Bariatric Surgery Reference Guide for the Primary Care Practitioner

Follow Up Appointments and Referrals

- Any patient who had bariatric surgery at UC Davis Health, please refer back to our program for all follow up needs.
- For any patient with a history of bariatric surgery with a current surgical concern (regardless of location of initial bariatric operation), please refer to UC Davis Health for evaluation.
- For long term follow up care for patients who did NOT have their bariatric procedure at UC Davis Health, please refer to the following recommendations.

New Patient Referral Considerations

- Most insurance companies require the patient to have 3-6 consecutive months of documented visits with PCP or registered dietitian, demonstrating their attempts at losing
    - These monthly visits usually need to be consecutive and if a month is missed, the time frame starts all over.
    - The primary diagnosis at these appointments must be obesity.
    - The patients may and should be referred to the bariatric team at this time so evaluation and testing can begin. We build the weight management appointments into our program however if a patient has started prior to evaluation, that can be helpful.
- Helpful work-up that can be done prior to referral (though not mandatory):
    - H&P
    - Chest X-ray
    - EKG
    - Up to date cancer screening: pap smear, mammogram (females 40+), colonoscopy (50+)

- Referral for sleep study if STOP-BANG ≥ 3
- Smoking and alcohol cessation

Postoperative Follow Up

- ≤ 3 months s/p surgery: global postoperative period, please refer back to patient's primary bariatric surgeon
- 6 months s/p surgery and annually: evaluate GI symptoms, lab evaluation and supplements as outlined below
    - CBC, CMP, CRP, iron panel (to include ferritin, transferrin, TIBC), RBC folate, lipid panel, Vitamin B1, Vitamin B12, Vitamin D-25 hydroxy, Hgb A1C, Zinc, Insulin, Copper (RYGB), Vitamin A (RYGB)

Lifelong Micronutrient Supplementation

- Roux-en-Y Gastric Bypass (RYGB) and Vertical Sleeve Gastrectomy (VSG)
    - Complete multivitamin with minerals
        - Bariatric brand multivitamin is preferred (dose/quantity varies)
        - If taking an over the counter brand, 1 complete multivitamin pill PO BID
            - Must include a total of:
                - Folic acid 800 mcg
                - Iron 36+ mg
                - Vitamin A 5,000-10,000 international units
                - Vitamin E 15 mg
                - Vitamin K 90 mcg
                - Zinc 8 mg
                - Copper 2 mg
        - Take separately from calcium by at least 2 hours
        - VSG patients can likely decrease to 1 pill per day at 6 months postoperatively if labs are within normal limits and PO intake is adequate

        - Gummy or senior/silver/men's formulas are not recommended.
    - Vitamin B1 (thiamine)
        - 100 mg PO daily for the first 3 months after surgery
        - 12 mg PO daily thereafter (included in bariatric brand multivitamins)
    - 1200-1500 mg calcium citrate or carbonate daily, in 2-3 divided doses, taken separately from iron sources (multivitamin or iron pills)
        - Some fortified protein shakes are highly fortified with calcium, which can count towards this daily total
    - Vitamin B12 500 mcg SL/PO daily or 1000 mcg IM injection once monthly
        - Higher doses can be taken less frequently: 1000 mcg every other day, 2500 mcg 2x/week, 5000 mcg once weekly
    - Vitamin D3 2,000-4,000 international units PO daily (dose adjusted to maintain Vitamin D-25 hydroxy level above 30 ng/mL)
- <u>Things to note</u>
    - Gummy vitamins are not appropriate.
    - Menstruating women may need 45-60 mg of elemental iron daily from diet and vitamins.

Treatment of Micronutrient Deficiencies

- Confirm that adequate routine supplementation is in place. If not, replete as needed and start patient on routine supplementation doses as outlined above.
- Vitamin B1 (Thiamine)
    - PO: 100 mg 2-3 times daily until symptoms resolve
    - Simultaneous administration of magnesium, potassium and phosphorus should be given to patients at risk for refeeding syndrome
- Vitamin B12
    - <400 pg/mL suboptimal, <200 pg/mL deficiency

- IM: 1000 mcg once weekly X 4 weeks
- PO: 1000 mcg daily X 2 weeks

- Vitamin D
  - <10 ng/mL, deficiency: treat with Vitamin D2 50,000 international units weekly X 12 weeks, then maintenance dose of 4,000 international units daily
  - <20 ng/mL, deficiency: treat with Vitamin D2 50,000 international units weekly X 8 weeks, then maintenance dose of 4,000 international units daily
  - <30 ng/mL, insufficiency: treat with Vitamin D3 2,000-4,000 international units daily
- Folate
  - PO: 1000 mcg daily X 2 weeks
- Iron
  - Note CRP should always be ordered when assessing ferritin level as it is a positive acute phase reactant
  - Ferritin < 20 ng/mL and CBC indicative of iron deficiency anemia: add 150-200 mg of elemental iron daily in split doses X 2 months
  - If iron deficiency does not respond to oral therapy and/or ferritin <10 and Hgb very low, IV infusion should be administered.
    - Venofer 200 mg X 5 doses weekly
    - Injectafer 750 mg X 2 doses 1 week apart
    - Measure CBC, ferritin and CRP before each infusion cycle and ~2 months post treatment.
- Vitamin A
  - Without corneal changes: 10,000-25,000 international units orally/day for 1-2 weeks
  - With corneal changes: 50,000-100,000 international units IM for 3 days followed by 50,000 international units daily IM for 2 weeks

- Copper
    - Mild to moderate deficiency (including low hematologic indices): treat with 3-8 mg/day oral copper gluconate or sulfate until indices return to normal
    - Severe deficiency: 2-4 mg/day IV copper can be initiated for 6 days or until serum levels return to normal and neurologic symptoms resolve
- Zinc
    - 50 mg elemental zinc daily X 1-2 weeks (though optimal dose for post-bariatric surgery patients has not been established)
    - Long term supplementation can induce copper deficiency
        - Supplement 1 mg copper per 8-15 mg zinc (taken several hours apart)
    - Take separately from calcium and iron to optimize absorption
- Vitamin K
    - For acute malabsorption, a parenteral dose of 10 mg Vitamin K is recommended
    - For chronic malabsorption, recommended dose is either 1-2 mg/day orally or 1-2 mg/week parenterally