It’s in your head: Bariatric Surgery and changes in Brain chemistry

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Inherent Biases
Bariatric Procedures

- Sleeve Gastrectomy
- Roux-en-Y Gastric Bypass

(ASMBS, 2016)
What changes?
“gut” or your “brain”

» We understand that much of the hormonal signaling within the enteric nervous system changes after bariatric surgery

» Newer research models now attempting to understand the changes wrought by surgery on actual brain chemistry
Gastric Surgery Changes Your Appetite

Long-Term Persistence of Hormonal Adaptations to Weight Loss

The “Hunger Hormone”
Ghrelin With Dieting

Figure 1. Mean (± SE) 24-Hour Plasma Ghrelin Profiles in 13 Obese Subjects before and after Diet-Induced Weight Loss. Breakfast, lunch, and dinner were provided at the times indicated. To convert ghrelin values to picomoles per liter, multiply by 0.296.
The “Hunger Hormone”
Ghrelin With Surgery
But what about the Master Control?

- Patients (and rats) automatically reduce the amount they eat and drink
- Eat and drink more frequently
- This is regardless of when and how much food is offered
- In this setting—measure pre-meal hunger and post-meal satiation is not different than pre-op
CNS and PNS

- Vagal nerve preservation seems to increase “eating-inhibitory” effect

- CNS- melanocortin system; need a specific MC4r reception (one allele) to have desired effects of surgery
Questions?