

# Perioperative Considerations for the Cosmetic Surgical Patient

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OCTOBER 16, 2021

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## Learner Outcomes

- Review the preoperative evaluation, preparation, and safety considerations for patients having larger cosmetic surgical procedures
- Discuss the intraoperative considerations for the cosmetic surgical patient
- Discuss the tumescent technique for larger liposuction procedures and safe local anesthetic dosages
- Identify the postoperative course and recommendations for the cosmetic surgical patient

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## Disclosures

- Shared photographs of cosmetic surgical patients from The Centre for Cosmetic Surgery and Medicine
- Patient consent obtained for use of photographs



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## Statistics

- > \$15M spent on combined surgical and nonsurgical cosmetic procedures in the U.S. annually
- 91% female, 9% male
- 25% of cosmetic patients are minorities
- 40% of cosmetic patients are 35-55 years old
- 50% have multiple surgeries
  - 50% of patients will return for another surgery
  - 47% of patients have multiple surgeries performed at the same time



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## Patient Consultation

- Introduction and First Impression
  - Assess the general appearance, demeanor, and behavior of the patient
  - Identify the cosmetic concerns
  - Psychological and physical evaluation begin with the first impression



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## Physical Evaluation

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Perform a focused physical evaluation of the area of concern

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Objective documentation

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Disrobe appropriately

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Any physical deformities, scars, flaws, or asymmetry is documented

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Photography is an essential tool

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# Physical Exam

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**History & Physical**

Name: Chandler Drusky Date: 9/24/21 DOB: 11/18/95  
 Chief Complaint: Stomach, Breast, Buttock

Referring Physician: Dr. Alec Binnadi Phone #: 302-234-4500

Diabetes Mellitus?  High BP?  Chest/Heart Disease?  Smoking?  Previous Surgery and Medical Issues: Breast reduction, tummy tuck, wisdom teeth, 3 children, psoriasis

Current Medication: Spironolone, Birth control

Any personal/family history of problems with anesthesia or malignant hyperthermia?  Allergies: NKA

Blood Type: A Rh: + Weight: 150 Height: 5'3" Eyes: Blue Hair: Blonde Skin: Fair The Confirmed Dengue?  Covid Vaccine?

Head & Neck: Palpable Nodes?  Heart Sounds: Regular?  Lungs: Clear?  Auscultatory Murmur?  Abdomen: Soft/Normal?  Bowel Sounds?  Mass?  Rectal: Normal?  Prostate: Normal?  Pelvic: Normal?  Testes: Normal?  Semen:  BOM: Normal?  Lacer:  VSC:  YIN:

Physician's Signature: Abdollah Malek, MD Date: 9/24/21  
 Doctor's Signature: A. Malek, MD

NOTICE: An H&P Exam may not be older than 30 days and must be updated on the day of surgery.

CHANGES TO HISTORY & PHYSICAL  
 No Yes



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# Schematic

**ANATOMIC FORM**

Head & Neck Circumference: \_\_\_\_\_  
 Chest Circumference: \_\_\_\_\_  
 Hip Circumference: \_\_\_\_\_  
 Waist Circumference: \_\_\_\_\_

Right: R Left: L

Patients Name: Sharon Tortinson Date: 9/23/20 D.O.B.: \_\_\_\_\_

Comments: \_\_\_\_\_



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# Pre-Operative Assessment

- Obtain a Health History
  - Comorbidities – HTN, CAD, COPD, Sleep Apnea, Obesity, DM, Thyroid, Renal, and Liver disorders
  - Smoking history
  - Prior surgeries
  - Medications - herbals
  - BMI
  - Anesthesia discussion
  - ASA 1, ASA 2
- Psychological Evaluation
  - Identify psychologically unfit patients
  - Body Dysmorphic Disorder



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# Body Dysmorphic Disorder



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## Pre-Operative Evaluation

- Medical clearance
- Determine BMI
  - < 25 normal
  - 25-29 overweight
  - 30-49 Obese
  - > 50 Morbid Obesity
- Pre-Op Testing
  - Pregnancy test
  - CBC – significant blood loss post op
  - Glucose, HgA1C – must have controlled blood sugars
  - Coagulation studies
  - CXR, EKG

BMI (kg/m <sup>2</sup> )	Classification
25.0–29.9	Overweight
30.0–34.9	Obese class I
35.0–39.9	Obese class II
40.0–49.9	Obese class III
≥50	Supermorbid obesity

*BMI, Body mass index.*



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## Day of Surgery

- Patient is examined and marked appropriately in an upright position or standing
- Use markers to outline areas to be treated
- Mark zones of adherence and other areas to be avoided with-parallel or cross hatched marks.



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## Perioperative Considerations

Perioperative IV antibiotics

Deep Venous Thrombosis Prophylaxis

Intermittent pneumatic compression devices should be used intraoperatively.

Hypothermia

Forced-air warming blankets

Consider circulating warm water mattresses

Cover exposed body areas

Warm intravenous fluids.

Warm operating room

Warm wetting solution.

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## Monitoring and Minimizing Physiologic Stresses Related to the Surgical Procedure

### Hypothermia

- Core body temp < 36° C
- 50%-90% of surgical patients develop hypothermia – when preventive measures are not used

#### • Causes

- Anesthesia impairs thermoregulatory mechanisms
- Core-to-peripheral heat redistribution begins
- Ambient operating room temperature occurs

#### • Risks

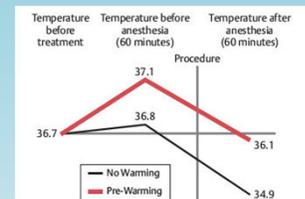
- ↑ blood loss, coagulation disorders, cardiac events, surgical site infection, and post op shivering

#### • Prevention

- Bair hugger, IV fluid warmer

#### • Recommendations

- Limit office procedures to < 2 hours duration and < 20% body surface area of exposure

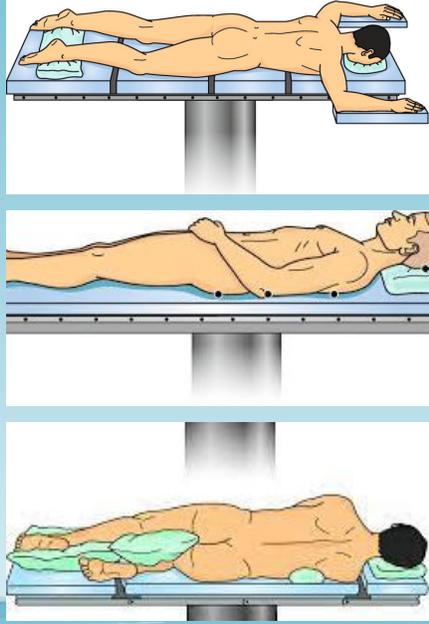


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## Positioning

- Pad all pressure points
- Protect face, breast, and genitals
- Arm abduction <90 degrees to prevent brachial plexus injury
- Hips and knees flexed at 30 degrees with a pillow



The illustrations show a patient in three different positions on a table: prone (top), supine (middle), and lateral (bottom). Each position is supported by pillows and pads to ensure comfort and safety during surgery.

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## Tumescent Technique for Larger Liposuction Procedures

### What is Tumescence?

- Research reveals:
  - Lidocaine 35mg/kg
  - 70kg patient ( $35 \times 70 = 2,450\text{mg}$ )

### Patient Example

- Determine how many liters to be removed by suction
- If 4L of fat removed, 4L of tumescence must go in
- Lidocaine 20ml = 200mg in each 1 L of LR with 1 amp Epi (1mg)
- 200mg Lidocaine in each Liter x 4 liters = 800mg of Lidocaine
- Dangerous to do under local anesthesia, patient requires more lidocaine if awake



The image shows a clear glass vial with a white label. The label text includes: '30 mL Single-Use Preservative-Free', '1% LIDOCAINE HCl Injection, USP', and '10 mg/mL'. There is also a small logo and 'LOT 34-0148-21' at the bottom.

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## Liposuction



- For small-volume liposuction, infiltration with a solution containing a local anesthetic may be sufficient without the need for adjunctive anesthesia, although the use of monitoring devices during the procedure is recommended.
- Bupivacaine (Marcaine) should not be used because of the severity of its side effects, its long half-life, and the inability to reverse toxicity.
- Lidocaine maximal dosage is 35 mg/kg.
- For larger-volume liposuction, the amount of lidocaine used should be reduced.
- Superwet (1:1) technique rather than tumescent (3:1) technique is used to reduce lidocaine dosage and infiltrate volume.
- If regional or general anesthesia is used, not using or reducing the lidocaine dose should be considered.
- Epinephrine - The recommended maximal dose is 0.07 mg/kg, although up to 10 mg/kg have been used safely.
- Epinephrine is avoided for patients with comorbid medical conditions that prohibit its use, including hyperthyroidism, severe hypertension, cardiac disease, peripheral vascular disease, and pheochromocytoma.
- For multiple-site liposuction procedures, infiltration is staged to decrease the epinephrine effects.
- Patient selection: Liposuction is generally a safe procedure for treating localized adiposity of the abdomen, flanks, arm, trunks, and thighs. Liposuction is not a treatment for obesity. It is generally not recommended for patients with a BMI >30.25



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## Liposuction Cannulas

- Most tips are blunt with multiple openings set back from the end to allow suctioning of fat with passage of the cannula.
- Blunt tips limit risks of penetration of unwanted structures such as fascia, peritoneum, vessels, and nerves.
- Suction cannulas range from 1.8 mm up to 1 cm in diameter (typical use for liposuction is 2.5-5.0 mm) with varying cannula lengths.
- Larger suction cannulas are typically used for deeper tissue.
- As suction cannula size increases, the rate of fat removal with each pass increases, as does the risk of contour irregularities.



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# Wetting Solutions

## Purposes

- Volume replacement
- Hemostasis
- Analgesia
- Enhance cavitation
- Dissipate heat

### Wetting Solution Technique

§ (table 57-1)

**Table 57-1 Wetting Solution Infiltrate and Estimated Blood Loss by Technique**

Technique	Infiltrate	Estimated Blood Loss (as % volume)
Dry	None	20-45
Wet	200-300 ml/area	4-30
Superwet	1 ml infiltrate:1 ml aspirate	<1
Tumescent	3-4 ml infiltrate:1 ml aspirate	<1

Infiltrate may contain lidocaine, epinephrine, and/or sodium bicarbonate, depending on surgeon's preference.

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# Lidocaine in Wetting Solution

- Analgesia is provided up to 18 hours postoperatively.
- Recommended maximum is 7 mg/kg in the presence of epinephrine (4 mg/kg in the absence of epinephrine).
- The estimated maximum safe lidocaine dosage using the tumescent technique is 35 mg/kg.
- Peak plasma concentration is 10-14 hours after infiltration.
- Klein's original study noted doses up to 52 mg/kg with no adverse effect; this has been confirmed in other studies.
- Objective signs of lidocaine toxicity at plasma concentration  $>5 \mu\text{g/ml}$
- Use of high quantities of lidocaine made possible because of:
  - Diluted solution
  - Slow infiltration
  - Vasoconstriction of epinephrine
  - Relative avascularity of fatty layer
  - High lipid solubility of lidocaine
  - Compression of vessels by infiltrate

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# Lidocaine Toxicity

Plasma Level ( $\mu\text{g/ml}$ )	Symptoms
3-6	Subjective (circumoral numbness, tinnitus, drowsiness, lightheadedness, difficulty focusing)
5-9	Objective (tremors, twitching, shivering)
18-12	Seizures, cardiac depression
12-14	Unconsciousness, coma
15-20	Respiratory arrest
>20	Cardiac arrest

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## Intralipid 20%

- Recommended dosing for 70 kg patient (lean body mass)
- Bolus 1.5 ml/kg (about 100 ml)
  - Infusion rate 0.25 ml/kg/min (about 18 ml/min)
  - Continue BLS/ACLS chest compressions to circulate
  - Repeat bolus x 2 every 3–5 minutes circulation is restored.
  - Can double infusion rate to support circulation
  - Maximal upper dosing limit varies in literature; has been reported to be 8–10 ml/kg.

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## Fluid Resuscitation During Liposuction

1L of isotonic fluid is absorbed from the interstitial in 167 minutes.

Any infiltrate not removed through aspiration is slowly reabsorbed and mobilized by normal homeostatic mechanisms.

Superwet infiltration technique is preferred over tumescent technique with equivalent blood loss and decreased potential of volume overload and congestive heart failure.

IV (using superwet infiltration)

Crystalloid IV at maintenance rate (adjust to urine output and vital signs)

Foley catheter should be placed for patients undergoing large-volume liposuction (>5 L total aspirate)

Replacement IV of 0.25 ml/kg of aspirate over 5 L

Intraoperative fluid ratio goals

Ratio = (Vol. of intraop fluid + Vol. of lipoaspirate + Vol. of superwet solution) / Aspiration vol.

Small-volume liposuction: 1.8

Large-volume liposuction: 1.2

Continue maintenance IV postoperatively until oral intake is adequate.



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## Safety Guidelines in Liposuction

- Appropriate patient selection (ASA class I, within 30% of ideal body weight)
- Use of superwet infiltration technique
- Meticulous monitoring of volume status (urinary catheter, noninvasive hemodynamic monitoring, communication with anesthesiologist)
- Judicious fluid resuscitation per protocol
- Overnight monitoring of large-volume (>5 L of total aspirate) liposuction patients in an appropriate health care facility
- Use of pneumatic compression devices in patients under general anesthesia or if case lasts >1 hour
- Maintenance of total lidocaine doses <35 mg/kg (wetting solution)



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## What is Fat/Stem Cells?

- Fat is very important physiology and culturally.
- Endocrine Actively : Leptin, Insulin, Cortisol, Growth Hormone, and Catecholamine.
- There is 3 kinds of Fat in the body:
  - 1. White Fat : Under the skin/ abdomen
  - 2. Brown Fat: Shoulder and neck area responsible for keep the body temperate constant.
  - 3. Beige Fat: Somewhere between white and brown. Under hormonal stimulation you can turn the white fat into brown.

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## Fat Transfer

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Cosmetic  
Surgical  
Procedures






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## Blood Loss

- If the anticipated blood loss is  $>500$  ml, the procedure should be performed in a facility in which postoperative monitoring and blood replacement products are readily available

Duration of the Surgical Procedure

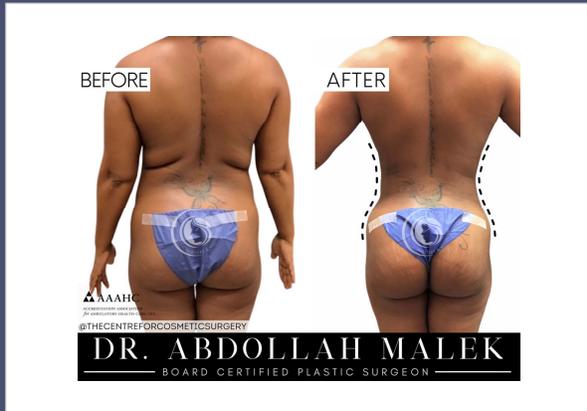
- Overall procedure length should be limited to  $<6$  hours for office-based surgical procedures
- The safety and efficacy of outpatient office-based surgery has been established by numerous studies
- Some studies have correlated the length of the ambulatory surgical procedure with increased rates of post discharge readmission to a hospital
- State regulations must be checked for details, because some states have more aggressive regulations/restrictions




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## Circumferential Liposuction



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## Tumescent Technique for Larger Liposuction Procedures



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## Liposuction



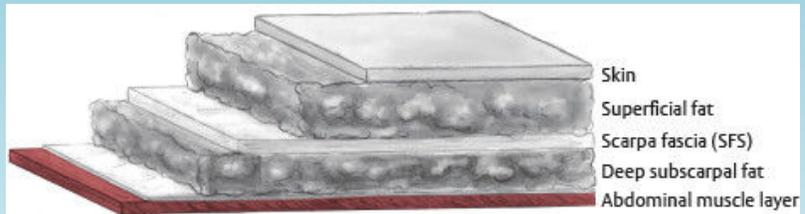
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## Abdominoplasty

The abdominal wall is composed of seven layers.

1. Skin
2. Subcutaneous Tissue
3. Scarpa fascia
4. Scarpa fat
5. Anterior rectus
6. Muscle
7. Posterior rectus sheath



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## Abdominoplasty



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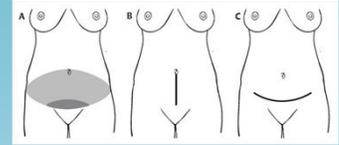
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## Lipoabdominoplasty

- The areas for liposuction are marked, usually avoiding liposuction of the upper midline.
- Superwet technique is used.
- Ultrasonic or traditional suction-assisted liposuction (SAL) is safe.
- A thin layer of fat is left on the abdominal wall to preserve lymphatic supply. At least 17% of lymphatics are preserved below Scarpa fascia.
- Selective undermining of the flap is limited to the central area that will require plication, most commonly to the lateral border of the rectus
- The abdominal perforators at the lateral aspect of the rectus muscle are preserved.
- Progressive tension sutures (PTS) and/or drains can be used.
- Saldanha et al., theorized that 80% of blood supply, nerves, and lymphatics are preserved with this technique, thus contributing to their low rate of seroma (0.4%), dehiscence, necrosis, and hematoma. The incidence of DVT and PE remain the same.
- Roostaeian et al., showed, via laser fluorescence imaging, that lipoabdominoplasty maintained flap perfusion as well as wide undermining. The authors concluded lipoabdominoplasty was as safe as traditional abdominoplasty.

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## Miniabdominoplasty



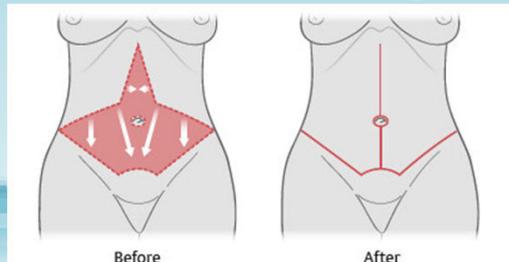
- The miniabdominoplasty is indicated in patients with primarily an excess of isolated infraumbilical skin and fat. Not a very common procedure.
- A shorter scar is planned than for traditional abdominoplasty; the scar should be 12-16 cm in length.
- The umbilicus remains attached to the abdominal flap. If necessary, the umbilical stalk is transected at the level of the anterior rectus sheath.
- The fascial defect created by umbilical transection must be repaired.
- Rectus diastasis, if present, is repaired using permanent or long-acting resorbable sutures.
- Excess skin and fat is resected; this is a much more conservative resection than performed for traditional abdominoplasty
- The umbilicus will generally move 2 cm inferiorly using this technique.
- Liposuction is frequently added to the miniabdominoplasty to improve overall abdominal contour, especially in the supraumbilical region.

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## Fleur-De-Lis Abdominoplasty

- The fleur-de-lis technique allows for excision of both lower abdominal skin and fat and supraumbilical horizontal excess skin through a transverse incision.
- The vertical midline incision can be taken as high as the xiphoid process and as low as the mons pubis, depending upon the areas of skin laxity.
- Tip: It is paramount to leave the skin flaps attached to the underlying fascia, except in areas contained within the fleur-de-lis excision, to maximize vascularity.
- This procedure can cause powerful changes to the abdominal contour not available with other techniques. The resulting scars must be discussed with the patient because they can be rather significant.



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## Postoperative Considerations

- Early ambulation and adequate hydration
- Postoperative abdominal binders and compression garments can constrict the common femoral vein in the thigh and may require modification.
- Pneumatic compression boots
- DVT prevention – Heparin or Lovenox SQ for inpatients
- In abdominoplasty patients, oral Factor Xa inhibitors have low rates of reoperative hematoma



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## Abdominoplasty



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Questions  
???

THANK YOU!



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