

Patient Safety in Postbariatric Body Contouring

Karol A Gutowski, MD, FACS

Disclosures

The Doctors Company - Advisory Board

Angiotech/Quill - Advisory Board

Suneva Medical – Instructor

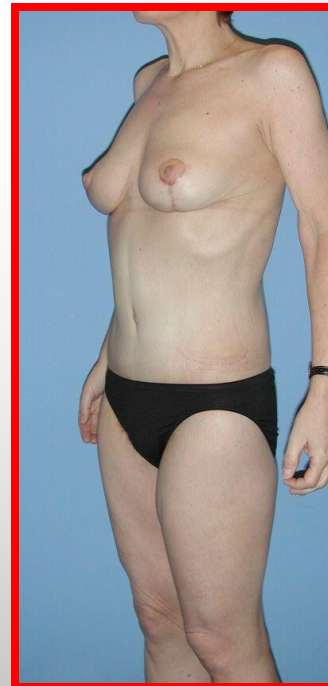
Viora - Speaker

Will not discuss off-label uses

Will discuss use of specific sutures

Objectives

- Understand the risks of MWL body contouring
- Identify key interventions to reduce risk
- Implement practice changes to address safety



My Case Presentation

- 55 year old female with MWL
- Hospital's first MWL body contouring case
- Arms, breasts, abdomen treated
- Patient develops hypothermia & blood loss

- No warming devices or not turned on
- Cold infiltration fluid
- No staff familiarity with procedure

Preoperative Evaluation

- BMI
 - No specific limit but correlates with risk
 - Less complications if <30
- Medical issues
 - Clear by PCP and bariatric team
- Smoking cessation
 - Preop urine cotinine test
- Nutritional & metabolic status
 - Laboratory confirmation

Preoperative Evaluation

- Stop all supplements, herbal, homeopathic meds
- VTE risk assessment
- Combined vs staged procedures
- Psychological assessment & expectations
- Home & recovery support



Multiple vs Staged Procedures

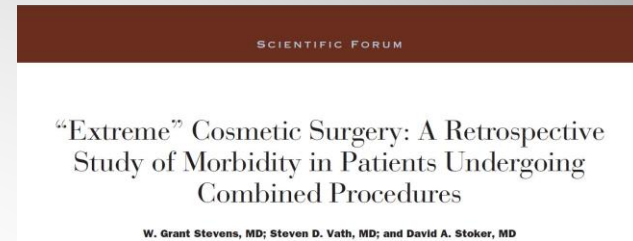
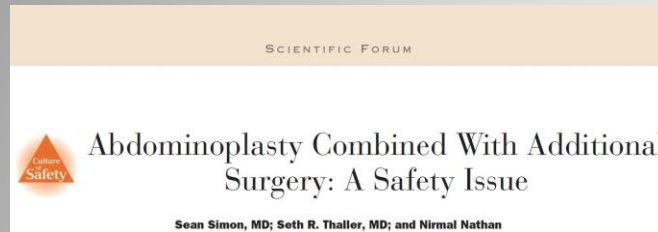
- Considerations
 - Surgical team experience and speed
 - Length of surgery
 - Cost to patient
 - Skin tension vectors
 - Surgical site proximity
 - Need for revisions
- Increased risk for seroma & dehiscence*
- No increased risk for major complications*

Multiple vs Staged Procedures

In properly selected patients done with an experienced team, there does not appear to be a significantly increased risk when multiple procedures are done in MWL patients

- Team approach
- OR limit 6 to 7 hrs

Abdominoplasty + Other Procedures



- May increase risk
- AAAASF shows increased mortality (VTE)
- Are smaller studies underpowered or are they doing something different?
- Is it the BMI (>30) or the anesthesia?

Intra-Operative Considerations

- OR team plan & check list
- Patient positioning
- Hypothermia
- VTE prophylaxis
- Minimizing blood loss
- Infection

Check Lists



Special Topic

Six Things Every Plastic Surgeon Needs to Know About Teamwork Training and Checklists

Capt. Stephen W. Harden, BS

Aesthetic Surgery Journal
33(3) 443-448
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Aesthetic Plastic Surgery, Inc.
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journalsPermissions.nav](http://www.sagepub.com/journalsPermissions.nav)
DOI: 10.1177/1090820X13477417
www.aestheticsurgeryjournal.com
SAGE

- Proven to work in OR & improve work environment
- Need to customize to your practice
- Easy to do across continuum of care
- Positive ROI (5 min briefing can save 30 min in OR)

You must lead it

Surgical Site Infection

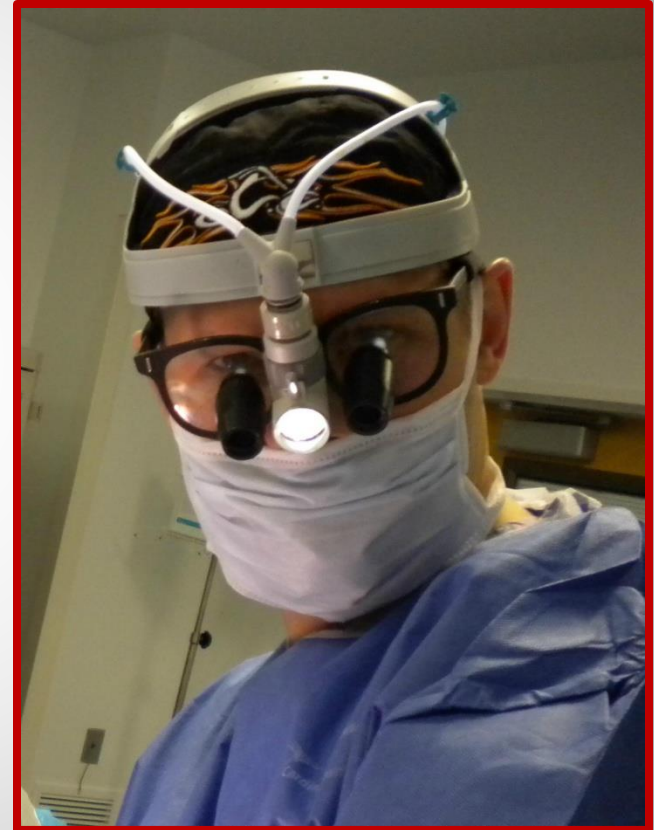
- Proper prophylactic antibiotics
 - Cefazolin 1 g IV, 30 to 60 min before incision
 - Cefazolin 2 g if patient > 80 kg
 - Redose if OR time > 4hrs or EBL > 1500 cc
- Alcohol & chlorhexidine skin prep
- Maintain normothermia
- Control hyperglycemia
- No hair removal

Patient Positioning

- Prone to supine
- Side to side to supine
- Proper padding at joints
- Gel rolls in prone position
- Neck position
- Patient repositioning

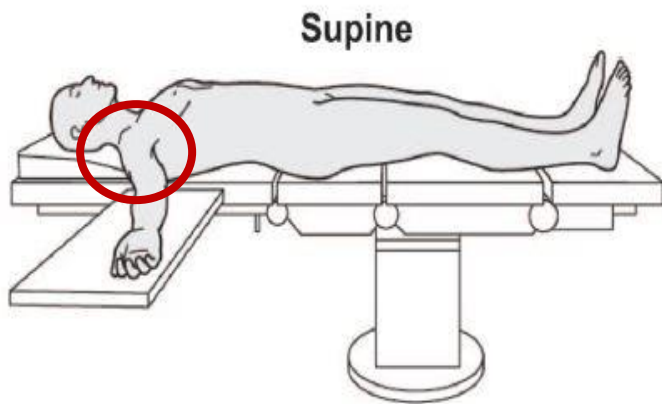
Patient Positioning

- Prone to supine
- Side to side to supine
- Proper padding at joints
- Gel rolls in prone position
- Neck position
- Patient repositioning



Surgeon should be present for positioning

Supine Positioning



Risks

Pressure points including occiput, scapula, thoracic vertebrae, sacrum/coccyx calcaneus, and patella

Neural injuries of extremities, including brachial plexus and ulnar and pudendal nerves

Safety Considerations

Padding to heels, elbows, knees, spinal column

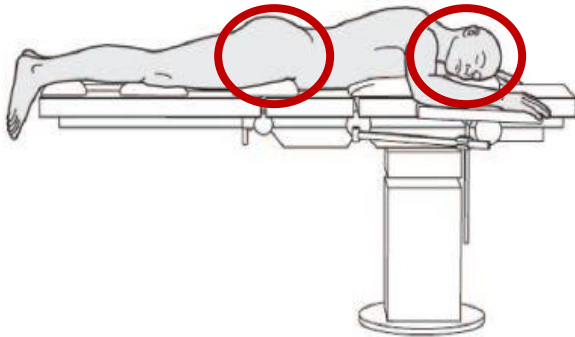
Occiput alignment with hips, legs parallel and uncrossed ankles

Armboards at ≤ 90 -degree angle, parallel with floor, and not overlapping table edge

Armboard pads level with pads and head in neutral position

Prone Positioning

Prone



Risks

Head

Eyes

Nose

Chest compression
iliac crest

Breasts, male genitalia

Knees

Feet

Safety Considerations

Maintain cervical neck alignment

Pillow or folded towel under shoulders

Protection for forehead, eyes and chin

Padded headrest to provide airway access

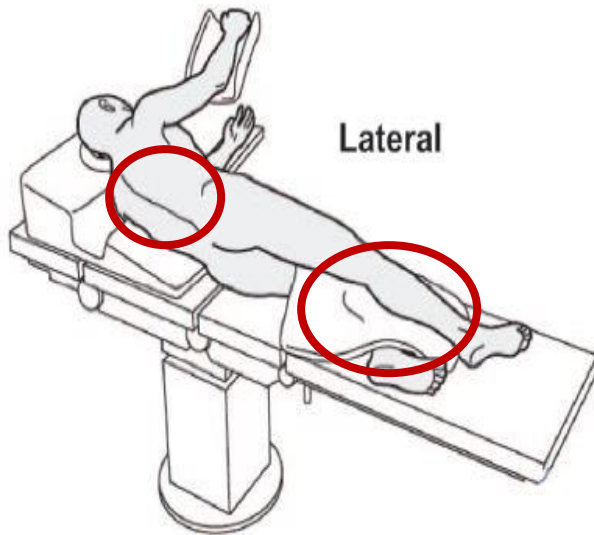
Chest rolls (clavicle to iliac crest) to allow
chest movement and decrease abdominal
pressure

Keep free from torsion

Padded with pillow to feet

Padded footboard

Lateral Positioning



Lateral

Risks

Bony prominence and pressure points on dependent side

Spinal alignment

Safety Considerations

Axillary roll for dependent axilla

Lower leg flexed at hip

Upper leg straight with pillow between legs

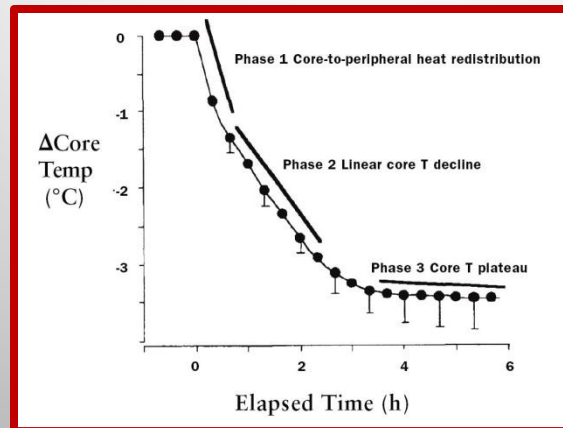
Padding between knees, ankles, feet

Maintain spinal alignment during turning

Padded support to prevent lateral neck flexion; make sure ear isn't trapped

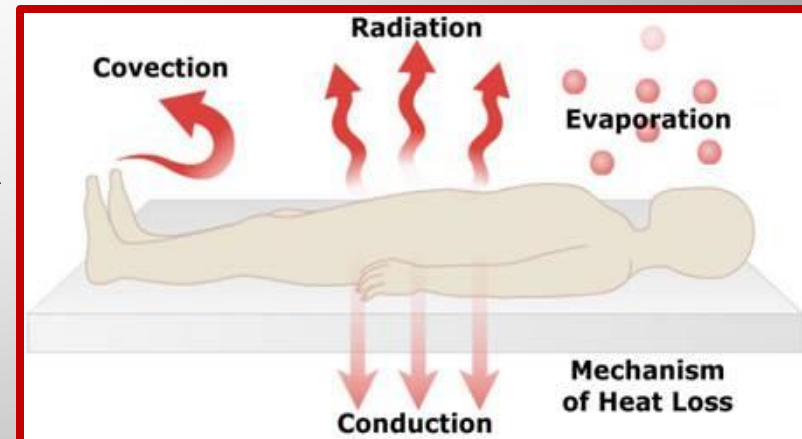
Hypothermia

- $T \leq 36C$
- Not frequently recognized or addressed
- National quality measure & SCIP
- More likely in multiple procedures
- General anesthesia impairs thermoregulation



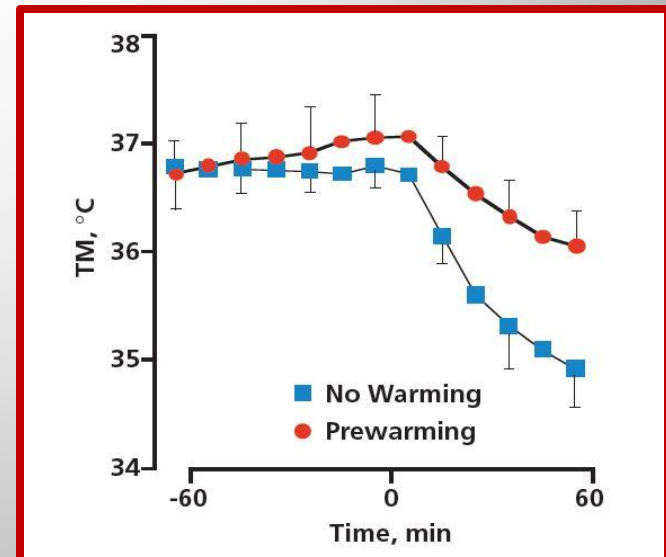
Hypothermia Consequences

- Blood loss
- Wound infections
- Cardiac events
- VTE risk
- Shivering
 - Physiologic stress
- Decreased drug metabolism
- Length of stay
- Costs



Hypothermia Prevention

- Pre-warm patient with forced air
- OR forced flow air warmer
- OR set $\geq 73\text{F}$
- Esophageal or tympanic membrane monitor



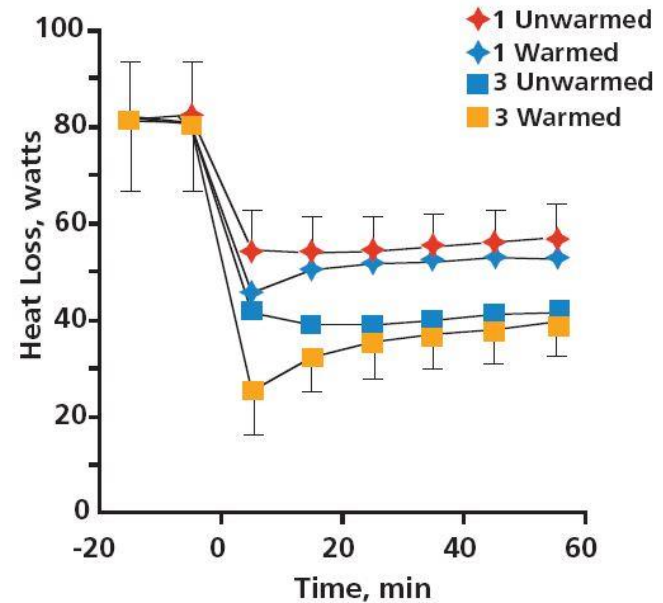
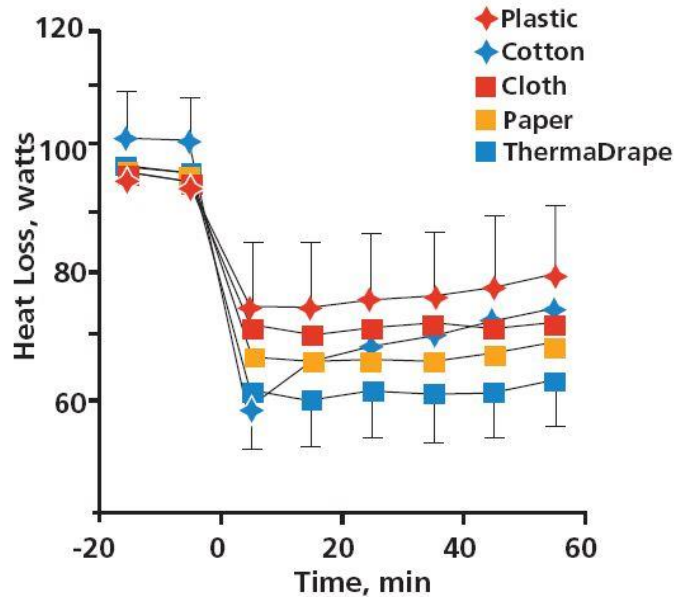
Hypothermia Prevention

- Warm IV & infiltration fluids (40C)
- Warm skin prep (comfort)
- Expose only current surgical site
- Treat shivering (meperidine)



What does NOT work

- Head cover
- Heating airway
- Warm skin prep
- Radiant heat (lamps)
- Heated mattress
- Adding more blankets



VTE Prophylaxis



Abdominoplasty seems to have a higher risk of VTE compared to other aesthetic procedures



VTE Chemprophylaxis

- When to start?
 - Enoxaparin 6-8 hrs after surgery does NOT increase hematoma rate (VTEPS)
- When to stop?
 - 7 to 10 days vs fully ambulatory
- Risks vs benefits

Thromboembolism in High-Risk Aesthetic Surgery: Experience With 17 Patients in a Review of 3871 Consecutive Cases

Christopher K. Patronella, MD; Amado Ruiz-Razura, MD; Germán Newall, MD; Henry A. Mentz, MD; Monica L. Arango, MD; Tiravat Assavapokee, PhD; and Jana L. Siarski



Patient Education



What is Deep-Vein Thrombosis (DVT)?

DVT occurs when a blood clot forms in one of the large veins, usually in the lower limbs, leading to either partially or completely blocked circulation. The condition may result in health complications, such as a pulmonary embolism (PE) and even death if not diagnosed and treated effectively.

Most common risk factors for DVT:

- Major surgery
- Congestive heart failure or respiratory failure
- Restricted mobility
- Recent injury
- Cancer
- Obesity
- Age over 40 years
- Recent surgery
- Smoking
- Prior or family history of venous thromboembolism (VTE)

Signs and Symptoms of DVT:

About half of people with DVT have no symptoms at all. For those who do have symptoms, the following are the most common and can occur in the affected part of the body, typically in the leg or calf region:

- Swelling unrelated to the surgical site,
- Pain or tenderness, unrelated to the surgical site and often worse when standing or walking,
- Redness of the skin,
- Warmth over the affected area.

** If you develop symptoms of a deep vein thrombosis, contact your health care provider for guidance.*



What is a Pulmonary Embolism (PE)?

A pulmonary embolism (PE) is a very serious condition that occurs when a blood clot blocks the artery that carries blood from the heart to the lungs (pulmonary artery). A clot that forms in one part of the body and travels in the bloodstream to another part of the body is called an embolus. PEs often come from the deep leg veins and travel to the lungs through blood circulation.

Signs and Symptoms of PE

- Difficulty breathing;
- Faster than normal heart beat;
- Chest pain or discomfort, which usually worsens with a deep breath or coughing;
- Coughing up blood; or
- Very low blood pressure, lightheadedness, or blacking out

** If you develop symptoms of a Pulmonary Embolism, seek emergency medical attention immediately.*

Caprini Risk Assessment Scoring System

A1: Each Risk Factor Represents 1 Point

- Age 40-59 years
- Minor surgery planned
- History of prior major surgery
- Varicose veins
- History of inflammatory bowel disease
- Swollen legs (current)
- Obesity (BMI > 30)
- Acute myocardial infarction (<1 month)
- Congestive heart failure (< 1 month)
- Sepsis (< 1 month)
- Serious lung disease incl. pneumonia (< 1 month)
- Abnormal pulmonary function (Chronic obstructive pulmonary disease)
- Medical patient currently at bed rest
- Leg plaster cast or brace
- Central venous access
- Blood transfusion (< 1 month)
- Other risk factor/s _____

A2: For Women Only (Each Represents 1 Point)

- Oral contraceptives or hormone replacement therapy
- Pregnancy or postpartum (<1 month)
- History of unexplained stillborn infant, recurrent spontaneous abortion (≥ 3), premature birth with toxemia of pregnancy or growth restricted infant

B: Each Risk Factor Represents 2 Points

- Age 60-74 years
- Major surgery (> 60 minutes)*
- Arthroscopic surgery (> 60 minutes)*
- Laparoscopic surgery (> 60 minutes)*
- Previous malignancy
- Morbid obesity (BMI > 40)

C: Each Risk Factor Represents 3 Points

- Age 75 years or more
- Major surgery lasting 2-3 hours*
- BMI > 50 (venous stasis syndrome)
- History of SVT, DVT/PE
- Family history of DVT/PE
- Present cancer or chemotherapy
- Positive Factor V Leiden
- Positive Prothrombin 20210A
- Elevated serum homocysteine
- Positive Lupus anticoagulant
- Elevated anticardiolipin antibodies
- Heparin-induced thrombocytopenia (HIT)
- Other thrombophilia- Type _____

D: Each Risk Factor Represents 5 Points

- Elective major lower extremity arthroplasty
- Hip, pelvis or leg fracture (< 1 month)
- Stroke (< 1 month)
- Multiple trauma (< 1 month)
- Acute spinal cord injury (paralysis)(< 1month)
- Major surgery lasting over 3 hours*

TOTAL RISK FACTOR SCORE: _____

*Select only one from the surgery category

VTE Chemoprophylaxis Concerns

EBM SPECIAL TOPIC

Evidence-Based Practices for Thromboembolism Prevention: Summary of the ASPS Venous Thromboembolism Task Force Report

Robert X. Murphy, Jr., M.D.
Amy Alderman, M.D.
Karol Gutowski, M.D.
Carolyn Kerrigan, M.D.
Karie Rosolowski, M.P.H.
Loren Schechter, M.D.
DeLaine Schmitz, R.N.,
M.S.H.L.
Edwin Wilkins, M.D.

Arlington Heights, Ill.

Summary: In July of 2011, the American Society of Plastic Surgeons Executive Committee approved the Venous Thromboembolism Task Force Report. The report includes a summary of the scientific literature relevant to venous thromboembolism and plastic surgery along with five evidence-based recommendations. The recommendations are divided into two sections: risk stratification and prevention. The risk stratification recommendations are based on the 2005 Caprini Risk Assessment Module, which has been validated in the scientific literature as an effective tool for risk-stratifying plastic and reconstructive surgery patients based on individual risk factors for 60-day venous thromboembolism. The three prophylaxis recommendations are dependent on an individual patient's 2005 Caprini Risk Assessment Module score. (*Plast. Reconstr. Surg.* 130: 168e, 2012.)



OPEN



SPECIAL TOPIC

Chemoprophylaxis for Venous Thromboembolism Prevention: Concerns Regarding Efficacy and Ethics

Eric Swanson, MD

Summary: Chemoprophylaxis has been recommended for plastic surgery patients judged to be at increased risk for venous thromboembolism. Several investigators have encountered this complication in patients despite anticoagulation therapy. An increased rate of complications related to postoperative bleeding has been reported. This article examines the efficacy and safety of this intervention, along with ethical considerations, in an attempt to determine whether any benefits of chemoprophylaxis justify the additional risks. The statistical methods and conclusion of the Venous Thromboembolism Prevention Study are challenged. Other preventative measures that do not cause negative side effects are discussed as safer alternatives. (*PRS GO* 2013;1:e23; doi:10.1097/GOX.0b013e318299fa26; Published online 20 June 2013.)

VTE Chemoprophylaxis in Aesthetic Surgery Concerns

- Aesthetic surgery patients are not “sick”
- Procedures not same as general surgery
- Total intravenous vs general anesthesia
 - Patients breath and have muscle tone
- Outpatient or minimal hospitalization
- Risk of increase hematoma

VTE: Is it the Anesthesia?

- Lower VTE rates with TIVA than GA
- Does it work for major body contouring cases?
 - Dedicated anesthesiologist
 - Propofol + Ketamine + Fentanyl
 - LMA (ETT if needed)
 - Lidocaine (0.25 -0.5%) + epi in incision lines
 - Lidocaine (0.05%) + epi in deep tissue
- Faster recovery
- Less PONV

Total Intravenous Anesthesia



Total Intravenous Anesthesia



Drains

- Rethink need for drains & proper use of compression
- Weak evidence for tissue sealants
- Consider sutures to close dead space
- NOT used in breast lifts, reductions or augmentations, abdominoplasties, bodylifts, arm lifts (overnight for thigh lifts)

RECONSTRUCTIVE

Evidence-Based Value of Subcutaneous Surgical Wound Drainage: The Largest Systematic Review and Meta-Analysis

Aaron M. Kosins, M.D.,
M.B.A.

Thomas Scholz, M.D.

Mine Cetinkaya, B.S.

Gregory R. D. Evans, M.D.

Orange, Calif.; and Durham, N.C.

Background: The purpose of this study was to determine the evidenced-based value of prophylactic drainage of subcutaneous wounds in surgery.

Methods: An electronic search was performed. Articles comparing subcutaneous prophylactic drainage with no drainage were identified and classified by level of evidence. If sufficient randomized controlled trials were included, a meta-analysis was performed using the random-effects model. Fifty-two randomized controlled trials were included in the meta-analysis, and

Seroma & Drains

Techniques in Cosmetic Surgery

Progressive Tension Sutures: A Technique to Reduce Local Complications in Abdominoplasty

Harlan Pollock, M.D., and Todd Pollock, M.D.

Dallas, Texas

IDEAS AND INNOVATIONS

Use of Absorbable Running Barbed Suture and Progressive Tension Technique in Abdominoplasty: A Novel Approach

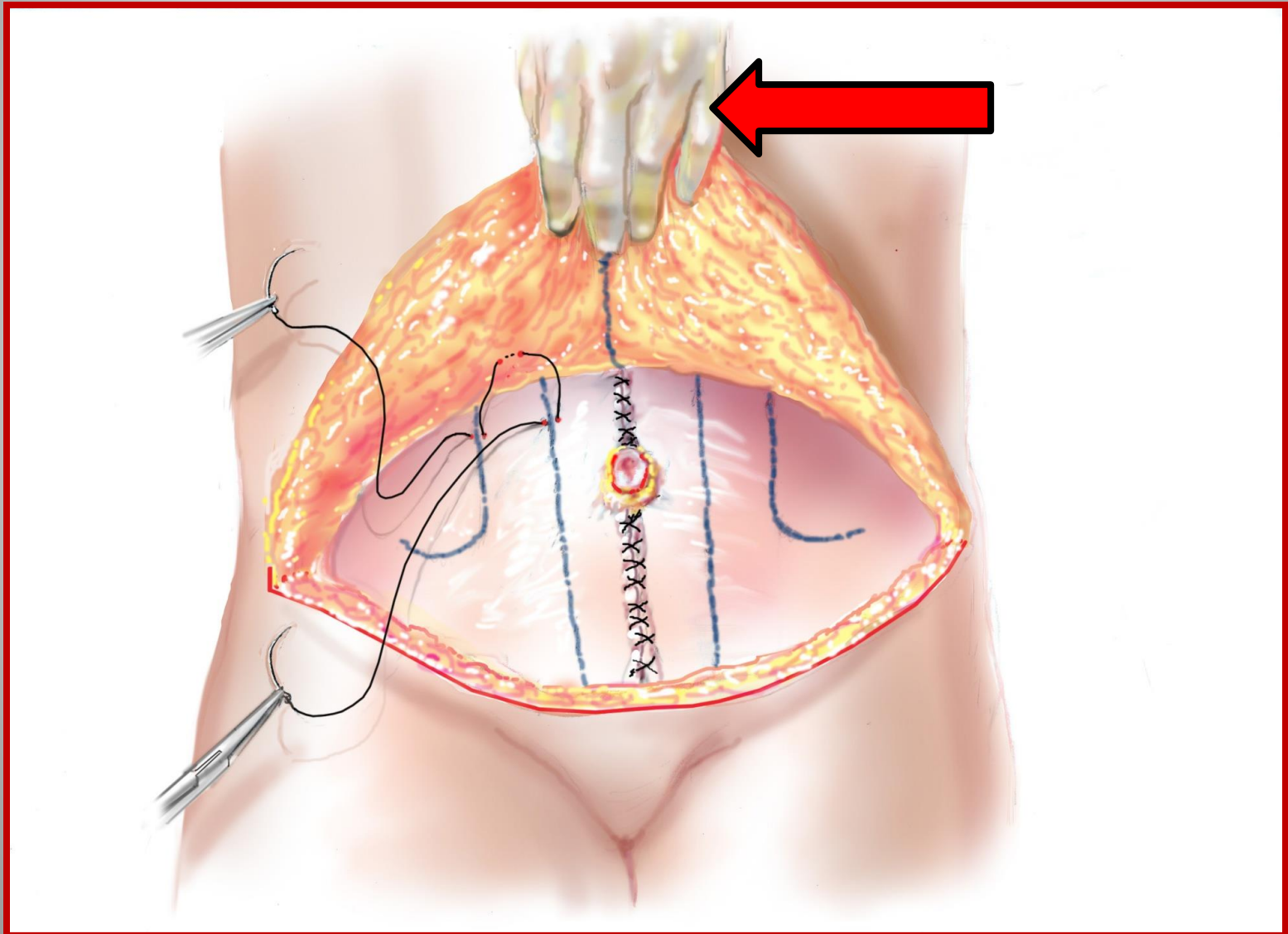
Allen D. Rosen, M.D.
Montclair, N.J.

Body Contouring

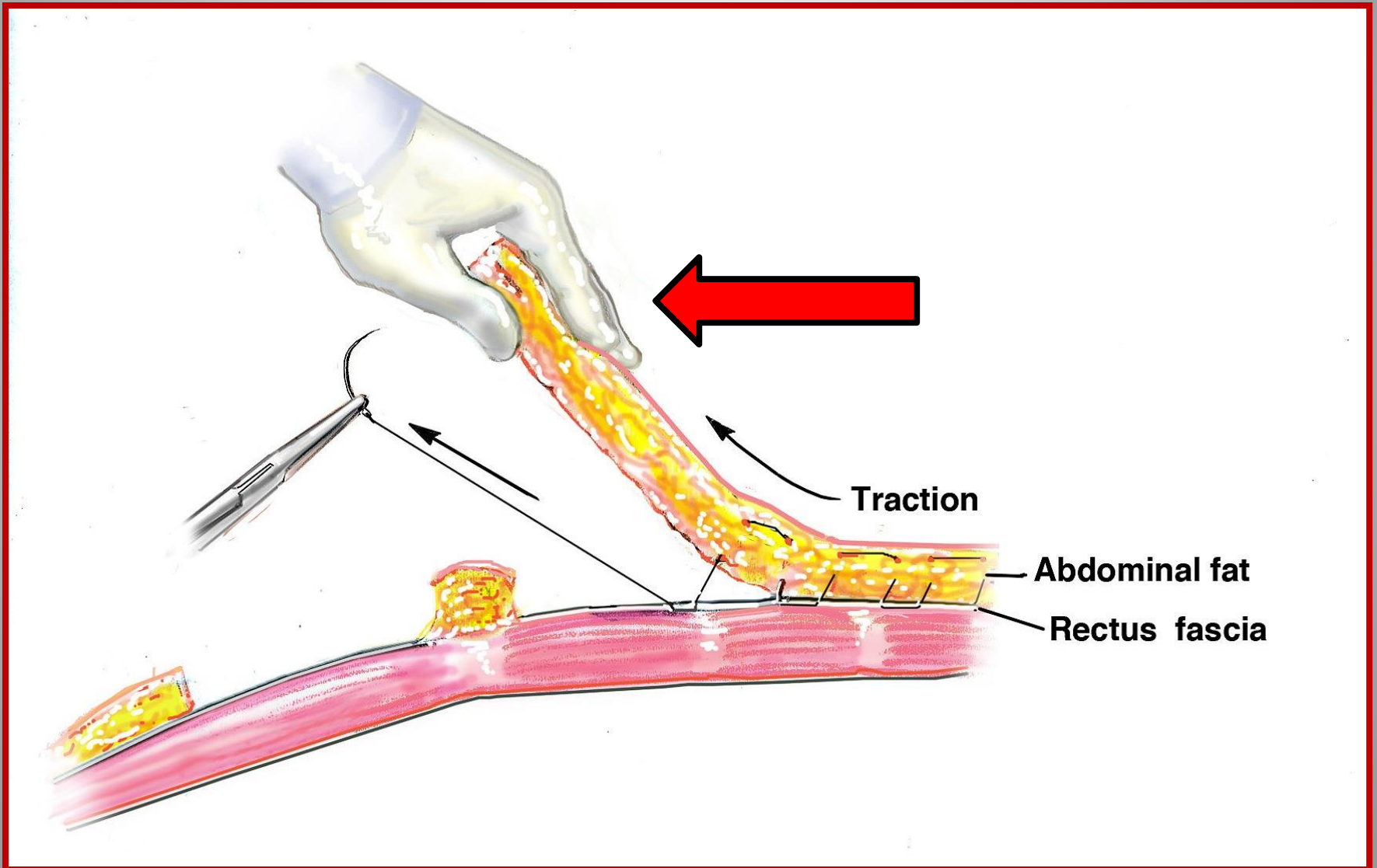
Abdominoplasty With Progressive Tension Closure Using A Barbed Suture Technique

Jeremy P. Warner, MD; and Karol A. Gutowski, MD

Barbed Progressive Tension Sutures



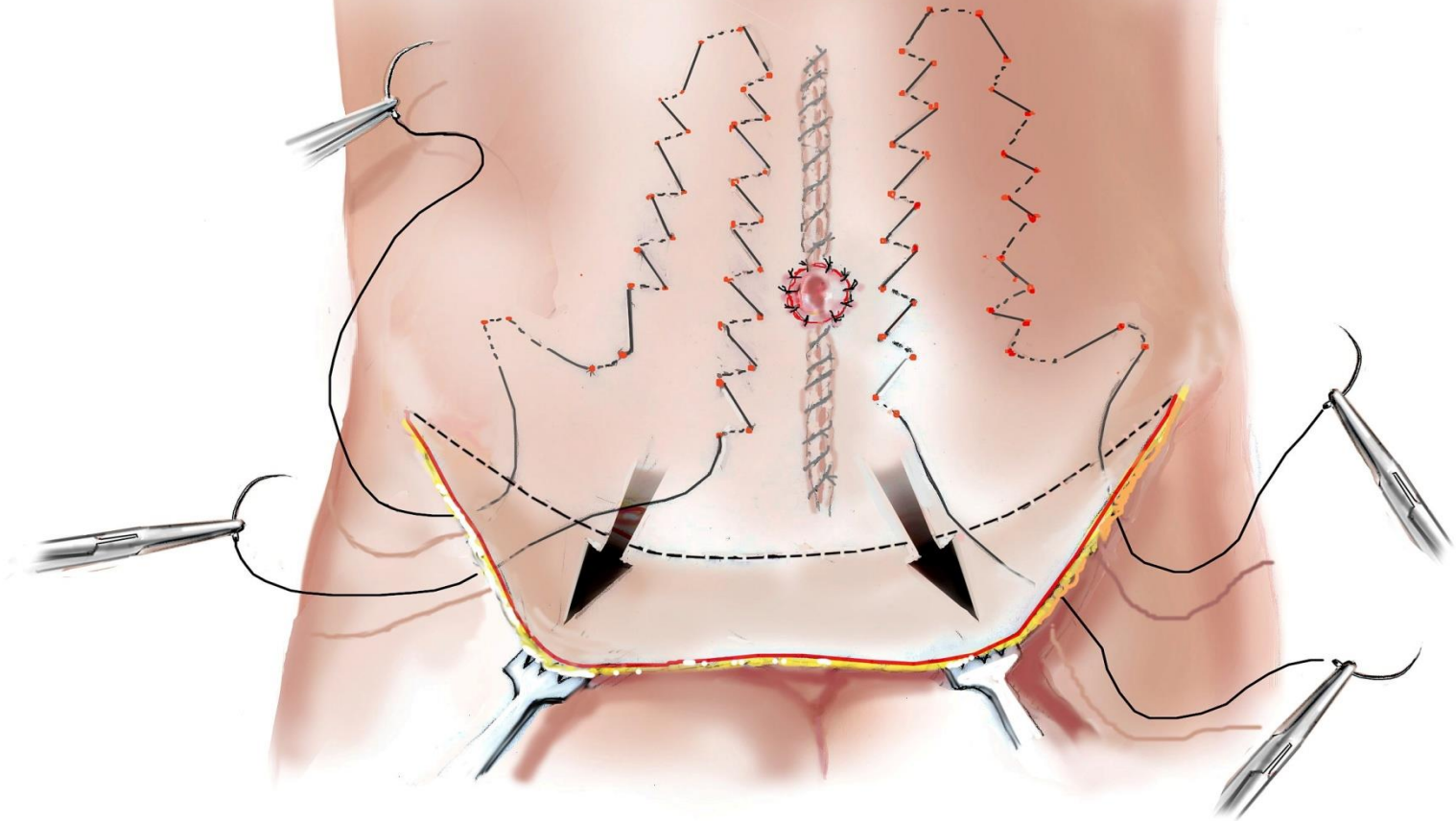
Barbed Progressive Tension Sutures



Barbed Progressive Tension Sutures

Finish lower abdominal PTS

Address the umbilical transposition



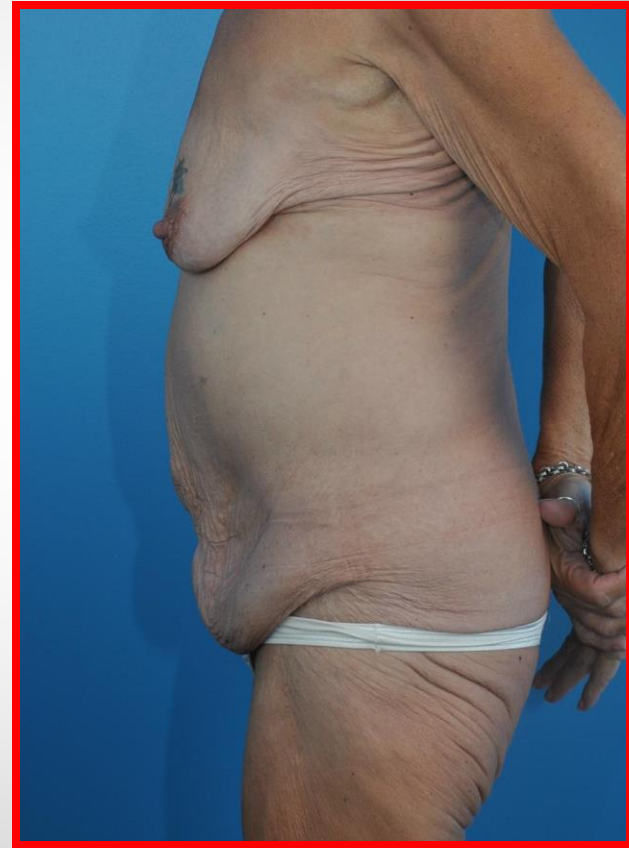
Seroma

- Amount, location & timing
- Seroma treatment
 - Aspirate
 - Percutaneous drain (SeromaCath)
 - Sclerosing agent (Doxycycline 500 mg in 50 cc NS)
 - Seroma capsule excision

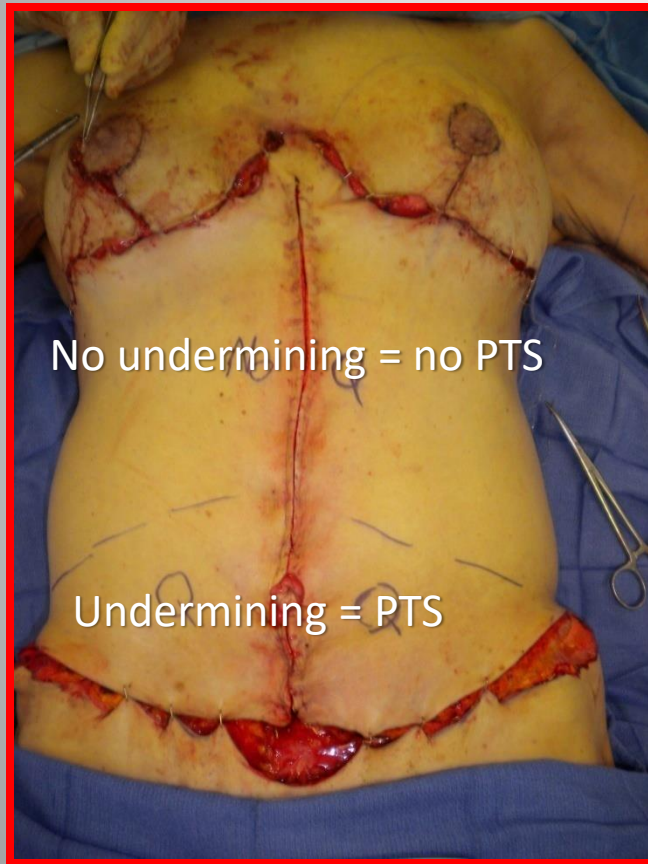
Fleur-de-Lis Abdominoplasty

- Risk for more wound & healing problems?
- Similar complication rates* except in:
 - Males, high BMI, subcostal scars, component separation
- Make it safer
 - Minimal lateral direct undermining (use liposuction)
 - Rely on SFS for incision tension
 - Use PTS to redistribute flap tension

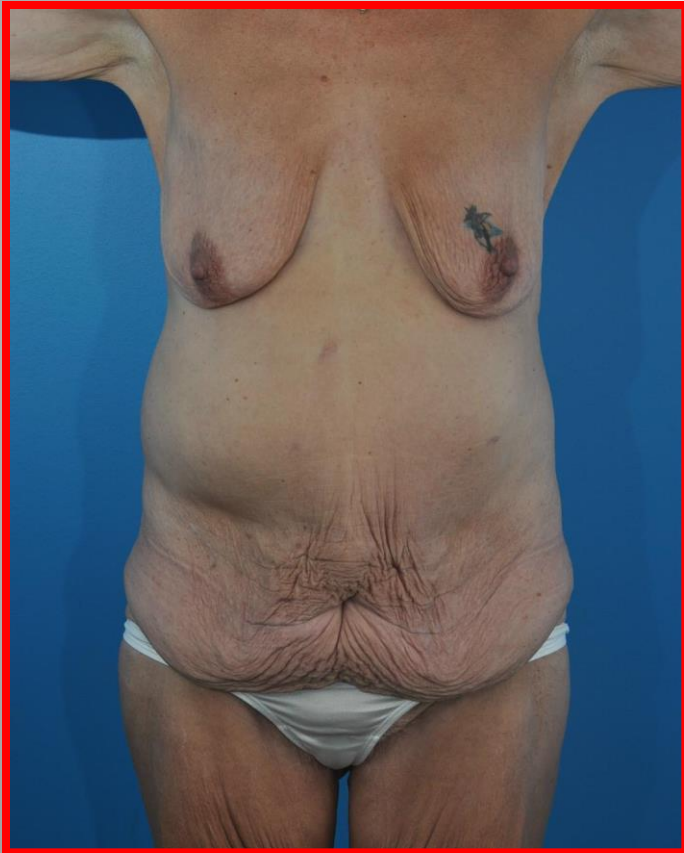
PTS “T-Incision” Abdominoplasty



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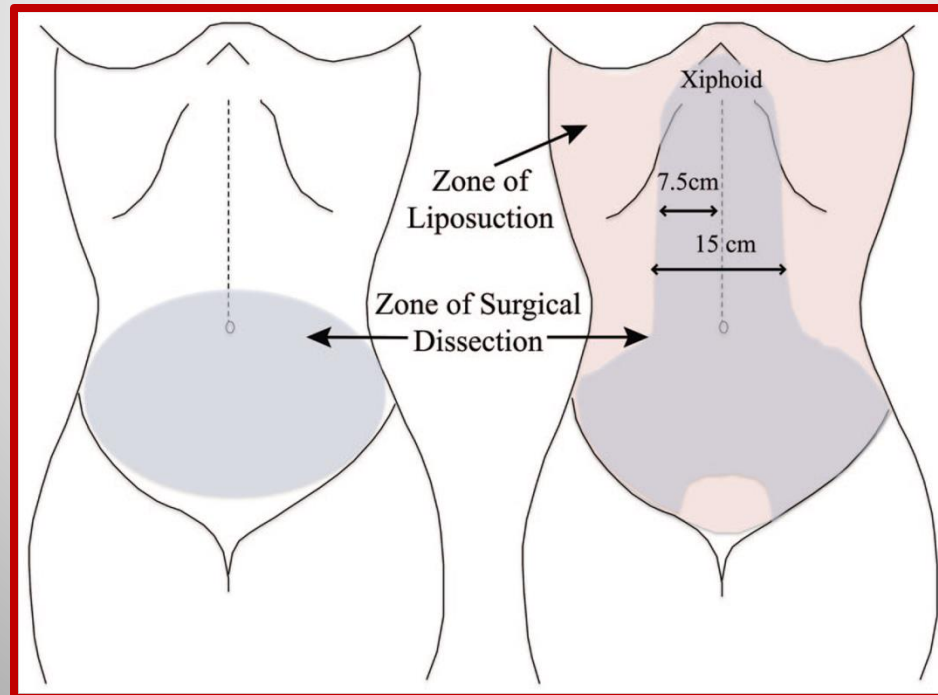


PTS “T-Incision” Abdominoplasty



Liposuction & Abdominoplasty

- Rethink Matarasso's classification
- Lipoabdominoplasty with minimal lateral undermining is safe*



**Weiler 2010, Heller 2008, Samra 2010*

Other Safety Issues

- Sleep apnea
 - Careful with narcotics
 - Overnight observation
- Lymphedema
 - Superficial dissection in lymph node regions
 - Presurgical consultation
- Suture abscess/granuloma
 - Don't use permanent suture (especially braided)

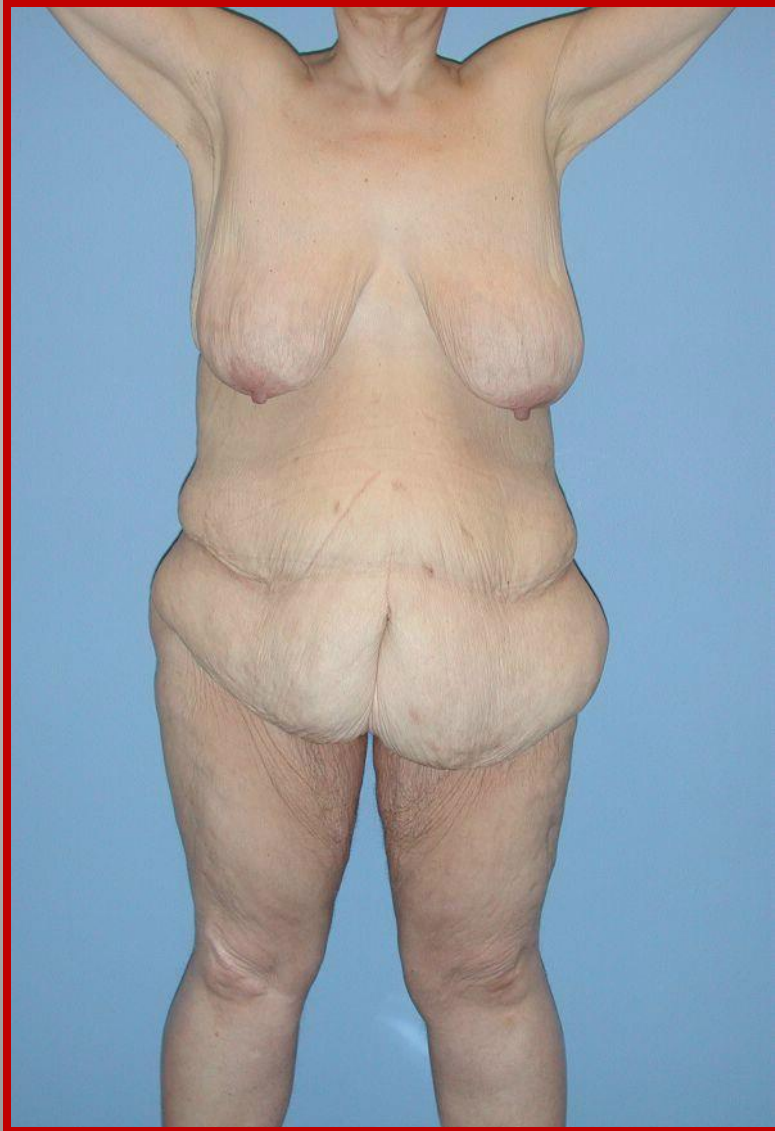
Postoperative Care

- Early ambulation – 10 minutes every hour
 - Easier without drains & in compression garment
- Narcotic and non-narcotic analgesia
- Supplemental nutrition and protein
 - No evidence of a benefit
- Progressive return to activity
 - Follow physiologic wound healing timeline
 - Incision closure technique

Improve Quality & Outcomes

- Track your results
- Implement improvement action plans
- Educate your team
- Control variables
- Not performing surgery is an option

MWL Body Contouring can be an Uplifting Experience!



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