Transference of Dependencies: Bariatric Surgery & Substance Use Disorders
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Logan – “The Alpha Male”

LUKE – “The Million $ Dog”
ASAM definition of Addiction

- A primary chronic disease of brain reward, motivation, memory and related circuitry.
- Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations.
- This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.
Addiction

- Inability to consistently Abstain
- Impairment in Behavioral control
- Craving or increased ‘hunger’ for drugs or rewarding experiences
- Diminished recognition of significant problems with behavior @ relationships
- A dysfunctional Emotional response

Systems Review: Cardiovascular, Respiratory, Neurologic, Endocrine, and Psychological

**Cardiovascular**
- Hypertension
- Congestive heart failure
- Cor pulmonale
- Varicose veins
- Pulmonary embolism
- Coronary artery disease

**Neurologic**
- Stroke
- Idiopathic intracranial hypertension
- Meralgia paresthetica

**Psychological**
- Depression
- Body image disturbance
- Low self-esteem
- Impaired quality of life

**Respiratory**
- Dyspnea
- Obstructive sleep apnea
- Hypoventilation syndrome
- Pickwickian syndrome
- Asthma

**Endocrine**
- Metabolic syndrome
- Type 2 diabetes mellitus
- Dyslipidemia
- Polycystic ovary syndrome / androgenicity
- Amenorrhea / infertility / menstrual disorders
Question???

*The first question to ponder: can one be addicted to food?

Food Addiction

What are the main foods that are currently viewed as addictive

a) Sugars
b) Starches
c) Fats
d) Salts
e) Any binge food
f) All of the above
Reward Center

• Reward system related to **matters of survival**:
  • Sex
  • Food
  • Safety
  • Companionship, love, joy

Neurotransmitters

Neurotransmitters involved in the brain and reward pathway are......

a) Serotonin
b) Dopamine
c) Endorphins
Drugs and the Reward Center

- Drugs ‘hijack’ the reward center,
- The traditional ‘rewards’ become secondary
- As these are not as **intense and concentrated** as drugs
Food - Reward

Notice which foods enhance the reward neurochemistry:

• Serotonin: warm milk, pasta, potatoes, bananas, turkey
• Dopamine: sugar, white starches
• Opiates: chocolate, sugar, dairy, spices

Medical and Surgical Treatment of Obesity

Where can we turn when counseling fails?

Medications

• Short-term obesity management
  • Sympathomimetics (Phentermine, Diethylpropion, Benzphetamine (Didrex))

• Long-term obesity management
  • Lipase inhibitors (Orlistat)

• Recently approved obesity medications
  • Serotonin agonists (Locaserin (Belviq))
  • Combination agents (Phentermine-topiramate)
Standard Treatments

Medications:
• Appetite suppressants (Dexedrine)
• Hormone based drugs (Leptin)
• Fat Absorption drugs (Orlistat)

Standard Treatments

• High dose anti depressants (Zoloft)
• Mood stabilizers (Topimax)
• Naltrexone (Revia)

Standard Treatments

Bariatric Surgery:
• Inhibits absorption of food (gastric bypass)
• Obstructs food intake (lap band)
• Limits the amount of food intake secondary to gastric size (gastric sleeve)
Bariatric Surgery

General Requirements

- BMI > 40 or > 35 with hypertension, heart disease, diabetes or severe sleep apnea
- Documentation that other significant attempts at weight loss have been ineffective
- Highly motivated increase activity and established healthier eating habits
- Smoke-free for at least six months
- Able to tolerate general anesthesia

Common Insurance Company Exclusions

- Alcoholic or drug abuse issues
- Active liver disease
- Untreated psychiatric condition
- Correctable cause of obesity (e.g. thyroid disease)
- Unable to comply program guidelines
- Unstable eating pattern related to medications
- Uncontrolled eating disorder

Three Major Procedures

Gastric bypass (Roux-en-Y)

Stomach is divided into a proximal small gastric pouch and a disconnected large pouch.

Food enters the small gastric pouch and later continues through an anastomosis between the small pouch and the jejunum (gastrojejunostomy) into the Roux limb.

The large pouch is removed from the food-transporting process, but does continue to secrete gastric acid, pepsin and intrinsic factor into the duodenum.

Gastric, pancreatic and biliary secretions travel down the duodenum and eventually mix with food at the point where this limb and the Roux limb are surgically connected into a common channel.
Gastric bypass (Roux-en-Y)

- The most common surgical weight loss procedure performed in the US
- Superior to purely restrictive procedures (e.g. banded gastroplasty) in long-term weight loss
- This procedure interferes with the pulsatile secretion of Ghrelin (a peptide hormone that stimulates appetite), thereby contributing to decreased appetite
- The gastrojejunostomy component is associated with dumping syndrome, characterized by lightheadedness, nausea, diaphoresis, abdominal pain, flatulence and diarrhea, when ingesting high-sugar meals. This often contributes to increased weight loss by negatively conditioning patients against eating high sugar meals
- The longer the Roux limb, the greater the degree of malabsorption, since it results in a shorter common channel and thus less exposure time for digestion and absorption
- Additional complications include anastomotic leaks, strictures and ulcers, nutritional deficiencies, small bowel obstruction (due to adhesion or hernia), gallstones, gastritis

Mean Excess Weight Loss
- > 62% after one year
- > 55% long-term

Adjustable Gastric Banding

- Tight, adjustable silicon band is placed around the upper portion of the stomach
- The band is attached to an infusion port that is placed in the subcutaneous tissue
- Restriction of the flow of food can be increased by injecting saline into the port, which results in a reduction in the diameter of the band
- Mean excess weight loss is lower overall and more gradual than with gastric bypass
- Efficacy is based solely on early "fullness" of the patient due to small capacity stomach
- Advantages include lowest mortality rate of all bariatric surgical procedures (< 0.5%), removability, no incisions in the stomach, quicker recovery, adjustability without re-operation, lack of malabsorption issues (since the intestines are not bypassed), pregnant women can accommodate need for increased caloric intake by loosening the band
- Disadvantages include a high complication rate (e.g. erosion of band into the stomach, band slippage), frequent esophageal dysmotility, high rate of need for re-operation, required frequent long-term follow-up and band adjustments
- Contraindicated in patients with portal hypertension, severe esophageal dysmotility and chronic steroid use

Mean Excess Weight Loss
- > 40% after one year
- > 43% long-term
Vertical Sleeve Gastrectomy

- Initially offered to super severely obese (BMI > 60) patients as a bridge to the more technically challenging gastric bypass procedure, but is now also used as a single-procedure in some high-risk patients.
- Efficacy is due to a small tubular stomach, resistance to stretch due to absence of the fundus, alterations in gastric motility and a substantial reduction in ghrelin-producing cells.
- Advantages include decreased hormonal (ghrelin) stimulation of hunger, minimization of dumping syndrome (because pylorus is preserved and there is no intestinal re-routing or bypass), minimal malabsorption, appropriateness in patients who are too high risk for gastric bypass, greater efficacy than banding with greater safety than bypass.
- Disadvantages include risk of leak, irreversibility, considered “investigational” by many insurance companies.

Mean Excess Weight Loss
- > 55% after one year
- > 50% long-term

Summary

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Efficacy ±</th>
<th>Adverse Effects and Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phentermine</td>
<td>3.6 kg @ 6 months</td>
<td>Dependence, HTN, pulmonary hypertension (rare)</td>
</tr>
<tr>
<td>Orlistat</td>
<td>2.5 kg @ 1 year</td>
<td>Oily fecal spotting, flatulence, severe liver injury (rare)</td>
</tr>
<tr>
<td>Lorcaserin</td>
<td>3.4 kg @ 1 year</td>
<td>Headache</td>
</tr>
<tr>
<td>Phentermine-topiramate</td>
<td>3.7 kg @ 1 year</td>
<td>Abuse potential, insomnia, anxiety, suicidality (rare)</td>
</tr>
<tr>
<td>Gastric bypass</td>
<td>&gt; 62% EWL @ 1 year</td>
<td>Dumping syndrome, anastomotic leak, nutritional deficiencies</td>
</tr>
<tr>
<td>Adjustable gastric band</td>
<td>&gt; 40% EWL @ 1 year</td>
<td>Vomiting, reflux, band slippage, band erosion into stomach</td>
</tr>
<tr>
<td>Sleeve gastrectomy</td>
<td>&gt; 55% EWL @ 1 year</td>
<td>Vomiting, reflux, diarrhea</td>
</tr>
</tbody>
</table>

★ Efficacy for medications are in terms of amount weight loss in kilograms versus “placebo” (which themselves usually include behavioral modifications), while efficacy for surgical procedures are in terms of percent excess weight loss (which is generally defined as percentage of pre-operative weight over BMI of 25 kg/m²).
Standard Treatments

Behavioral:
• Residential or community based
• To moderate food intake of all foods

Treatment for Addiction

• How would treatments differ if eating disorders were viewed as an Addiction?
Food Addiction

Hunger

• Hunger releases the hormone **gherlin** from the stomach which activates **dopamine**
• This creates cravings
• Food cues i.e. smells, sights, tastes also creates cravings

Sugar Addiction?
Acts like a Dopamine

• Some studies show that **overweight** people have a diminished dopamine response
• Thus have more cravings
Sugar Addiction?

- Sugar also releases our own **endorphins**
- Fats have also been implicated
- Relieves pain and gives a sense of well being

Sugar Withdrawal

- After a few weeks of sugar binging, rats will show opiate withdrawal ...
- If given Naltrexone

Satiation

- The stomach also gives the feedback to stop eating
- A **full** stomach releases the hormone **leptin**, leads to appetite satiation
Dieting: a Gateway to Drugs?

• During fasting, anticipatory dopamine is not selective for food rewards
• Dieting increases the rewarding effects of most drugs.

Why do Alcoholics Love Sugar? Substitution!

Alcohol AND Food, enhances:

• Endorphin
• Dopamine
• Serotonin

Gateway for Drugs

• Cross sensitization occurs with amphetamines and sugar
• When the rat is given amphetamines?
Summary: Food Addiction

1. A Neurochemical excess of serotonin, dopamine and endorphins
2. Heightens reward in the limbic brain

Summary of Food Addiction

3. Trigger Foods stimulate excess neurochemicals.
4. This is exaggerated when starving, over eating and purging
5. Binge of neurochemicals over ride the normal checks and balances

Summary of Food Addiction

6. Which fosters addictive eating behaviors
7. Gateway to substance use
New Question?

• Can a person become addicted to substances after having a Bariatric surgical procedure???

Review of Fogger Research on this Topic

Research in the Field

• The Relationship between Addictions and Bariatric Surgery for Nurses in Recovery by Susanne A. Fogger & T. M. McGuinness
• Methodology: Sub-analysis of a cross-sectional study of 173 impaired nurses in a state monitoring program
• 14% (n=25) of these nurses had a bariatric surgical procedure
• 17 of these 25 nurses developed a substance use disorder following the procedure
Case Study

• Let's call her Jane
• Jane was a health care professional for a number of years working in the field of radiology
• Jane had a bariatric gastric bypass procedure
• She entered a residential addictions treatment center for alcoholism

In an interview with Jane, she related that she had not become an alcoholic until after her bariatric procedure. She described what happened as a “transfer” of one addiction (that being food) to that of drinking alcohol. Jane raises an very interesting idea – the idea of transference from one addiction to another.

My Own Experience

• The most common substance use disorders that I see in this patient population are alcohol and opioid.
• Opioid seems to occur from the problem with prescription opioids and keeping the patients on them post-operatively too long.
Some Questions & Points to Ponder . . . .

• Many of these patients have issues of self-esteem
• There are two major types of pain – physical and psychological
• Does the psychological pain, especially a low self-esteem, leave one after they become thin following a bariatric procedure?
• Is the transference to another substance more a result of continued psychological pain versus the brain biology and addiction?
• There is no doubt that more research is needed in this field

THE END

• Questions????
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