




OBEISITY MANAGEMENT IN PRIMARY CARE TRAINING AND CERTIFICATE PROGRAM

Devices and Surgery

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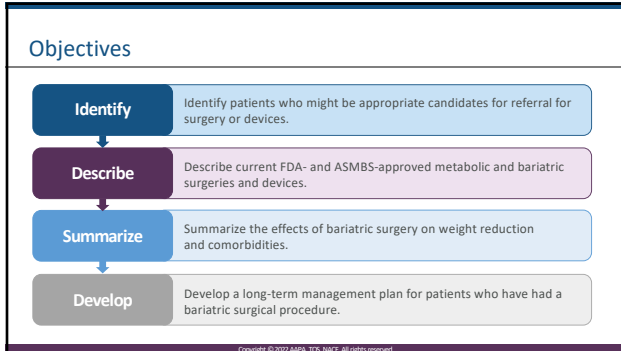
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 **Faculty and Disclosure Statement**

- Melissa Davis is a board-certified adult nurse practitioner, clinical nurse specialist, RN first assistant, Assistant Professor of Practice—University of Arizona College of Medicine (Phoenix), and Fellow of the American Association of Nurse Practitioners.
- She earned her Bachelor of Science in Nursing from Seton Hall University, post-master's nurse practitioner from Saint Louis University, and doctorate in nursing practice from Northern Arizona University.
- Dr. Davis has been caring for bariatric medical and surgical patients since 2001. Her role includes assisting in surgery, hospital rounding, clinic exams, education, research, and program coordination.
- Melissa has been an active member of the American Society of Metabolic and Bariatric Surgery (ASMBS) since 2002, elected in 2013 to the Integrated Executive Council, and participating extensively on the Integrated Health Clinical Issues and Guidelines, Integrated Health Nominations, and RN Certification Committees.
- **Disclosures:** none

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Appropriate Referrals for Metabolic/Bariatric Surgery

- BMI ≥ 40 kg/m²
- BMI ≥ 35 kg/m² + 1 obesity-related complication
 - Eg, high risk for T2DM (insulin resistance, metabolic syndrome, prediabetes), poorly controlled hypertension, NAFLD/NASH, OSA, OA of the knee or hip, SUI
- BMI 30-34.9 kg/m² + T2DM with inadequate glycemic control despite optimal lifestyle and medical therapy
- Inability to achieve healthy weight loss sustained for a period of time, with prior weight loss efforts

Clinical Note: BMI criteria for bariatric procedures should be adjusted for ethnicity (≥ 25 kg/m² classified as obesity in Asians)

BMI, body mass index; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; OA, osteoarthritis; OSA, obstructive sleep apnea; SUI, stress urinary incontinence; T2DM, type 2 diabetes mellitus.
 American Society for Metabolic and Bariatric Surgery. 2016. <https://asmbs.org/patients/who-is-a-candidate-for-bariatric-surgery>. Accessed April 7, 2021.
 Johnson RL, et al. *Am Surg*. 2012 Jun;78(6):585-592. Mitchell JA, et al. *Endocr Pract*. 2013;25(12):1346-1355.
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Which of the following is a contraindication for bariatric surgery?

Polling Question

1. Active bingeing/bulimia
2. Advanced age
3. HbA1c greater than 8%
4. New diagnosis of cancer
5. BMI

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Metabolic/Bariatric Surgery

Contraindications:

- Active substance abuse
- Active psychiatric disease
- Active bingeing/bulimia
- Noncompliance
- Poor competence

Not a Contraindication:

- HbA1c >8%
- Advanced age (data do not support age cutoff)
- New diagnosis of cancer
- BMI

Reference FPO

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Metabolic/Bariatric Surgical Procedures

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How Does Metabolic/Bariatric Surgery Work?

Change in microbiomes	NOT restriction
Change in hunger hormones	NOT only malabsorption
Change in satiety hormones	

Putti A, et al. J Endocrinol Invest. 2019;42(2):117-128. Copyright © 2019 AMA, FIC, NACE. All rights reserved.

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Polling Question

Which bariatric surgery is most performed currently?

1. Gastric Bypass Roux-en-Y
2. Vertical Sleeve Gastrectomy
3. Duodenal Switch
4. Single Anastomosis Duodenal Ileostomy
5. Adjustable Gastric Band

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Gastric Bypass Roux-en-Y (RYGB)

Accounts for 17% of all bariatric surgeries performed¹

Procedure:²

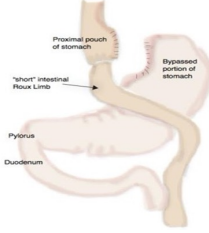
- Stomach stapled to create ~15-30 mL proximal pouch
- Small bowel divided at jejunum
- Distal jejunum anastomosed to proximal stomach pouch (ante or retro-colic*)
- Distal stomach remains in place; proximal small bowel is anastomosed to jejunum

*Two different techniques with different adverse events.
1. American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers>. Accessed April 12, 2021.
2. Putti A, et al. J Endocrinol Invest. 2019;42(2):117-128. Copyright © 2019 AMA, FIC, NACE. All rights reserved.

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RYGB Mechanism of Action

- Decrease in ghrelin¹
- Increase in satiety hormones (GLP-1, PYY, etc.)¹
- 30%-35% TBWL²
- GERD/obesity advantage²
- Reversible²



GERD, gastroesophageal reflux disease; GLP-1, glucagon-like peptide; LRYGB, laparoscopic RYGB; PYY, peptide YY; TBWL, total body weight loss.
1. Puczi A, et al. J Endocrinol Invest. 2019;42(2):117-128. 2. Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359.
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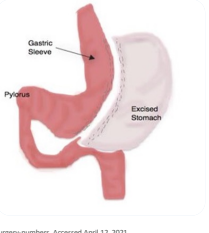
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Vertical Sleeve Gastrectomy (VSG)

Accounts for 60% of all bariatric surgeries performed¹

Procedure:²

- 75%-85% of stomach removed (fundus/greater curvature)
- Pylorus preserved
- No intestinal disruption

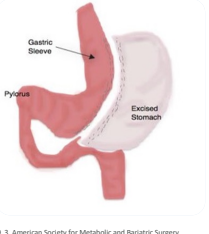


1. American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers>. Accessed April 12, 2021.
2. Puczi A, et al. J Endocrinol Invest. 2019;42(2):117-128.
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VSG Mechanism of Action

- Decrease in ghrelin¹
- Increase in satiety hormones (GLP-1, PYY, etc.)¹
- 25%-30% TBWL²
- Potential to increase GERD²
- Irreversible³



1. Puczi A, et al. J Endocrinol Invest. 2019;42(2):117-128. 2. Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359. 3. American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/patients/bariatric-surgery-procedures>. Accessed April 8, 2021.
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Duodenal Switch (DS)

Accounts for 0.9% of all bariatric surgeries performed¹

Procedure:²

- Sleeve gastrectomy (1st stage)
- Bypass:
 - Alimentary limb (100 cm)
 - Common channel (150 cm)
- Requires proficient intracorporeal suturing



1. American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers>. Accessed April 12, 2021. 2. Conner J, et al. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. <https://www.ncbi.nlm.nih.gov/books/NBK56319/>. Copyright © 2022 AAPA, TCR, NACE. All rights reserved.

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DS Mechanism of Action

- Decrease in ghrelin¹
- Increase in satiety hormones (GLP-1, PYY, etc.)¹
- 2-stage^{2,3}
- 35-45% TBWL²
- Strongest potential for remission of T2DM^{2,3}
- Vitamin deficiency potential^{2,3}



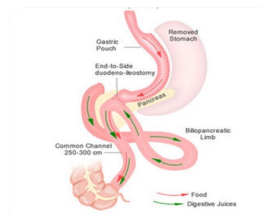
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Single Anastomosis Duodenal Ileostomy (SADI)

Procedure:

- Modification of DS
- Sleeve gastrectomy
- 1 anastomosis (duodenum-ileum)

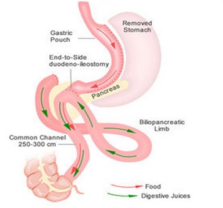


Mechanic II, et al. Endocr Pract. 2019;25(12):1346-1359. Copyright © 2022 AAPA, TCR, NACE. All rights reserved.

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SADI Mechanism of Action

- Decrease in ghrelin*
- Increase in satiety hormones* (GLP-1, PYY, etc.)
- Decreased risk obstruction?*
- Decreased OR time?*
- 35-45% TBWL¹



OR, operating room.
 *Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359.

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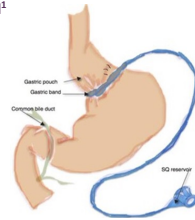
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Adjustable Gastric Band (AGB)

Accounts for 0.9% of all bariatric surgeries performed¹

Procedure:²

- Pars Flacida approach
- Around vagus
- Restriction?



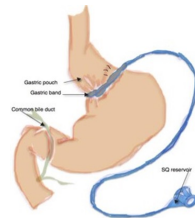
1. American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers> Accessed April 12, 2021. 2. Pedersen SO. Gastroenterol Res Pract. 2013;2013:528450.

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AGB Mechanism of Action

- Increased ghrelin (60%)
- Reversible¹
- Potential tissue and vagus damage
- Multiple complications/little long-term weight loss
- 20-25% TBWL¹



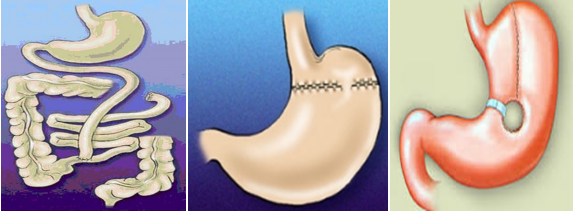
1. Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359.

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Revisional Bariatric Surgery

Approximately 15% of bariatric procedures performed per year are revisions



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Complications of Metabolic/Bariatric Surgeries

Early (<30 days)	Late (>30 days)
<ul style="list-style-type: none">• Bleeding• Leak• Pneumonia• Bowel obstruction• VTE (PE/DVT)• Dehydration• N/V	<ul style="list-style-type: none">• Stricture• Hernia (incisional and internal)• Marginal ulcer• Vitamin deficiencies• Osteoporosis• Dumping

DVT, deep vein thrombosis; N/V, nausea and vomiting; PE, pulmonary embolism; VTE, venous thromboembolism. Copyright © 2022 ASPA, TOS, NACE. All rights reserved.

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Weight-loss Devices



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Weight-loss Devices

FDA Approved

- Adjustable gastric band (Lap-Band®)
- Intra-gastric balloons (Orbera®, Reshape®, Obalon®)
- Transpyloric bulb (TransPyloric Shuttle®)
- Aspiration therapy (AspireAssist®)
- Vagal Nerve Blocking Therapy (Vbloc®)

ASMB Approved

- Adjustable gastric band (Lap-Band®)
- Intra-gastric balloons (Orbera®, Reshape®, Obalon®)

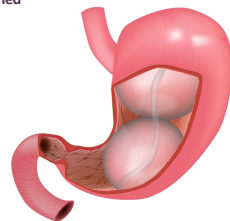
ASMBS, American Society for Metabolic and Bariatric Surgery; FDA, Food and Drug Administration.
 American Society for Metabolic and Bariatric Surgery. 2019. <https://asmbs.org/resources/endorsed-procedures-and-devices> Accessed April 12, 2021.
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Intra-gastric Balloons

Accounts for 1.8% of all bariatric surgeries performed¹

- Procedure²
 - "Space occupying"
 - Series of balloons (1, 2, or 3)
 - Removed after 6 months
 - Outpatient placement (radiology or endoscopy)
 - Outpatient removal (endoscopy)
- 10-12% TBWL²
- Insurance exclusion
- Best studied device
- Minimal long-term follow up



¹ American Society for Metabolic and Bariatric Surgery. 2021. <https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers>. Accessed April 12, 2021. ² Mechnick JI, et al. *Endocr Pract.* 2019;25(12):1346-1359.
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Transpyloric Bulb

- Procedure:¹
 - Introduced and removed endoscopically
 - Large bulb – pylorus
 - Small bulb – duodenum
- "Faster filling time and delayed gastric emptying"
- Remains intact up to 12 months
- 14% TBWL²
- Insurance exclusion

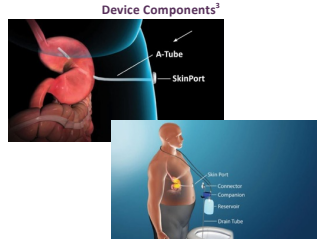


¹ Soaba NL, et al. 2019. <https://www.sagepub.com/publications/tavas/transpyloric-shuttle/>. Accessed April 12, 2021. ² Mechnick JI, et al. *Endocr Pract.* 2019;25(12):1346-1359.
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Aspiration Therapy

- Procedure:¹
 - Endoscopically placed G-tube (connected to a skin port valve)
 - Connector locks after 115 cycles (5-6 weeks) so patient must return to the clinic
- Patient aspirates stomach contents after each meal¹
- Can remain intact indefinitely
- 12-14% TBWL²
- Insurance exclusion



1. Sullivan S, et al. Gastroenterology. 2011;140(6):1240-1252.e525. 2. Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359. 3. Badurdeen D, et al. Bariatric Times. 2015;16(2):8-10.

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Vagal Nerve Blocking Therapy

- Procedure:¹
 - Laparoscopically placed
 - Requires meticulous dissection of anterior and posterior vagus
- Large neuroregulator¹
- Requires 12-hour use/day¹
- 24-month follow up
- 8-9% TBWL²
- Insurance exclusion



1. Ikramuddin S, et al. JAMA. 2014;312(9):915-922. Erratum in: JAMA. 2015;313(1):95. 2. Mechanick JL, et al. Endocr Pract. 2019;25(12):1346-1359.

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Weight-management Devices

Oral removable palatal space occupying device – SMART^{®1}

- Worn when eating
- Temperature recording sensor
- Limits bite size
- Slows down the intake of food

Ingested, transient, space-occupying device – Plenity^{®2}

- Swallowed
- Transiently occupies space in the stomach
- Passes via the GI tract



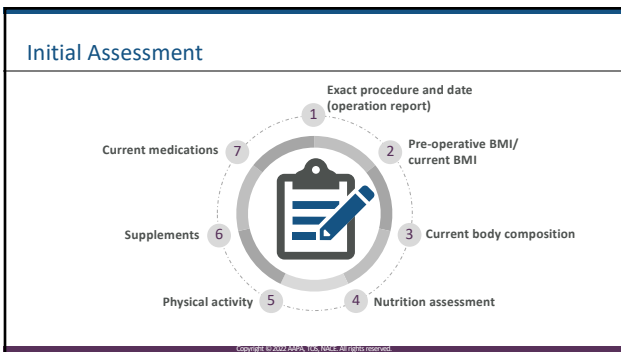
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Metabolic/Bariatric Procedure (GBP, VSG, DS, SADI) Follow-up

<p>Annual:</p> <ul style="list-style-type: none"> • CBC • CMP • Lipid panel • HgbA1c • TSH • PTH • Iron panel • Vitamins A, B1, B6, B12, D, folate • Zinc • Copper (DS) • DEXA (every other yr if normal) 	<p>Vitamins/supplements (bariatric preferred):</p> <ul style="list-style-type: none"> • 2 MVI (20 minerals), including 18 mg iron • Calcium citrate, 1200-1500 mg/day in 3 divided doses of 500-600 mg <p>Miscellaneous</p> <ul style="list-style-type: none"> • No NSAIDs or ASA >81 mg • No alcohol • Caution with anticoagulation other than warfarin
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ASA, aspirin; CBC, complete blood count; CMP, comprehensive metabolic panel; DEXA, dual energy X-ray absorptiometry; DS, duodenal switch; MVI, multivitamin injection; NSAID, nonsteroidal anti-inflammatory drug; PTH, parathyroid hormone; TSH, thyroid-stimulating hormone.

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Adjustable Gastric Band and Devices Follow Up

Adjustable Gastric Band

- Annual UGI fluoroscopy
- Refer to bariatric provider

Devices

- Refer to bariatric provider



UGI, upper gastrointestinal.
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Hospital or Surgical Facility

- High-volume accredited center
- Emergency department and intensive care unit
- Dedicated bariatric unit
- Bariatric certified nurses (CBN)
- CT scanner (600+ pounds)
- MRI (500+ pounds)
- Specialized surgical team

CT, computed tomography; MRI, magnetic resonance imaging.
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Metabolic/Bariatric Obesity Program

Lifetime follow up	Medical and surgical care
Support groups	Pre- and post-operative classes
Coordination of care with primary care provider	24/7 call coverage
Newsletter and web chat support	1-800 number
Mobile phone app	National accreditation

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Metabolic/Bariatric Surgical Programs and Facility



American College of Surgeons Bariatric Surgery Center Network Accreditation Program.
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Additional Resources

- American Society for Metabolic and Bariatric Surgery: www.asmb.org
- Obesity Action Coalition: <https://www.obesityaction.org/>
- Centers for Disease Control and Prevention: <http://www.cdc.gov/obesity/resources/>
- The Obesity Society (NHLBI): <http://www.obesity.org/>
- Obesity Medicine Association: <https://obesitymedicine.org/>

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