

# No Drain Abdominoplasty: No More Excuses

*Karol A Gutowski, MD, FACS*

Instructional Course

plastic  
surgery

THE MEETING



Orlando

OCTOBER 6 - 10 2017



# Disclosures

Suneva Medical – Instructor

Merz – Advisory Board

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

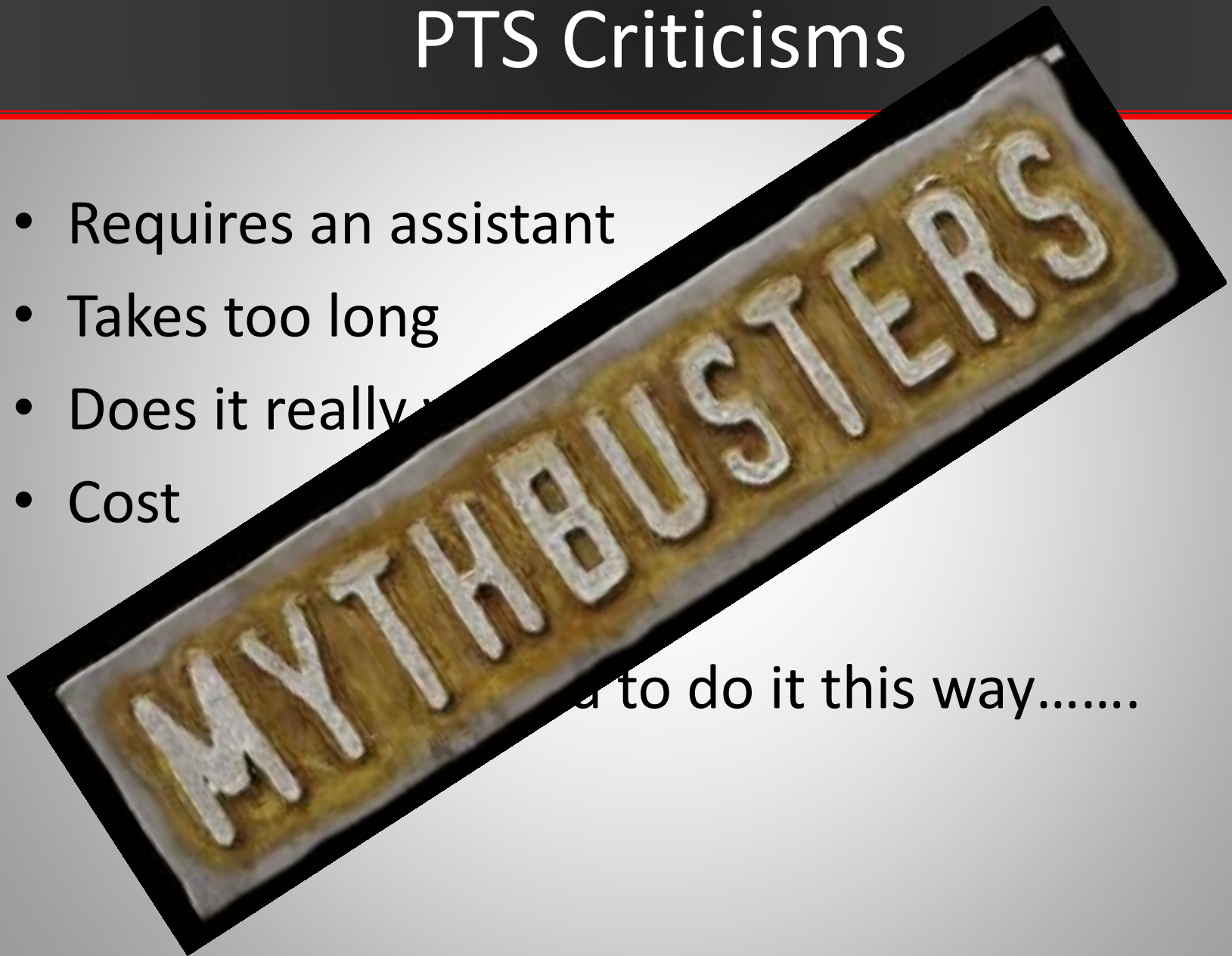
- Requires an assistant
- Takes too long
- Does it really work?
- Cost

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

# PTS Criticisms

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

to 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



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## 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.<sup>27-29</sup>

**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**

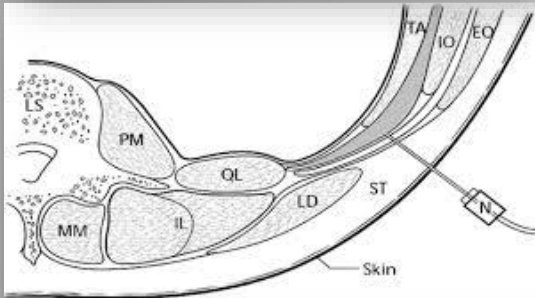


# Drains in Breast Augmentation

- 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.  
Montclair, N.J.

# Patient's Perception of Drains


RealSelf Ratings Ask a Doctor Doctor Finder

Tummy Tuck : Reviews Photos Q&A Forum Doctors

## Tummy Tuck Q&A

**94%** WORTH IT RATING  
2,218 Reviews

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



[View Before and Afters](#)

[Ask a Question](#)

### 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?


**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

**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 Ratings Ask a Doctor Doctor Finder

Tummy Tuck : Reviews Photos Q&A Forum Doctors

## Tummy Tuck Q&A

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[View Before and Afters](#)

[Ask a Question](#)

### 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?

**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

**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

[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%**  [Average Tummy Tuck Cost: \\$8,331](#)  
WORTH IT RATING  
2,218 Reviews

[Post to Forum](#)

[Learn about Tummy Tuck](#)



[View Before and Afters](#)

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### 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. Mhaweji, 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

- 230 consecutive abdominoplasties
  - 43 circumferential
  - 211 with flank liposuction
  - 65 massive weight loss
  - 183 outpatient
- Tumescence 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
- 8 lower abdominal seromas
  - Multiple aspirations
  - 4 required drain
- 1 major wound dehiscence
- 2 hematomas drained in OR
- 2 infected seromas
  - Incised & drained



# Pivotal Publication

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## Techniques in Cosmetic Surgery

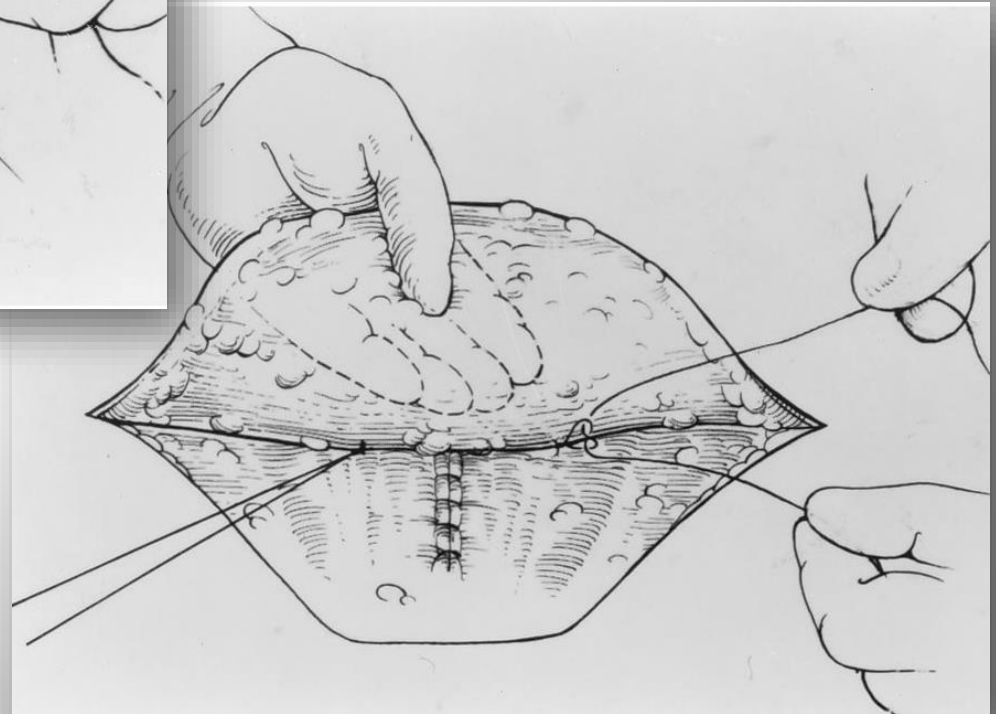
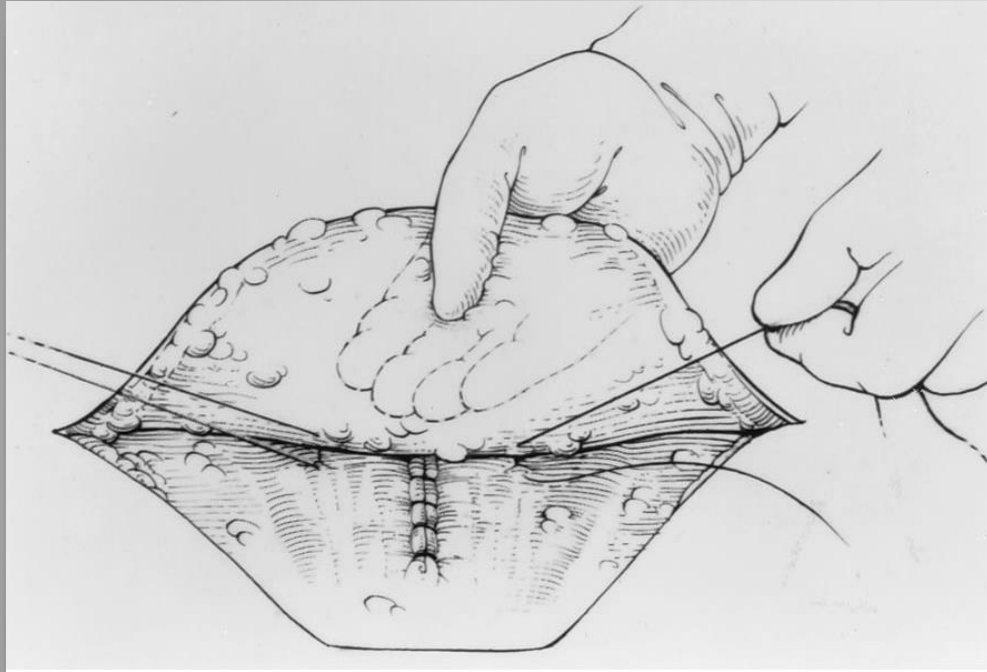
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### Progressive Tension Sutures: A Technique to Reduce Local Complications in Abdominoplasty

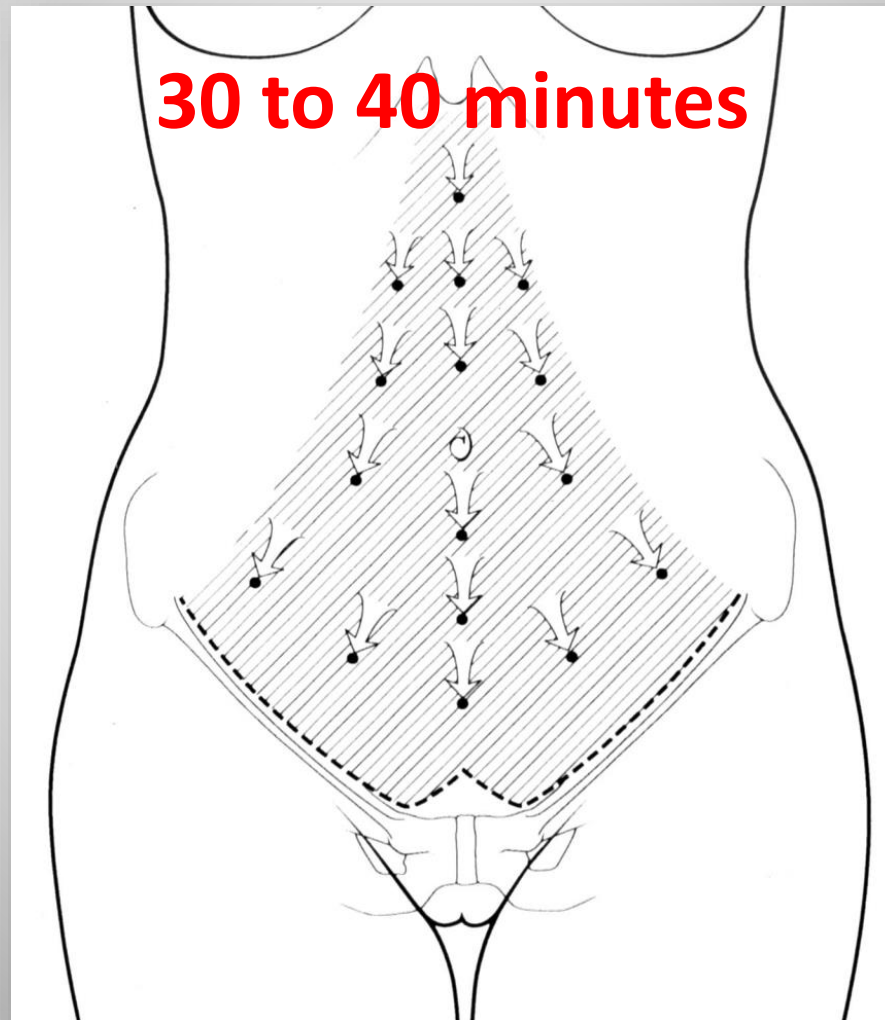
**Harlan Pollock, M.D., and Todd Pollock, M.D.**

*Dallas, Texas*

# Individual Sutures



# Progressive Inferior Tension



# Introduction of Barbed PTS

## Body Contouring

### Abdominoplasty With Progressive Tension Closure Using A Barbed Suture Technique

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

*ASJ 2009*

## IDEAS AND INNOVATIONS

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

*Allen D. Rosen, M.D.  
Monclair, N.J.*

*PRS 2010*

# 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](http://www.aestheticsurgeryjournal.com)  
SAGE

#### Abstract

**Background:** Seroma is one of the most troubling complications that shearing forces between the two separated abdominal wall layers until the layers are sufficiently adhered may be a problem.  
**Objective:** The authors examine the association between seroma formation and the use of drains.  
**Methods:** This retrospective study included 60 patients who underwent abdominoplasty with drains for 48 hours (group 2). For thromboembolism prophylaxis, low-dose aspirin was given to all patients. Follow-up for detection of seroma continued for at least 6 weeks.  
**Results:** Mobilization after 24 hours led to a seroma rate of 10%.  
**Conclusions:** For abdominoplasty patients with a low risk of thromboembolism, prophylaxis with aspirin and mobilization after 24 hours may be sufficient to prevent seroma formation.

## 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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journalsPermissions.nav](http://www.sagepub.com/journalsPermissions.nav)  
DOI: 10.1177/1090820X10372048  
[www.aestheticsurgeryjournal.com](http://www.aestheticsurgeryjournal.com)  
SAGE

#### Abstract

**Background:** Over the past 30 years, the preferred technique regarding the surgical and postoperative approaches that best reduce the overall complication rate, most specifically the incidence of seroma, remains unclear.  
**Objective:** The authors evaluate their 28-year experience of drains for reducing the overall complication rate, most specifically the incidence of seroma.  
**Methods:** A retrospective review was conducted of 517 consecutive cases of abdominoplasty, divided into three groups based on operative setting, postoperative care, and drain placement.  
**Results:** The authors found that the last group of patients, as an outpatient procedure, had the lowest incidence of seroma (9.6%) in early groups, when abdominoplasty was performed without the placement of progressive tension sutures, but with drains.  
**Conclusions:** Abdominoplasty can be safely performed as an outpatient procedure. Despite controversy in the previous literature, the use of drains dramatically decreases overall complication rates.

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,<sup>2</sup> 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.<sup>3,4,11</sup> 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; Katerina Andjelkovic, MD, PhD;  
Paulo Cesar Rozental-Fernandes, MD; Reza Javanmard, MD, PhD;  
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

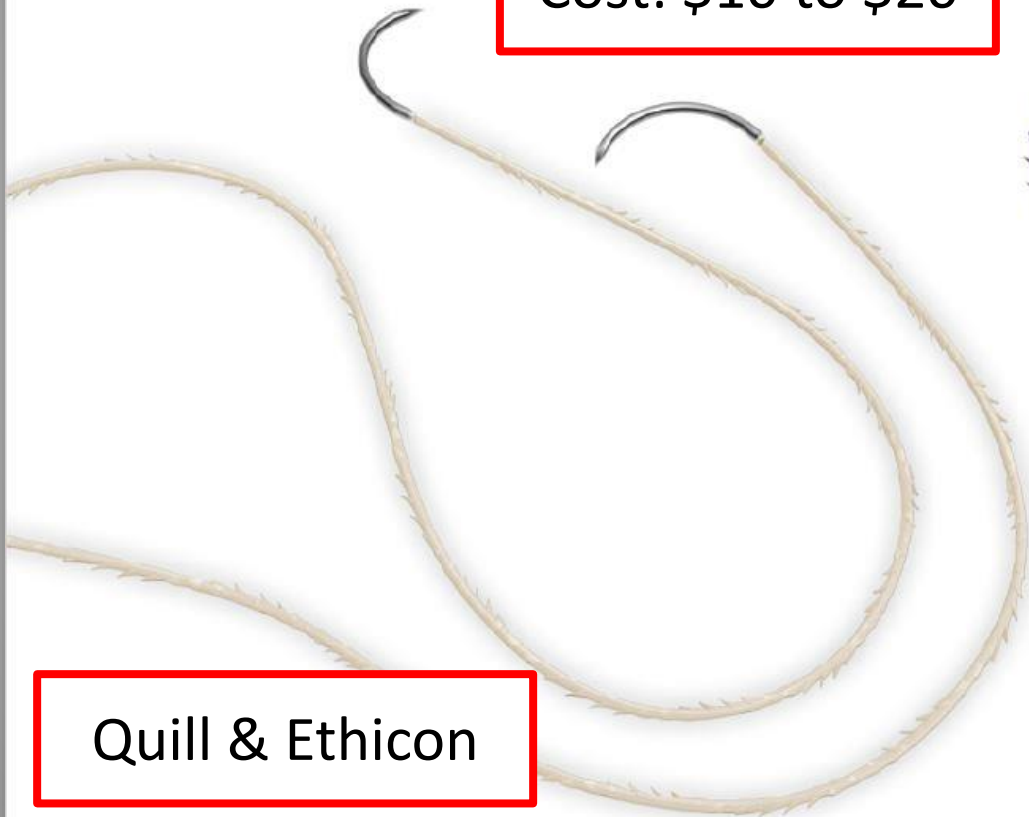
Luis H. Macias, MD, FACS; Edwin Kwon, MD; Daniel J. Gould, MD, PhD; Michelle A. Spring, MD, FACS; and W. Grant Stevens, MD, FACS

# Barbed Suture Technology

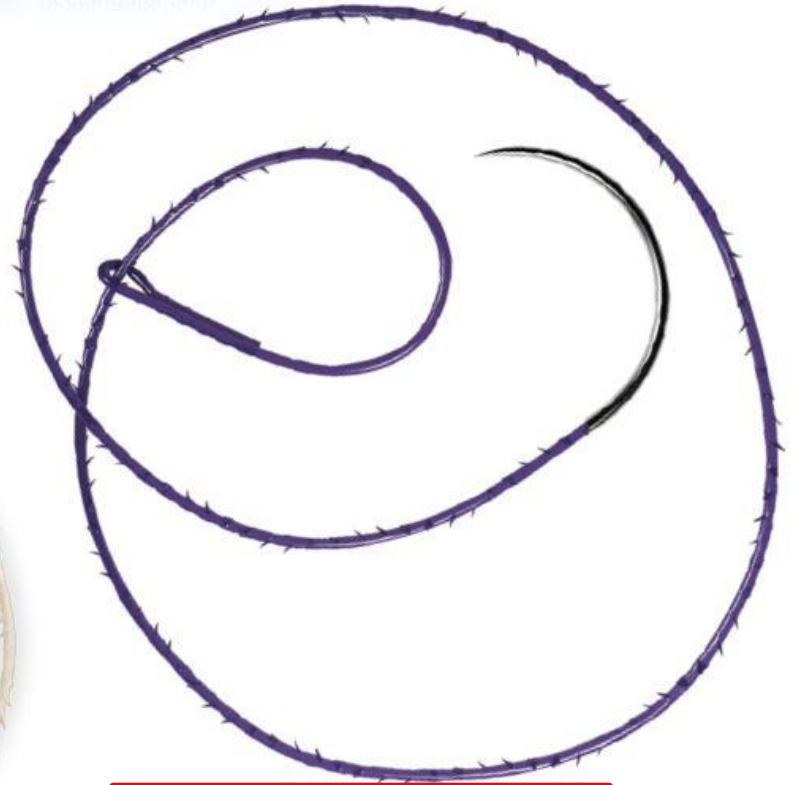


# Barbed Suture Technology

Cost: \$10 to \$20

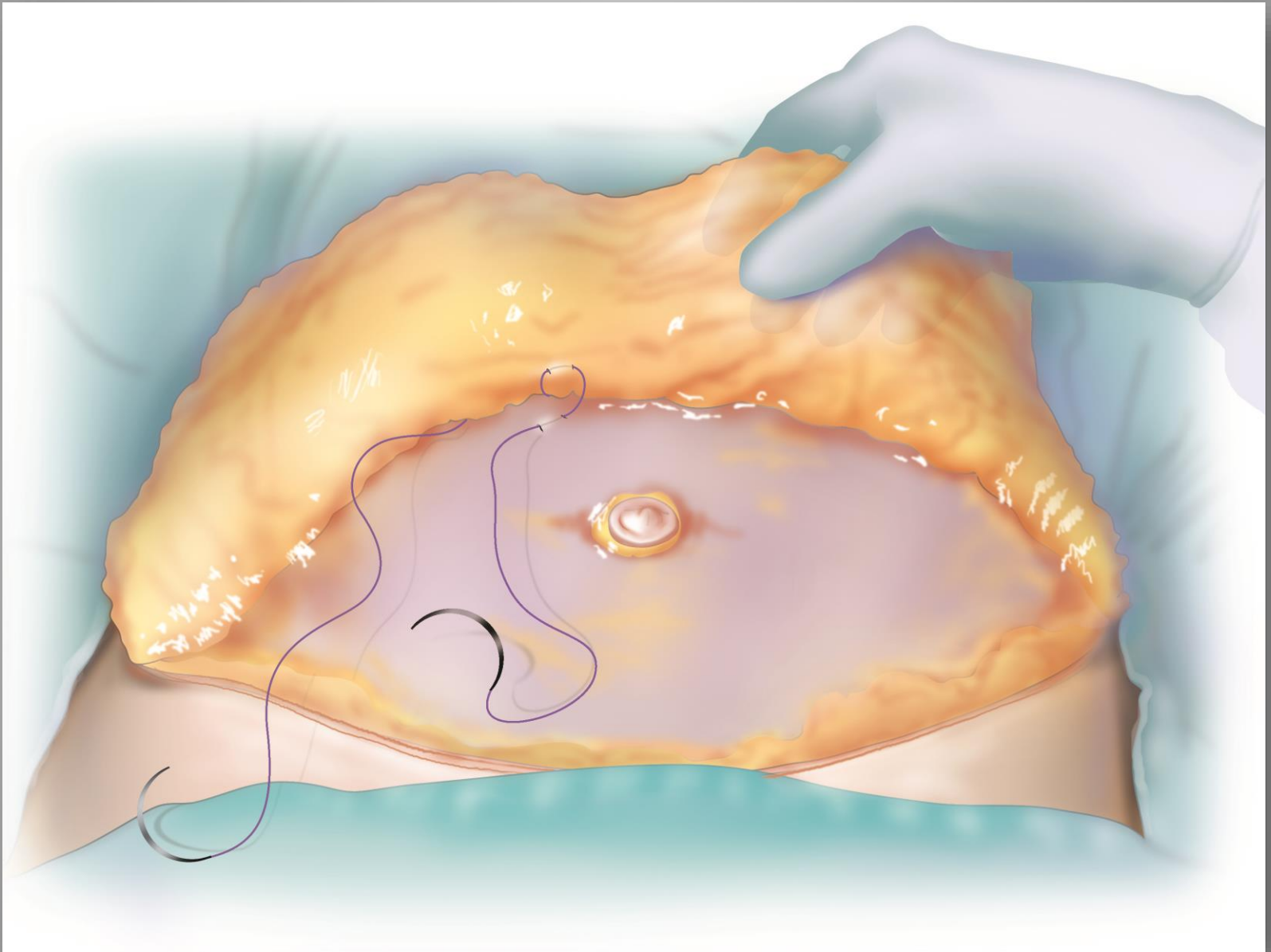


Quill & Ethicon

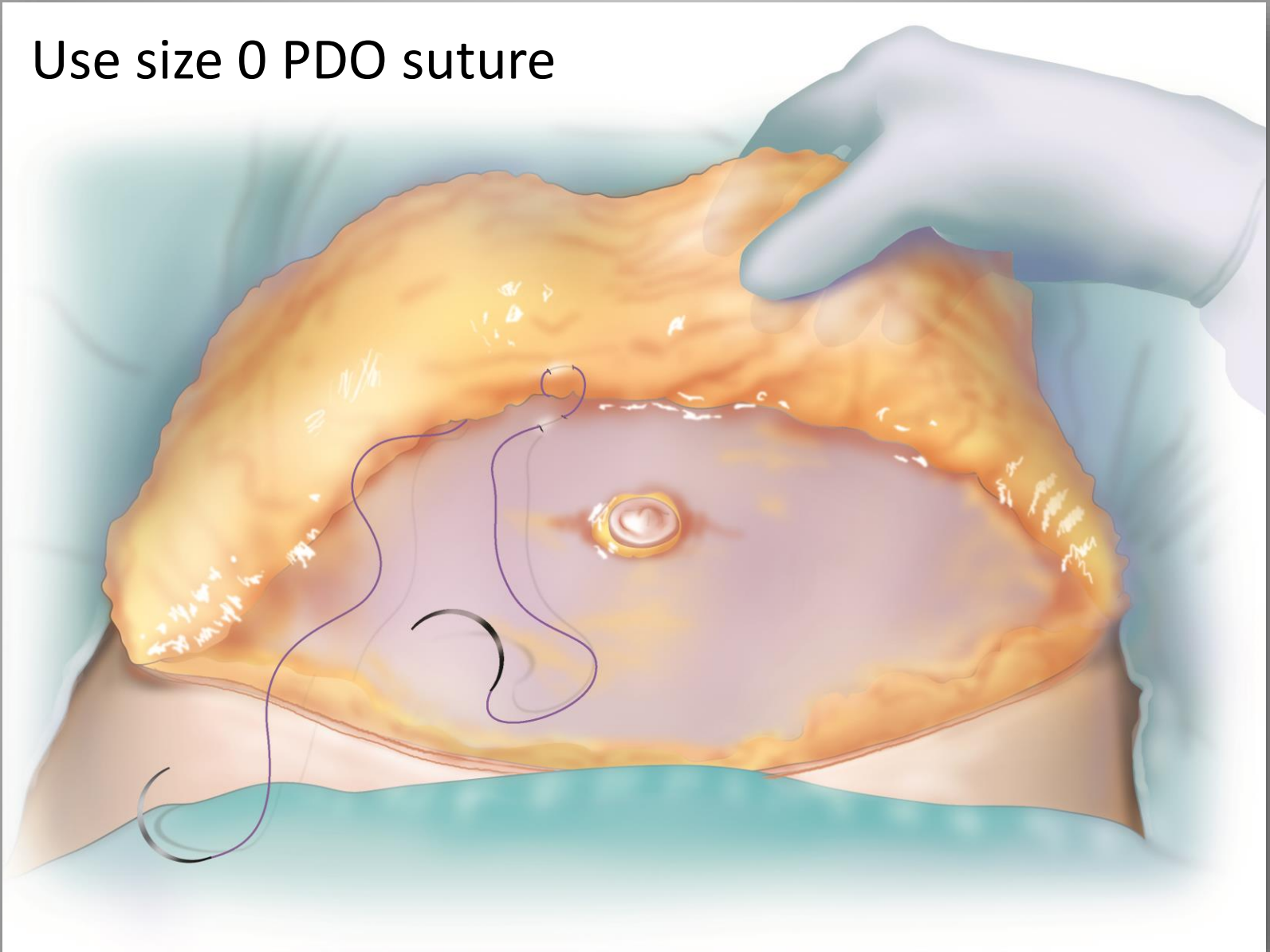


Quill & V-Loc

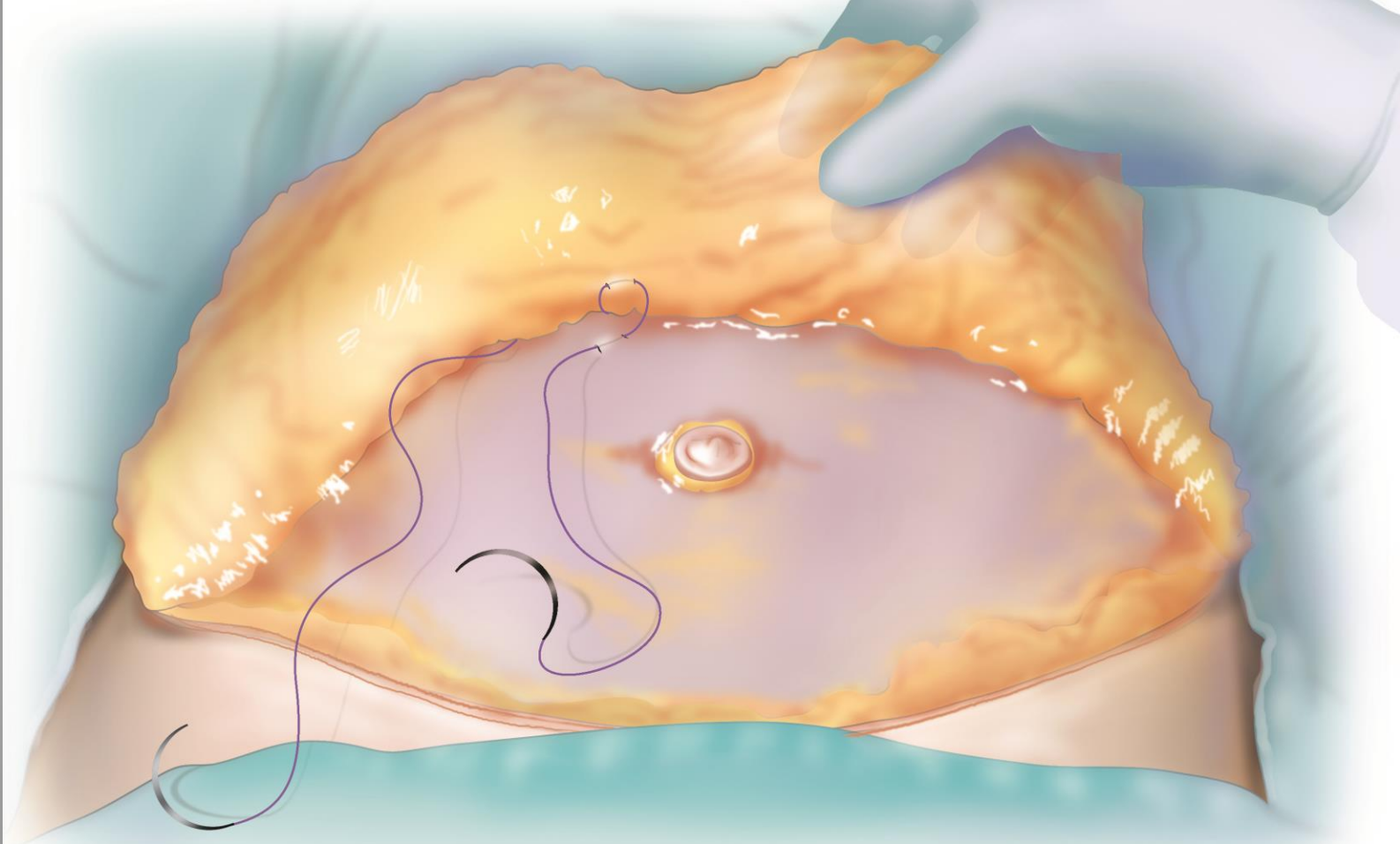




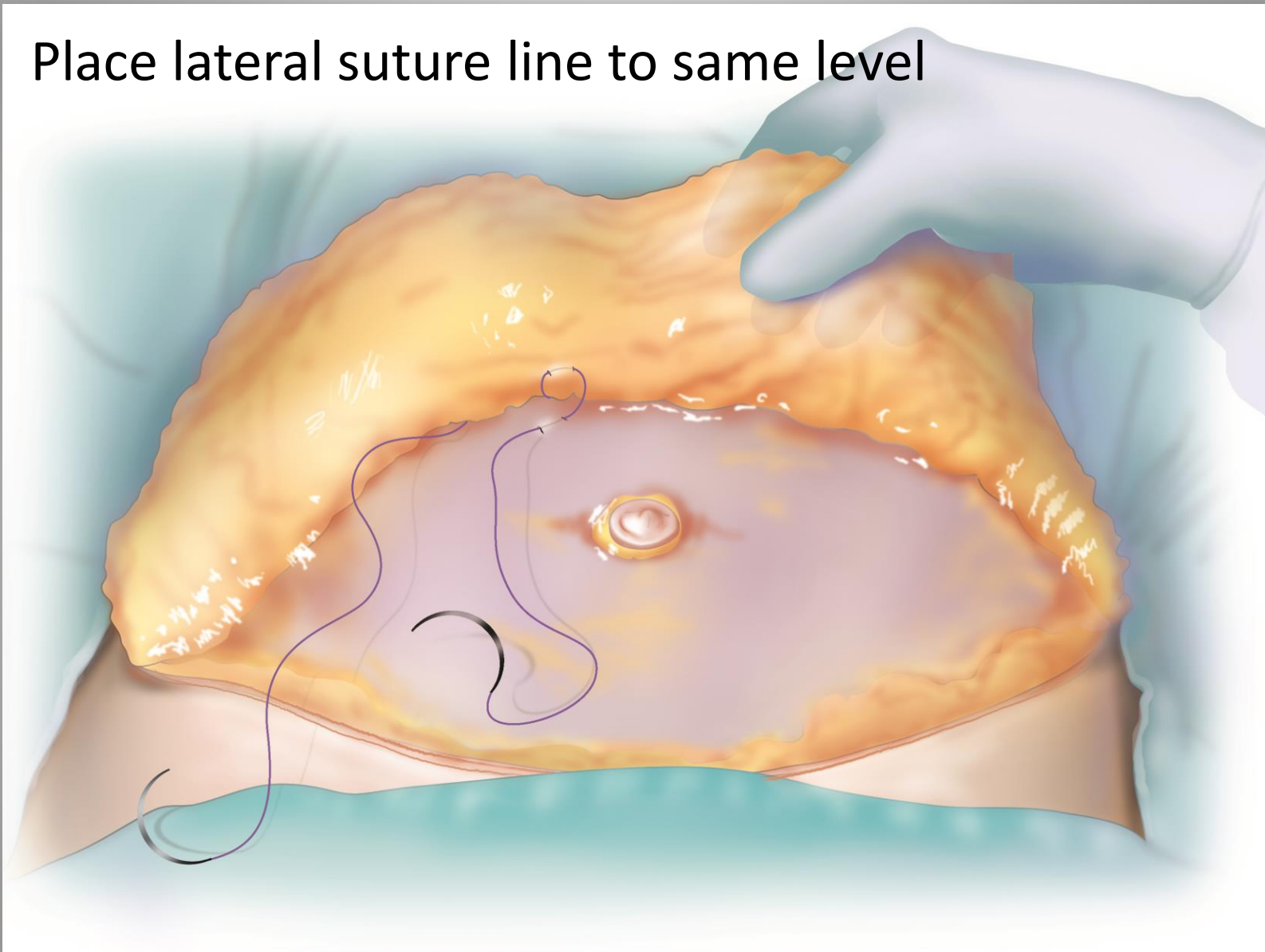
Use size 0 PDO suture



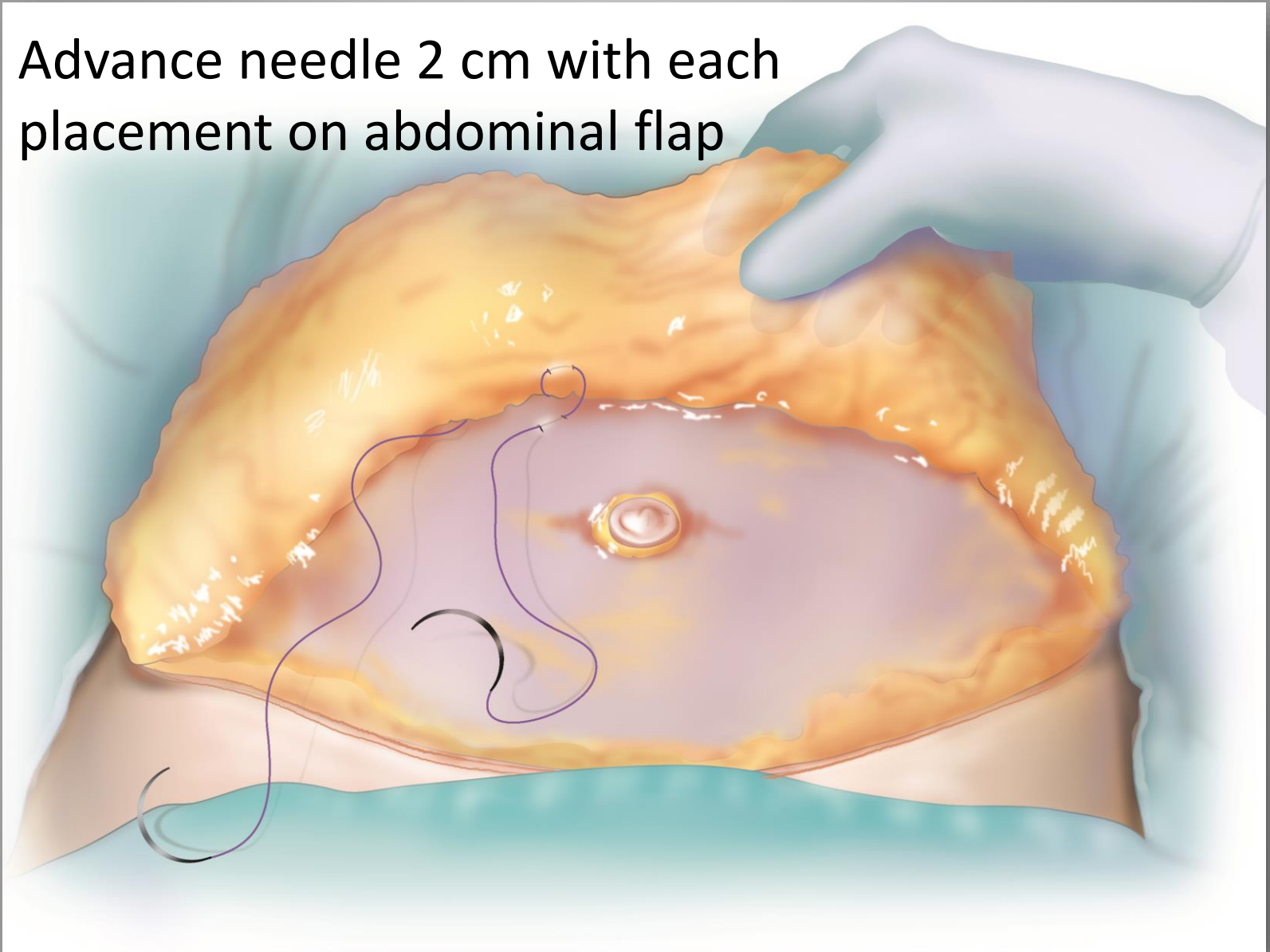
Place medial suture line to umbilical stalk



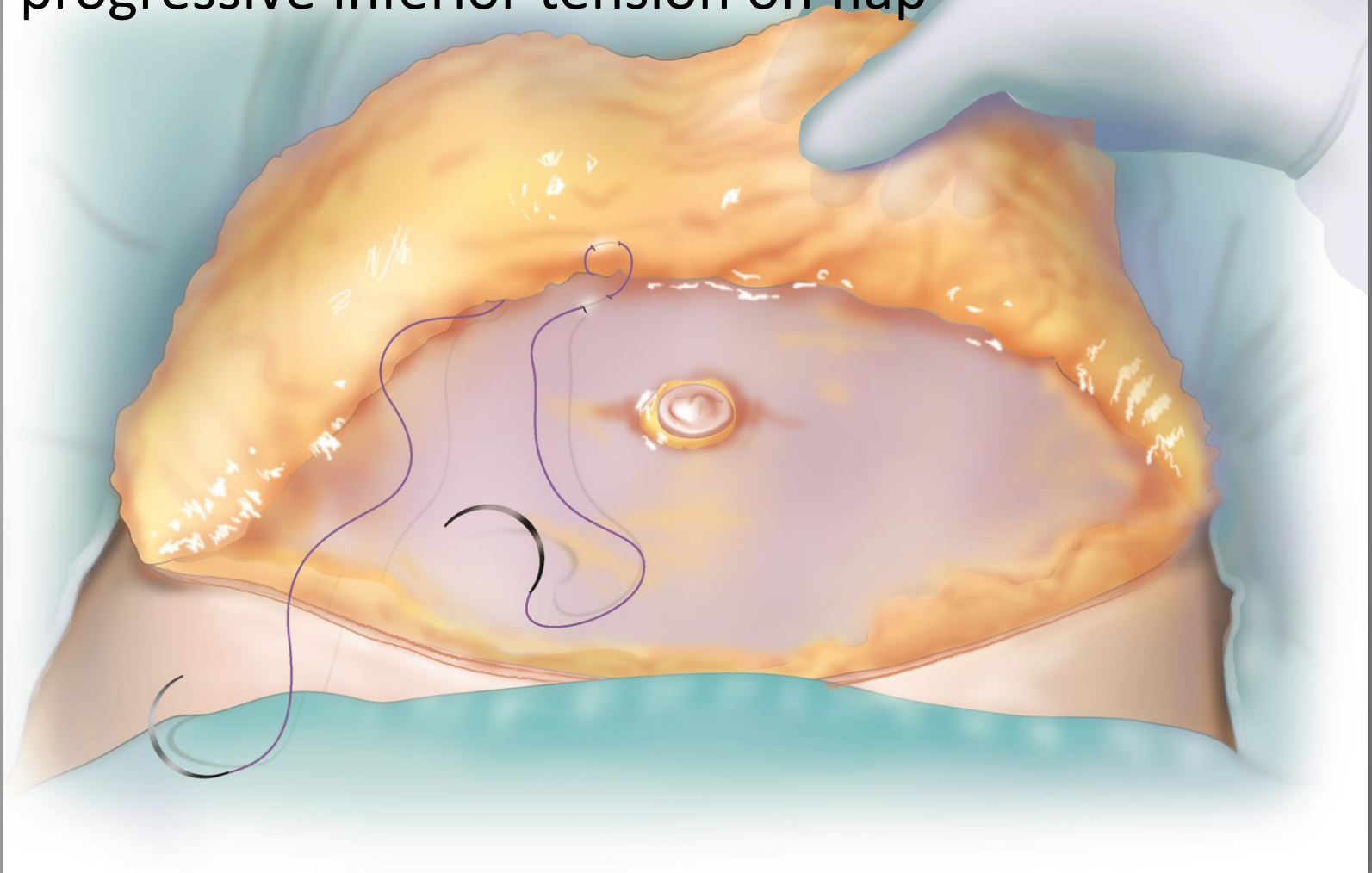
Place lateral suture line to same level



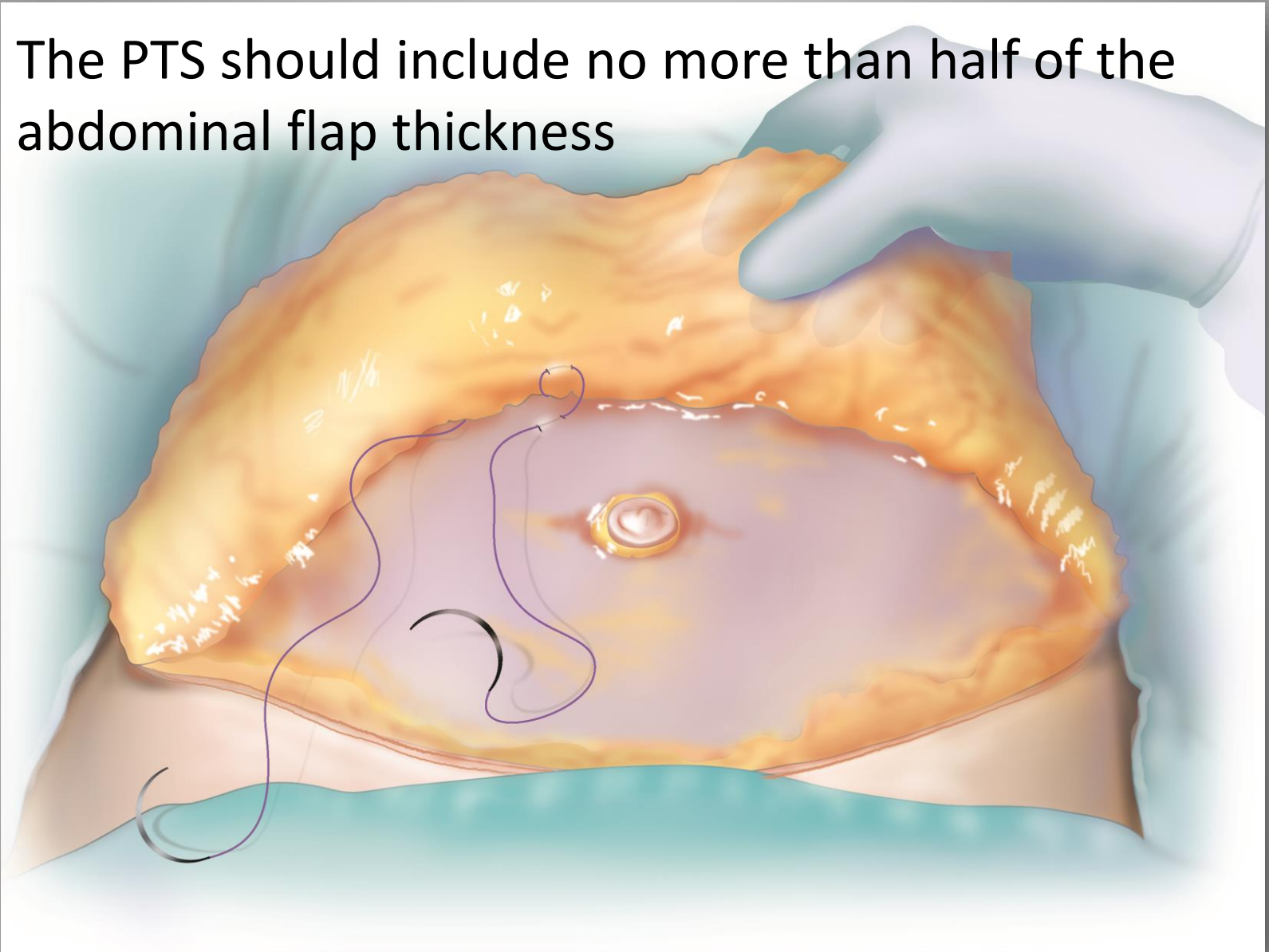
Advance needle 2 cm with each placement on abdominal flap



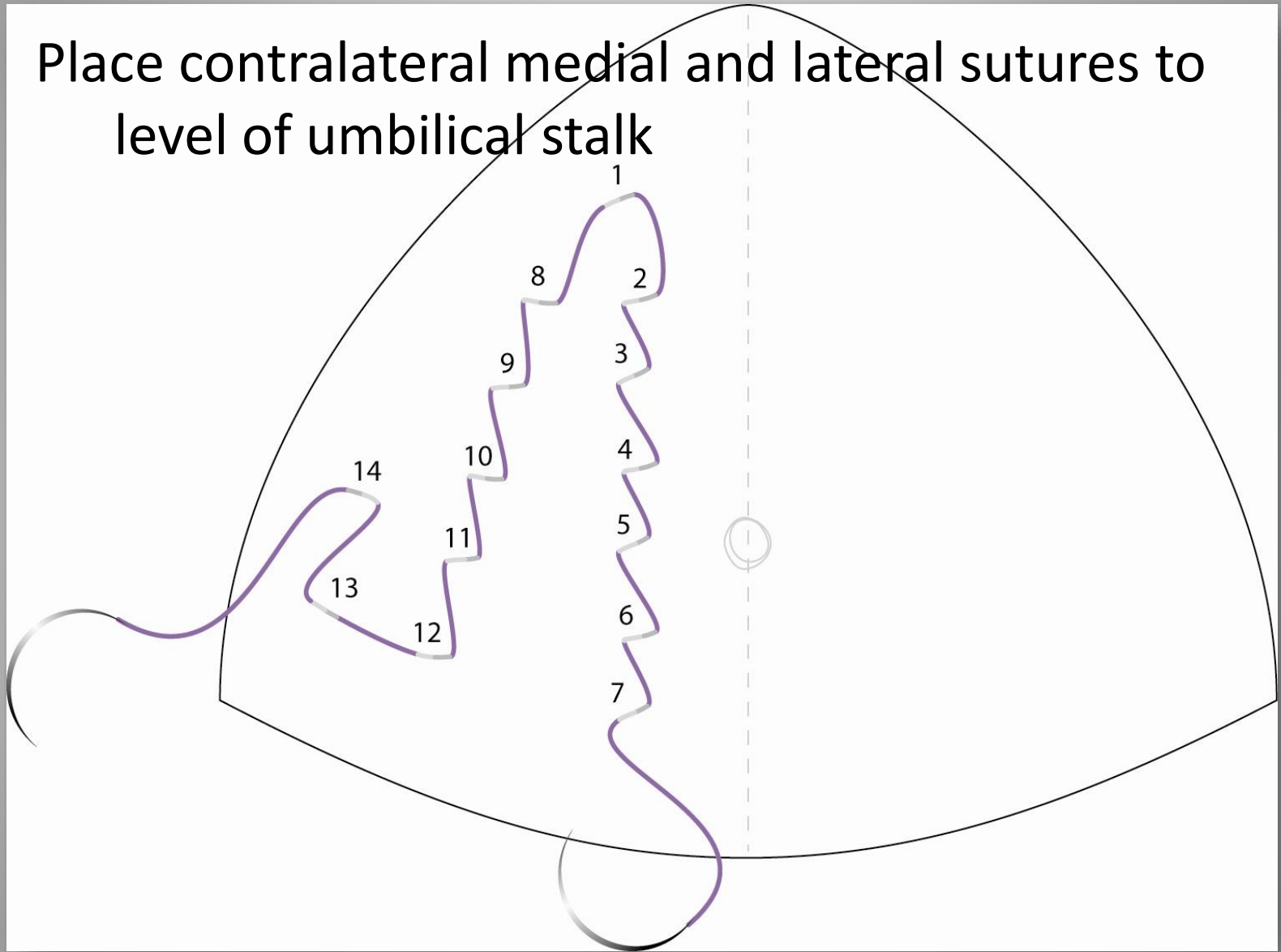
Secure to abdominal wall fascia while maintaining progressive inferior tension on flap



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



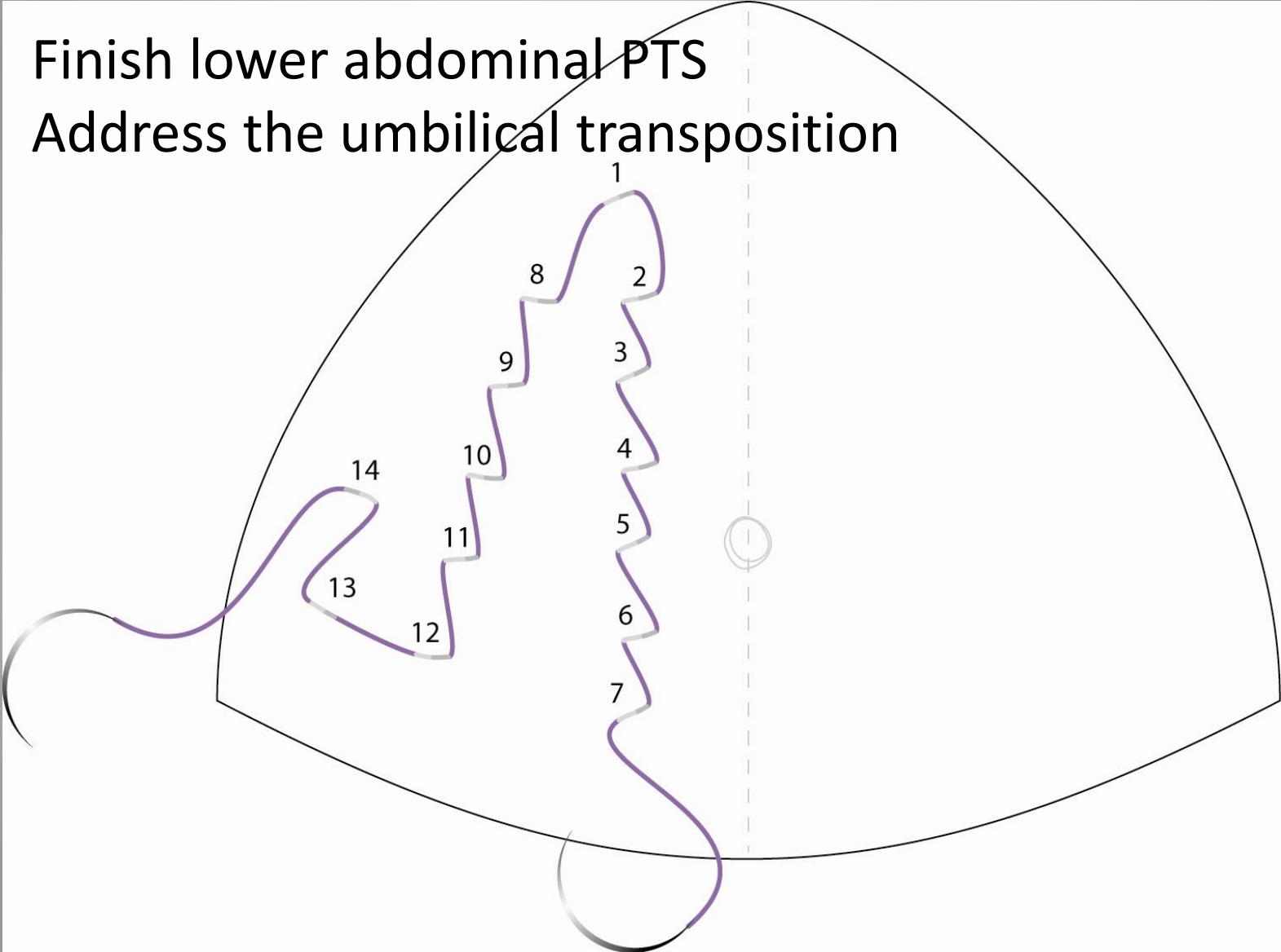
Place contralateral medial and lateral sutures to level of umbilical stalk



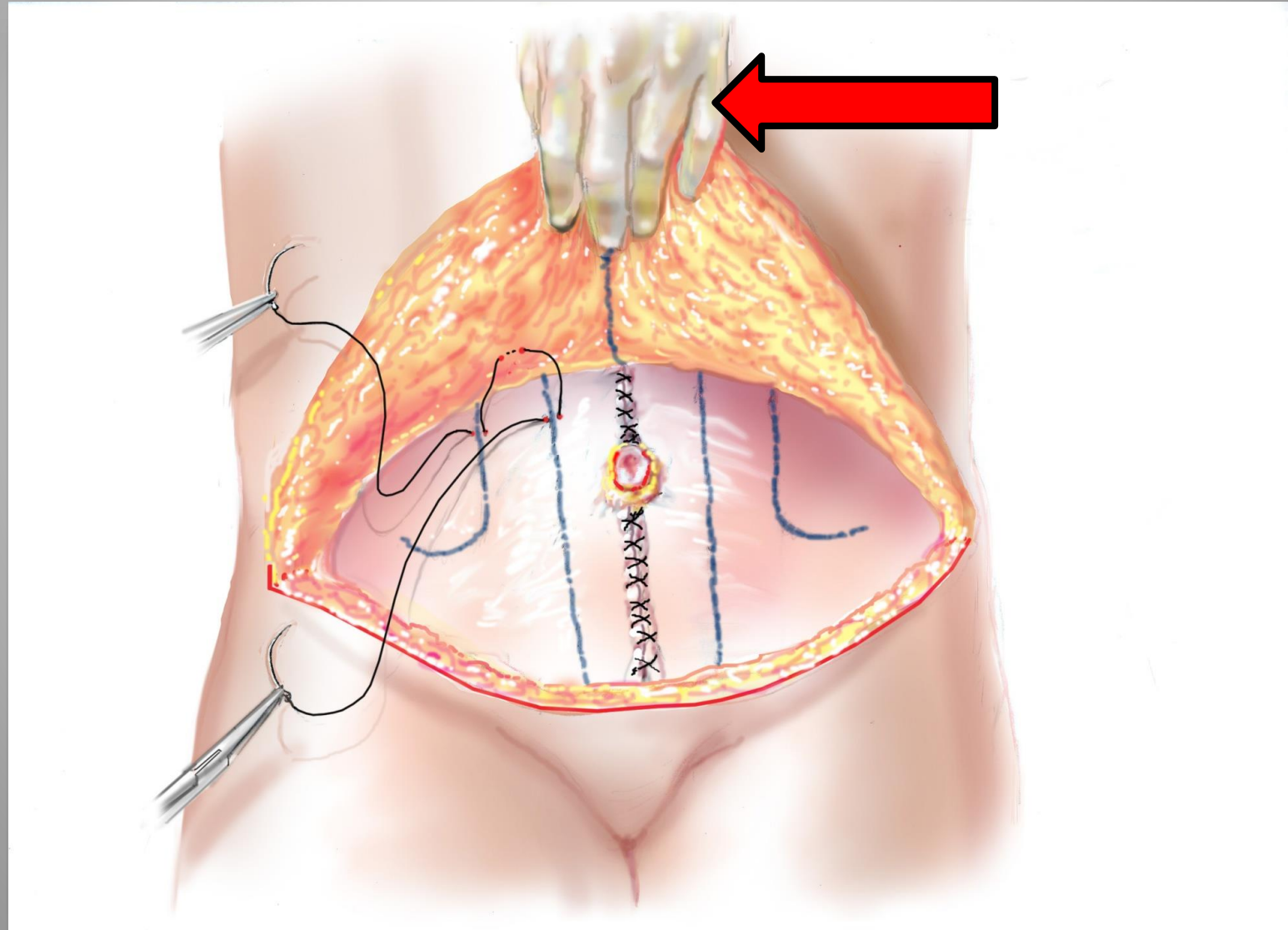


Finish lower abdominal PTS

Address the umbilical transposition



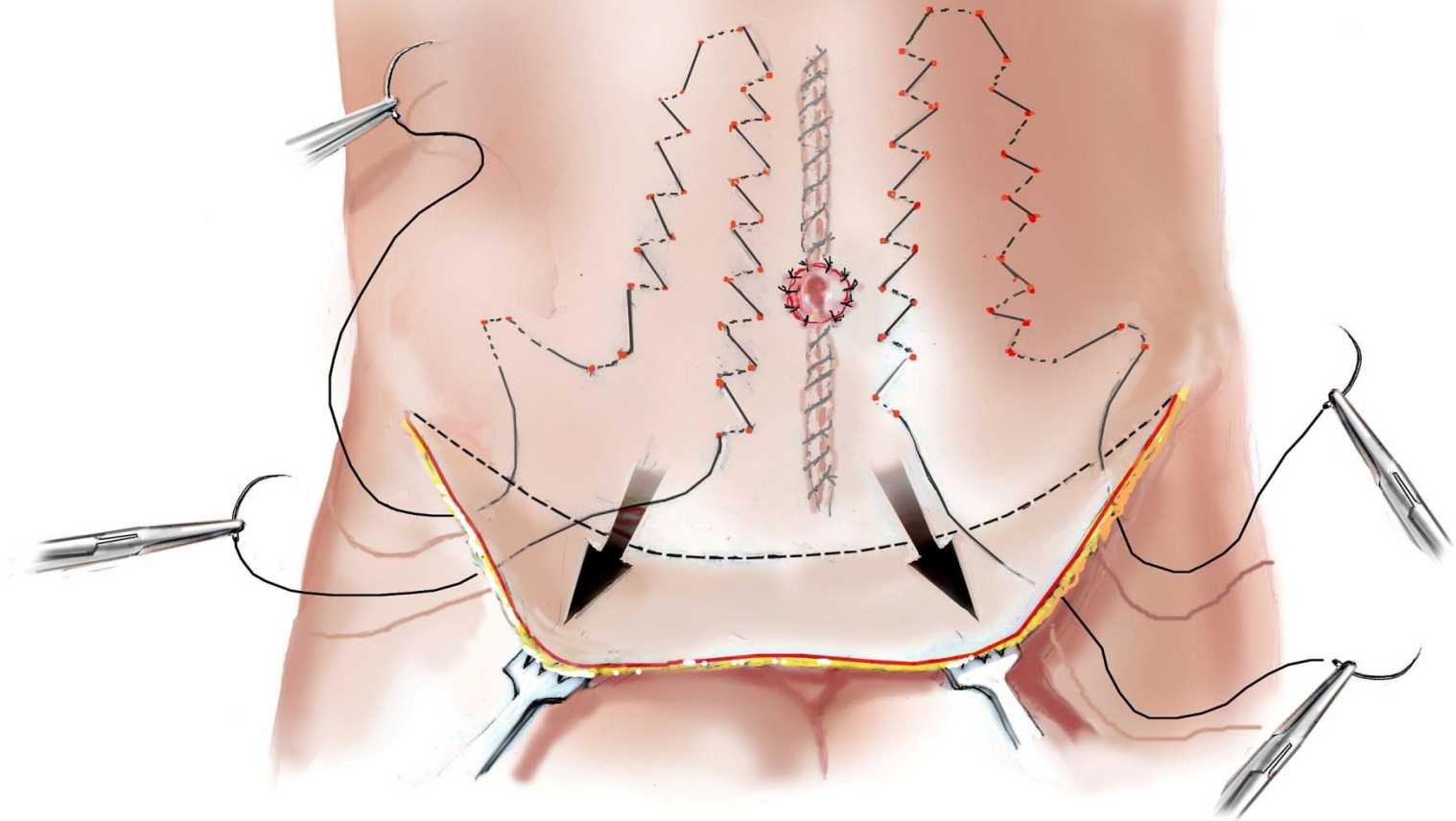
# Barbed Progressive Tension Sutures



# Barbed Progressive Tension Sutures

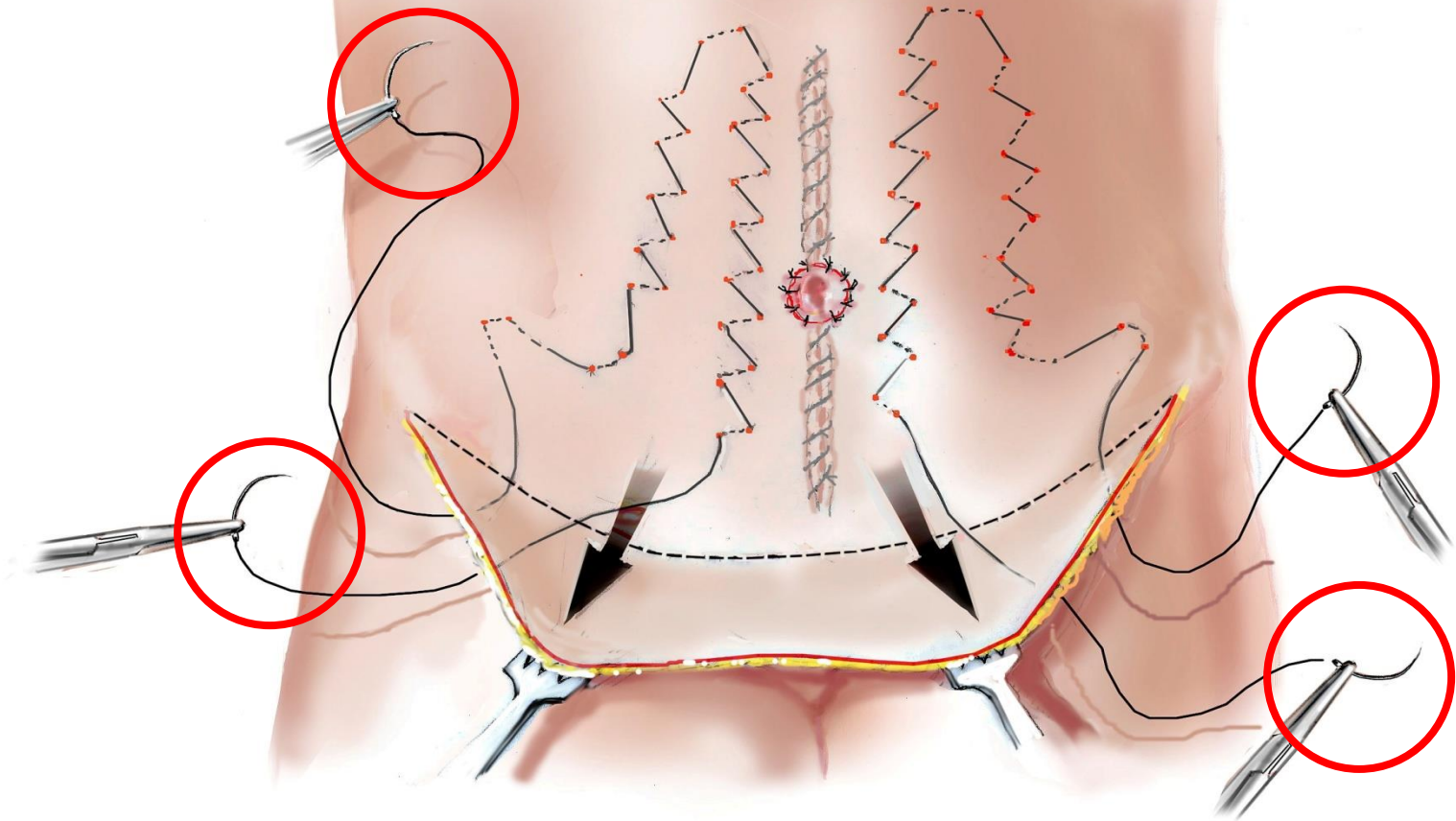
Finish lower abdominal PTS

Address the umbilical transposition

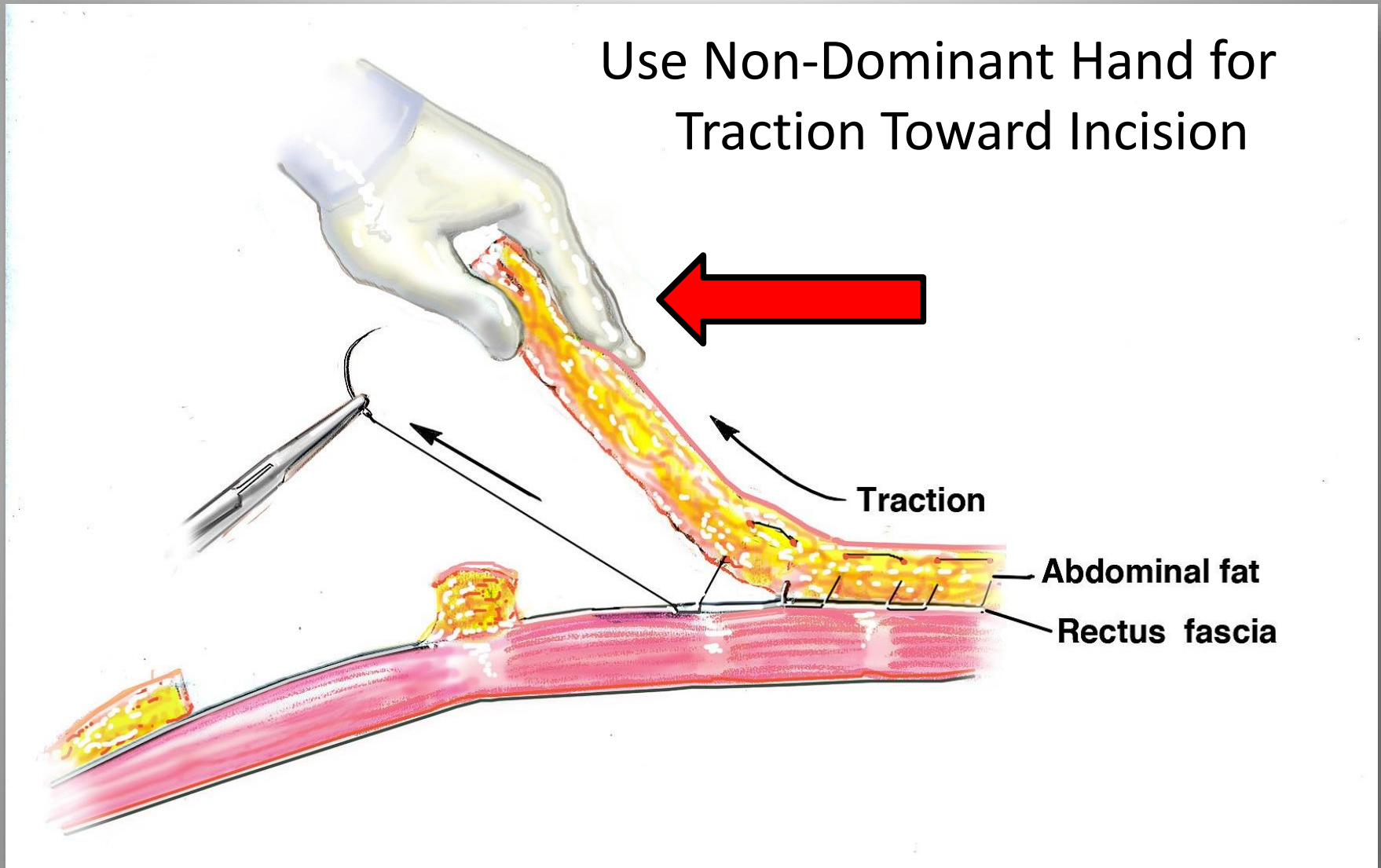


# Barbed Progressive Tension Sutures

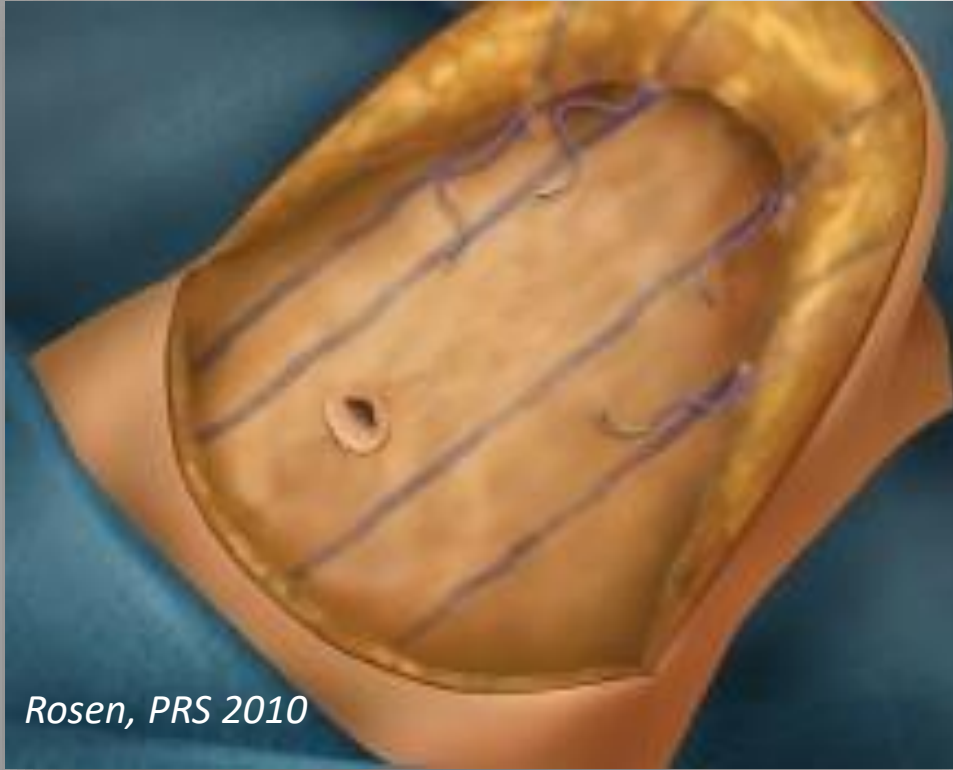
Protect the Needles



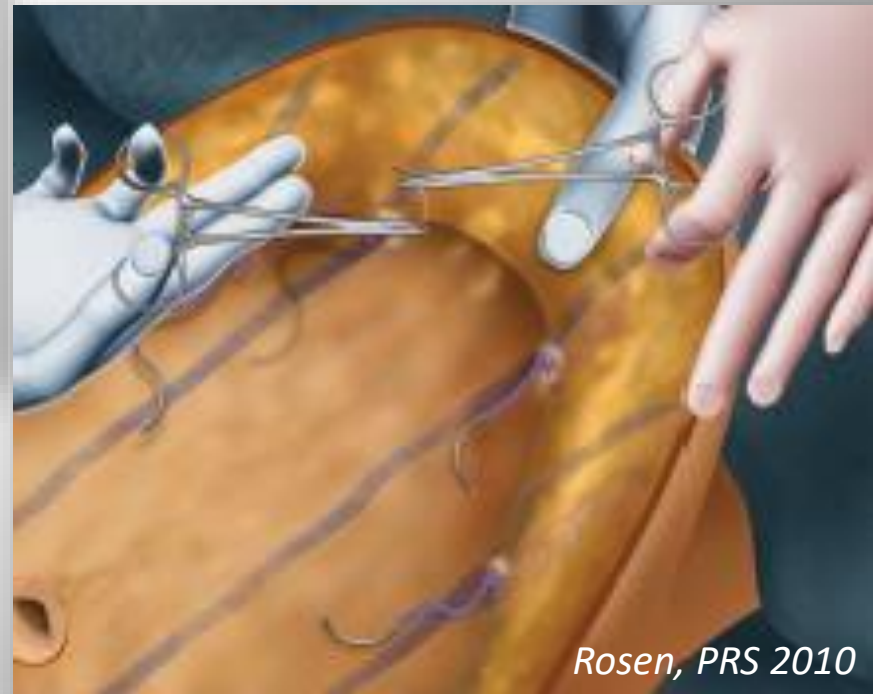
# Barbed Progressive Tension Sutures



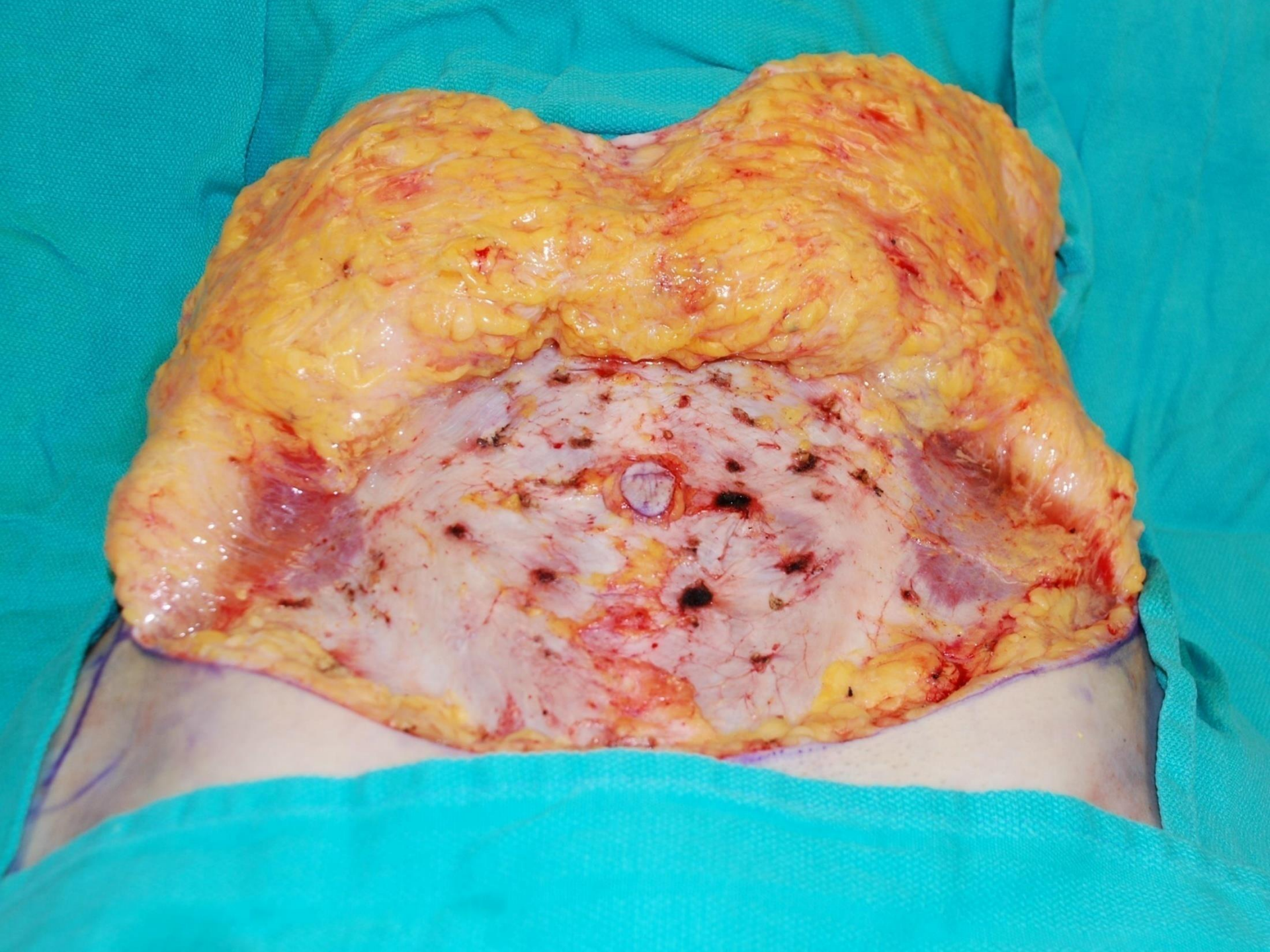
# Unidirectional Barbed Suture

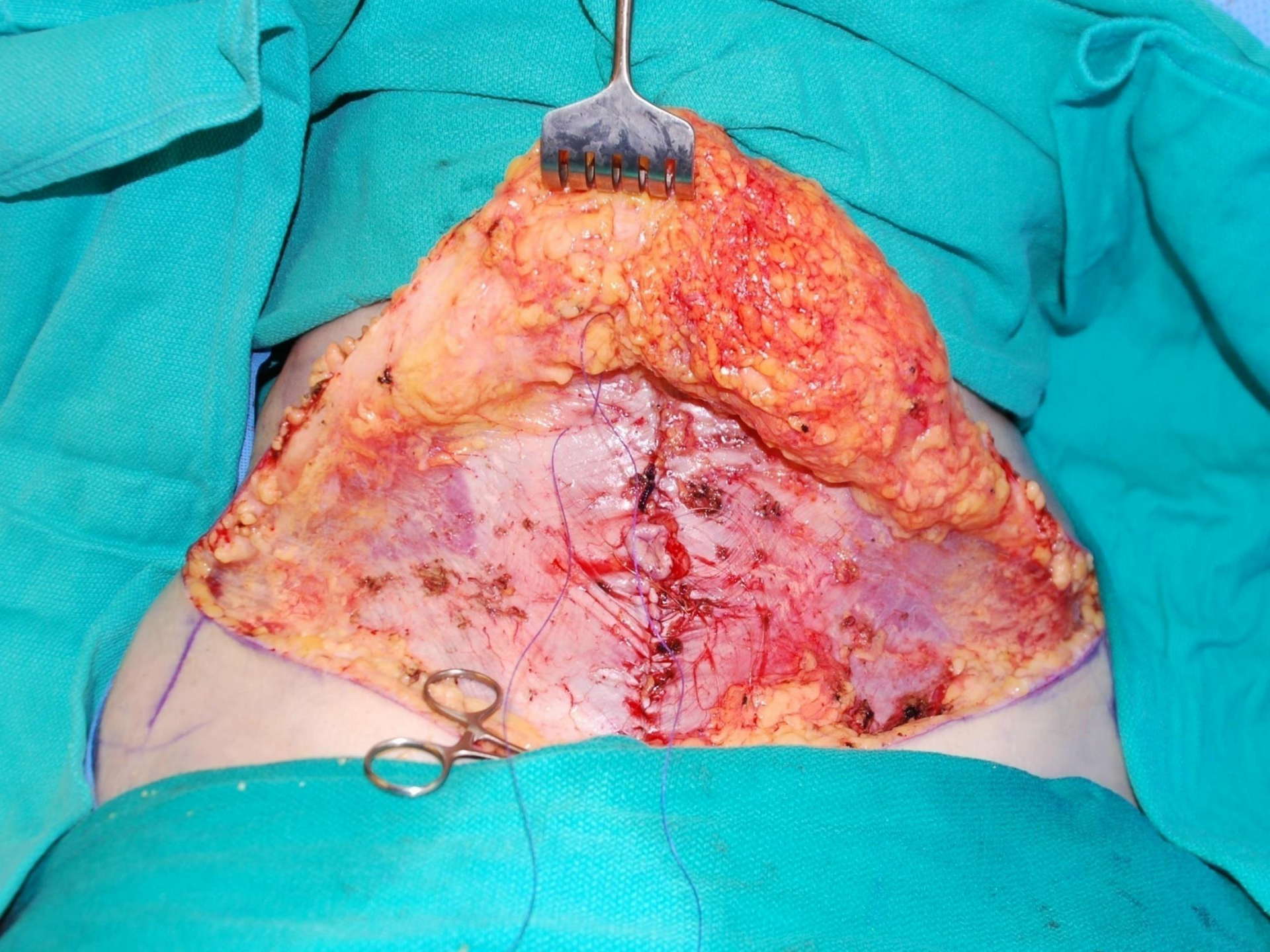


*Rosen, PRS 2010*

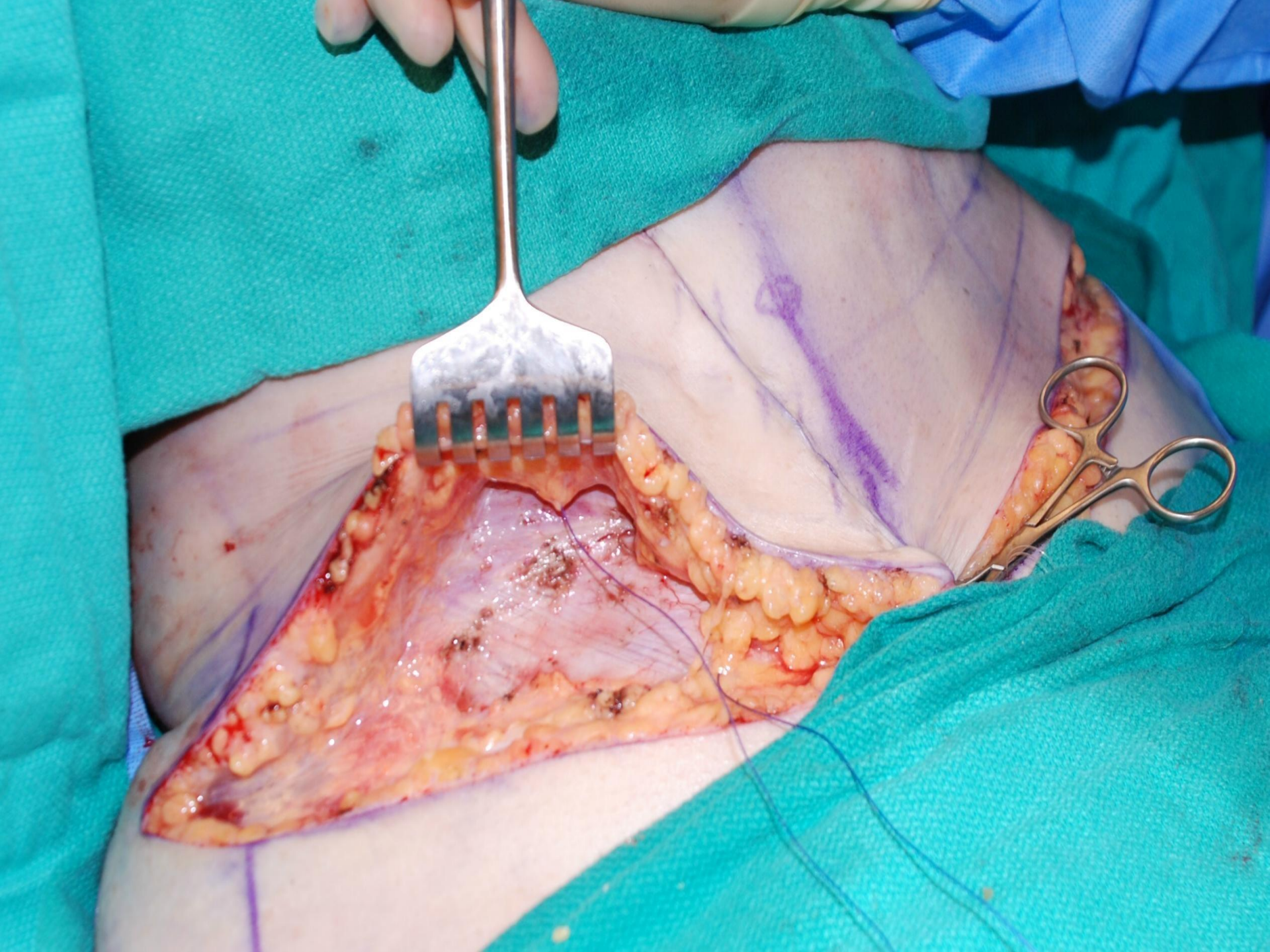


*Rosen, PRS 2010*

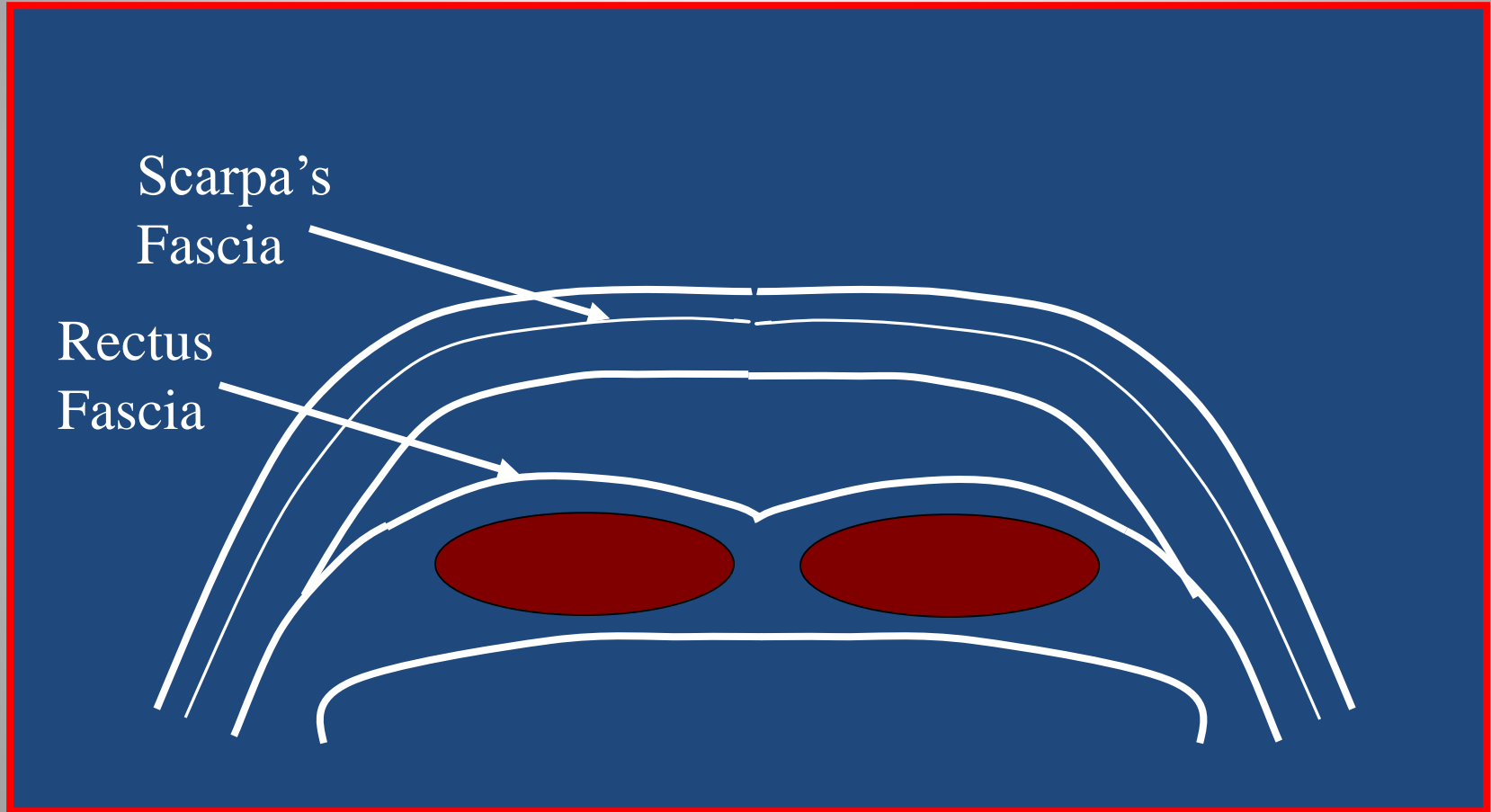






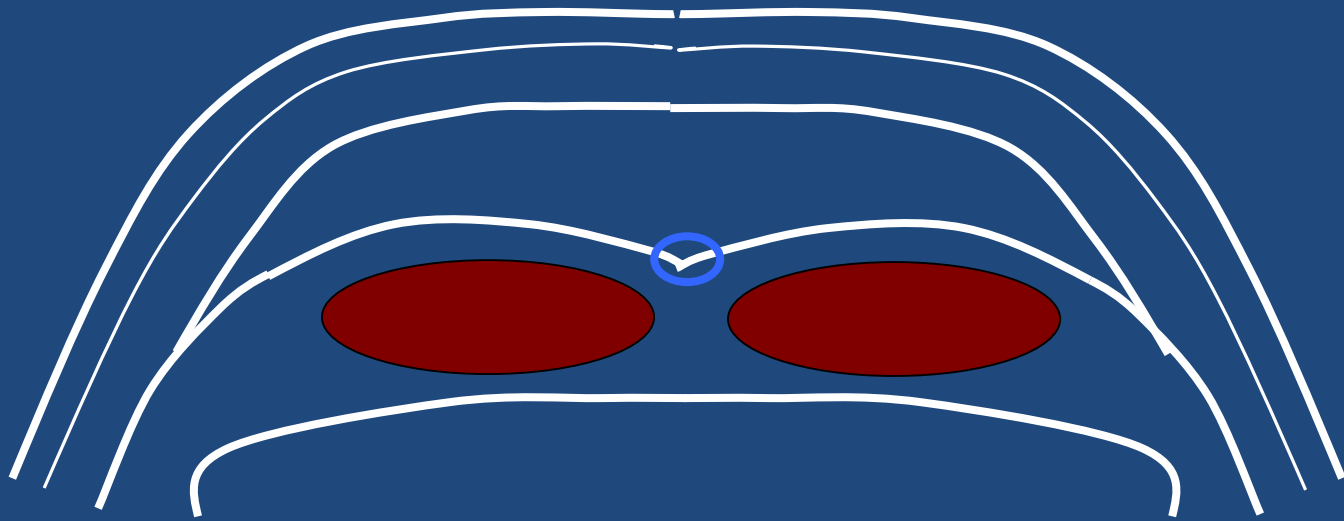


# Layers of PTS



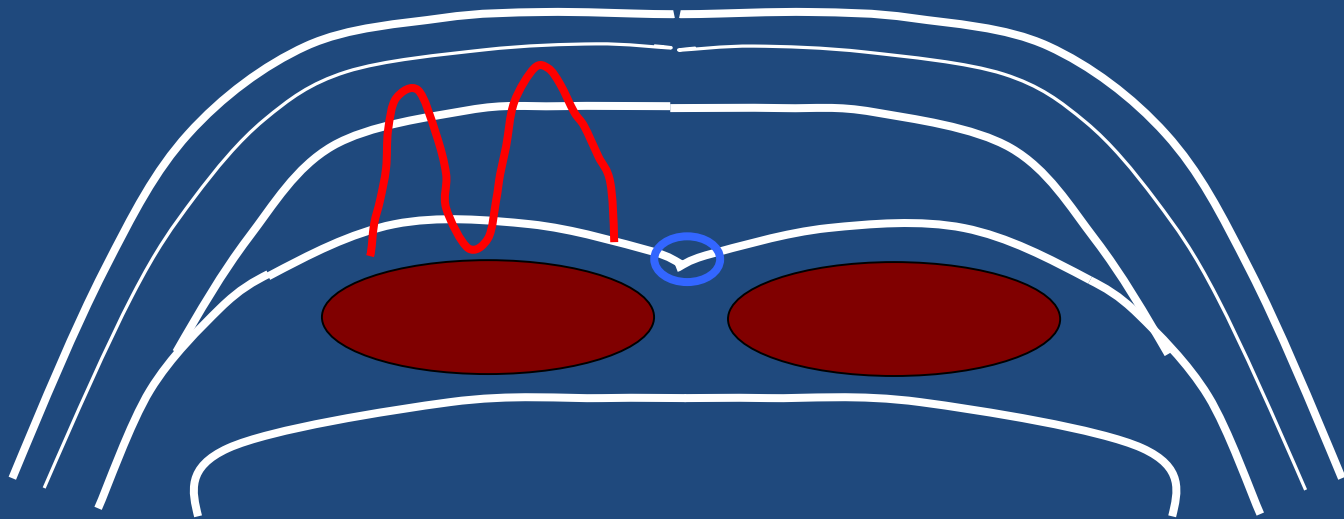
# Layers of Quill Sutures

Rectus Fascia Plication: Choice



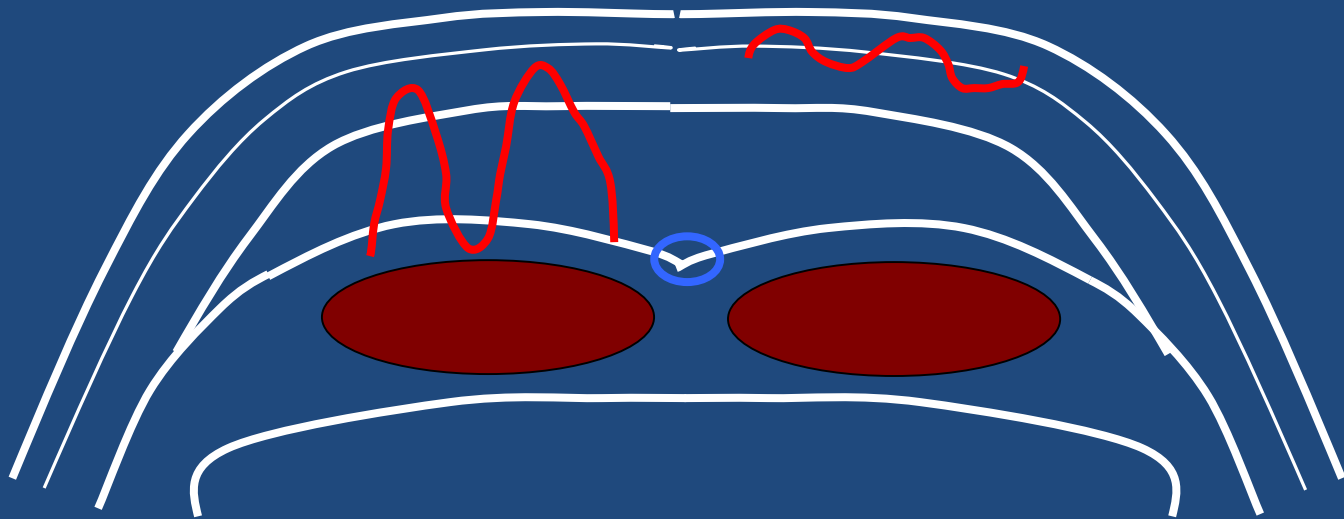
# Layers of Quill Sutures

Progressive Tension Suture  
Quill PDO Taper Point  
Size 0, 24 cm or 30 cm



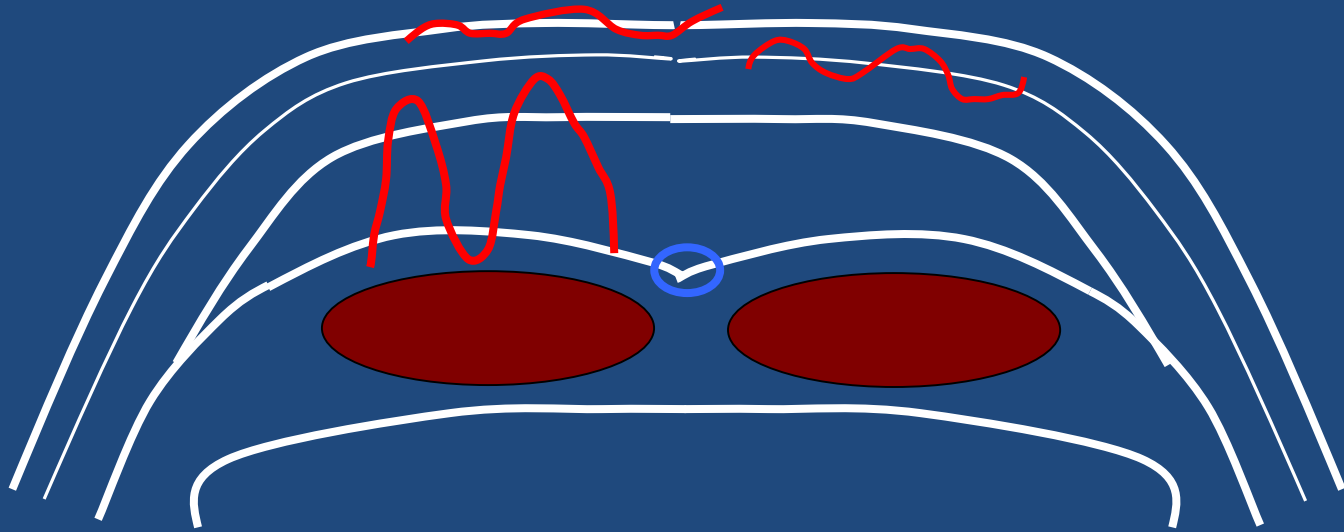
# Layers of Quill Sutures

Scarpa Fascia Suture  
Quill PDO Taper Point  
Size 0, 24 cm or 30 cm



# Layers of Quill Sutures

Dermal Closure  
Quill Monoderm Diamond Point  
Size 2-0



# No Drain Body Contouring Patient

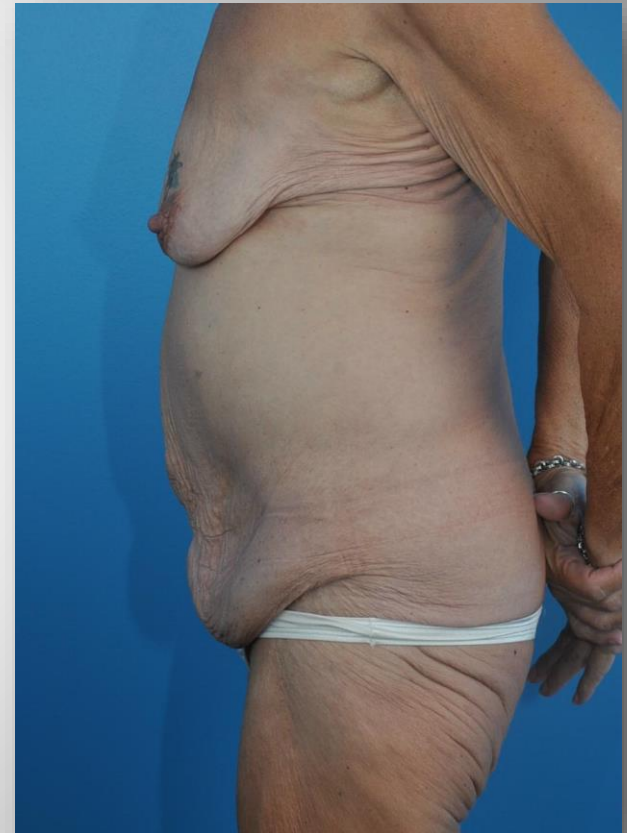


Arm lift

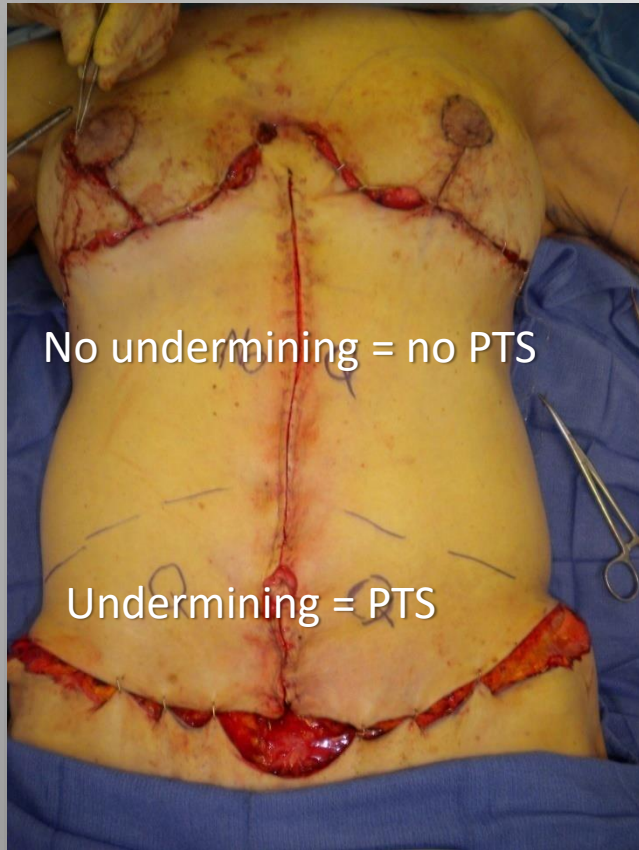
Mastopexy  
with lateral auto-  
augmentation

Body lift

Thigh lift



# No Drain Body Contouring Patient





# No Drain Body Contouring Patient



**Not a Drain**



**in Sight!**

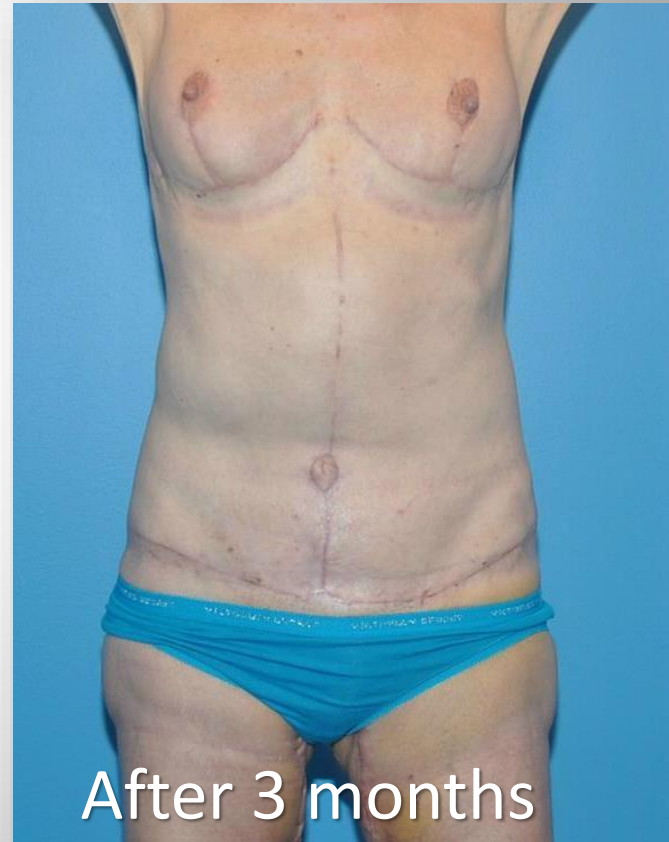
# No Drain Body Contouring Patient



# No Drain Body Contouring Patient

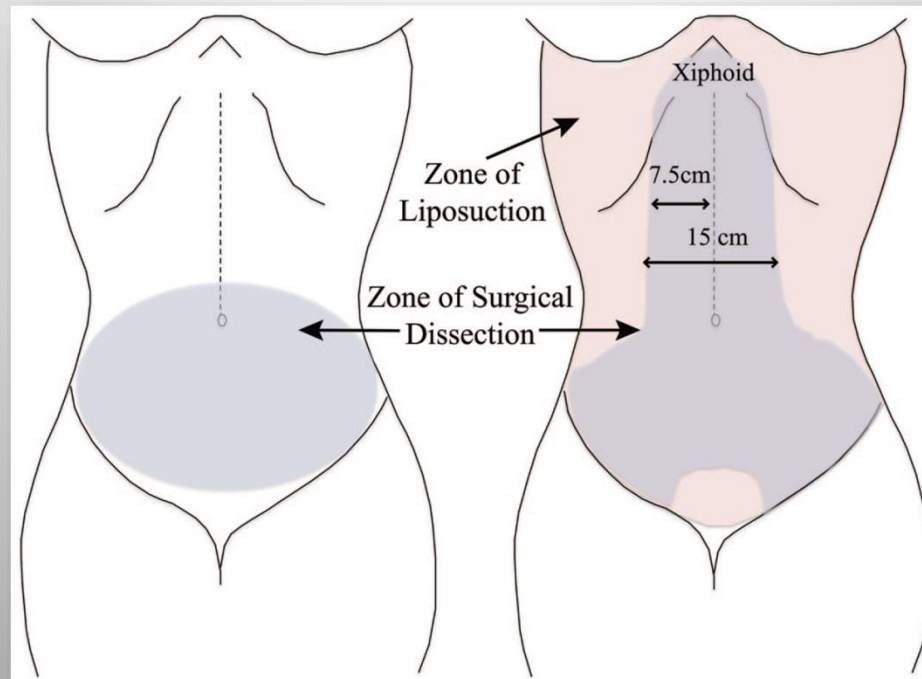


# No Drain Body Contouring Patient



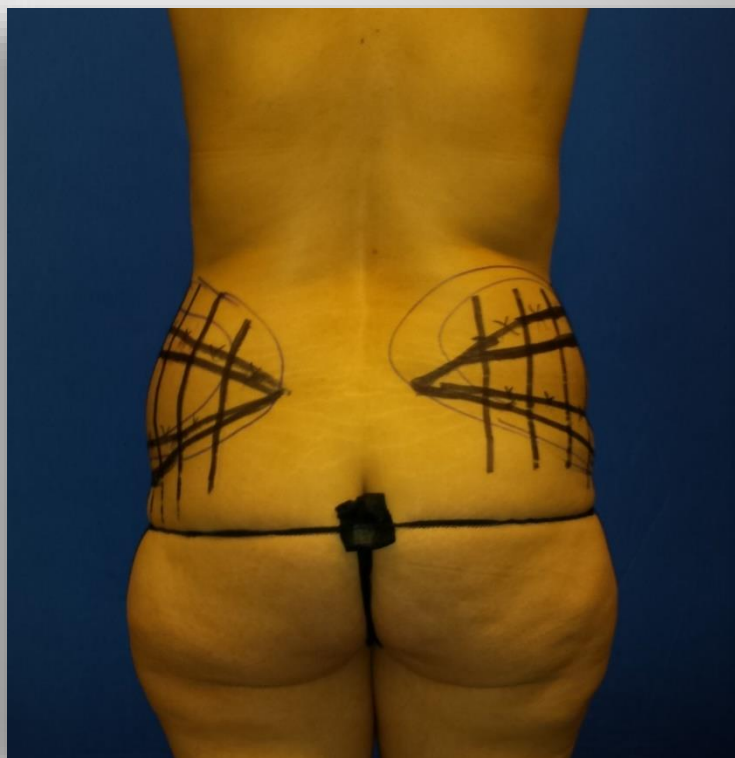
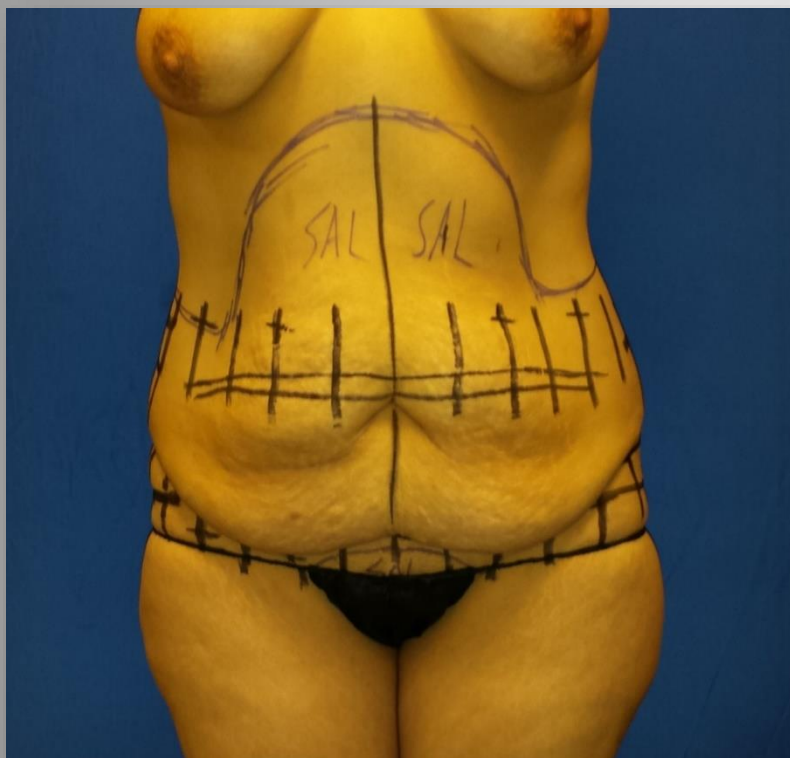
# Lipo-Abdominoplasty

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

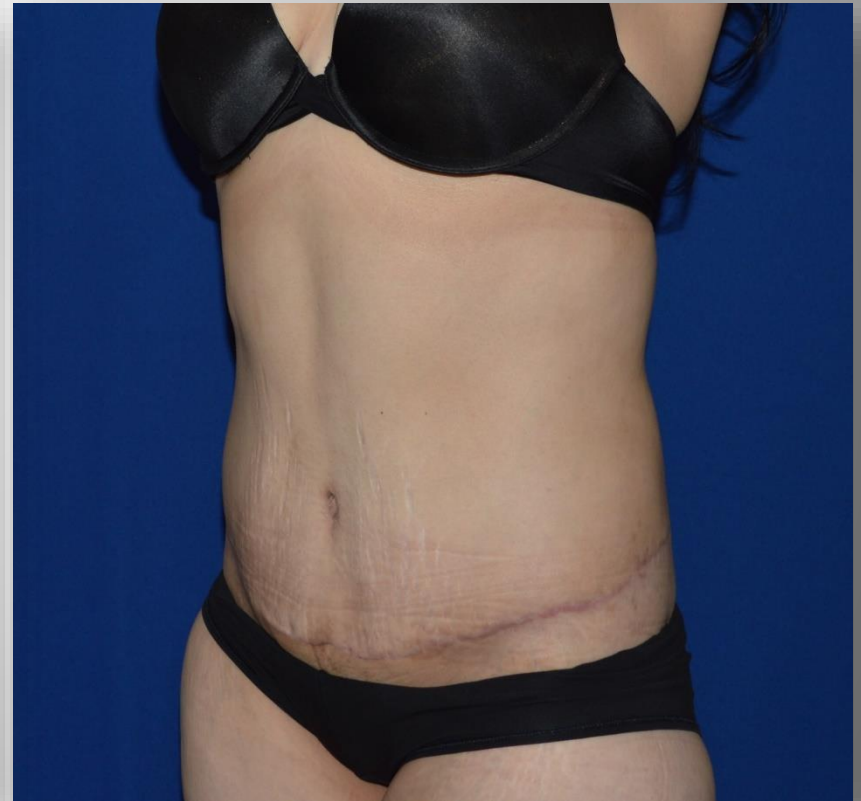


*\*Weiler 2010, Heller 2008, Samra 2010*

# Liposuction of Abdominoplasty Flap



# Extended Lipo-Abdominoplasty



# Extended Lipo-Abdominoplasty





# No Drains No Suture

## Body Contouring

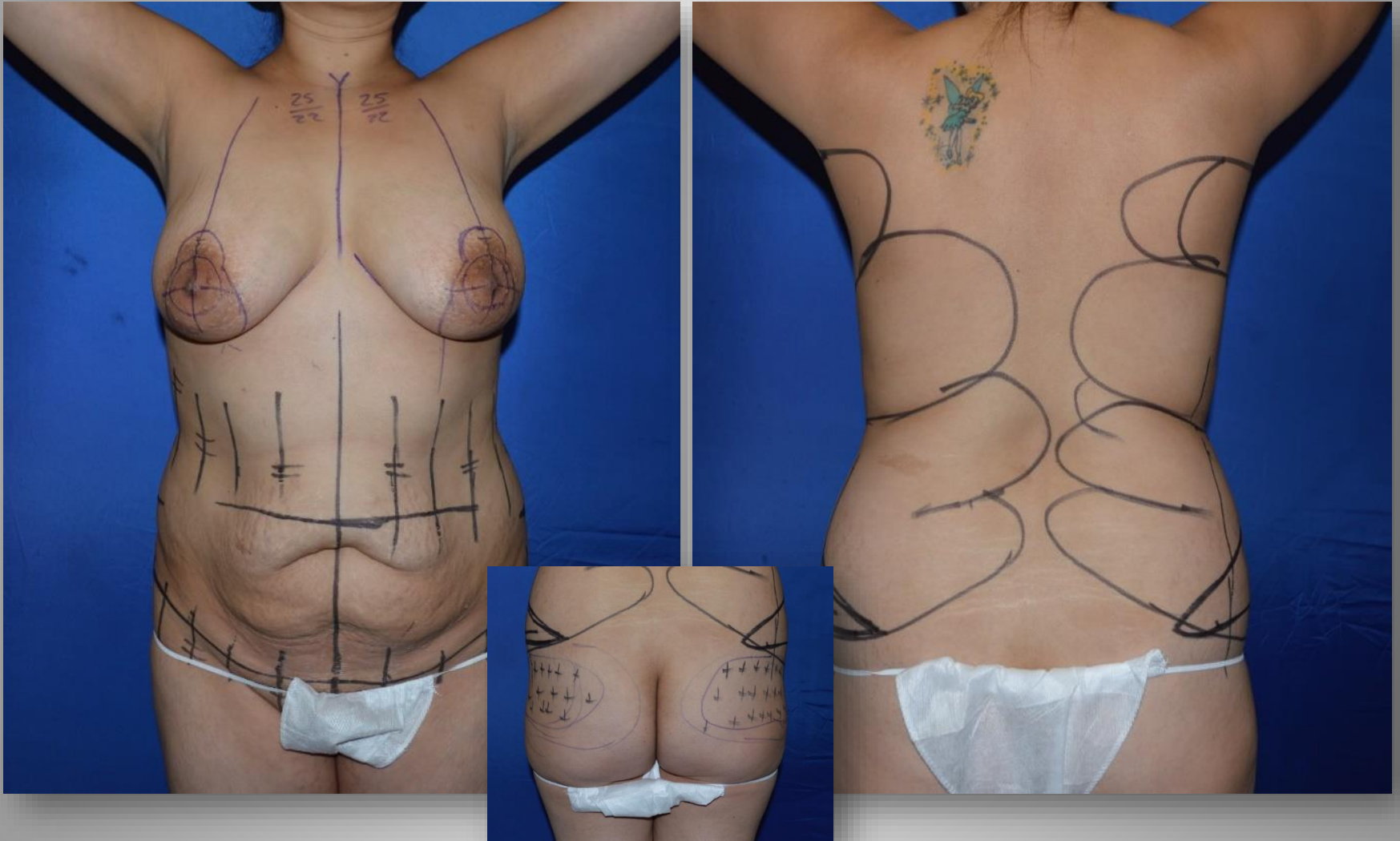
### Lipoabdominoplasty Without Drains or Progressive Tension Sutures: An Analysis of 100 Consecutive Patients

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

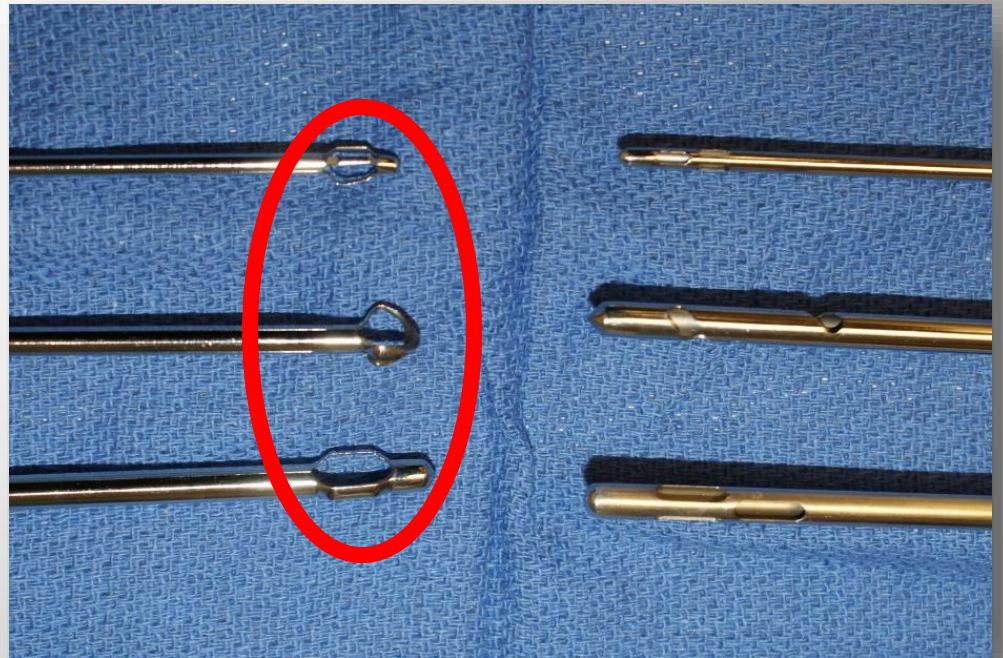
# No Drains No Suture



# Treat Entire Trunk



# No Drain Lipo-Abdominoplasty



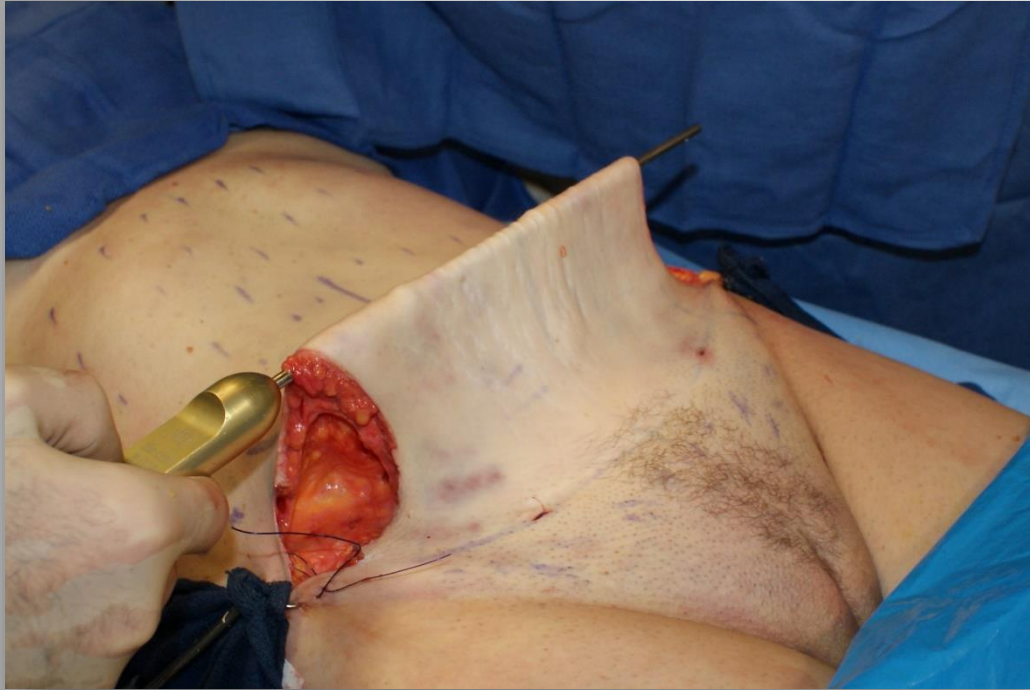
# No Drain Lipo-Abdominoplasty



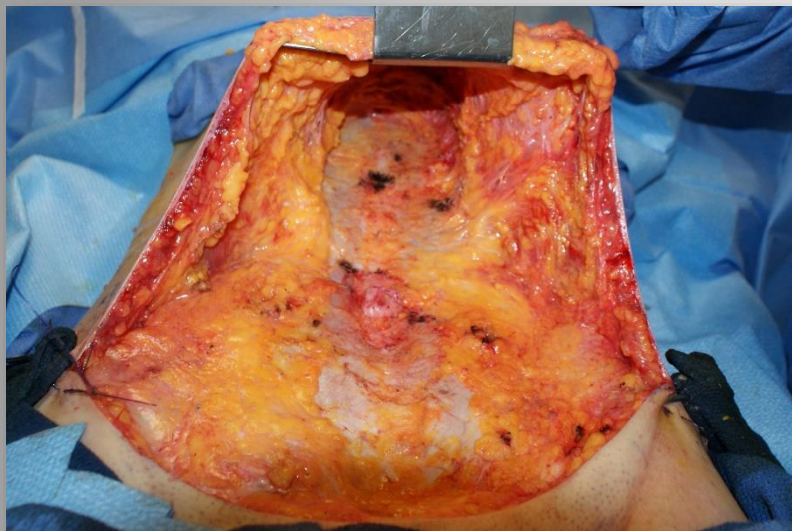
# No Drain Lipo-Abdominoplasty



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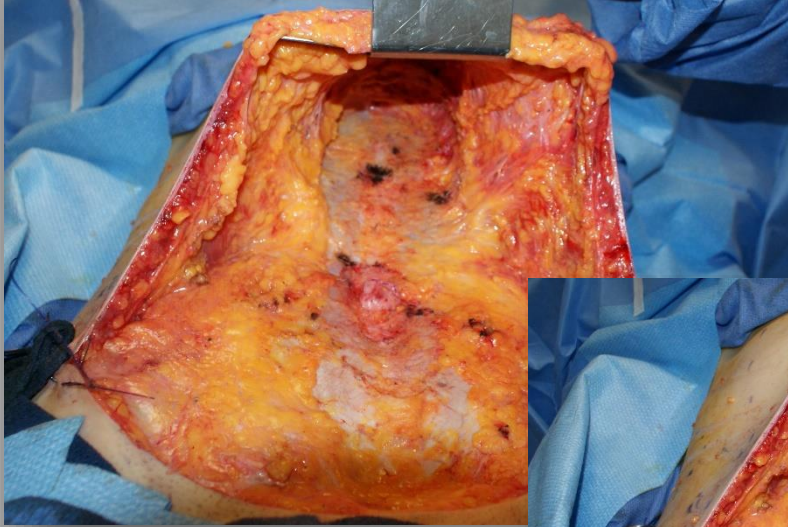


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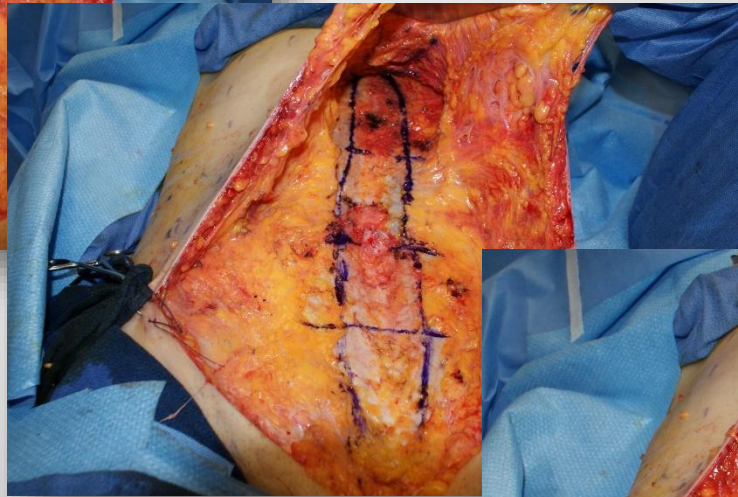
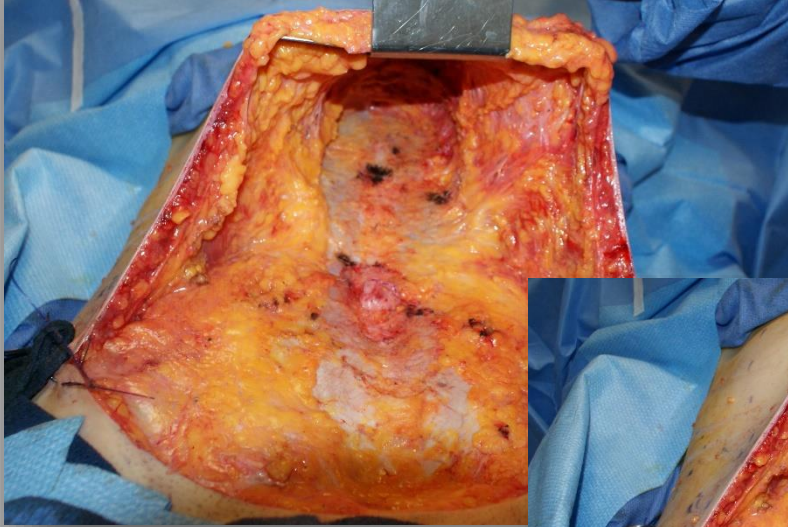




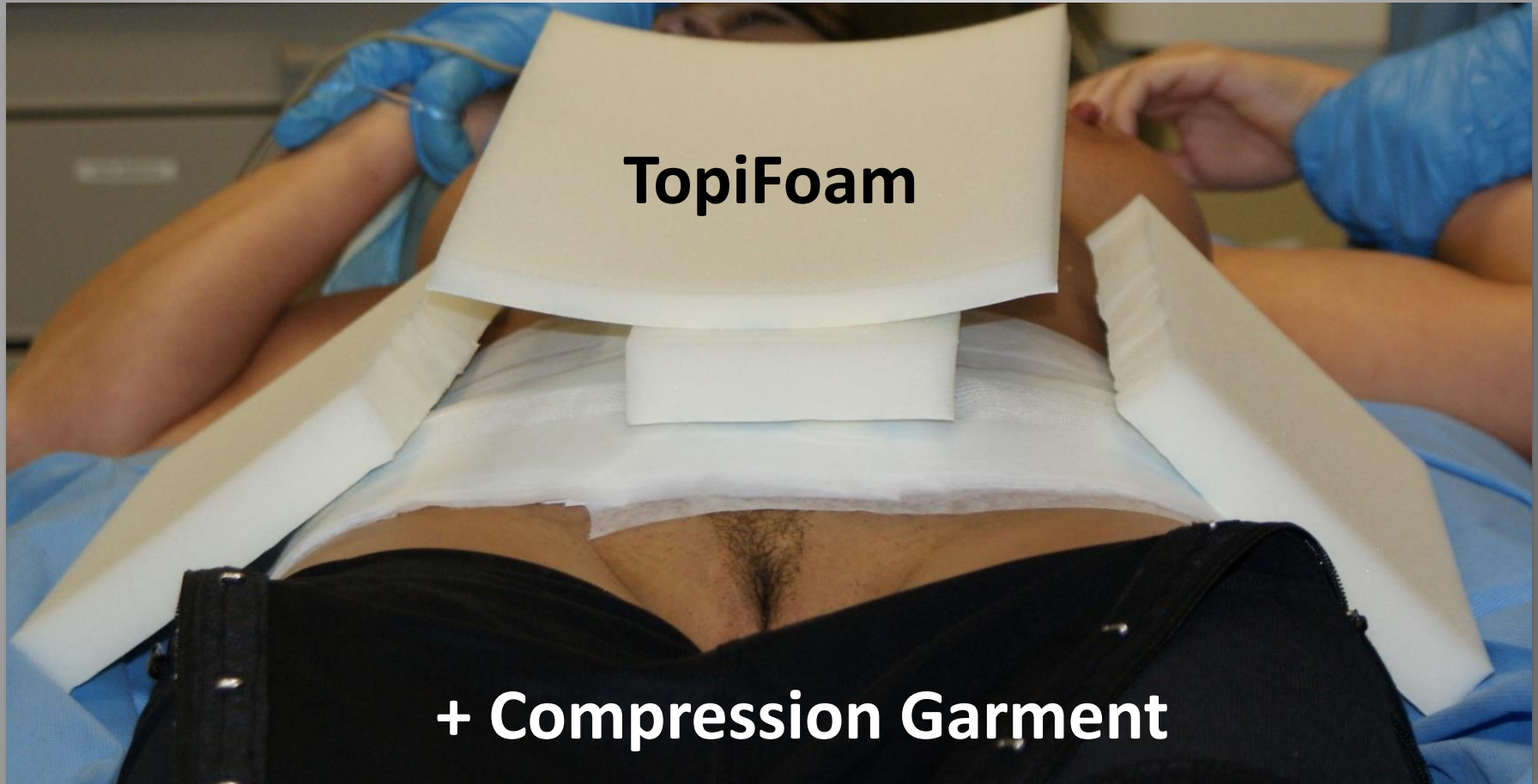
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# Compression



**+ Compression Garment**

**+/- Soft Abdominal Binder**

# 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!



# Contact Information

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# Video Presentation



# No Drain Abdominoplasty: No More Excuses

*Karol A Gutowski, MD, FACS*

Instructional Course

plastic  
surgery

THE MEETING



Orlando

OCTOBER 6-10 2017

