

2006 Guidelines for Liposuction Surgery

THE AMERICAN ACADEMY OF COSMETIC SURGERY

A joint Ad Hoc Committee of the American Society of Lipo-Suction Surgery (ASLSS) and the American Academy of Cosmetic Surgery (AACCS) was formed to create the following guidelines for liposuction surgery.¹

1. Training and Education

Physicians practicing liposuction surgery should have adequate training and experience in the field. This training and experience may be obtained in residency training, cosmetic surgery fellowship training, observational training programs, CME accredited post-graduate didactic and live surgical programs, or via proctorship with trained credentialed surgeons experienced in liposuction techniques. Post-graduate training should include completion of CME accredited didactic and live surgical training courses approved by the American Academy of Cosmetic Surgery. In addition, training and education should include one-on-one or observational training experiences, in a proctorship or preceptorship setting with qualified practitioners of liposuction techniques.

Surgeons of multiple specialties perform liposuction surgery. Qualified surgeons who practice liposuction surgery should have the necessary skills to perform the procedures and the knowledge to diagnose and manage cardiovascular, surgical, or pharmacological complications that may arise. Surgeons, who have received adequate training and surgical experience as either a primary surgeon or co-surgeon as part of their residency, do not require attendance at didactic courses, live surgical workshops, or preceptorship. If residency experience is not adequate, the surgeon should complete the three levels of education.

2. Preoperative Evaluation

A documented medical history, physical examination, and appropriate laboratory work based upon the patient's general health and age must be performed on all patient candidates. It is recommended that the anesthesia guidelines of the American Society of Anesthesiology (www.anesthesiology.org) should be considered for liposuction candidates. Special attention should be given to bleeding disorders, potential drug interactions, history of thrombophlebitis, and other common risks of surgery. Documented informed consent must be obtained prior to surgery.

Thorough clinical examination should include a detailed evaluation of the regions to be lipocontoured including a notation of hernias, scars, asymmetries, cellulite, and stretch marks. The quality of the skin and, particularly, its elasticity, and the presence of stria and dimpling should be evaluated. The underlying abdominal musculofascial system should be evaluated for

¹ The members of this original committee include: Jim E. Gilmore, MD; Robert W. Alexander MD, DMD; Ronald A. Fragen, MD; Dee Anna Glaser, MD; Kevin Pinski, MD; and Jacob Varon, MD. The ASLSS Advisory Council reviewed the Guidelines in May 2002. These revised Guidelines were presented to and passed by the AACCS Board of Trustees on October 3, 2002. [This is the 2006 update.](#)

the presence of flaccidity, integrity, and diastasis recti. The deposits of body fat should be recorded. Standardized photodocumentation is required.

3. Indications

Indications for liposuction or use of liposuction techniques include removal of localized deposits of adipose tissues that do not respond to diet and exercise. These would include:

- 1) Body contouring, including the face, neck, trunk, and extremities.
- 2) Treatment of diseases, such as lipomas, gynecomastia, pseudogynecomastia, lipodystrophy, and axillary hyperhidrosis.
- 3) Reconstruction of the skin and subtissues in flap elevations, subcutaneous debulking, and help in mobilization of flaps or other conditions.
- 4) To harvest fat cells for transfer (grafting) to provide tissue augmentation, correction of scar defects, etc.

Note: Weight loss is not considered an indication for liposuction surgery.

4. Techniques of Liposuction

Tumescent: Tumescent infiltration has been shown over the last 20 years to be an important adjunctive technique for liposuction and lipocontouring, with the improved safety, fastest recovery time, and the least number of complications in the liposuction patients. Not only has infiltration of large volumes of dilute local anesthetic (i.e., lidocaine [0.5 – 1.0 gm/L] with epinephrine [1.0 mg/L]) been shown clinically to significantly decrease blood and intravascular fluid loss, it is believed to facilitate lipocontouring. (The dosages and amount of the above agents may vary within recognized safe limits). Most recognized authorities define tumescent infiltration as placement of a 1:1 or higher ratio of subcutaneous infiltration to total aspirated volumes.

When using the tumescent technique and other forms of infiltration of lidocaine with epinephrine, studies recommend a maximum range of 45-55 mg/kg. The limit of 55 mg/kg should rarely be exceeded. The safe dosage is dependent on the total volume of body fat and size of patient. Small patients with minimal body fat should receive doses at the lower range level. Larger volume patients may receive doses approaching the 55-mg/kg level.

General Anesthesia may be used for liposuction surgery but some studies have shown general anesthesia to be associated with higher rates of morbidity and mortality.

Ultrasonic: Ultrasonic-assisted liposuction (UAL) is a recognized technique that appears to be safe, based on current reported clinical experiences. It is common to use ultrasonic-assisted liposuction in conjunction with conventional liposuction techniques (machine or syringe). Use of ultrasonic liposuction technique is recommended for use by surgeons who have extensive previous experience with use of conventional techniques, and who have received additional post-graduate education dedicated to ultrasonic-assisted liposuction.

Laser Light Technologies/Power Assisted: Newer technologies continue to emerge and potentially facilitate the process of liposculpting. The onus is on the physician to obtain adequate education and training before incorporating these newer technologies into his or her practice.

5. Megaliposuction

Megaliposuction is single stage removal of more than 6,000 mL supranatant fat. The American Academy of Cosmetic Surgery recommends serial liposuction for the removal of large volumes of

fat, rather than utilizing megaliposuction. Until sufficient data is collected on megaliposuction, its use should be restricted to experienced surgeons performing clinical research in a hospital setting and under the supervision of an IRB (Institutional Review Board). Megaliposuction can be associated with higher rates of morbidity and mortality.

6. Recommended Volumes for Removal

Liposuction surgery, using the tumescent technique, has been demonstrated to be safe for the routine removal of volumes up to 5,000 mL (supranatant fat). Volumes exceeding 5,000 mL should be removed in select patients without co-morbidities in an approved operating facility. Recommended maximum volumes should be modified based on the number of body areas operated on, the percentage of body weight removed, and the percentage of body surface area covered by the surgery.

Liposuction may be safely performed utilizing tumescent local anesthesia only, local plus IV sedation, epidural blocks, or general anesthesia on an outpatient basis. Liposuctions within the recommended volume range typically do not require use of autologous blood transfusion.

7. Surgical Setting

Liposuction surgery may be commonly performed on an ambulatory, outpatient basis in clinic-based surgical facilities, free-standing surgical facilities, or hospital settings. The procedures must be performed using sterile technique. Elimination of microorganisms is vitally important in preventing the spread of infection. It may be achieved by various physical or chemical means, such as boiling, steam autoclaving, ultraviolet irradiation, or x-radiation. Cold sterilization may not be adequate for liposuction instrumentation. Additionally, the procedures must be performed with routine monitoring of vital signs, oxygen saturation, EKG monitoring, and end-tidal CO₂ monitoring (if under general anesthesia). IV access is recommended for removal of volumes greater than 100 mL of fat.

The surgeon or other health care provider administering tumescent local anesthesia should be properly trained and qualified to provide the required level of anesthesia. At least one health care provider in the operating room should have adequate training in cardiopulmonary resuscitation techniques (ACLS). In the immediate post-operative period, as long as the patient remains in the facility, there should be an individual immediately available to provide the appropriate level of cardiopulmonary resuscitation.

It is recommended that operating facilities have AAAHC certification (or equivalent) or function under equal guidelines as those required for such certification. In some states, this O.R. accreditation is mandatory. Appropriate and safe management of waste products must be in compliance with current OSHA regulations.

8. Expected Sequelae and Outcomes

Outcome expectations should be based on realistic preoperative evaluation of the patient's age, skin elasticity, volume of fat to be removed, and area of liposuction. Best results are expected in younger patients, minor deformities, normal weight, elastic skin, and small volume removal. Contour irregularities and skin texture changes are commonly seen especially in patients over forty and increase with aging.

- a.) Common side effects: Edema, ecchymosis, dysesthesia, fatigue, soreness, scarring, asymmetry, and contour imperfections are expected sequelae.
- b.) Occasional Side Effects: Persistent edema, long-term dysesthesia, hyperpigmentation, pruritis, hematoma, seroma, and drug or tape adhesive reactions.

- c.) Uncommon Complications: Skin necrosis, severe hematomas, recurrent seromas, nerve damage, systemic infection, hypovolemic shock, intraperitoneal or intrathoracic perforation, deep vein thrombosis, pulmonary edema, pulmonary embolism (ARDS) and loss of life have been reported.²

9. Postoperative Care and Medications

Post-surgical compression garments including binders, girdles, foam tape, closed-cell foam, and other specialized equipment have been effectively utilized. The use of compression is considered important and appears to be most helpful in the first seven days following surgery. Some surgeons also prefer to facilitate drainage of tumescent fluids after surgery.

Prophylactic antibiotic therapy may be indicated in cases of liposuction surgery. Reasonable early ambulation of liposuction patients is advisable to avoid venous stasis and shorten the post-operative recuperation period.

10. Documentation of Care

Patients should have standardized pre-operative and post-operative photographs to document the patient's condition. Patient's weight should be recorded prior to the procedure. The operative record should include, at a minimum, the following information:

- 1) Quantity of tumescent fluid infused;
- 2) Total dosages and drugs utilized;
- 3) Total volume of fat and fluid extracted;
- 4) Volume of supranatant fat;
- 5) Technique utilized;
- 6) Type of anesthesia;
- 7) Anatomical sites treated;
- 8) Use of ultra-assisted technique (internal or external);
- 9) Drains (if placed);
- 10) Complications should be noted;
- 11) Post-operative garments utilized.

Surgeons should review and compare before and after photographs to objectively evaluate the quality and extent of final outcomes. Critical outcome analysis is valuable for surgeon and patient perspectives.

11. Privileging for Liposuction Surgeons

Privileging in hospital, ambulatory surgery center, or clinic-based surgical facilities should follow appropriate guidelines required to grant privileges for adding any surgical procedure. The granting of privileges and the determination of competency should be based on a surgeon's education, training, and experience. Surgeons seeking privileges in liposuction should be prepared to submit evidence of completed accredited CME didactic coursework, live surgical conferences, and clinical case experience. Clinical experience may be derived from proctoring or preceptorship training with a qualified, experienced liposuction surgeon for a reasonable number of procedures to adequately determine satisfactory technique and patient management. The proctor or preceptor should have current privileges at an accredited facility (peer review/quality assurance reviewed) to perform such procedures, and be willing, without bias, to observe and evaluate the applicant surgeon. The number of procedures required may be determined at the

² Fatalities are rare; 1 in 40,000 according to a recent AACCS survey.

local facility according to published guidelines, and should be adequate to evaluate pre-operative, intra-operative, and post-operative case management. Confidential case evaluations should be provided, in writing, to the appropriate committee or board granting surgical privileges. Any conflict that may arise between proctor and applicant surgeon should be resolved according to regulations and bylaws of the facility and/or hospital.

Annually, liposuction surgeons are encouraged to obtain continuing medical education (CME) credits specifically in the field of liposuction and related surgery. This may be in the form of current scientific publication review, video tapes, scientific conferences, courses, or workshops.

12. Recording Adverse Events

It is the surgeon's duty and responsibility to report any adverse event, including, without limitation, significant morbidity and mortality as required by local or state requirements. Report should also be provided to the surgeon's respective professional organizations, such as the American Academy of Cosmetic Surgery and/or American Society of Liposuction Surgery in order to provide statistical tracking of such events.³

13. Disclaimer

These Guidelines provide information to consider when contemplating liposuction surgery. The Guidelines are not intended to be all-inclusive or otherwise limit the inquiry and consideration applicable to one considering liposuction surgery. The Guidelines neither endorse nor make any representation regarding the qualifications, capabilities, skill or competence of any individual physician. The Guidelines present general information for educational purposes only and are not intended nor should it be used as a substitute for professional medical advice. AACS expressly disclaims all responsibility and liability arising from your use of or reliance on the Guidelines, and assumes no responsibility or liability for any claims that may result directly or indirectly from your use of the information.

14. Bibliography

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³ Legislatures and state medical boards are urged to support legislation that will permit the medical profession and the insurance industry to cooperate in formulating a non-punitive policy toward reporting surgical complications. An ideal solution to the problem of identifying unrecognized causes of death as a result of surgery or anesthesia would be for each specialty to take full responsibility for reporting and analyzing each and every unanticipated death. This would require compulsory reporting, absolute confidentiality and significant penalties for non-compliance. The AACS and ASLSS may serve as a clearinghouse for the collection of data concerning the safety of liposuction and the occurrence of adverse events.

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