Review of Hyperparathyroidism in Bariatric Surgery

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INTRODUCTION

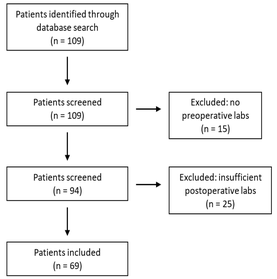
- Rates of obesity continue to climb, and bariatric surgery case volume has paralleled this rise, with over 250,000 procedures in the US and Canada in 2019
- Bariatric surgery including Sleeve Gastrectomy (SG) and Roux-en-Y Gastric Bypass (RYGB) are proven obesity treatment modalities
- Derangements in hypothalamus-pituitary-parathyroid axis exist following bariatric surgery
- Secondary hyperparathyroidism (SHPT) is evidenced by low vitamin D, low calcium, and elevated parathyroid hormone (PTH)
- This may be explained by the malabsorptive nature of RYGB, but SG patients also exhibit signs of SHPT

OBJECTIVES

- Evaluate a single institution's rate of hyperparathyroidism in bariatric surgery patients
- Evaluate postoperative trends in PTH, vitamin D, calcium
- Evaluate if type of surgery impacted presence of hyperparathyroidism

METHODS

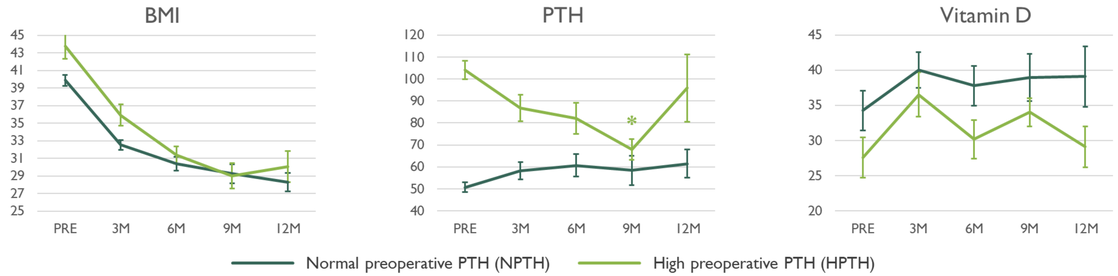
- Retrospective review between 2018 – 2020
- Eligibility:
  - BMI >40 kg/m2
  - BMI >35 kg/m2 with comorbidities
- 69 patients included
- Lab panel obtained preoperatively, and at 3, 6, 9, 12, and 24 months postoperatively
- Recommend patients take chewable multivitamin BID and Calcium 600mg/Vitamin D 800IU QD postoperatively



RESULTS

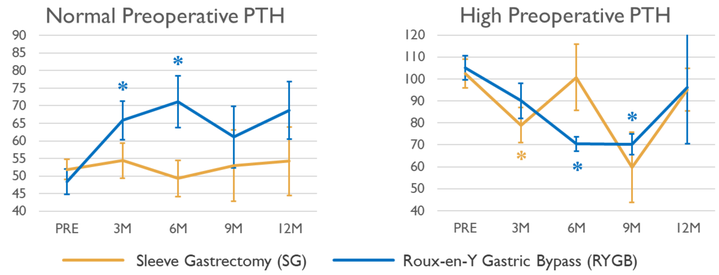
DEMOGRAPHICS

- 89.9% of patients were female with a mean age of 47 years old and preoperative BMI of 41.3 kg/m2
- Within the SG group, 89.5% were female at 46yo and preoperative BMI of 40.3 kg/m^2, and 93.4% female at 48 years old and preoperative BMI of 42.4 kg/m^2 in the RYGB group



NORMAL vs. HIGH PREOPERATIVE PTH

- Preoperative hyperparathyroidism (HPTH) was seen in 25 patients (36.23%) and correlated with higher average BMI compared with the normal preoperative PTH (NPTH) cohort (BMI 43.8 vs. 39.9, p <0.001)
- HPTH group saw a decrease in PTH from 104.2 pg/mL (mean) preoperatively to 86.7 pg/mL at 3 months (p 0.013), and the decrease was sustained until 9 months with an average of 67.94 pg/mL (p 0.001), which is within the normal PTH range
- NPTH group had average vitamin D of 32.28 ng/mL and HPTH group with 27.57ng/mL – no significant change over time
- All patients, on average, had normal calcium throughout study



SLEEVE GASTRECTOMY vs. ROUX-EN-Y

- When subdividing both the NPTH group and HPTH group into SG vs. RYGB, no statistical difference in PTH at each postoperative visit was appreciated
- A significant increase from baseline in the NPTH RYGB group was seen at 3 and 6 months, but patients remained within normal limits
- The HPTH RYGB had normal PTH at 3 and 6 months, and the HPTH SG group was normal at 9 months, but both returned to hyperparathyroidism at 12 months

DISCUSSION

- Following bariatric surgery, one would expect worse HPTH, but data suggests a short term improvement in PTH
- NPTH patients continued to have normal PTH postoperatively
- Although HPTH patients had a trend towards normal, and experienced normal PTH on average at 9 months, a sharp rise in PTH was appreciated at 12 months
- Literature reports vitamin D deficiency in up to 57-96% of morbidly obese patients. This study found 44% of the NPTH group insufficient or deficient in vitamin D, and 60% in the HPTH group.

LIMITATIONS

- Limited postoperative data due to poor follow up, frequent change of duty stations for military personnel and dependent patients, and pandemic limiting in-person follow up
- Unable to assess data after 12 months, and this is when a sharp rise in PTH is seen in the HPTH group

CONCLUSIONS

Trends of this study demonstrate preoperatively normal PTH patients will remain normal postoperatively. If patients present with hyperparathyroidism, some may become normal at 9 months, but are ultimately found to be hyperparathyroid at 12 month follow up.

FUTURE DIRECTIONS

- Analyze long term postoperative follow up greater than 12 months
- Analyze adherence to empiric calcium/vitamin D supplementation to HPTH patients, and evaluate effects on postoperative PTH

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