

No Drain Abdominoplasty: No More Excuses

Karol A Gutowski, MD, FACS



— 33RD ANNUAL ASPS —
**BREAST SURGERY &
BODY CONTOURING
SYMPOSIUM**

— JULY 19-21, 2018 —



Austin
TEXAS

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Disclosures

NO financial interests in any suture company

Will use brand names due to lack of
distinguishing generic names

Objectives

- Explain why drains aren't needed
- Present data on No-Drain Abdominoplasty
- Learn PTS technique
- Discuss pitfalls & key points
- Know how to manage complications

**Rethink the need for drains
to improve patient experience**

Drain Free Procedures

- Breast
 - Reduction
 - Mastopexy
 - Augmentation
- Trunk
 - Abdominoplasty
 - Body lift
- Extremity
 - Arm lift
 - Thigh lift (depends)



Drains

- “Standard of care” for many procedures
- Benefit: often NOT proven
- Downside: pain, cost, less mobility, anxiety, phone calls, infection, scars
- Not substitute for good surgical technique

PTS Criticisms

- Requires an assistant
- Takes too long
- Does it really work?
- Cost

But I was trained to do it this way.....

PTS Criticisms

- Requires an assistant
- Takes too long
- Does it really work?
- Cost



do it this way.....

Evidence?

2013

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-

Conclusions: Many surgical operations can be performed safely without prophylactic drainage....breast reduction, abdominal wounds, femoral wounds..... Furthermore, surgeons should consider not placing drains prophylactically in obese patients.

Drains in Breast Reduction



Evidence-based Clinical Practice Guideline: Reduction Mammoplasty

Drains. Although wound drains can minimize the amount of fluid at the surgical site, evidence indicates that the use of drains neither increases nor decreases postoperative complications, causes greater patient discomfort, and possibly increases the length of the hospital stay.²⁷⁻²⁹

Recommendation: In standard reduction mammoplasty procedures, evidence indicates that the use of drains is not beneficial.

However, if liposuction is used as an adjunctive technique, the decision to use drains should be left to the surgeon's discretion.

Level I, II Evidence: Grade A



Drains in Breast Augmentation

- No evidence to support drains in primary breast augmentation
- Drains may increase risk of capsular contracture 4x
- No guidelines for secondary cases with capsulectomy or with biological products



Enhanced Patient Experience



Body Contouring

Abdominoplasty With Progressive Tension Closure Using A Barbed Suture Technique

ASJ 2009

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

IDEAS AND INNOVATIONS

PRS 2010

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

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

Patient's Perception of Drains

RealSelf

RatingsAsk a DoctorDoctor Finder


Tummy Tuck : ReviewsPhotosQ&AForumDoctors

Tummy Tuck Q&A

94%
WORTH IT RATING
2,218 Reviews

Average Tummy Tuck Cost: \$8,331
Learn about Tummy Tuck

Ask a Question


View Before and After


Tummy Tuck Without Drainage Vs. with Drains?


Does it make a difference on swelling? I notice that people who have Tummy Tucks without drainage seem to be more swollen than tummy tucks done with. What is the difference?

Tags: [COMPARISON](#) [DRAINAGE](#) [SWELLING](#)


Answer this question


10 answers to Tummy Tuck Without Drainage Vs. with Drains?


 +4




Tummy Tucks and Drains
Thanks for your question. Tummy tucks creates a large dead space above the belly button down to the incision. Fluid can accumulate in this space. In addition, incisions used to perform abdominoplasty divide small lymphatic vessels decreasing the body's ability to return fluid from tissue back into the circulation. Drains usually stay in from 4 days to two weeks. The drains are used to remove fluid that collects in the dead space created. When drain output is low enough (most surgeons... [more](#)

 **Steven H. Williams, MD** [Top](#)
San Francisco Plastic Surgeon

 +2



Tummy Tuck drainage at surgeon's discretion
To drain or not to drain is at the surgeon's discretion as there is no consensus. The majority of surgeon's drain, some for just a couple of day, some for weeks. Some try to suture the cavity closed thus obviating the need for drainage. The main purpose is to prevent small hematomas or seromas from forming. It usually does not prevent large bleeds from occurring and the amount of swelling should be less as bruising (which contributes to swelling) should also be less. However, it may be that... [more](#)

 **Robin T.W. Yuan, MD** [Top](#)
Beverly Hills Plastic Surgeon

RealSelf

RatingsAsk a DoctorDoctor Finder


Tummy Tuck : ReviewsPhotosQ&AForumDoctors

Tummy Tuck Q&A

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Is Drainless Tummy Tuck a Safe Procedure?


After consulting a board certified plastic surgeon, I was told that some physicians do not do the drainless procedure because it takes additional time in the O.R. (hence higher cost) or that the same risks exist when using drains. Is it safe?
I have heard conflicting views and am a bit concerned/confused about this. I must admit, no drains sounds very appealing to me as a patient.

Tags: [ABDOMEN](#) [COSTS](#) [DRAINAGE](#) [PLASTIC SURGEON](#)


Answer this question


16 answers to Is Drainless Tummy Tuck a Safe Procedure?


 +4



Tummy tuck can be done safely without a drain
According to answers posted on this site it seems that performing a tummy tuck without a drain is seldom recommended. There was a similar debate concerning drains after a facelift many years ago, and again surgeons divided into those that did drain and those that did not. Today very few surgeons consider using a drain in a facelift procedure, and my feeling is that in tummy tuck too in the future few surgeons will continue placing a drain. In our practice for the past nine years we have... [more](#)

 **Peter E. Johnson, MD**
Chicago Plastic Surgeon

 +4



Drainless works in experienced hands
Drain less Tummy Tuck operations are performed by Plastic Surgeons who use a quilting technique. In this procedure, multiple sutures are placed between the muscle and fat layer to quilt the skin like a down comforter. It requires a lot more time in the OR and needs an experienced physician. We perform more than 100 Tummy Tucks a year and still use drains. Our complication rate with drains is extremely low, so I see no reason to add the time to the procedure. While the idea of no drains... [more](#)

Patient's Perception of Drains

RealSelf[Ratings](#)[Ask a Doctor](#)[Doctor Finder](#)

[Tummy Tuck](#) : [Reviews](#) [Photos](#) [Q&A](#) [Forum](#) [Doctors](#)

[Home](#) > [Tummy Tuck](#) > [Forum](#) > Recovering MARCH Tummy Tuckers!

Tummy Tuck Forum

94%
WORTH IT RATING
2,218 Reviews

[Average Tummy Tuck Cost: \\$8,331](#)
[Learn about Tummy Tuck](#)

[Post to Forum](#)


[View Before and Afters](#)

Recovering MARCH Tummy Tuckers!

By [3boys 1princess](#) on 07 Apr 2011

Thought I would start another thread for recovery questions and comments. Here goes the first one... How long have you had your drains or how long did you have them? I am 10 days out and still have both. NOT happy about that. Think that I am doing too much, but LIFE goes on. Was supposed to get 1 out tomorrow but drainage jumped back up to 40 today. YUCK!! Hope everyone is recovering nicely and if you have any questions or comments POST THEM HERE!!

Tissue Adhesives

Body Contouring

Effect of Tissue Adhesives on Seroma Incidence After Abdominoplasty: A Systematic Review and Meta-Analysis



Marwan W. Nasr, MD; Samer F. Jabbour, MD; Rachad I. Mhawej, MD; Joseph S. Elkhoury, MD; and Fadi H. Sleilati, MD

- Lack of high-quality evidence to support TAs to prevent seroma after abdominoplasty
- Well-designed RCTs are needed

Clinical Experience

- 270 consecutive abdominoplasties
 - 53 circumferential
 - 241 with flank liposuction
 - 71 massive weight loss
 - 223 outpatient
- Tumescant technique
- *Modified Progressive Tension Suture Technique*
 - Bidirectional barbed sutures
 - 8 to 10 minutes (vs 15 to 18 min, up to 50 min)
 - No drains
 - Compression garment + binder for 2 weeks

Results

- 1 epigastric seroma
 - One aspiration
- 13 lower abdominal seromas
 - Multiple aspirations
 - 6 required SeromaCath drain
- 1 major wound dehiscence
- 2 hematomas drained in OR
- 3 infected seromas
 - Incised & drained

Pivotal Publication

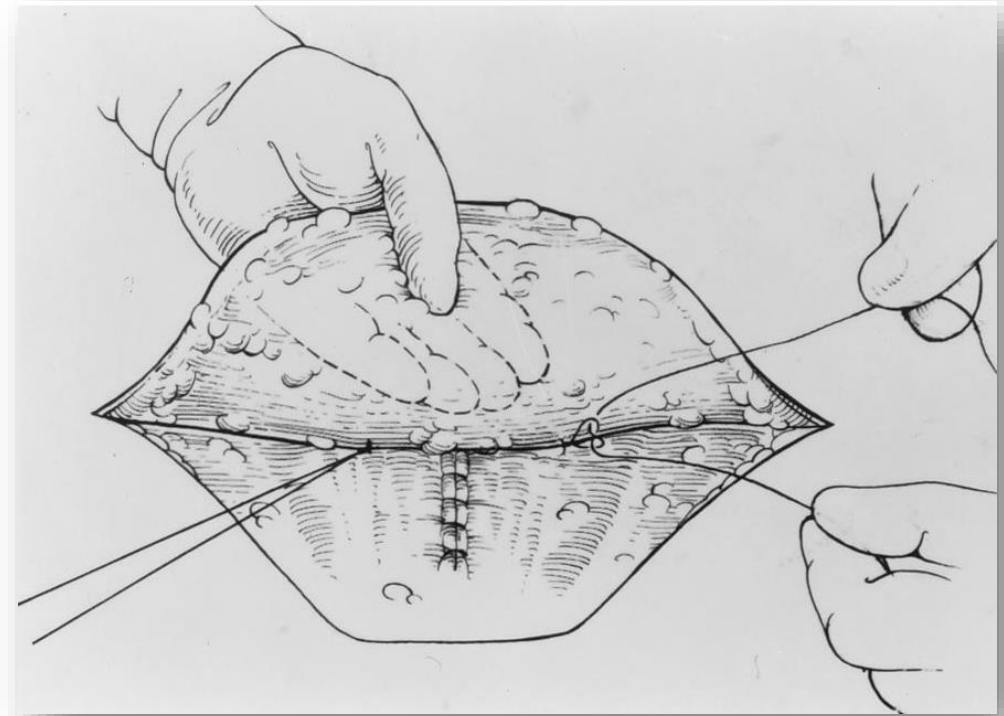
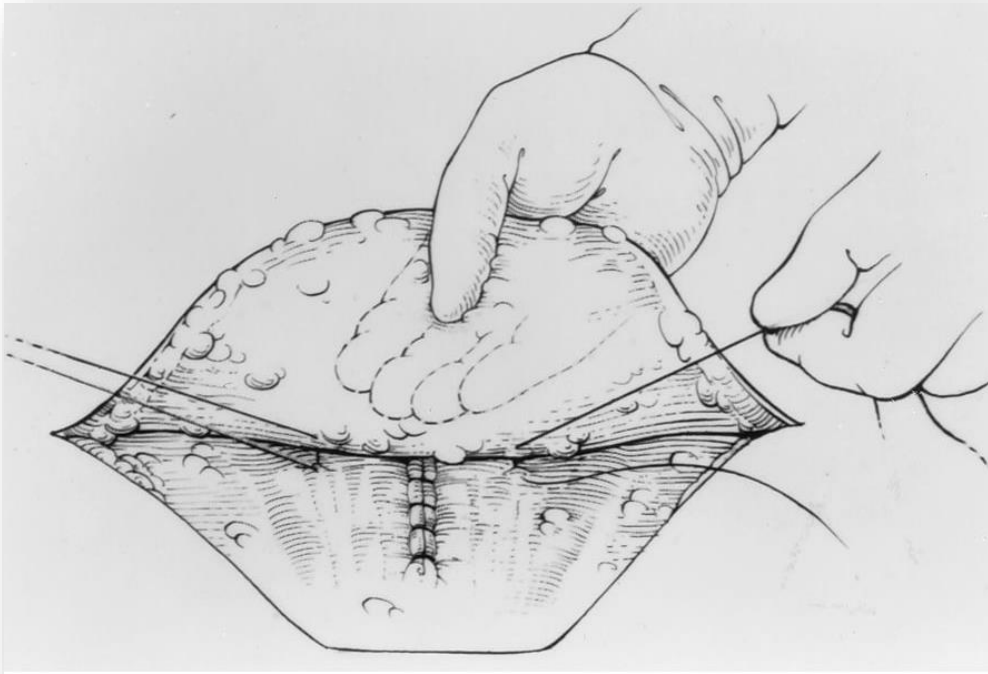
Techniques in Cosmetic Surgery

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

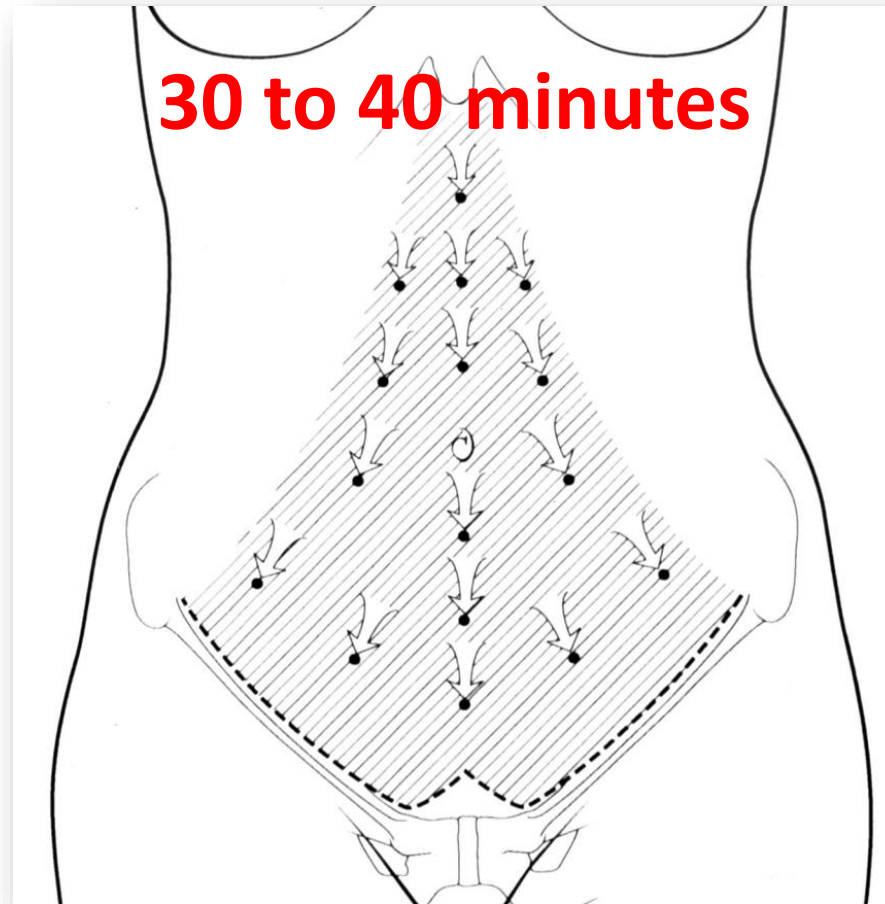
Harlan Pollock, M.D., and Todd Pollock, M.D.

Dallas, Texas

Individual Sutures



Progressive Inferior Tension



Introduction of Barbed PTS

Body Contouring

Abdominoplasty With Progressive Tension Closure Using A Barbed Suture Technique

ASJ 2009

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

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.*

Subsequent Publications

Body Contouring

Prevention of Seroma After Abdominoplasty

Gertrude M. Beer, MD; and Heinz Wallner, MD

Aesthetic Surgery Journal
30(3) 414–417
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journalsPermissions.nav](http://www.sagepub.com/journalsPermissions.nav)
DOI: 10.1177/1090820X10374116
www.aestheticsurgeryjournal.com
SAGE

Abstract

Background: Seroma is one of the most troubling complications after abdominoplasty; incidence rates of that shearing forces between the two separated abdominal layers play a key role in the development of seroma. Patient until the layers are sufficiently adhered may be a solution to the problem.

Objective: The authors examine the association between length of immobilization and the development of seroma. **Methods:** This retrospective study included 60 patients; half were immobilized for 24 hours (group 1) and 48 hours (group 2). For thromboembolism prophylaxis, all patients received low molecular weight heparin follow-up for detection of seroma continued for at least three months.

Results: Mobilization after 24 hours led to a seroma rate of 13%, whereas immobilization of at least 48 hours led to a seroma rate of 0%. **Conclusions:** For abdominoplasty patients with a low or moderate thromboembolic risk, the data suggest that with chemical and mechanical thromboembolism prophylaxis significantly reduces the risk of seroma.

Body Contouring

Reducing Seroma in Outpatient Abdominoplasty: Analysis of 516 Consecutive Cases

John W. Antonetti, MD, and Alfred R. Antonetti, MD

Aesthetic Surgery Journal
30(3) 418–427
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DOI: 10.1177/1090820X10372048
www.aestheticsurgeryjournal.com
SAGE

Abstract

Background: Over the past 30 years, the preferred techniques and settings for abdominoplasty have evolved regarding the surgical and postoperative approaches that best limit serious complications such as seroma.

Objective: The authors evaluate their 28-year experience with abdominoplasty and suggest a technique (progressive tension sutures) for reducing the overall complication rate, most significantly with regard to seroma.

Methods: A retrospective review was conducted of 517 consecutive abdominoplasty cases in the senior author's practice based on operative setting, postoperative care, and surgical technique. Concurrent procedures and complications were also noted.

Results: The authors found that the last group of patients, in whom abdominoplasty with progressive tension sutures was performed as an outpatient procedure, had the lowest incidence of seroma. Specifically, the incidence of clinically significant seroma was 9.6% in early groups, when abdominoplasty was performed as an inpatient procedure; the rate was 24% when it was performed as an outpatient procedure without the placement of progressive tension sutures, but was then reduced to 1.7% with the placement of progressive tension sutures.

Conclusions: Abdominoplasty can be safely performed with other concomitant procedures (such as liposuction) as an outpatient procedure. Despite controversy in the previous literature, the authors' data support the conclusion that progressive tension sutures without drains dramatically decreases overall complication and seroma rate during abdominoplasty.

426

Aesthetic Surgery Journal 30(3)

Commentary

Karol A. Gutowski, MD, FACS

DOI: 10.1177/1090820X10371752

Although seroma after abdominoplasty is rarely a cause of significant morbidity or reoperation, its presence does result in increased patient visits and occasional discomfort due to percutaneous aspirations or additional drain placement. Rarely, a seroma may contribute to infection, inci-

Are other options available to minimize seroma formation without the additional cost and risk of prolonged immobilization? Starting with Pollock and Pollock's first patient series,² reports have been published supporting the role of internal progressive tension sutures in not only minimizing seroma formation, but also eliminating the need for drain placement.^{3,4,11} This technique is simple and

Subsequent Publications

Body Contouring

Use of Quilting Sutures During Abdominoplasty to Prevent Seroma Formation: Are They Really Effective?

Marcos Sforza, MD; Rodwan Husein; Katarina Andjelkov, MD, PhD; Paulo Cesar Rozental-Fernandes, MD; Renato Zaccheddu, MD; and Milan Jovanovic, MD, PhD

Body Contouring

Decrease in Seroma Rate After Adopting Progressive Tension Sutures Without Drains: A Single Surgery Center Experience of 451 Abdominoplasties Over 7 Years

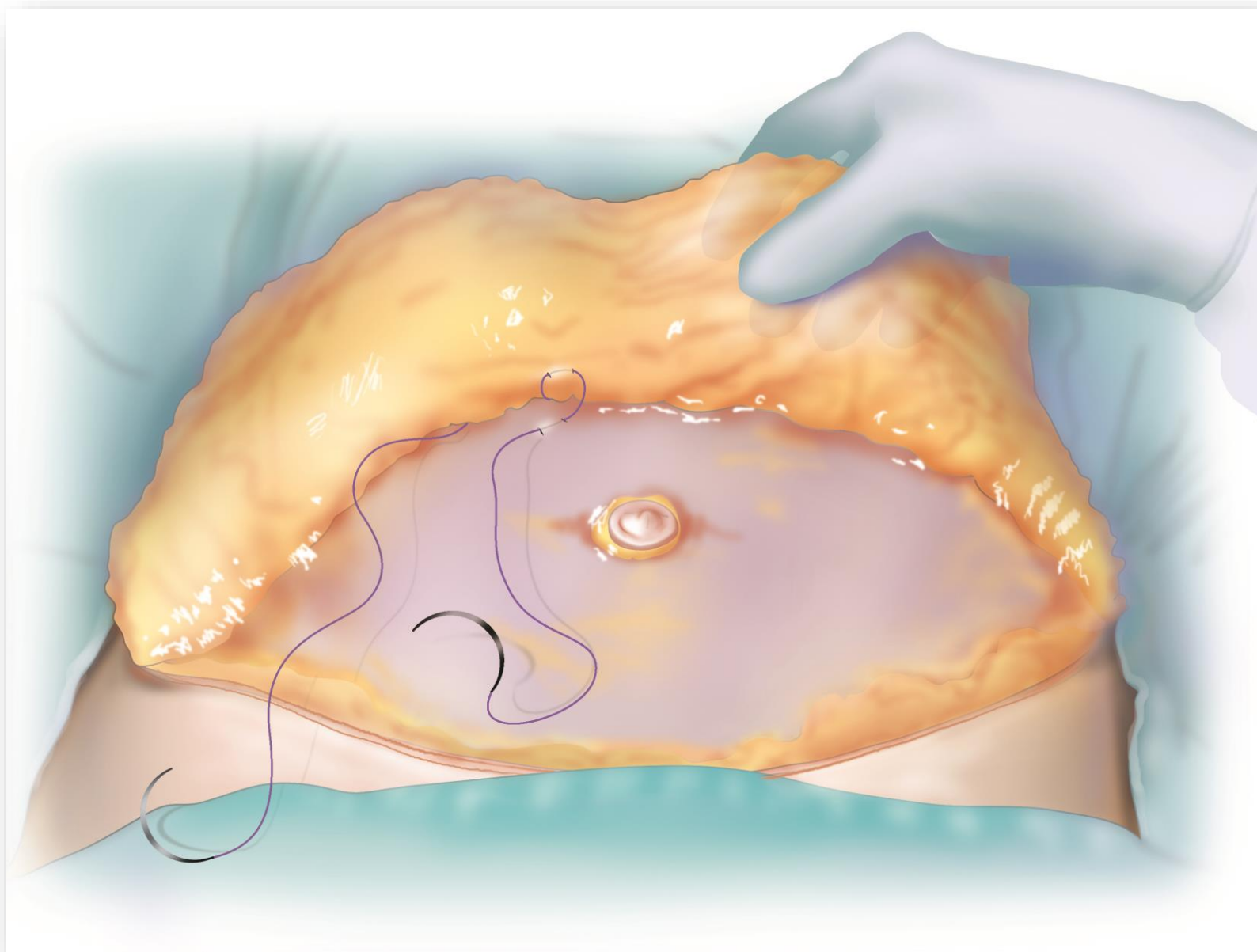
Luis H. Macias, MD, FACS; Edwin Kwon, MD; Daniel J. Gould, MD, PhD; Michelle A. Spring, MD, FACS; and W. Grant Stevens, MD, FACS

Barbed Suture Technology

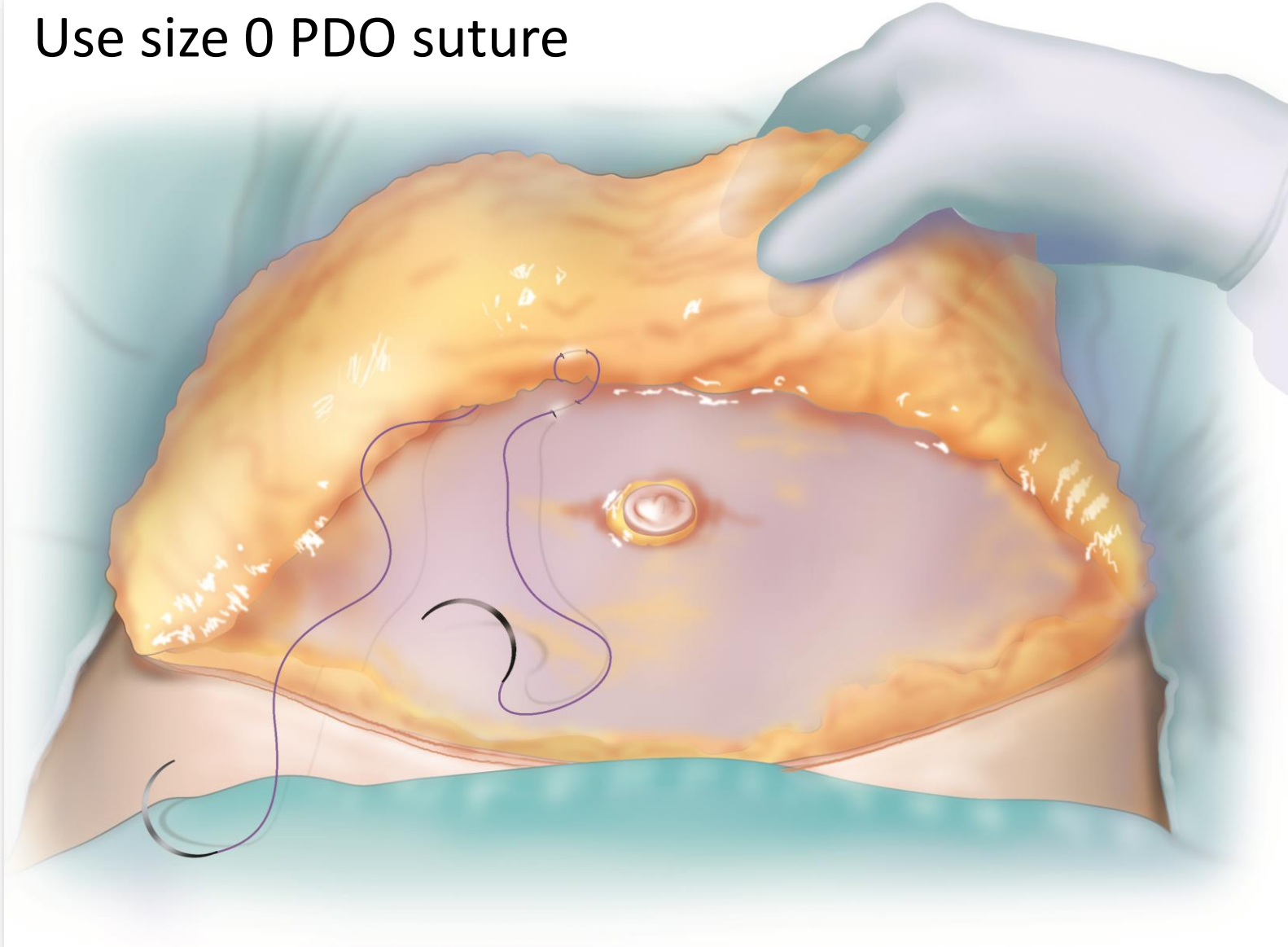


Barbed Suture Technology

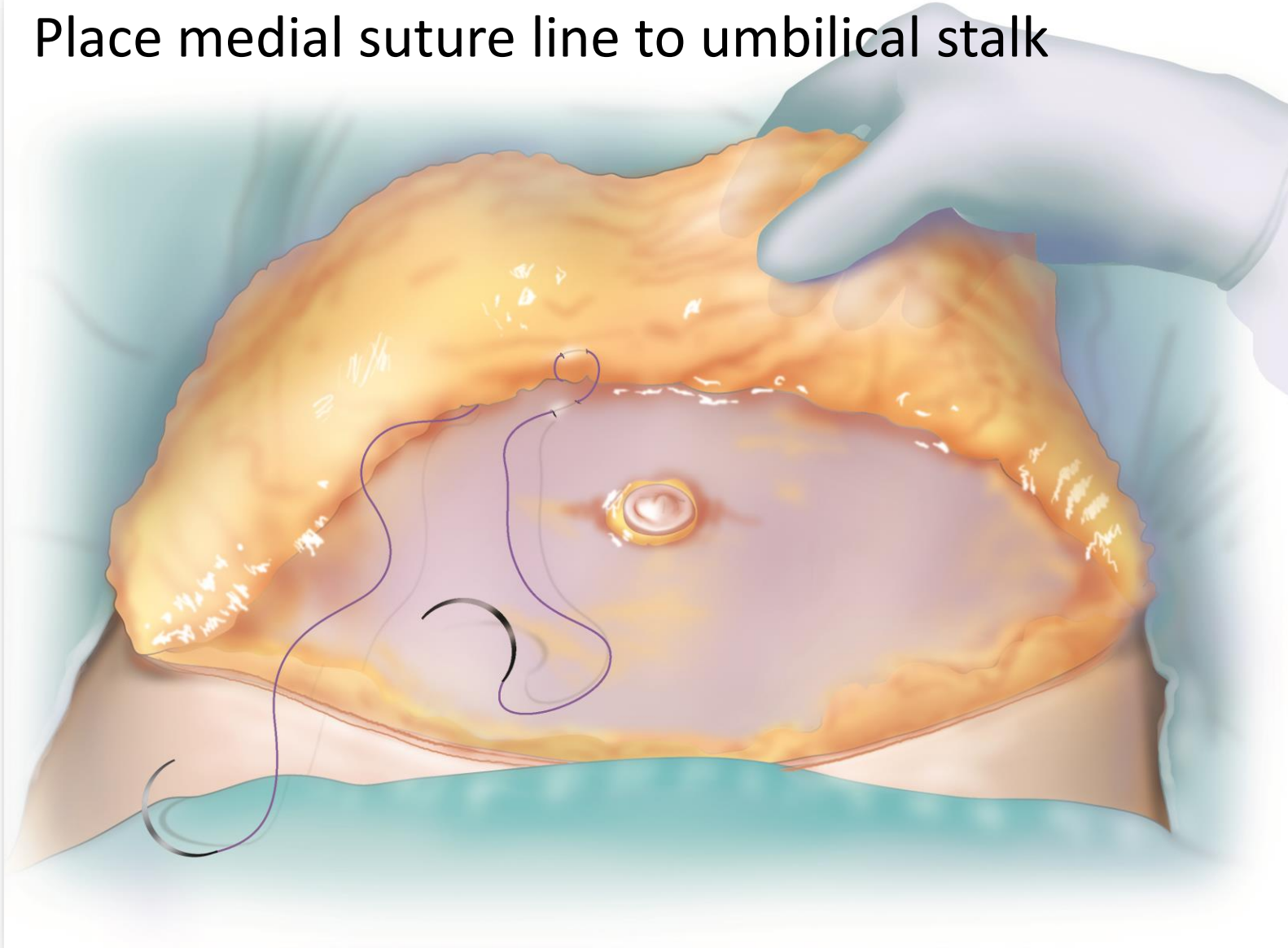




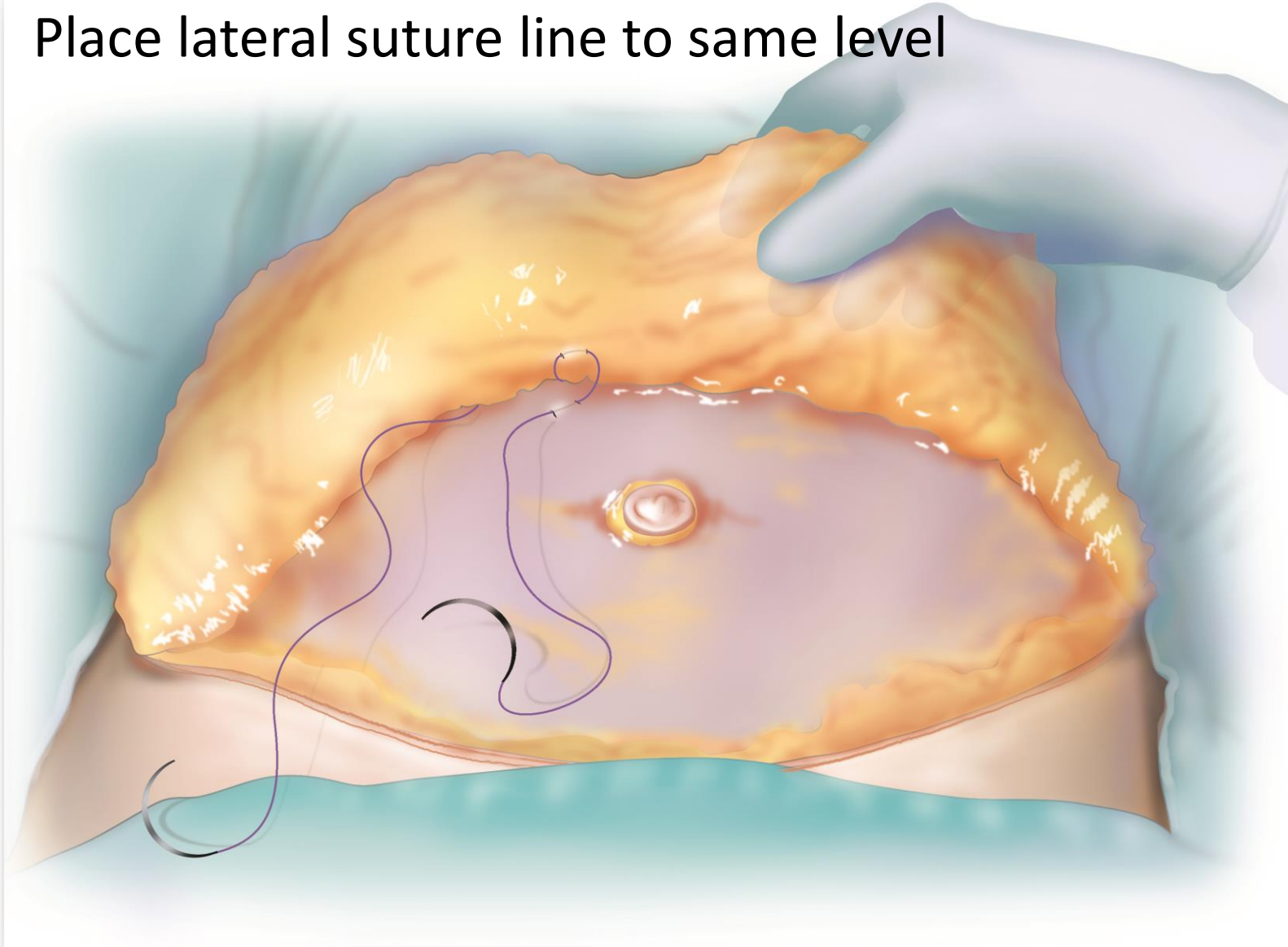
Use size 0 PDO suture



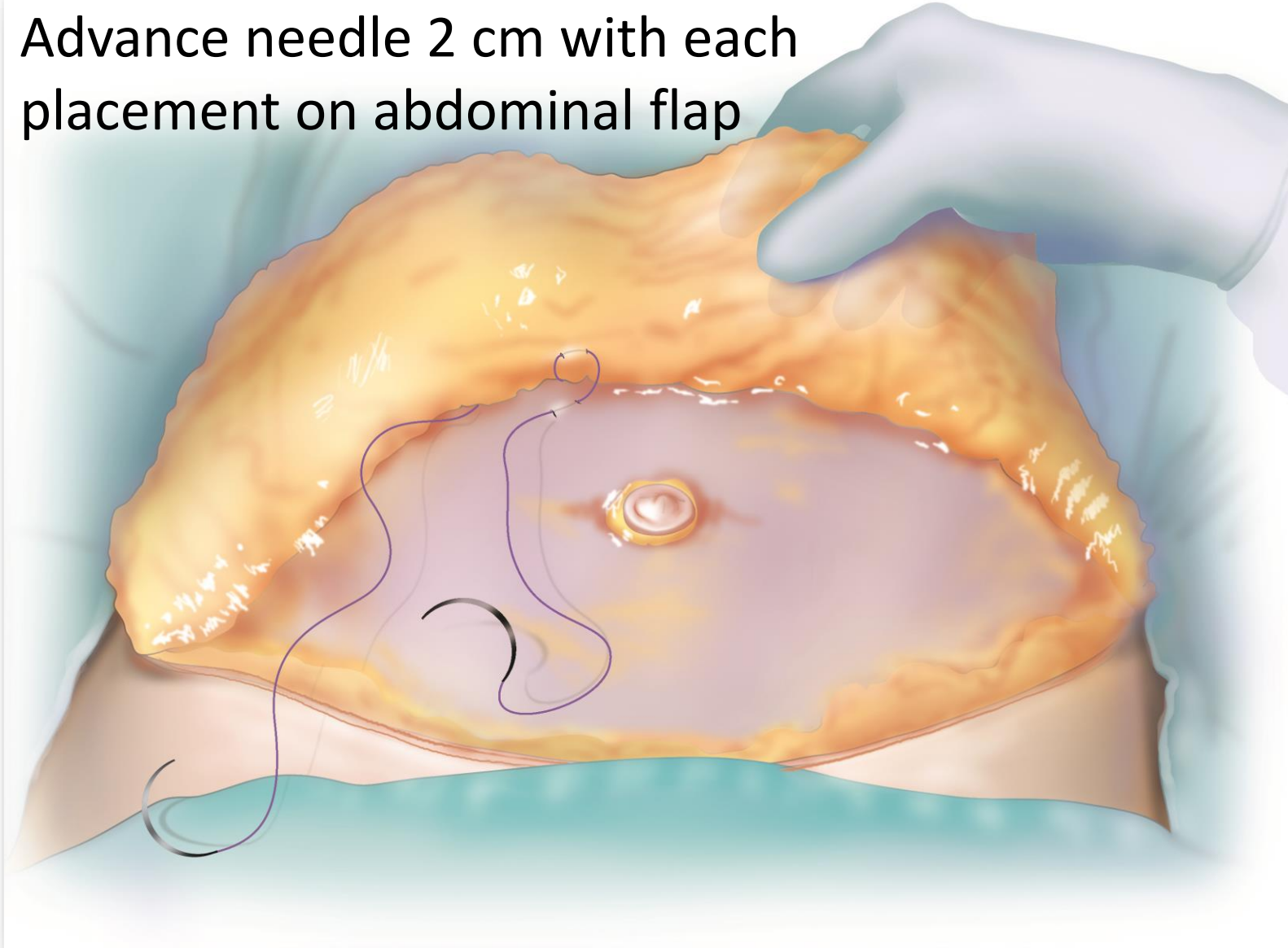
Place medial suture line to umbilical stalk



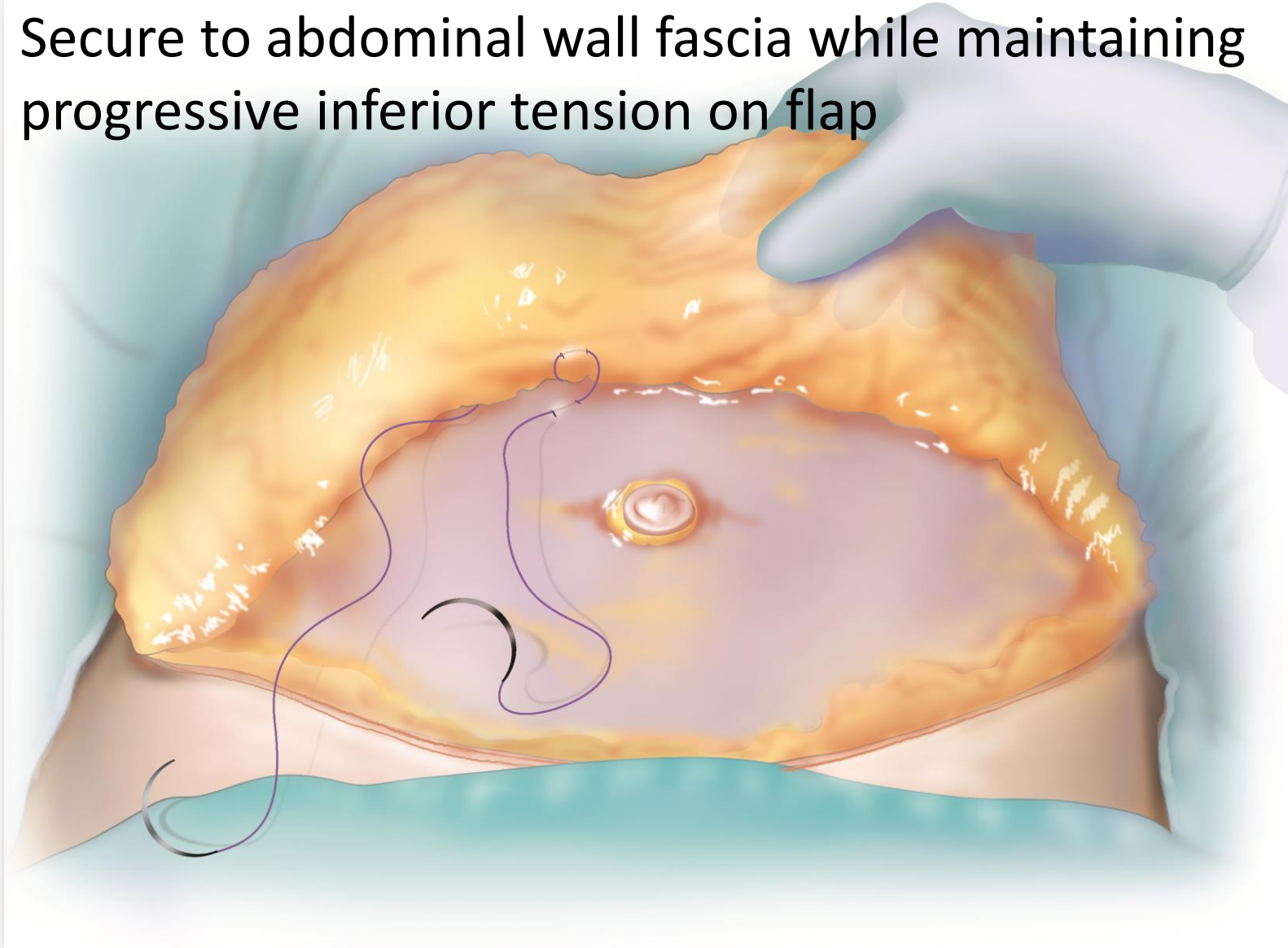
Place lateral suture line to same level



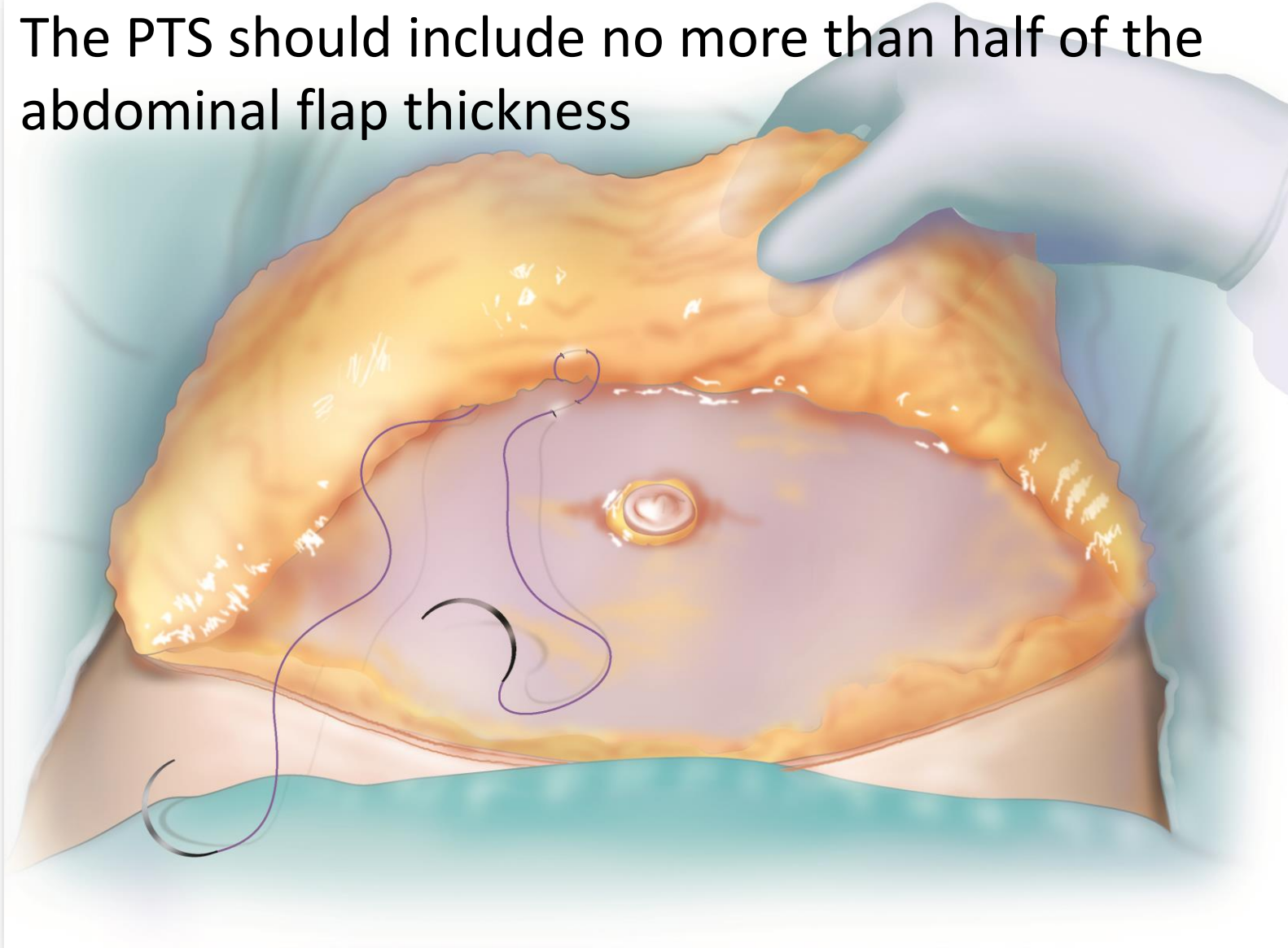
Advance needle 2 cm with each placement on abdominal flap



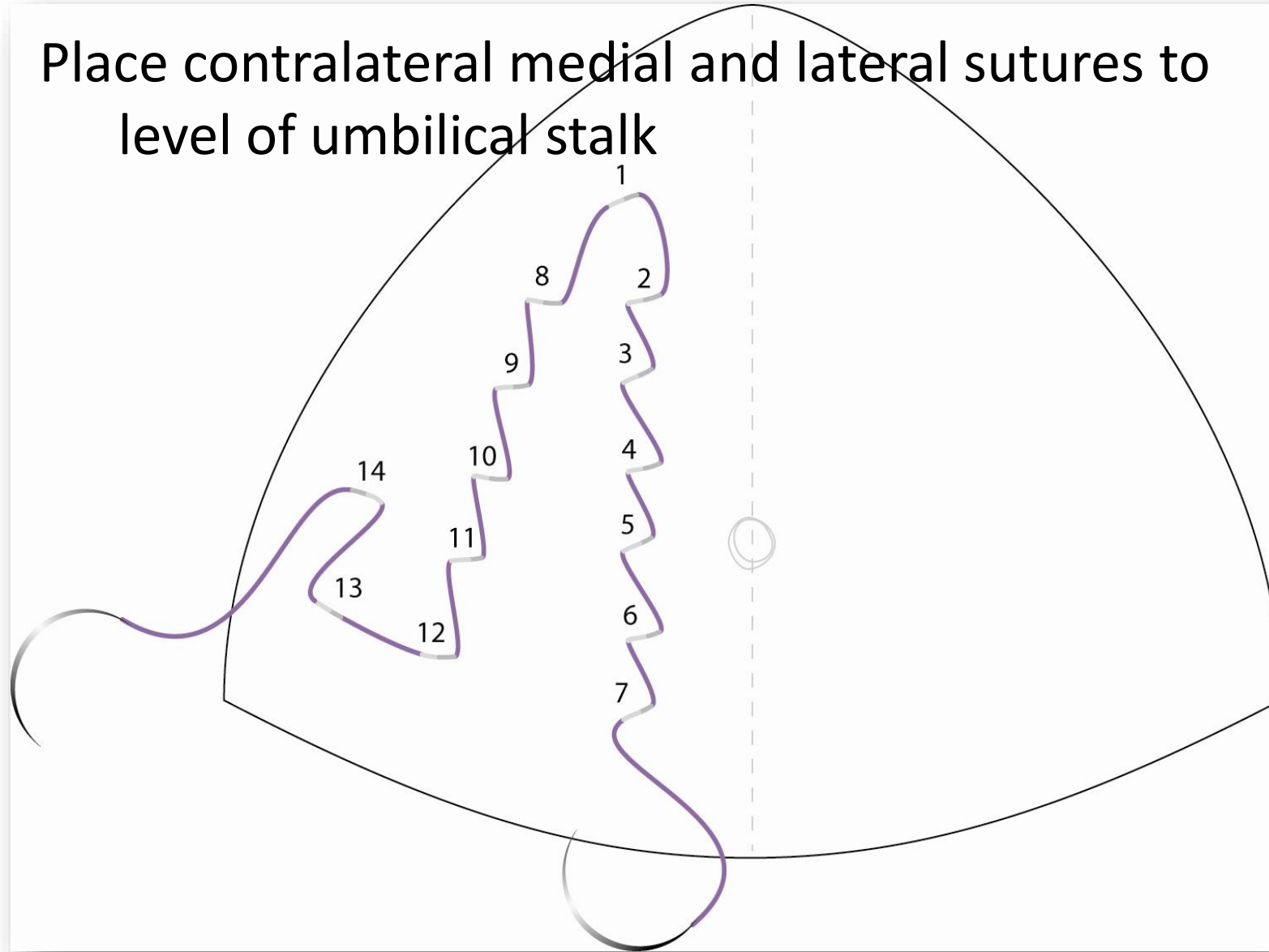
Secure to abdominal wall fascia while maintaining progressive inferior tension on flap



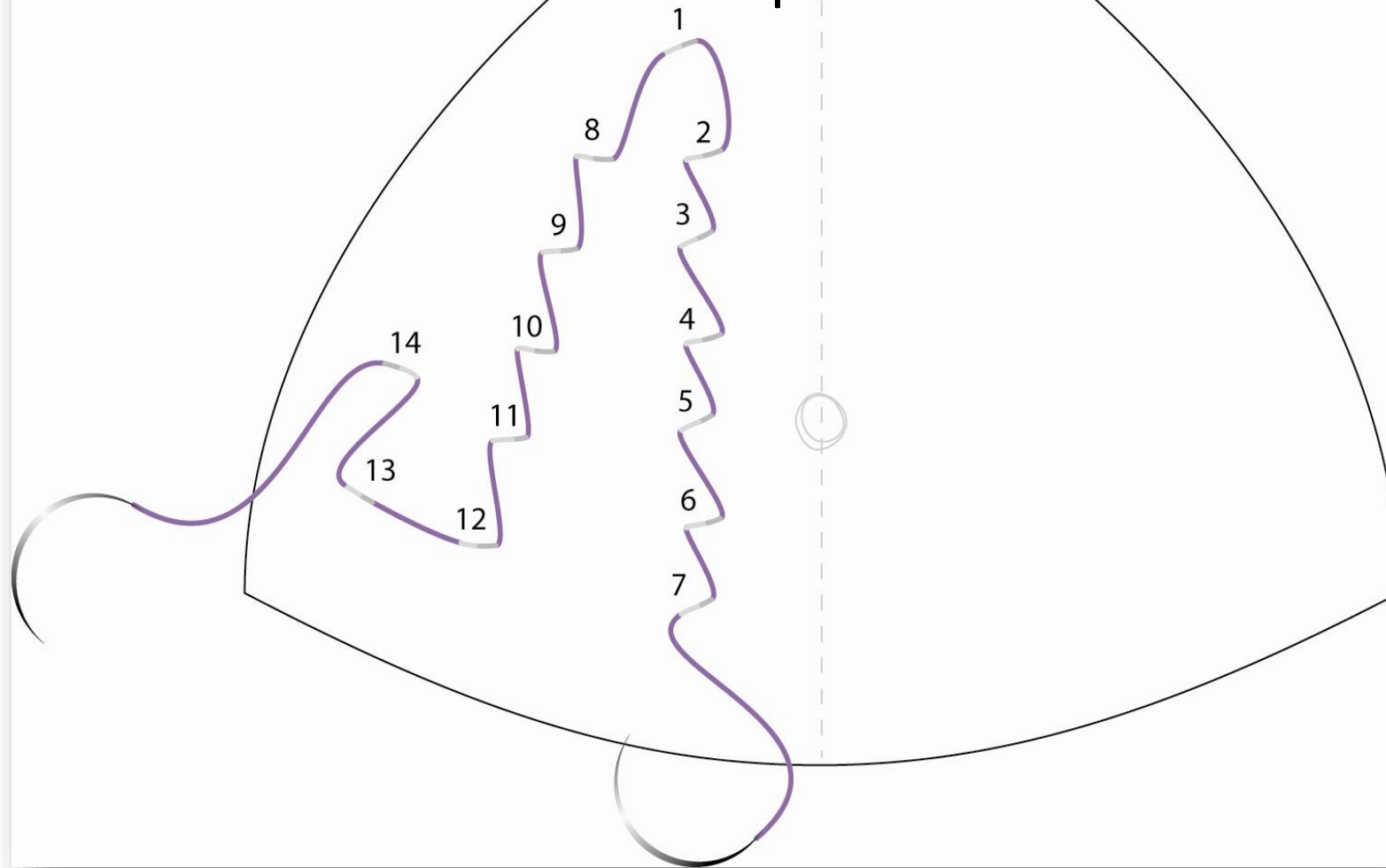
The PTS should include no more than half of the abdominal flap thickness



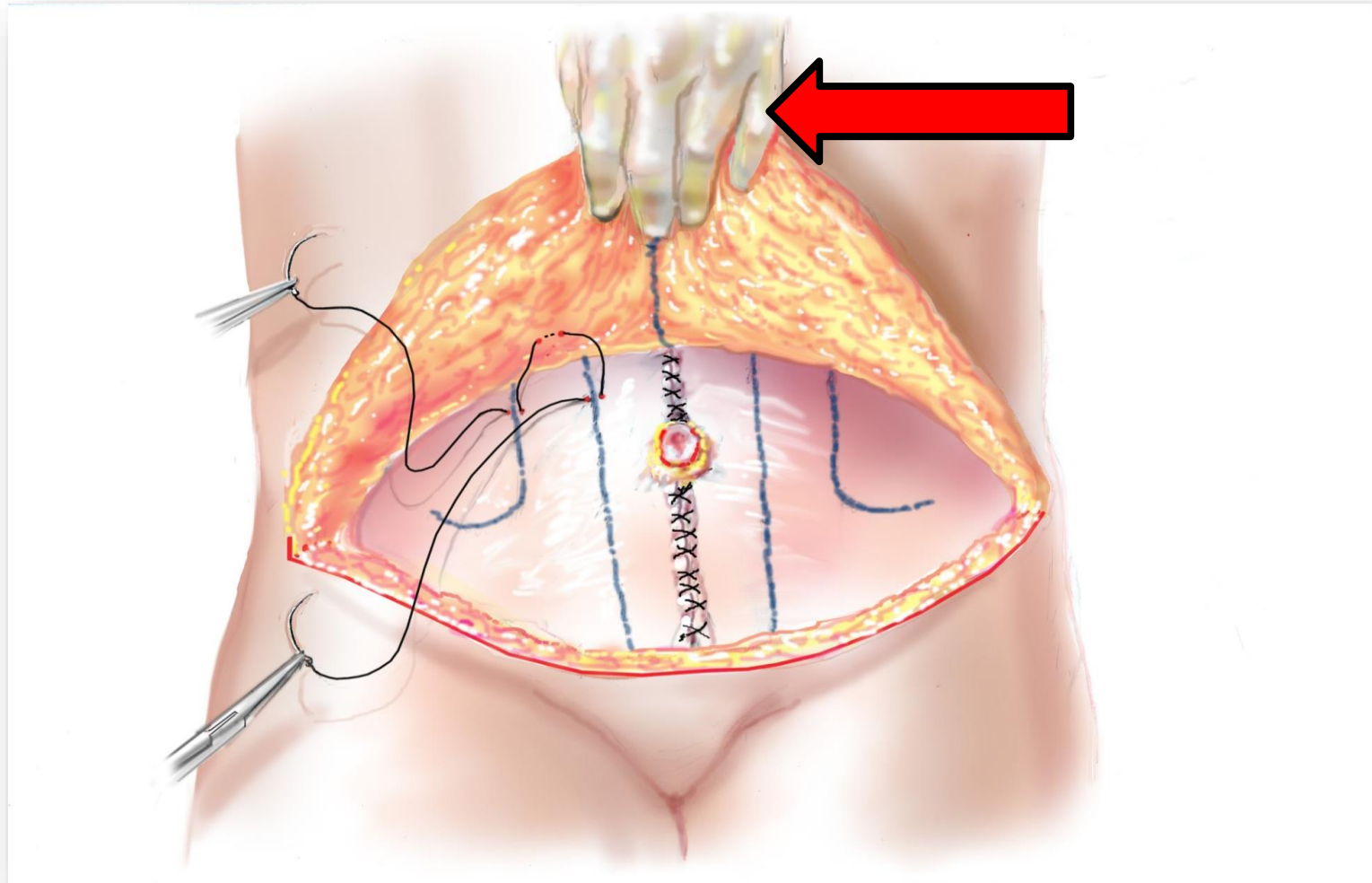
Place contralateral medial and lateral sutures to level of umbilical stalk



Finish lower abdominal PTS
Address the umbilical transposition



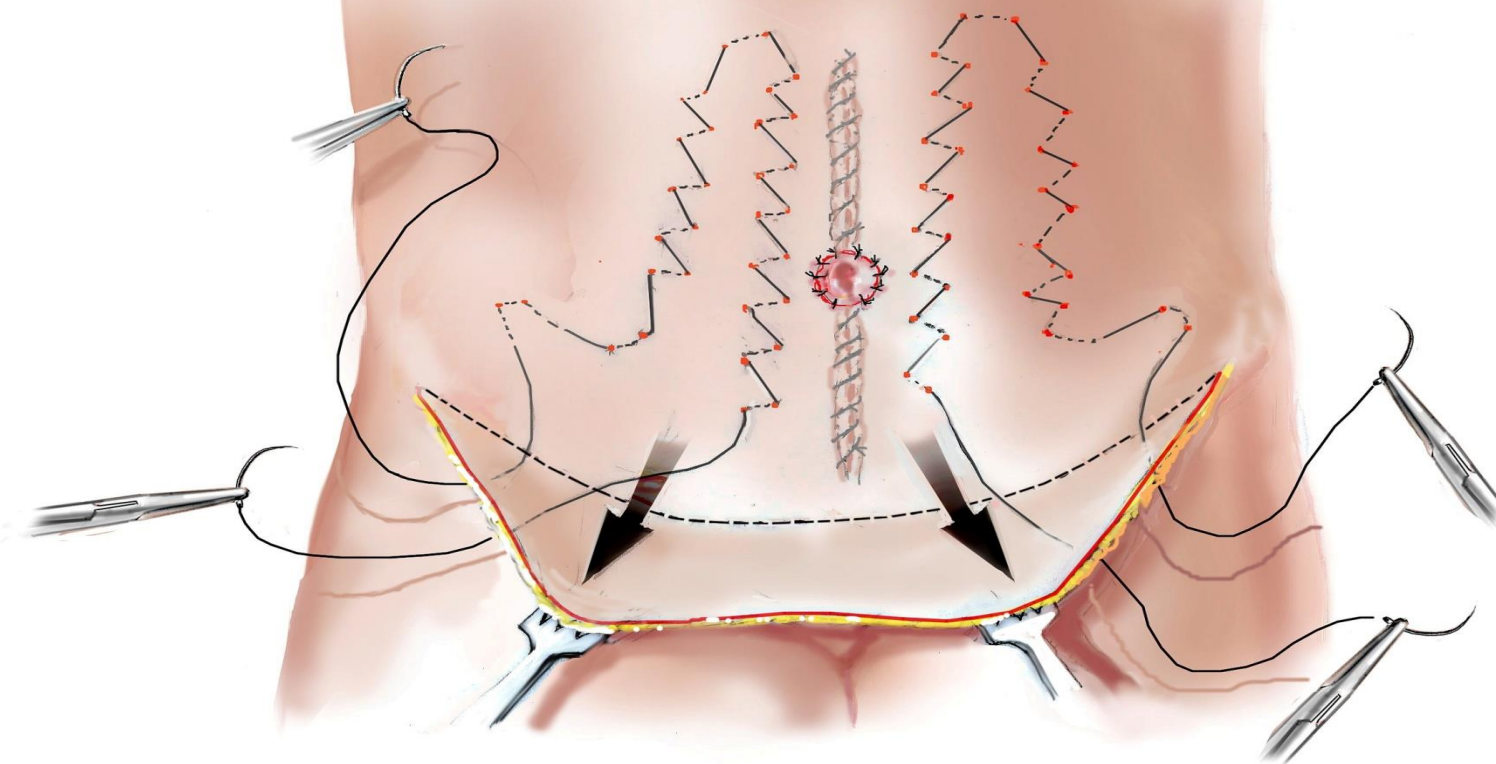
Barbed Progressive Tension Sutures



Barbed Progressive Tension Sutures

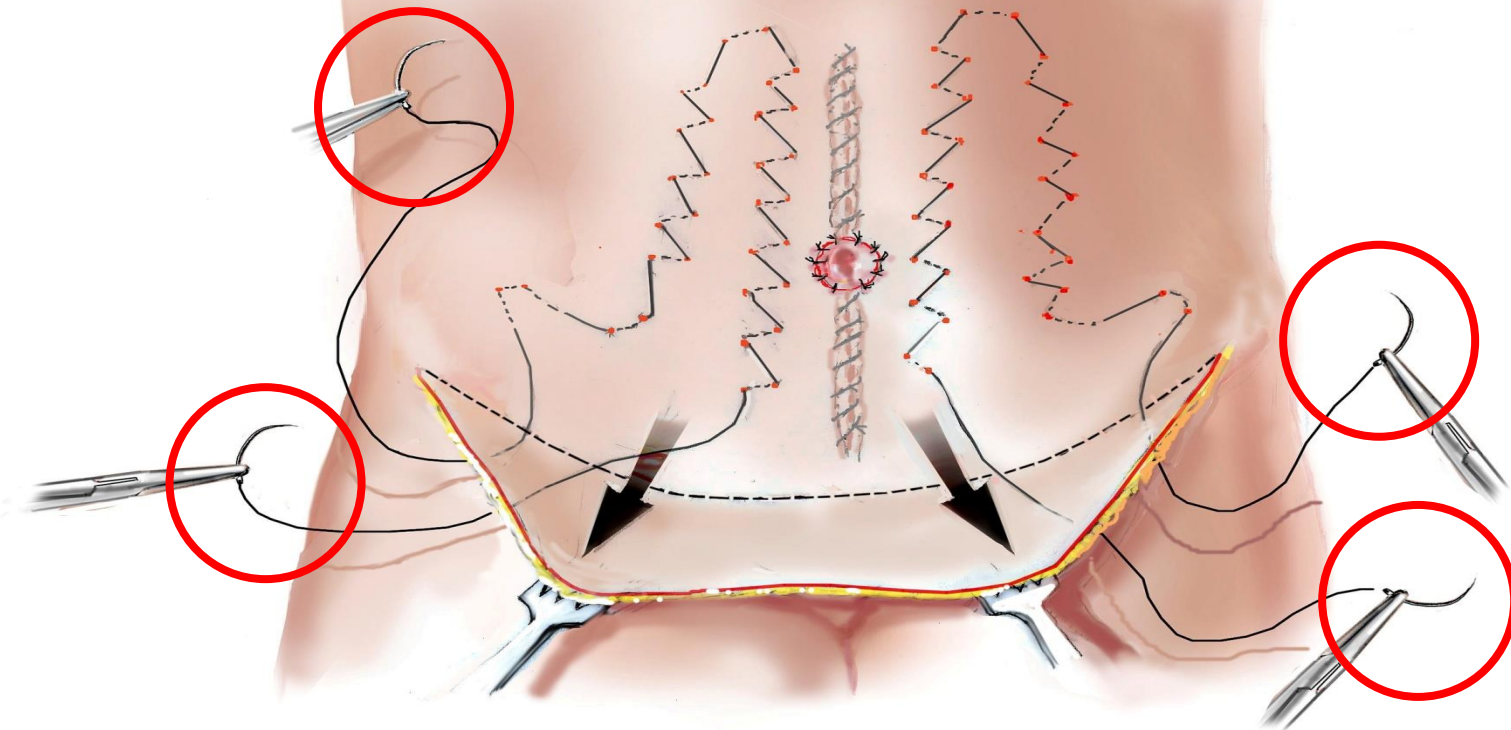
Finish lower abdominal PTS

Address the umbilical transposition

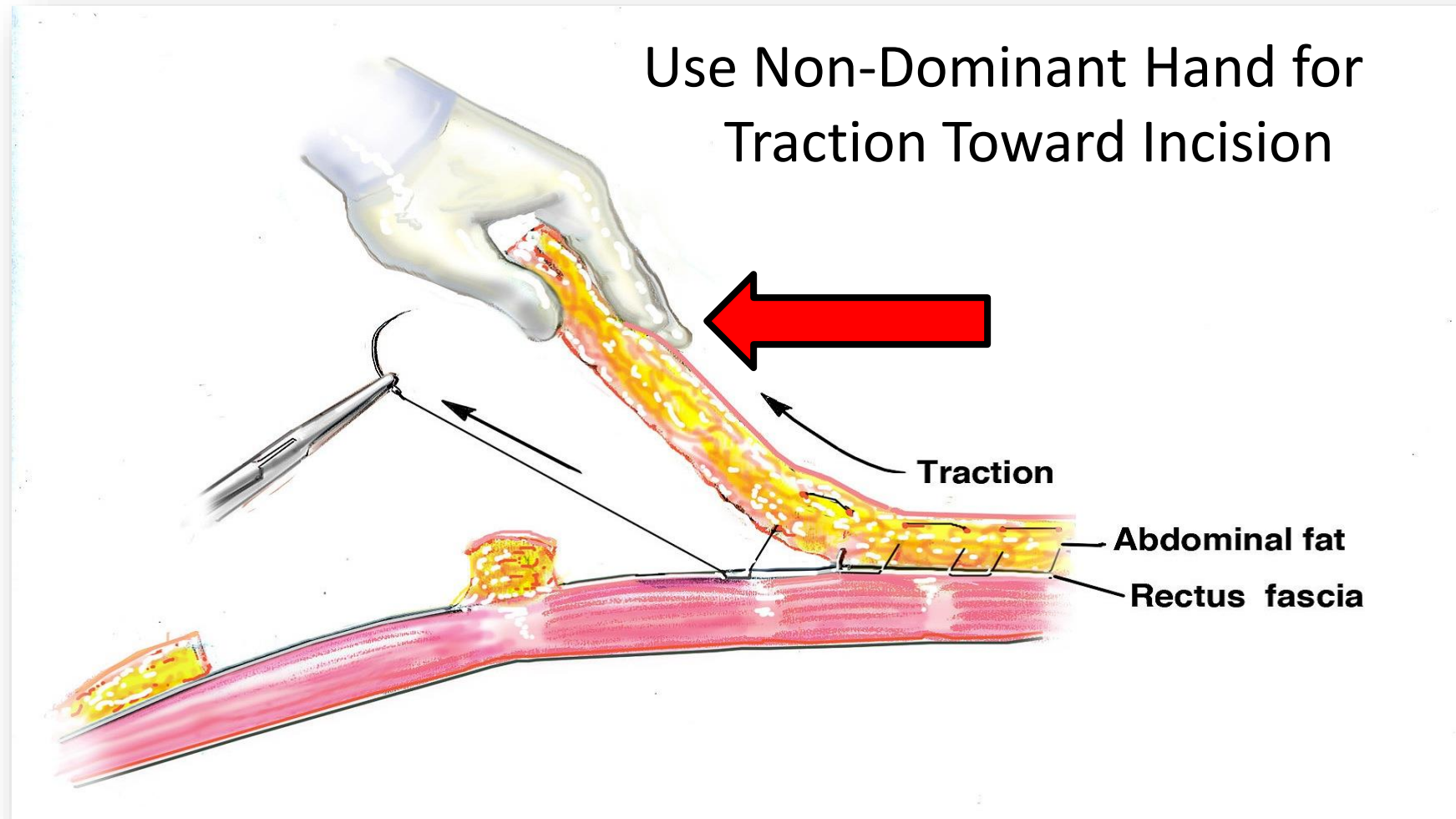


Barbed Progressive Tension Sutures

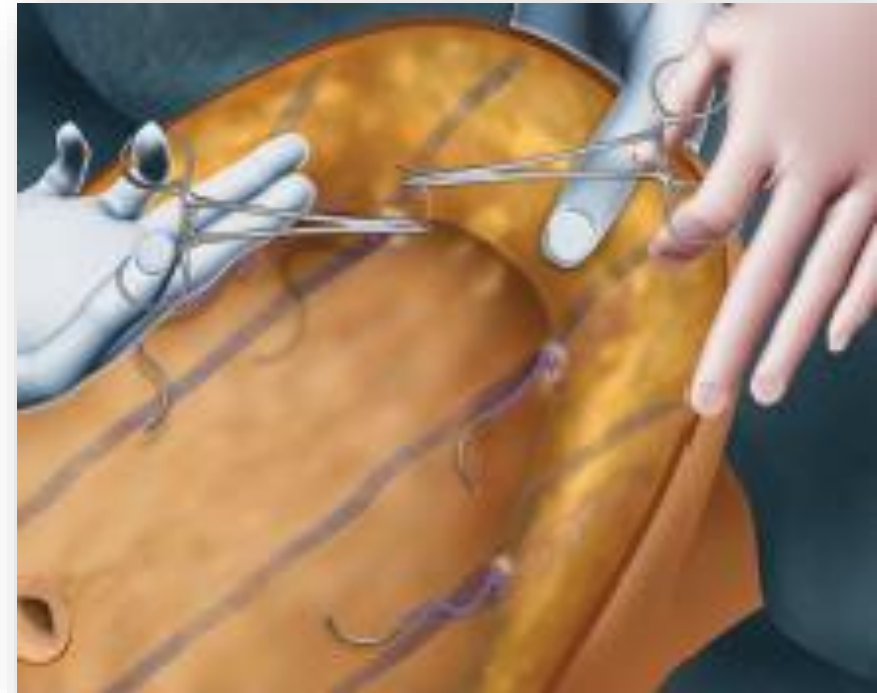
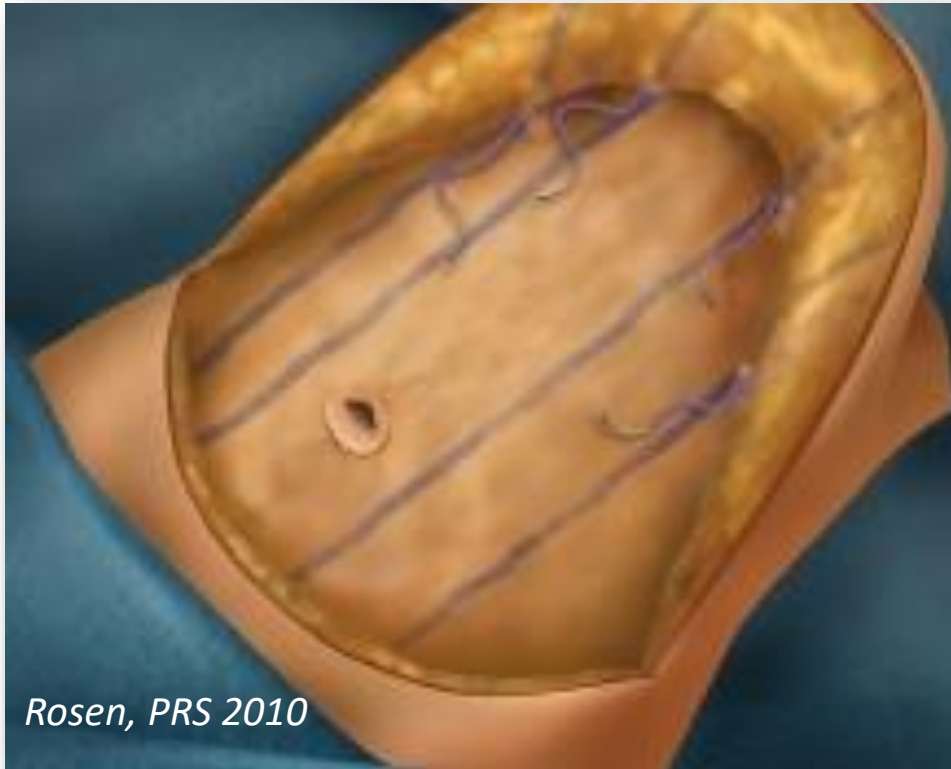
Protect the Needles

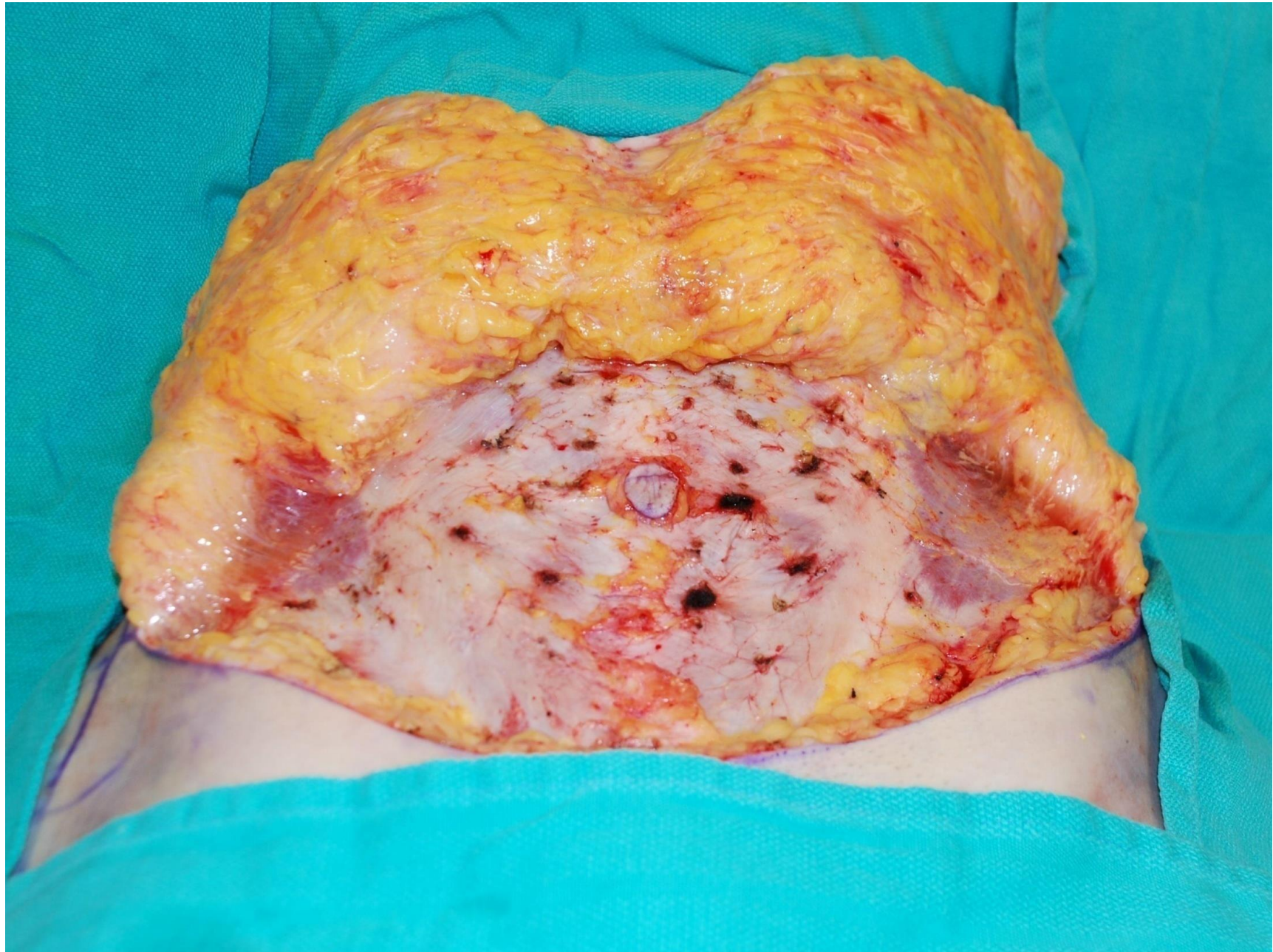


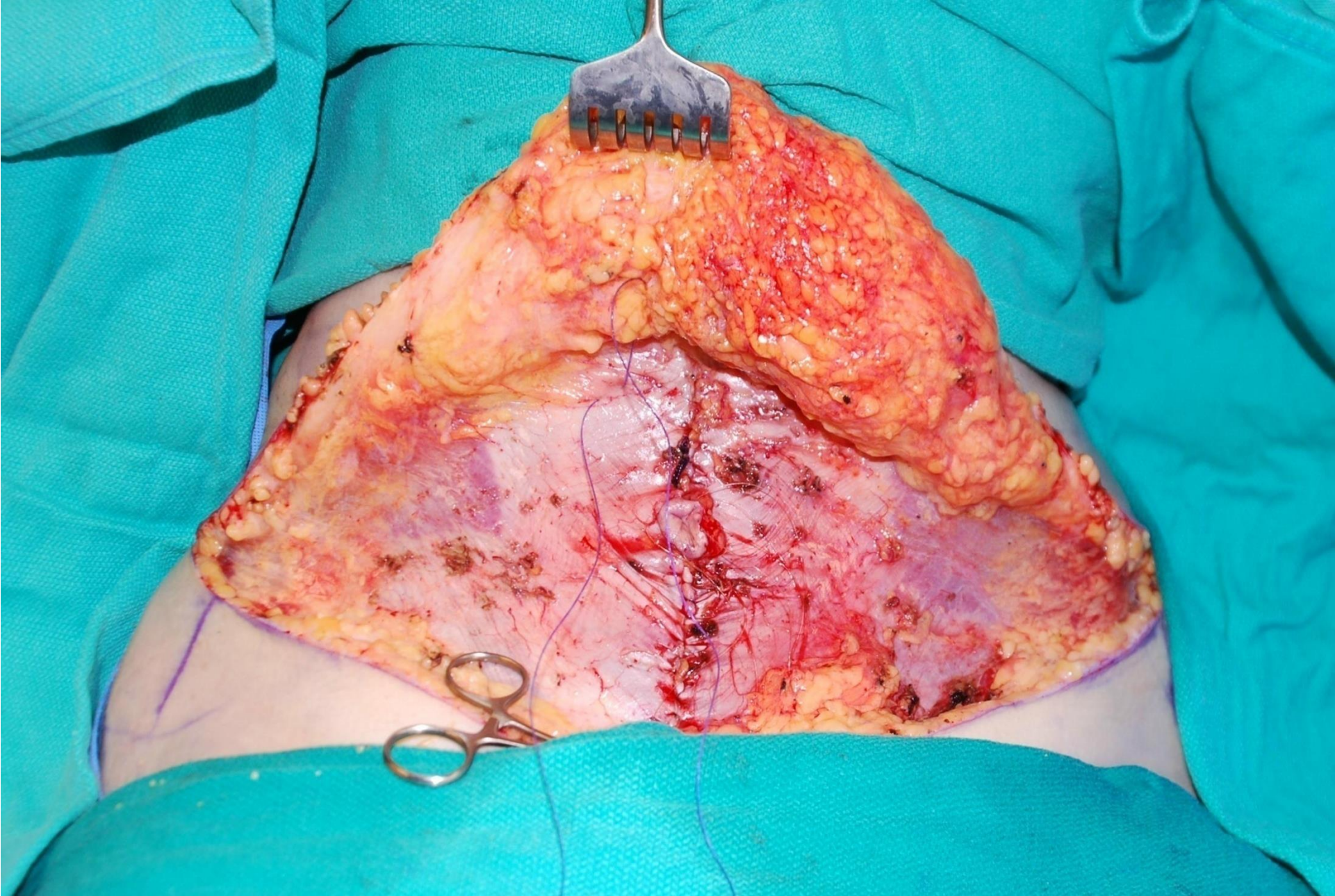
Barbed Progressive Tension Sutures

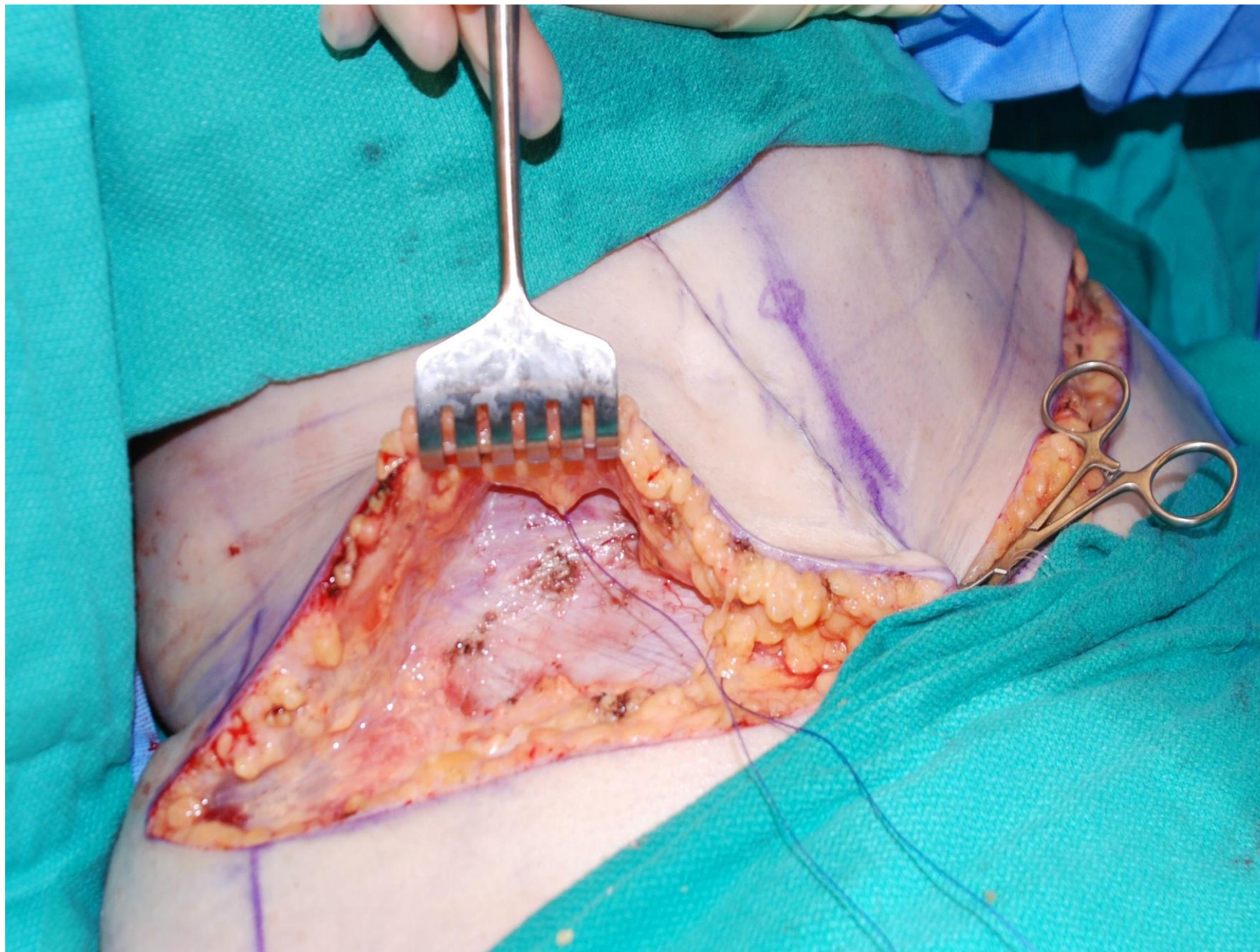


Unidirectional Barbed Suture

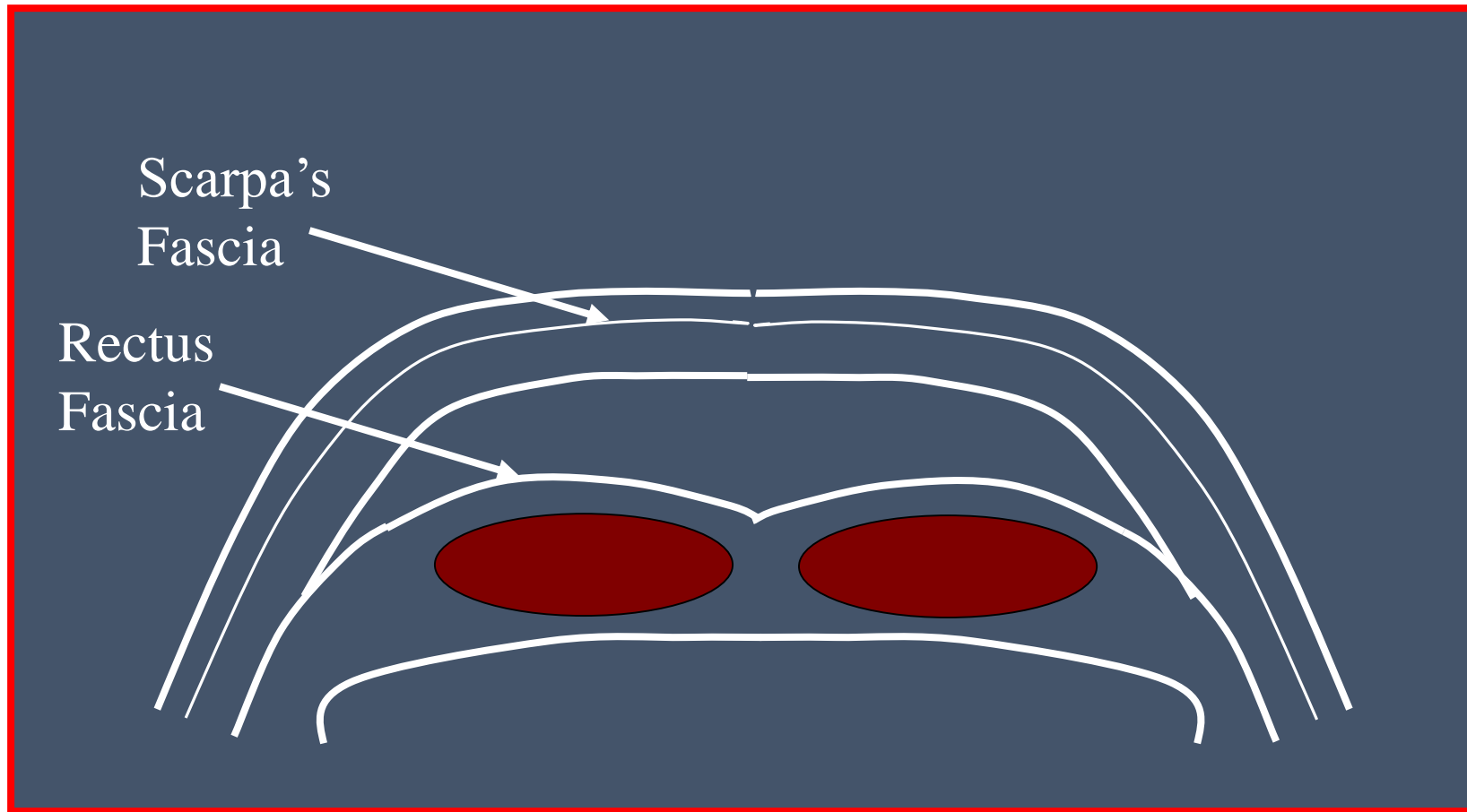






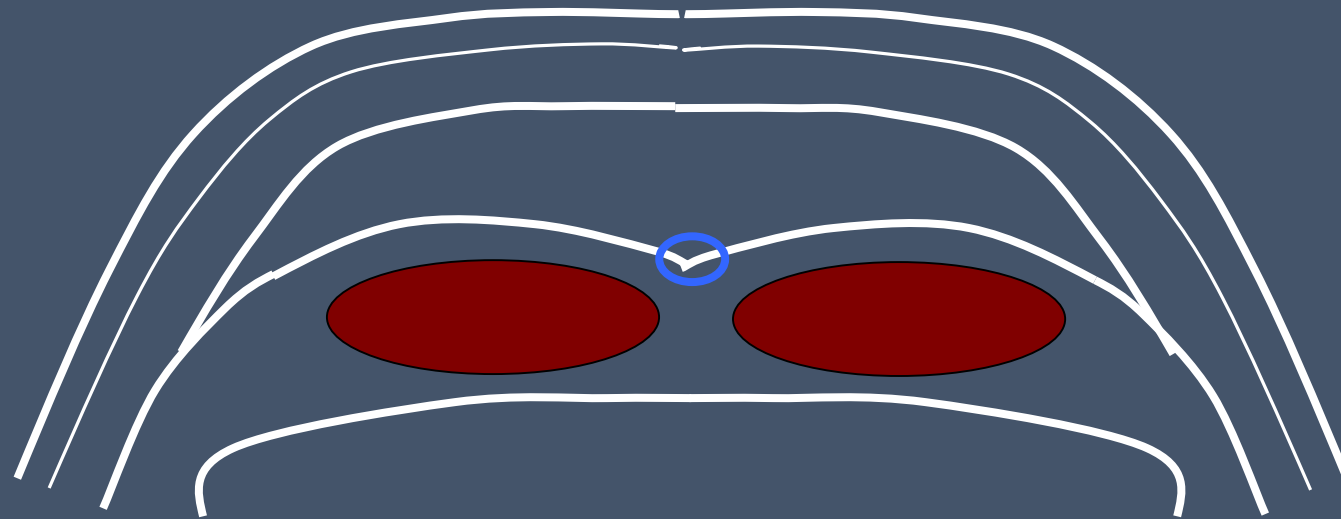


Layers of PTS

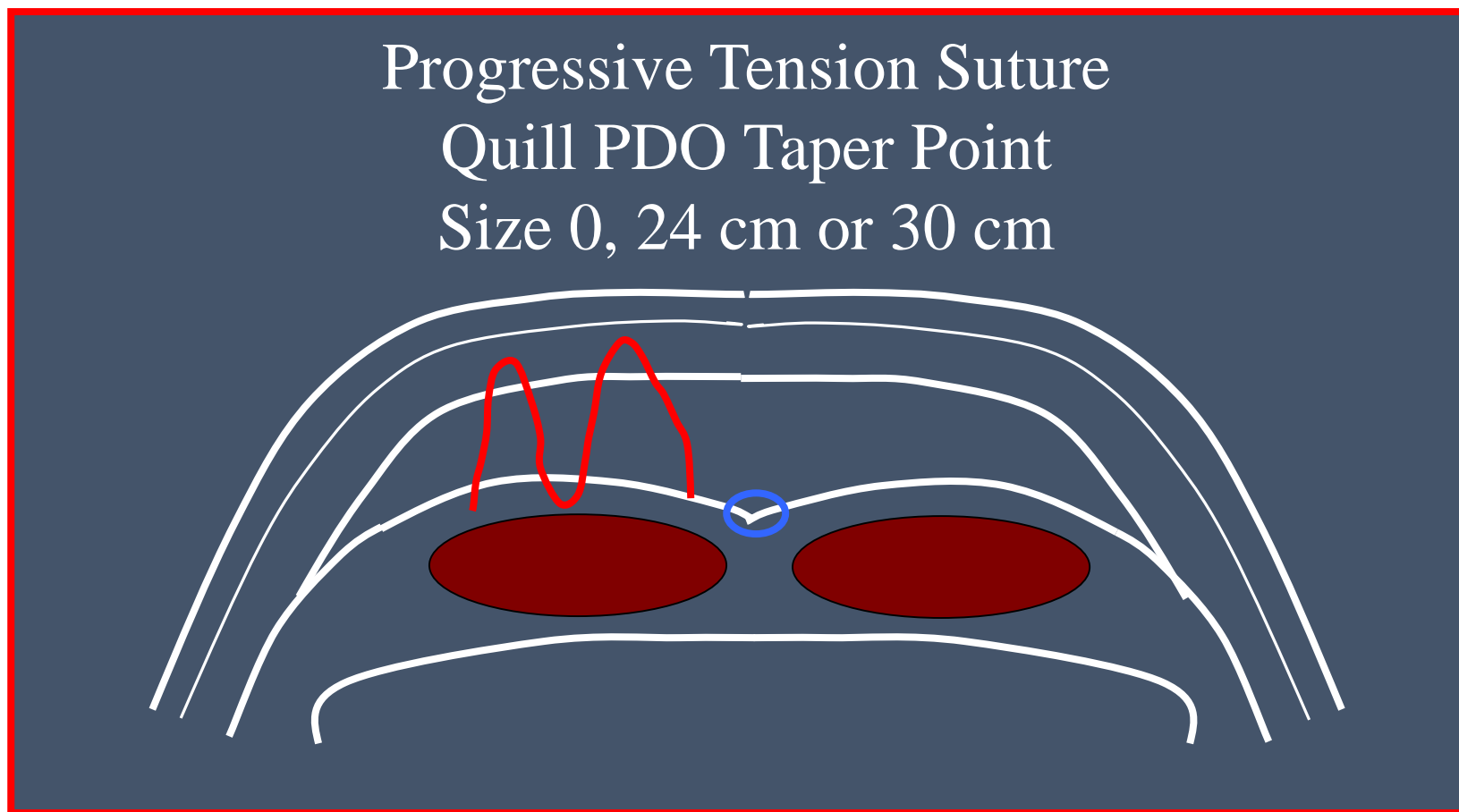


Layers of Quill Sutures

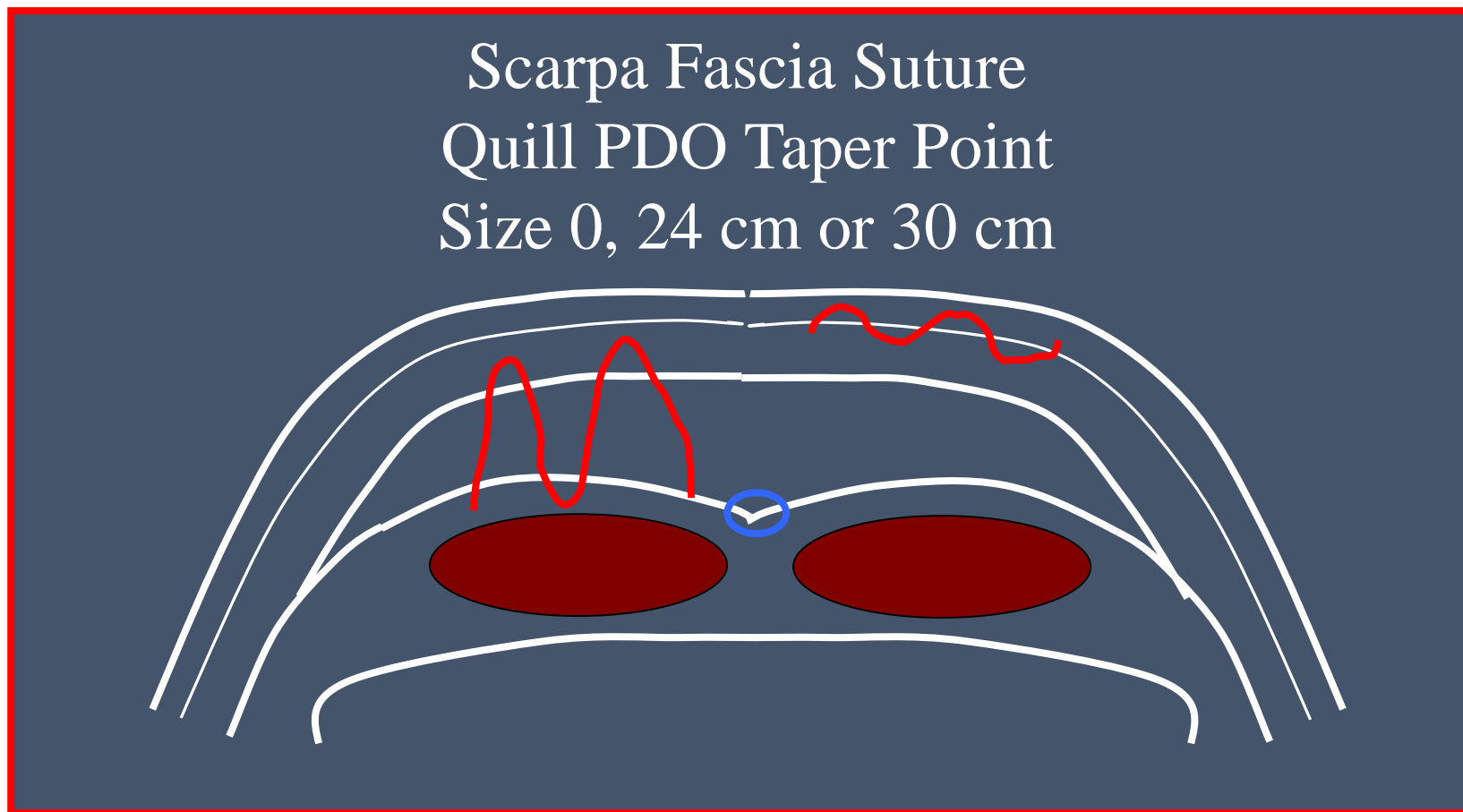
Rectus Fascia Plication: Choice



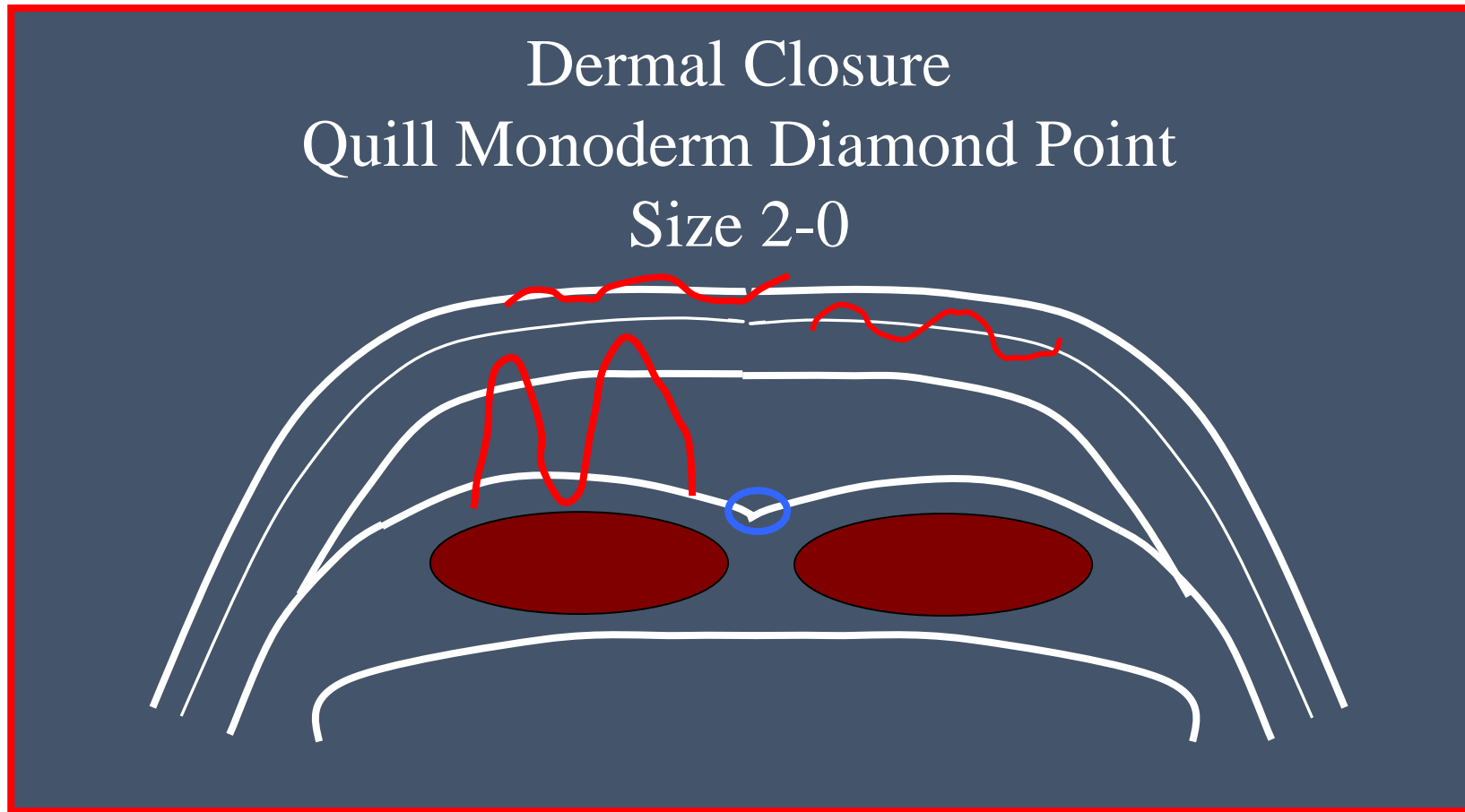
Layers of Quill Sutures



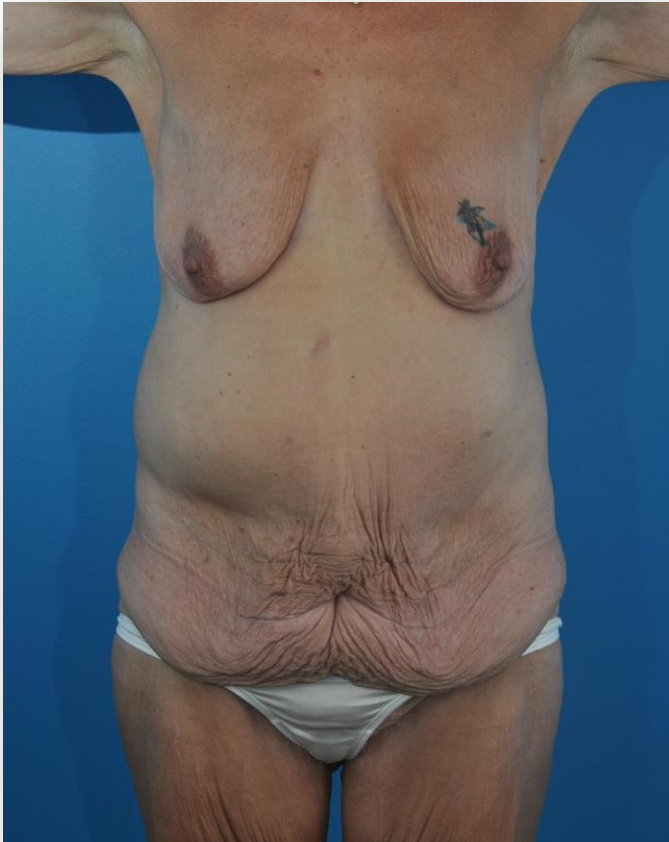
Layers of Quill Sutures



Layers of Quill Sutures



No Drain Body Contouring Patient



Arm lift

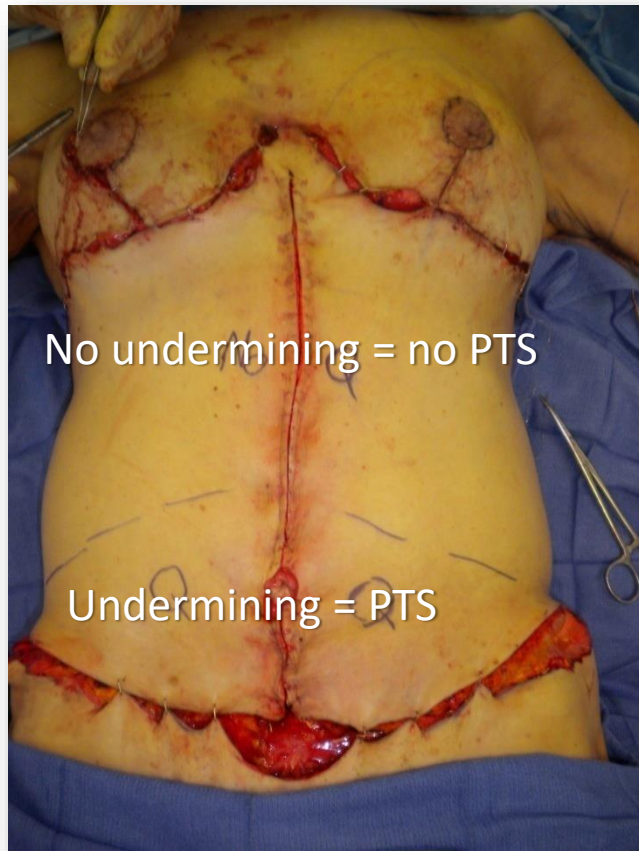
Mastopexy
with lateral auto-
augmentation

Body lift

Thigh lift



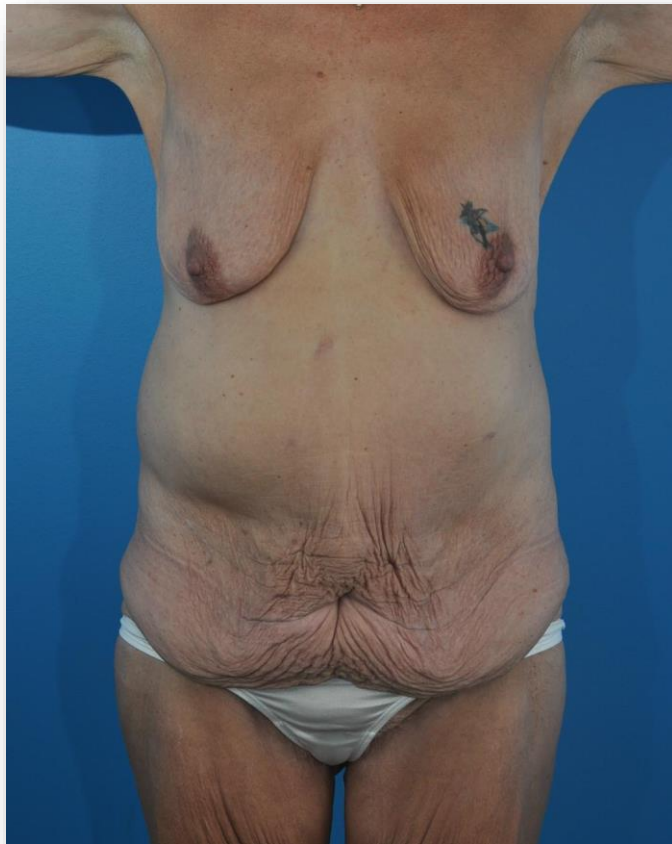
No Drain Body Contouring Patient



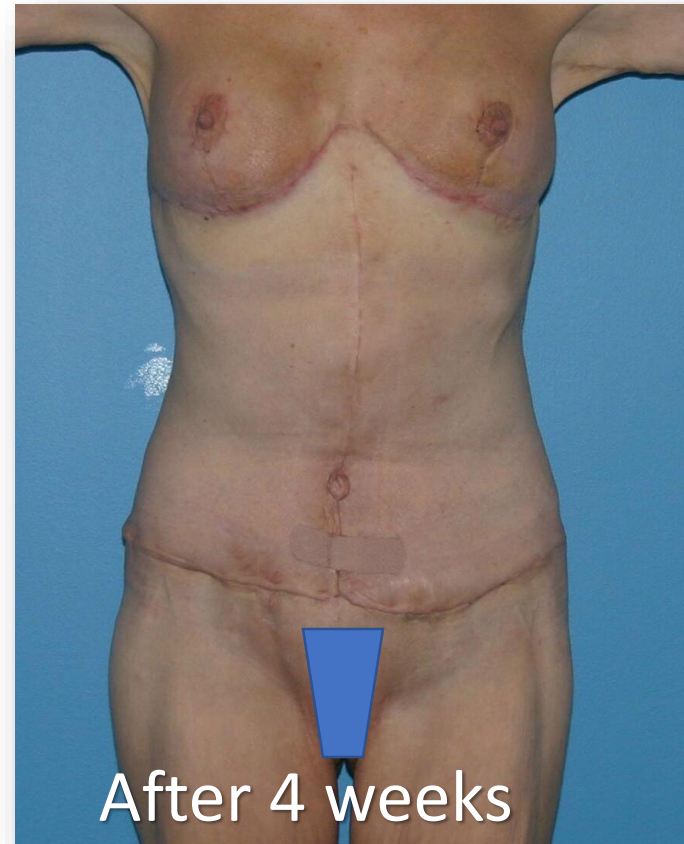
No Drain Body Contouring Patient



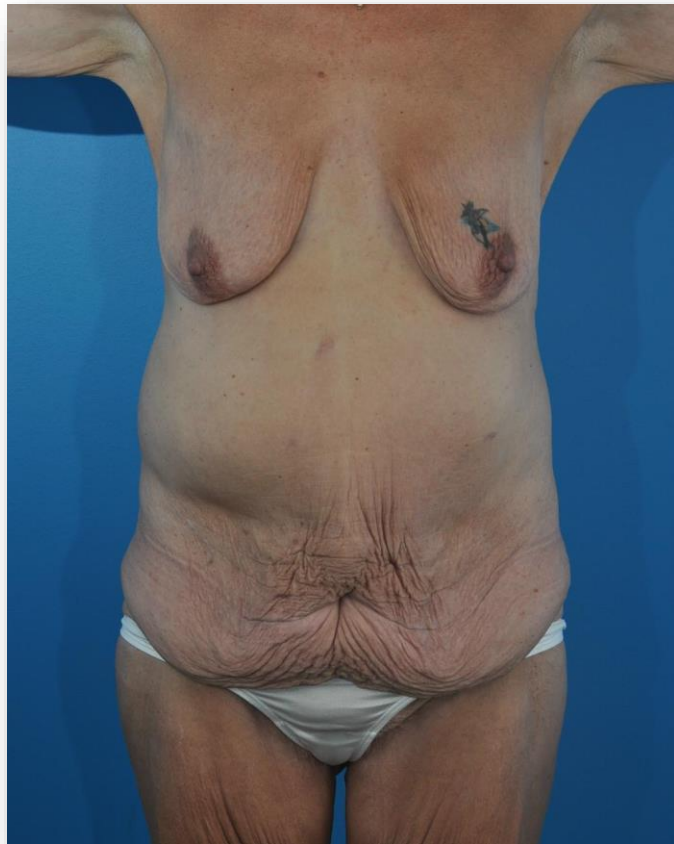
No Drain Body Contouring Patient



No Drain Body Contouring Patient

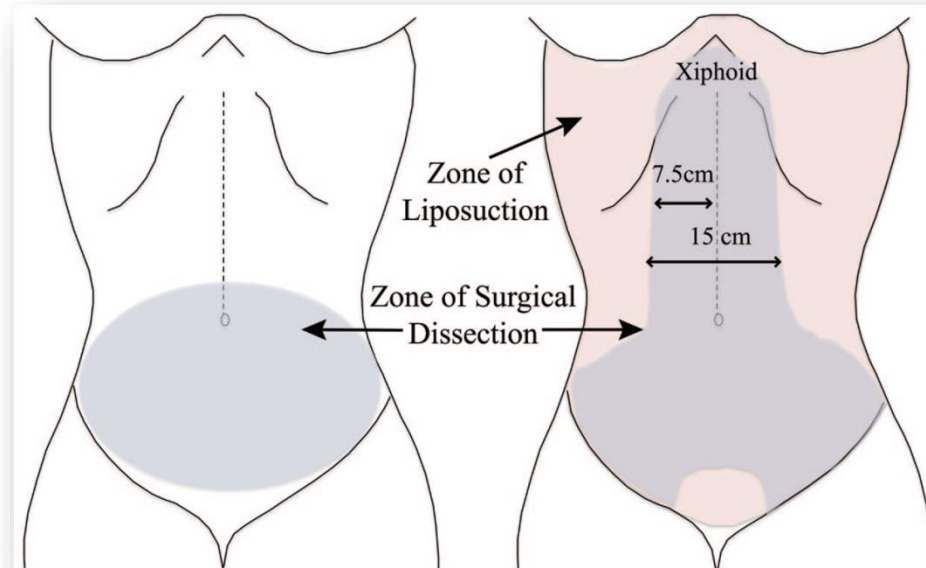


No Drain Body Contouring Patient

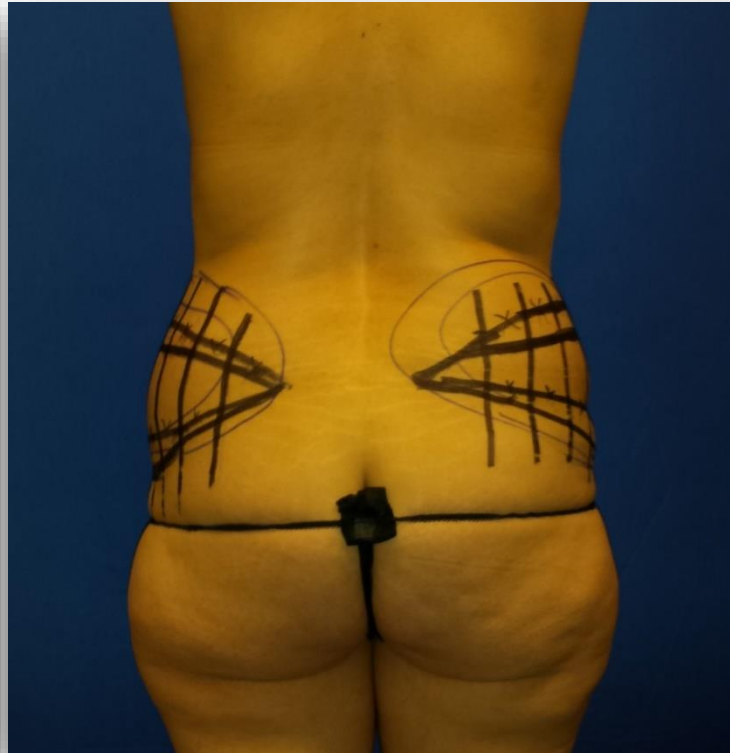
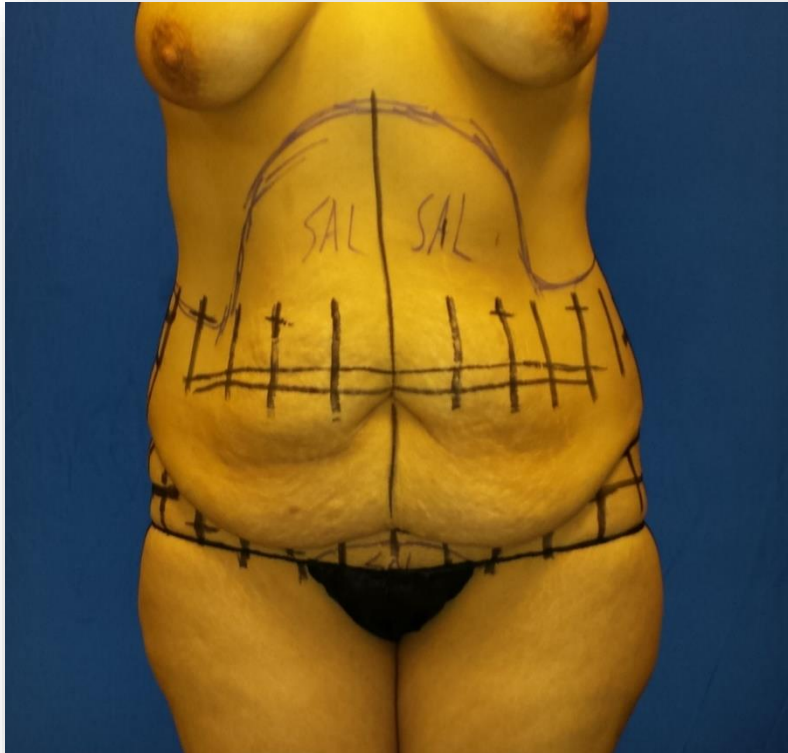


Lipo-Abdominoplasty

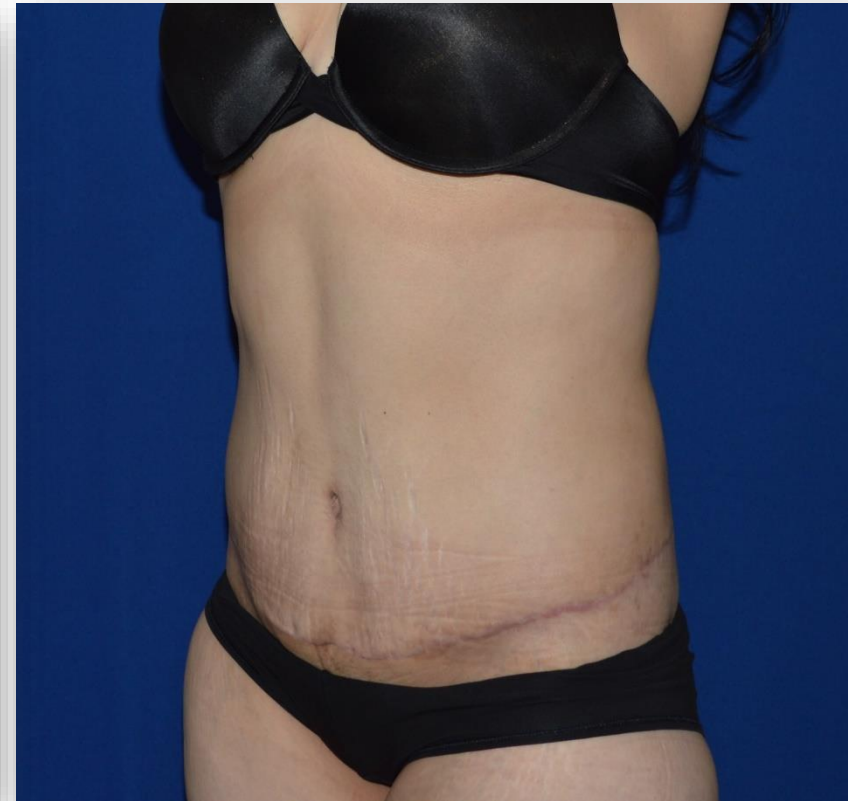
- Rethink Matarasso's classification
- Lipo-abdominoplasty with minimal lateral undermining is safe*



Liposuction of Abdominoplasty Flap



Extended Lipo-Abdominoplasty



Extended Lipo-Abdominoplasty



No Drains No Suture

Body Contouring

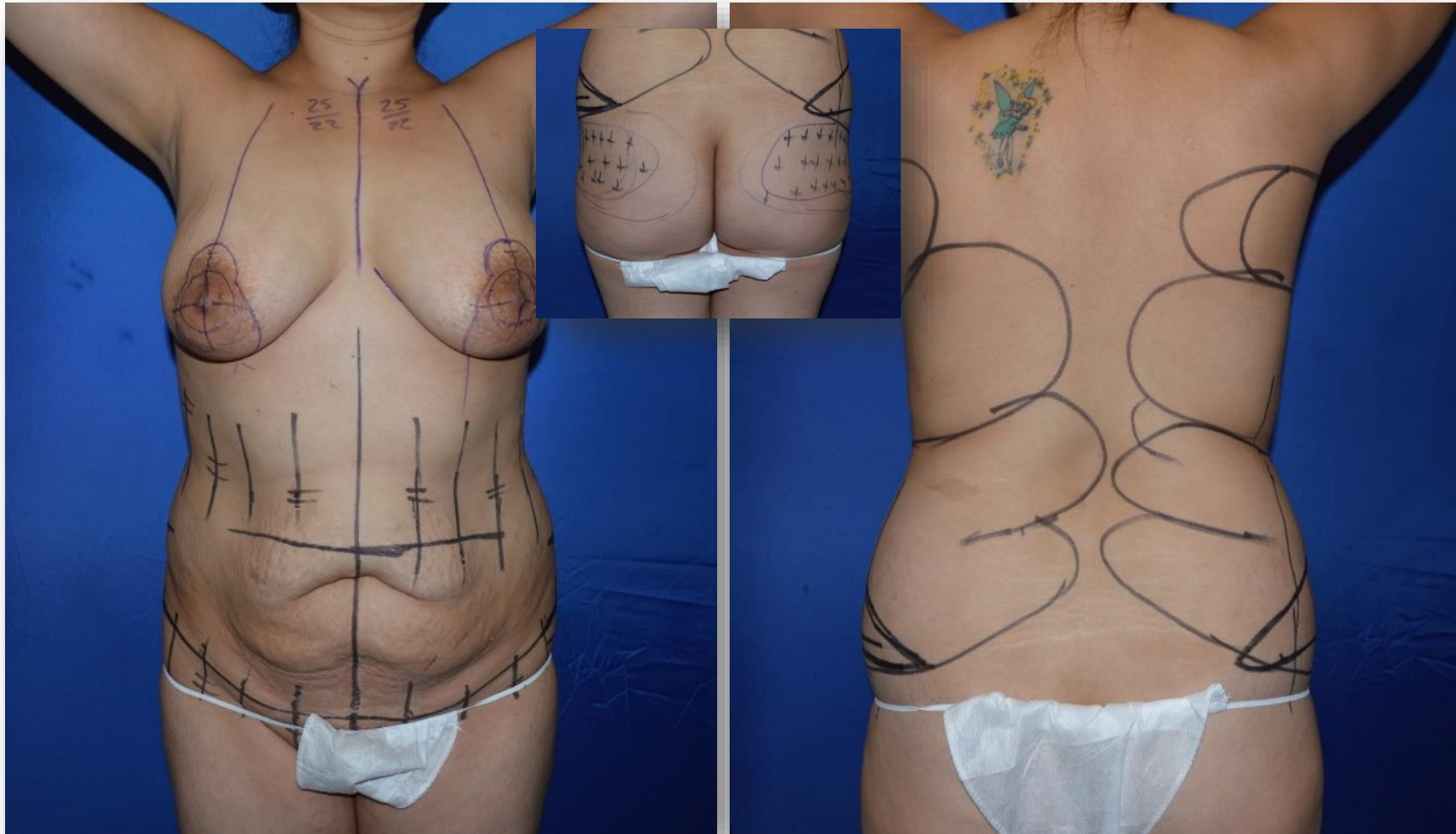
Lipoabdominoplasty Without Drains or Progressive Tension Sutures: An Analysis of 100 Consecutive Patients

Sarah Epstein; Michael A. Epstein, MD, FACS;
and Karol A. Gutowski, MD, FACS

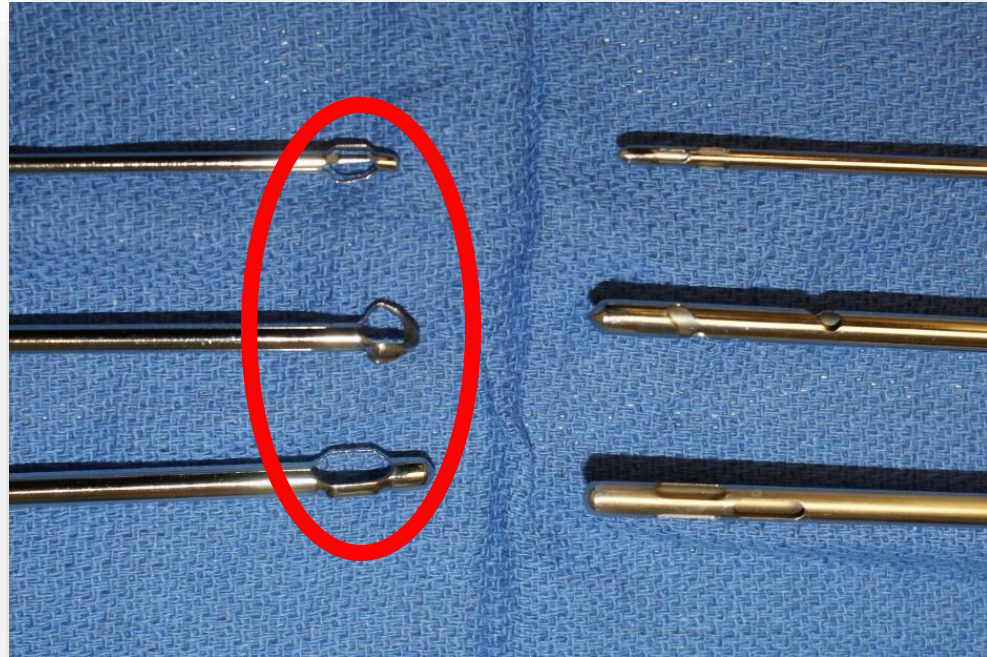
No Drains No Suture



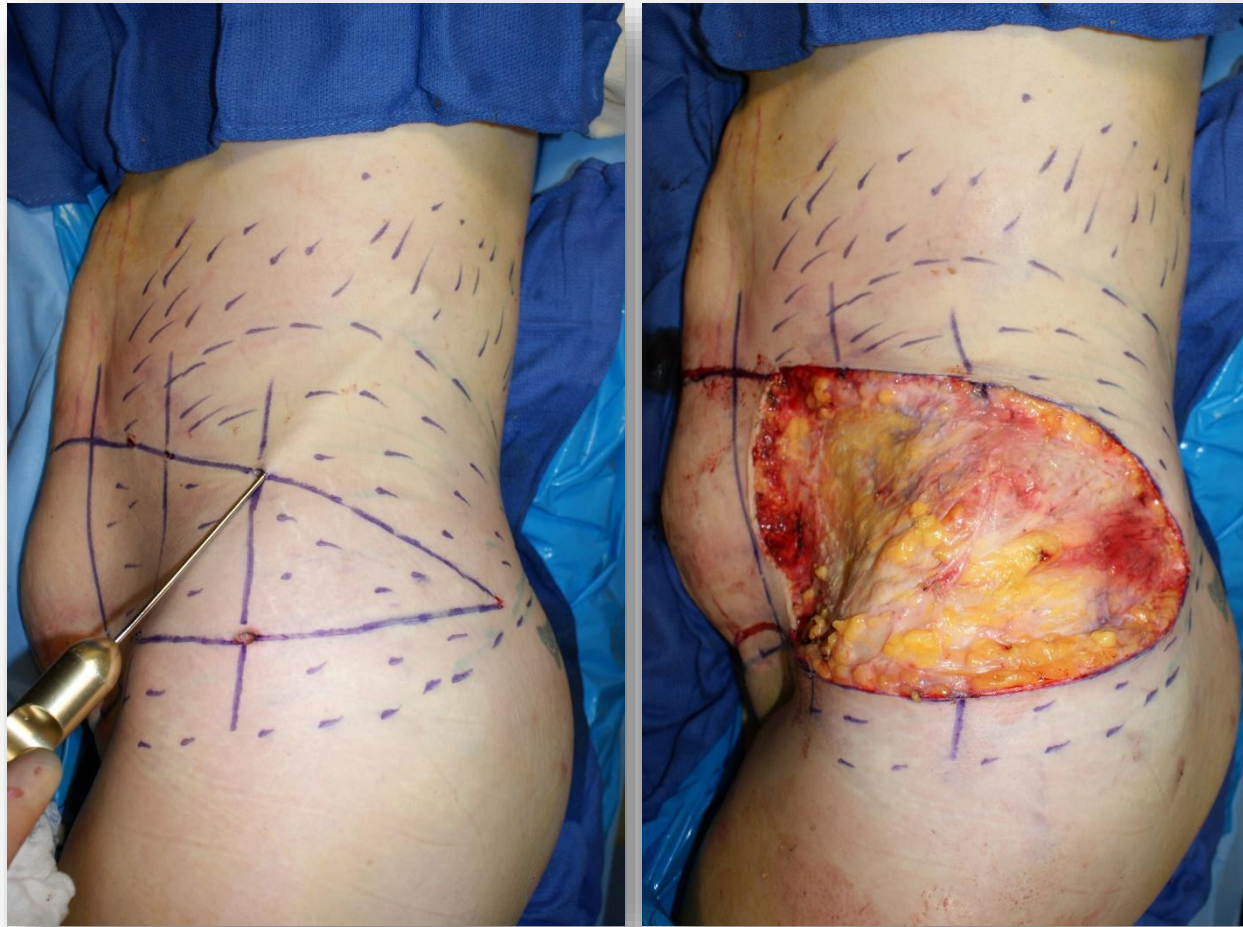
Treat Entire Trunk



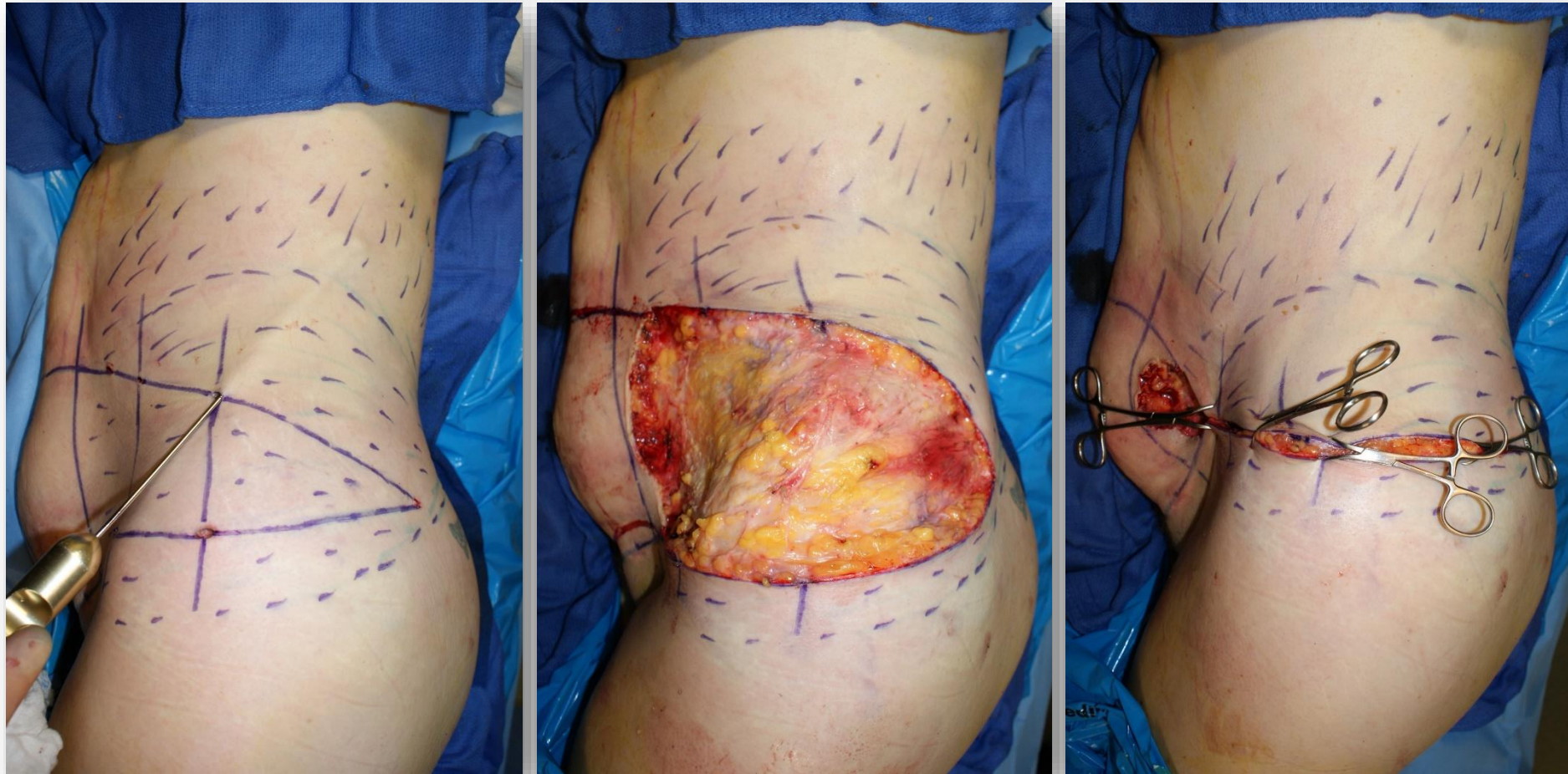
No Drain Lipo-Abdominoplasty



No Drain Lipo-Abdominoplasty



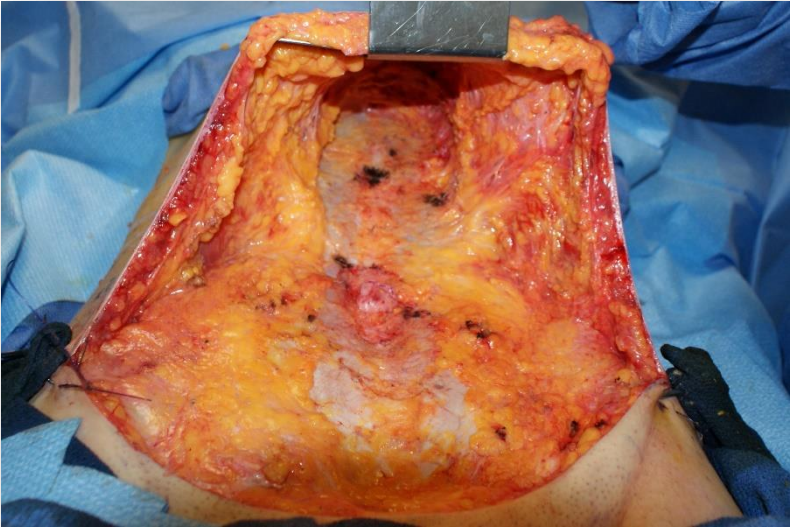
No Drain Lipo-Abdominoplasty



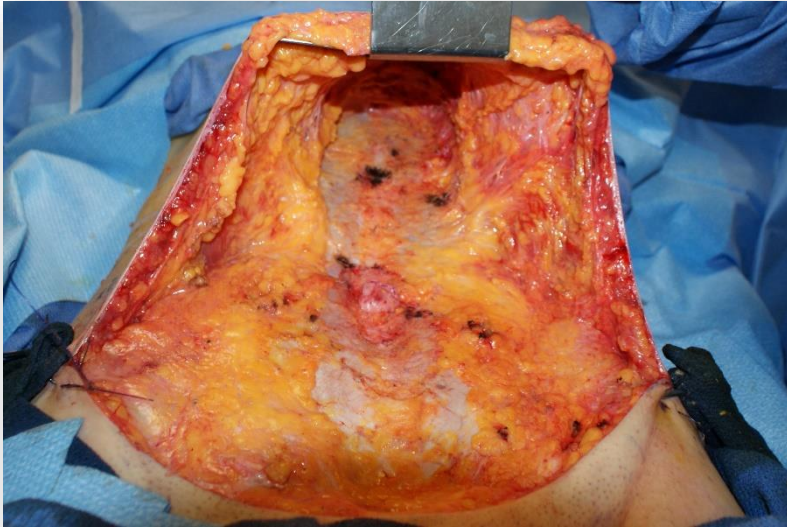
No Drain Lipo-Abdominoplasty



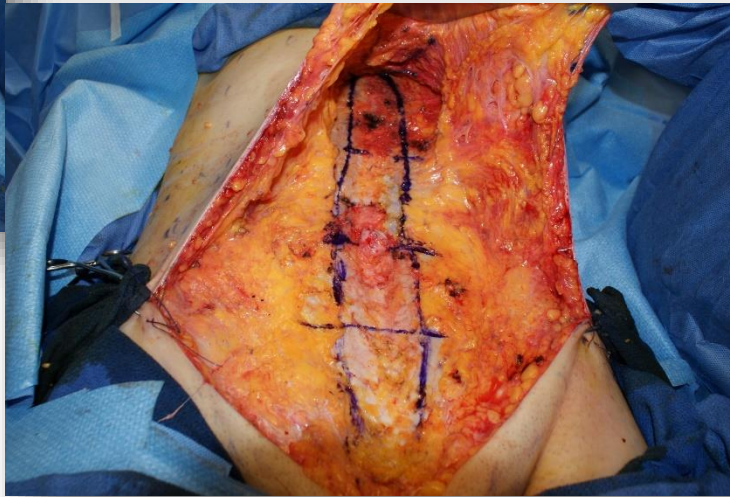
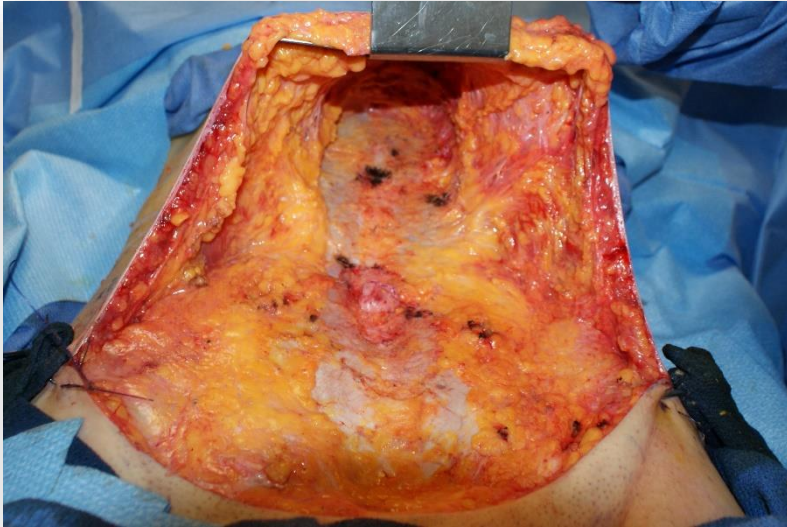
No Drain Lipo-Abdominoplasty



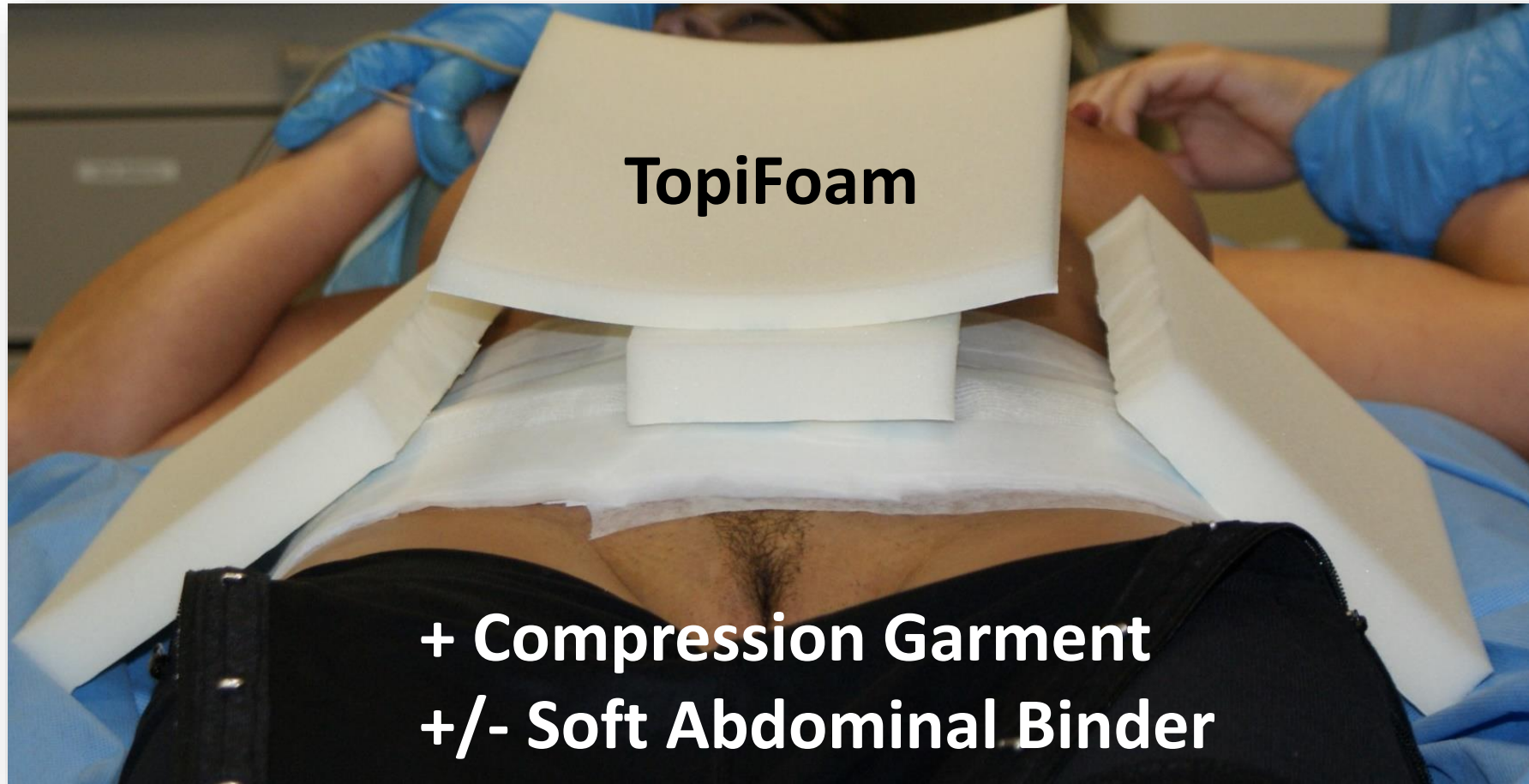
No Drain Lipo-Abdominoplasty



No Drain Lipo-Abdominoplasty



Compression



Practical Tips

- Instruct assistants on principals of this technology
 - More familiarity = faster incorporation it into your practice
 - Don't cut off one of the two needles of the bidirectional sutures
- Suture is more firm
 - Gentle stretching prevents loop and knot formation
- Avoid contact with gauze, lap sponges & similar materials
 - Barbs may attract lint-like material onto the suture
- Two needles on operative field with each suture
 - Protect the needle not in use with a needle holder
- If a barbed suture breaks
 - Start a new suture with 3-4 cm of overlap with the old suture

More Practical Tips

- Keep abdominal flap aligned
 - Mark undersurface & avoid tendency to pull flap to one side
- Avoid excess tension as fat necrosis may result
- May apply techniques to circumferential abdominoplasty
 - Use posterior “3-point” tissue fixation to close dead space
- Advise patients
 - Small abdominal contour irregularities resolve in 1 to 2 weeks
 - May feel “popping” sensation in 2 to 6 weeks

Lessons Learned

- Quill PDO in dermis will “spit”
- Resist temptation to advance suture too far
 - Fascia – tissue contour
 - Dermis – puckers
- Teach nurses & scrub techs
- Don't place on certain material
- Patient expectations
- Favorable learning curve
- Try it on a TRAM

Technique Advantages

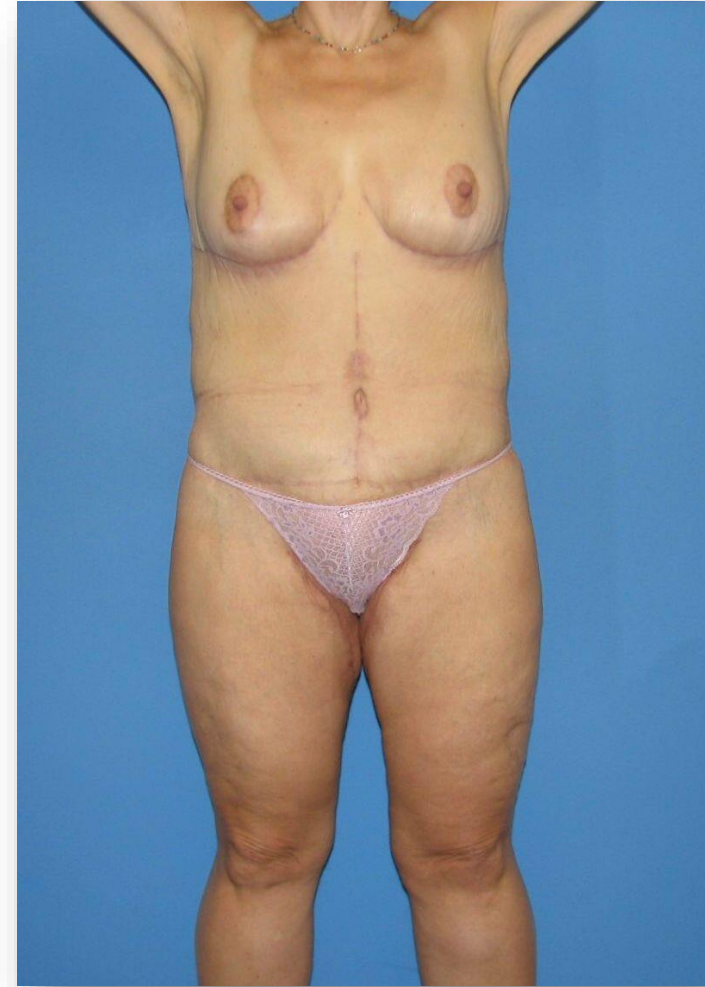
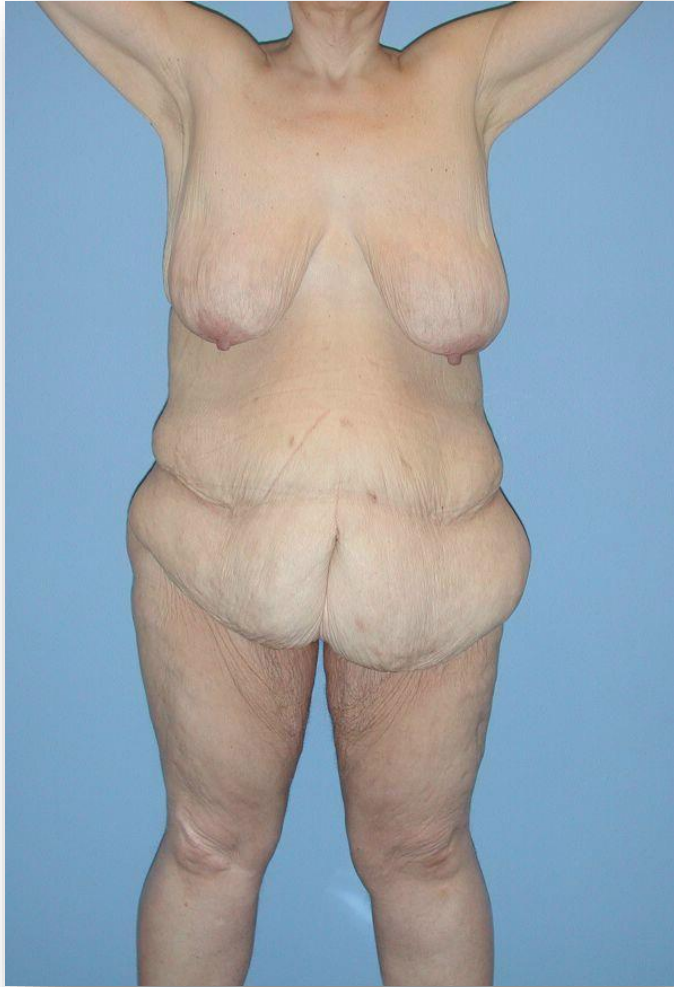
- Fast closure
 - 8 to 10 minutes additional time for PTS
- Can do without an assistant
- Maintains tissue approximation
 - Less tissue pull-through
- Eliminate abdominal drains
- Need for abdominal binder?

Seroma Treatment

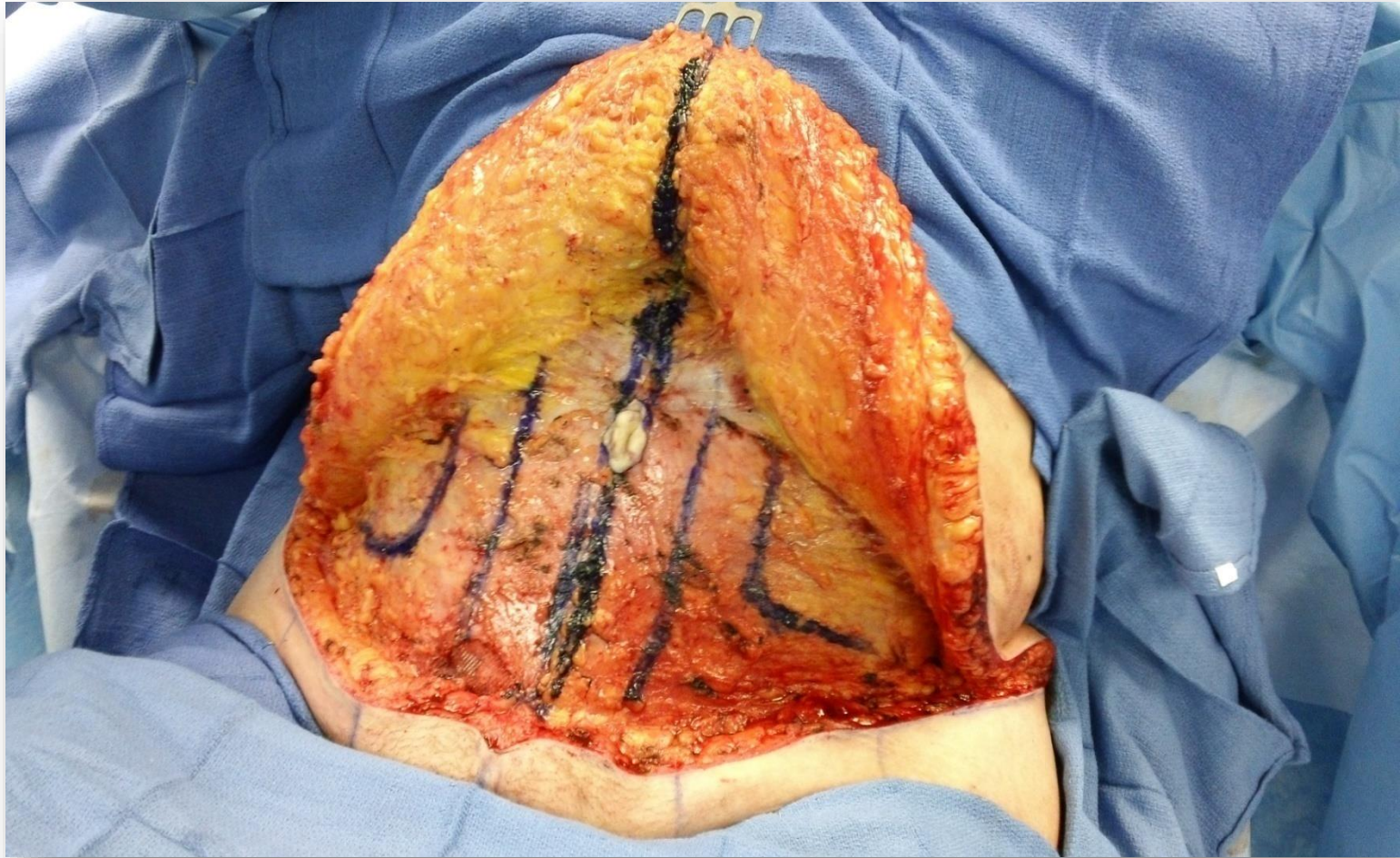
- Aspirate if in doubt
- SeromaCath
- Sclerosis
 - Doxycycline
 - Ethanol
- Excision



Not Using Drains is an Uplifting Experience!



Internal Guidelines







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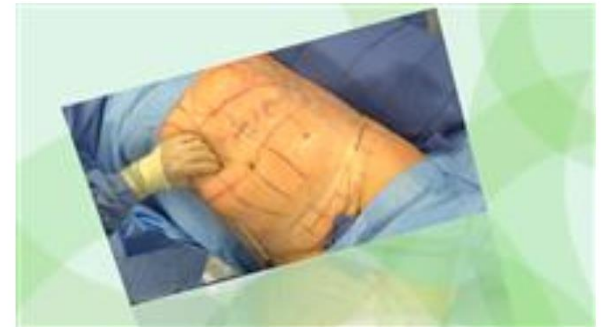
No Drain Lipo-Abdominoplasty

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Aesthetic



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No Drain Abdominoplasty: No More Excuses

Karol A Gutowski, MD, FACS

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