 days at SSF
- >95% gastric bypasses done laparoscopically
- Lap Band programs initiated 2006-7
- Not doing BPD/duodenal switch/sleeve gastrectomy
The Obesity Epidemic
A Rapidly Expanding Problem

- Three in five Americans are either overweight or obese
- 15% of children are overweight
- $117 billion health care cost of US economy
- 75% of obese children become morbidly obese adults
- Classified by the CDC as a “critical health problem”
- 300,000+ premature deaths annually
  - Second only to smoking
  - Average life expectancy decreased by 9 years in females and 12 years in males for morbidly obese

Source: The Surgeon General’s Call to Action to Prevent Overweight and Obesity.
Epidemiology of obesity

- 67% of Hispanic/black women obese vs. 46% Caucasian women (black women highest)
- No racial/ethnic disparities among men
- Increases in obesity/overweight in both men and women and among all racial/ethnic groups from 1978-1991

Prevalence of Overweight Adults

- United States: 61%
- Australia: 59%
- Russia: 54%
- United Kingdom: 51%
- Brazil: 36%
- China: 15%
- Malaysia: 27%

Body Mass Index

\[ \text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)} \times \text{height (m)}} \]
Degrees of Obesity

- **NORMAL**
  - BMI 18.5 — 24.9

- **OVERWEIGHT**
  - BMI 25 — 29.9

- **OBESE**
  - BMI 30 — 34.9

- **SEVERE OBESE**
  - BMI 35 — 39.9

- **MORBIDLY OBESE**
  - BMI ≥ 40
Medical Co-Morbidities related to Obesity

- Diabetes Mellitus
- Hypertension
- Sleep apnea
- Coronary artery disease
- Hypercholesteremia
- Depression
- Increased risk of breast, uterine, prostate cancer
- Arthritis
- Infertility
- Reflux disease
**Body Mass Index vs. Mortality**

Exponential Increase in Risk

**Source:** NIH, NEJM, 1995.
Treating Obesity

- Diet and exercise
- Behavior modifications
- Weight loss programs
- Appetite suppressants
- Hypnosis, jaw-wiring, counseling

only 5% of patients with successful long-term nonsurgical weight loss
Surgery is the only way to obtain consistent, permanent weight loss for morbidly obese patients. Gastric bypass is identified as a safe and effective surgical treatment for obesity. Surgery indicated in patients with:

- BMI of 40 or over
- BMI of 35+ with significant co-morbidity
- Documented dietary attempts ineffective
GBP, VBG, lap band, or DS/ BPD recommended operations

Bariatric surgery should be extended to the adolescent population under certain conditions

Consideration should be given to patients with BMI 30-35 with significant co-morbidities

Bariatric surgery can be cost-effective within 4 years
Weight-loss surgery in the US

- Gastric bypass (Roux-en-Y)
  - >140,000 in US in 2004
- Gastric banding
  - 40,000 expected in US in 2004
- New options:
  - Gastric sleeve
- Out of favor
  - Vertical banded gastroplasty (VBG), Duodenal switch/ biliary pancreatic bypass, Jejeunal-Ileal Heal bypass
Surgical Therapy for Obesity

GOAL of Obesity Surgery:
- Improve Health
- Improve Quality of Life
- Increase Lifespan
- Not cosmetic—this is only a side effect
Who Is a Surgical Candidate?

- No hormonal cause of obesity
- No uncontrolled med/surg problems
- Active involvement in pre-operative program
- No drug or alcohol problem
- No uncontrolled psychological conditions
- Acceptable operative risk
- Understands surgery and risks
- Committed to lifelong life-style changes and follow-up
Pre-Operative Evaluation

- Multi-Disciplinary Approach
  - Psychological Evaluation
  - Dietary Evaluation
  - Medical Evaluation

- Pre-Operative Diet
  - 1200 Kcal diet/low carbohydrate

- Exercise Program

- Pre-operative Weight loss mandatory
Gastric bypass
Operative/Post-operative Details

- General Anesthesia
- Operative time 1-2 hours
- Hospital Stay
  - 1-2 days for laparoscopic
  - 3-5 days for open
- Stage II diet on discharge
- First follow-up 2 weeks
- Off Work 2-4 weeks
Roux-en-Y Gastric Bypass

- Gastric POUCH
- Gastric REMNANT
- Roux Limb
Roux-en-Y gastrojejunostomy
“gastric bypass”
Gastric bypass Post Operative Diet

- Stage II diet for 2 weeks
- Stage III thereafter
- Must consume 40-60 grams of protein each day to maintain muscle mass
- Will need to maintain a healthy, balanced diet
- 48-64 oz fluid daily
Early Complications of Gastric Bypass (Kaiser experience)

- Approximately 1900 gastric bypasses done since 2001
- >97% laparoscopically in past 2 years
- Anastomotic leak (<1%)
- DVT/pulmonary embolism (0%)
- Anastomotic stenosis (narrowing) <5%
- Wound infection (<.4%)
- Bleeding (1-2%)
- Death (<.1%)
- Re-operative rate (1.5%), re-admission rate (2.6%)
Complications of Gastric Bypass (Late)

- Bowel obstruction/ Internal hernias (3%)
- Nutritional/ vitamin deficiencies
- Marginal ulceration/ perforation
- Gallstones
- Abdominal wall hernias
- Anastomotic stricture
Post-operative Issues

- Lifelong diet/exercise program
- Plastic surgery if medically indicated
  - Not within 1 year
- Pregnancy OK once medically stable
  - Not within 1 years
- Most patients regain some weight
  (50% excess body weight loss)
- No NSAIDs, Celebrex, coumadin (?)
Results of gastric bypass

- 70-80% EBWL at 1 year

- Less pain, shorter LOS, decreased incisional hernia rates and wound complications with lap GBP vs open GBP
Gastric Band

Laparoscopic Adjustable Gastric Banding (LAGB®) System

product line

LAP-BAND® System
Lap-Band™

- First developed in 1986
- Allergan (formerly named) Lap-Band approved in 2001 by FDA
- 40,000 band placed in US in 2004
- New gastric banding systems to enter US market soon
  - Swedish Band™
  - Mid-Band™
Technical details Lap-Band™

- Restrictive component
- Regular sizes (9.7 and 10.0 mm) and VG
- Lap-Band
  - Inflatable silicon ring
  - Placed just below GE junction
- Tubing
- Reservoir
  - Portacath
  - Placed above abdominal fascia
Gastric Banding

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Mechanism of action Lap-Band™
The LAP-BAND System Is Adjustable

- The silicone band around the stomach is hollow
- It is filled with a saline solution
- By adding or removing the saline, the band can be made tighter or looser
- Adjustments are made to meet individual weight loss needs
Comparison Bypass vs. Band

**Bypass**
- Greater weight loss
- Long term nutritional supplementation
- More complex surgery
- Higher morbidity/mortality
- Nonreversible
- Nonadjustable
- Well studied operation

**Band**
- Less weight loss
- No long term nutritional supplementation
- Less complex surgery
- Reversible
- Adjustable
- Higher need for re-operation
- Need for reservoir adjustment
Gastric Band Patient

- Appropriate for patients who are candidates for bariatric surgery
  - Patients with BMI > 40 kg/m²
  - Patients with co-morbidities and BMI > 35 kg/m²
- Acceptable surgical risk
- Understands surgery and associated risks
- Dedicated to lifestyle changes and lifelong follow-up
- Pre-operative protocol/teaching same
- Extensive post-operative follow-up (1 visit/month for 1st post op year)
Gastric Band operation

- Patient prep/positioning same as GBP
- Foley, SCD, Heparin SQ pre-operatively
- Kefzol 2 gm IV prior to surgery
- General endotracheal intubation
- 10mm 30 degree scope
- Lap GBP instrument set
- No stapling instruments
Details of operation

- Insert trocars/ cameras
- Pars flaccida approach
- Place band around stomach & secure band
- Partial fundoplication of stomach over band
- Place & secure reservoir in subcutaneous tissue
- Operation should last around 30-60 minutes
- Most patients should leave POD#1
- No bougie or methylene blue!
Gastric Band results

Early results


- 44.4% EBWL @ 1 year
- 51.8% EBWL @ 2 years
- 52% EBWL @ 3 years


- 57% EBWL at 5 years
Lap Band Vs. GBP Results

- Long-term results of band vs. bypass
  - early results only
  - 74.6 vs. 40.4% EBWL at 18 mo
- % EBWL better with lap GBP than Lap band till 5 years. Similar reoperative rates and mortality but shorter OR times and LOS with lap band.
Gastric Band Complications

- 5% major complication rate
  - Mortality 0%
  - Acute obstruction 1.5%
  - Prolapse/slippage 2.9%
  - Reservoir/technical problems 2.4%
  - Wound infection .9%
- Inadequate weight loss 10-20%
- Overall 1.5% need for re-operation

Gastric band complications (2)

- 709 patients, prospective study, single institution over 6 year period

- 13% re-operative rate
  - 3.6% port/tubing problems
  - 1% infection
  - 2.8% erosion rate
  - 12.5% prolapse/slippage rate

Biliopancreatic Diversion

- More extreme alteration of the digestive process
- Roughly 3/4 of stomach removed
- Stomach pouch is connected to the final segment of the small intestines
- Nutrients are separated from the bile and pancreatic enzymes that would break them down
- Greatly reduces nutrient absorption and caloric intake
Duodenal switch

- Pylorus preserved
  - Less marginal ulceration
  - Less dumping syndrome
- Greater weight loss than gbp
- Able to tolerate greater food intake
New options for Bariatric Surgery: Sleeve Gastrectomy

Weight loss equivalent to DS or GBP
leak 1.4%, reoperations in 2.8%, no mortality

Reoperative Bariatric Surgery

- 2-4x complications rate of primary bariatric surgery
- 5-28% leak rate
- Few published reports
- As high as 71.8% reoperative rate and 12.5% mortality (Cates JA, Arch Surg 125(10):1400-3, 1990.)
Bariatric surgery results

- Meta-analysis (136 studies; 22,094 patients) from 1990 to 2003
- Overall mortality .1% (BPD 1%)
- Mean% EBWL
  - Lap band 47%
  - GBP 61%
  - DS/BPD 70%
- Resolution of co-morbidities
  - Diabetes 86% complete/significant improvement
  - Hypertension 79%
  - OSA 86%

Long-term effects of bariatric surgery

- 5-year mortality reduction by 89% (including risks of surgery)
- Suggested 45% decrease in health care costs at 5 year interval

Malabsorptive/nutritional disorders after bariatric surgery

- B1 (thiamine) deficiency (beri-beri, Wernicke’s)
- Calcium oxalate kidney stones/renal insufficiency (after J I bypass)
- Protein deficiency - 13% after distal GBP
- Vit B12 deficiency 33% prevalence after GBP
- Folic Acid deficiency 22% after GBP
- CA/Vit D deficiency/secondary hyperparathyroidism common post op with replacement
- Iron deficiency 6-33%
- Vit A deficiency
**Long-Term Complications**

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+ requiring increased p.o. FeSO4 or IM injection
++ requiring TPN
*revision due to metabolic sequelae
Nutritional supplementation

- MVI
- Vitamin $B_{12}$ 1000mcg SL PO 2x/ wk or x1/ month IM
- Vitamin $B_1$ 50 mcg PO/ day
- Calcium 500mg PO tid
- Fe 45 mg Po/ day
Future of bariatric surgery

- Here to stay
- New gastric bands (Swedish Band)
- New procedures for obesity (gastric sleeve)
- Pediatric bariatric surgery
Vertical Banded Gastroplasty

- Purely restrictive
- Upper stomach is stapled vertically about 2.5 inches to create small pouch
- Outlet is restricted by non-adjustable ring
- Majority of these are performed as open procedures