

# Avoiding Seromas with Progressive Tension Sutures: Easier than You Think

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*Private Practice*

*University of Illinois & University of Chicago*



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CAESARS PALACE LAS VEGAS



PROGRAM CO-CHAIRS:  
Amy Alderman, MD  
Dennis Hammond, MD  
James Zins, MD

# Disclosures

Merz

Syneron/Candela

May use brand names due to lack of  
distinguishing generic names

# 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



But we tried 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



## 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**



# 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](#)

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### 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**

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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

[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!!

# Clinical Experience

- 330 consecutive abdominoplasties
  - 63 circumferential
  - 291 with flank liposuction
  - 81 massive weight loss
  - 283 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 for at least 2 weeks

# Results

- 1 epigastric seroma
  - One aspiration
- 17 lower abdominal seromas
  - Multiple aspirations
  - 7 required SeromaCath drain
- 2 major wound dehiscence
- 2 hematomas drained in OR
- 4 infected seromas
  - Incised & drained in office

**Overall 5% seroma rate is less than or equal to techniques using drains**

# Pivotal Publication

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## Techniques in Cosmetic Surgery

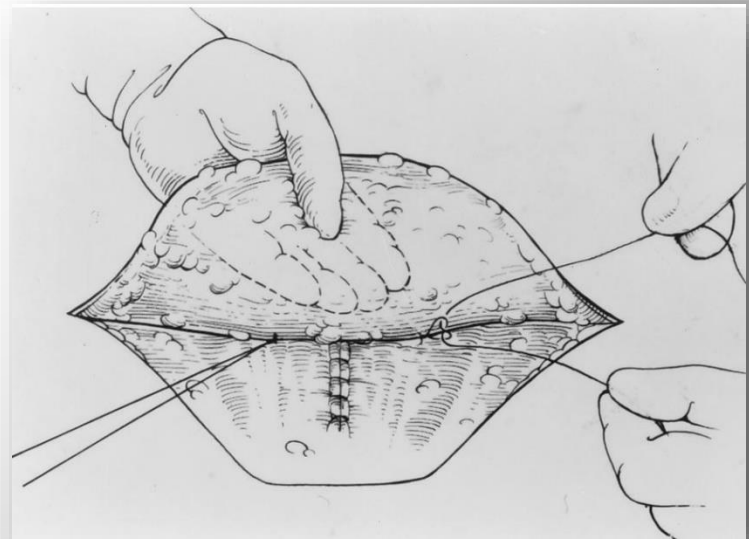
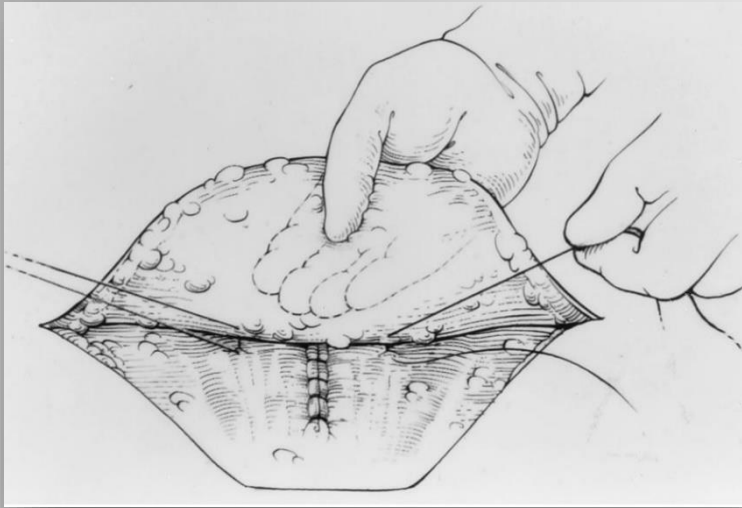
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### Progressive Tension Sutures: A Technique to Reduce Local Complications in Abdominoplasty

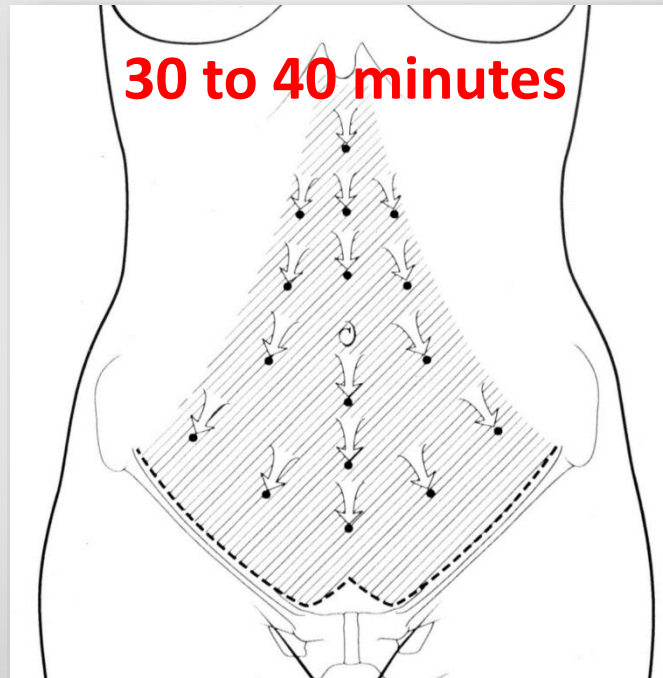
Harlan Pollock, M.D., and Todd Pollock, M.D.

*Dallas, Texas*

# Individual Sutures



# Progressive Inferior Tension





# Introduction of Barbed PTS

## Body Contouring

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

*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.*

*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 after abdominoplasty; incidence rates of up to 25% have been reported. If it is correct that shearing forces between the two separated abdominal layers play a key role in the development of seroma, postoperative immobilization of the 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 half for 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

#### Abstract

**Background:** Over the past 30 years, the preferred techniques and settings for abdominoplasty have evolved considerably, but controversy remains 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 without placement of drains) 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 clinic. The cases were divided into five groups based on operative setting, postoperative care, and surgical technique. Concurrent procedures and comorbidities were also noted.

**Results:** The authors found that the last group of patients, in whom abdominoplasty with progressive tension sutures without placement of drains 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 1.9% with the placement of progressive tension sutures without drains.

**Conclusions:** Abdominoplasty can be safely performed with other concomitant procedures (such as liposuction) in an outpatient setting. 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.

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

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; 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

# Subsequent Publications

## Progressive Tension Sutures in the Prevention of Postabdominoplasty Seroma: A Prospective, Randomized, Double-Blind Clinical Trial

Patricio Andrades, M.D.  
Arturo Prado, M.D.  
Stefan Danilla, M.D.  
Claudio Guerra, M.D.  
Susana Benitez, M.D.  
Sergio Sepulveda, M.D.  
Carlos Sciarraffia, M.D.  
Vicente De Carolis, M.D.

**Background:** The purpose of this study was to evaluate the seroma reduction capabilities of progressive tension sutures and compare them with the conventional use of drains.

**Methods:** Sixty female patients were randomized into four groups: group 1 (control, no drains, and no progressive tension sutures), group 2 (progressive tension sutures alone), group 3 (drains alone), and group 4 (progressive tension sutures and drains). All patients underwent a classic abdominoplasty and drains were left for 7 days in the corresponding groups. Clinical and ultrasound assessments were

- Increase surgical time
- Reduce drain outputs
- Same seroma frequency
- **Combination of drains & PTS does not add advantages**
- Complications increase if one is not used

# Subsequent Publications

## ORIGINAL ARTICLE

### Do Progressive Tension Sutures Really Decrease Complications in Abdominoplasty?

*Sami Khan, MD,\*† Sumeet S. Teotia, MD,\* William F. Mullis, MD,\* William E. Jacobs, MD,\*  
Michael E. Beasley, MD,\* Kevin L. Smith, MD,\* Felmont F. Eaves III, MD,\*  
Stephan J. Finical, MD,\* and Paul A. Watterson, MD\**

- Overall complications reduced with PTS
- Seroma formation same
- Time to drain removal same

## ORIGINAL ARTICLE

### The Use of Quilting Suture in Abdominoplasty Does Not Require Aspiratory Drainage for Prevention of Seroma

**Henrique Lopes Arantes · Rodrigo Gouvêa Rosique ·  
Marina Junqueira Ferreira Rosique ·  
Jose Marcos Mélega**

- No increase in seromas

# No Drains or Progressive Tension Sutures

## 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



# Ultrasound Findings

## Ultrasound in the Diagnosis and Management of Fluid Collection Complications Following Abdominoplasty

Jamal A. Mohammad, MD, FRCSC\*  
Patrick H. Warnke, DDS†  
W. Stavrakys, MD, FRCSC\*

- Fluid collection 52%
- Seroma 43%
- Hematoma 9%

## Does Quilting Suture Prevent Seroma in Abdominoplasty?

Fabio Xerfan Nahas, M.D.,  
Ph.D.  
Lydia Masako Ferreira,  
M.D., Ph.D.  
Charles Ghelfond, M.D.  
*São Paulo, Brazil*

**Background:** Seroma is the most frequent complication in abdominoplasty. Some patients are more prone to develop this complication. Ultrasound is a well-known method with which to diagnose seroma in the abdominal wall. The purpose of this study was to verify the efficacy of the use of quilting suture to prevent seroma.

**Methods:** Twenty-one female patients who presented with abdominal deformity type III/A according to the authors' classification of abdominal skin and

- Average fluid collection 8.2 mL
- 2 patients aspiration (>20 mL)
- Quilting suture prevent seromas

## Seroma in Lipoabdominoplasty and Abdominoplasty: A Comparative Study Using Ultrasound

Marcello Di Martino, M.D.,  
M.S.  
Fábio Xerfan Nahas, M.D.,  
Ph.D.  
Marcus V. J. Barbosa, M.D.,  
Ph.D.

**Background:** Abdominoplasty is one of the most frequently performed cosmetic procedures, and its combination with liposuction has become more common. Seroma is one of the most common complications in abdominoplasty. The aim of this study was to compare the rate of seroma formation in patients who underwent either abdominoplasty with or without the use of quilting sutures or lipoabdominoplasty.

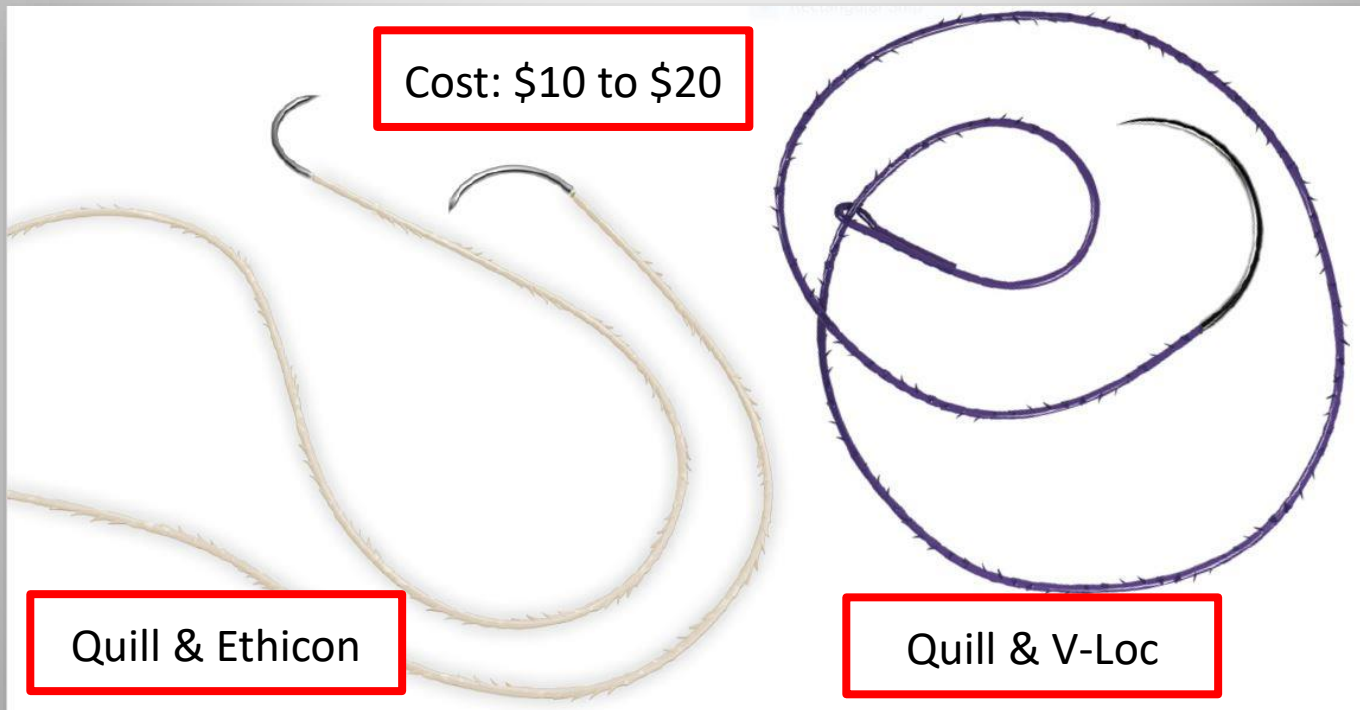
- Abdominoplasty + PTS & lipo-abdominoplasty are effective in preventing seroma compared to abdominoplasty without PTS



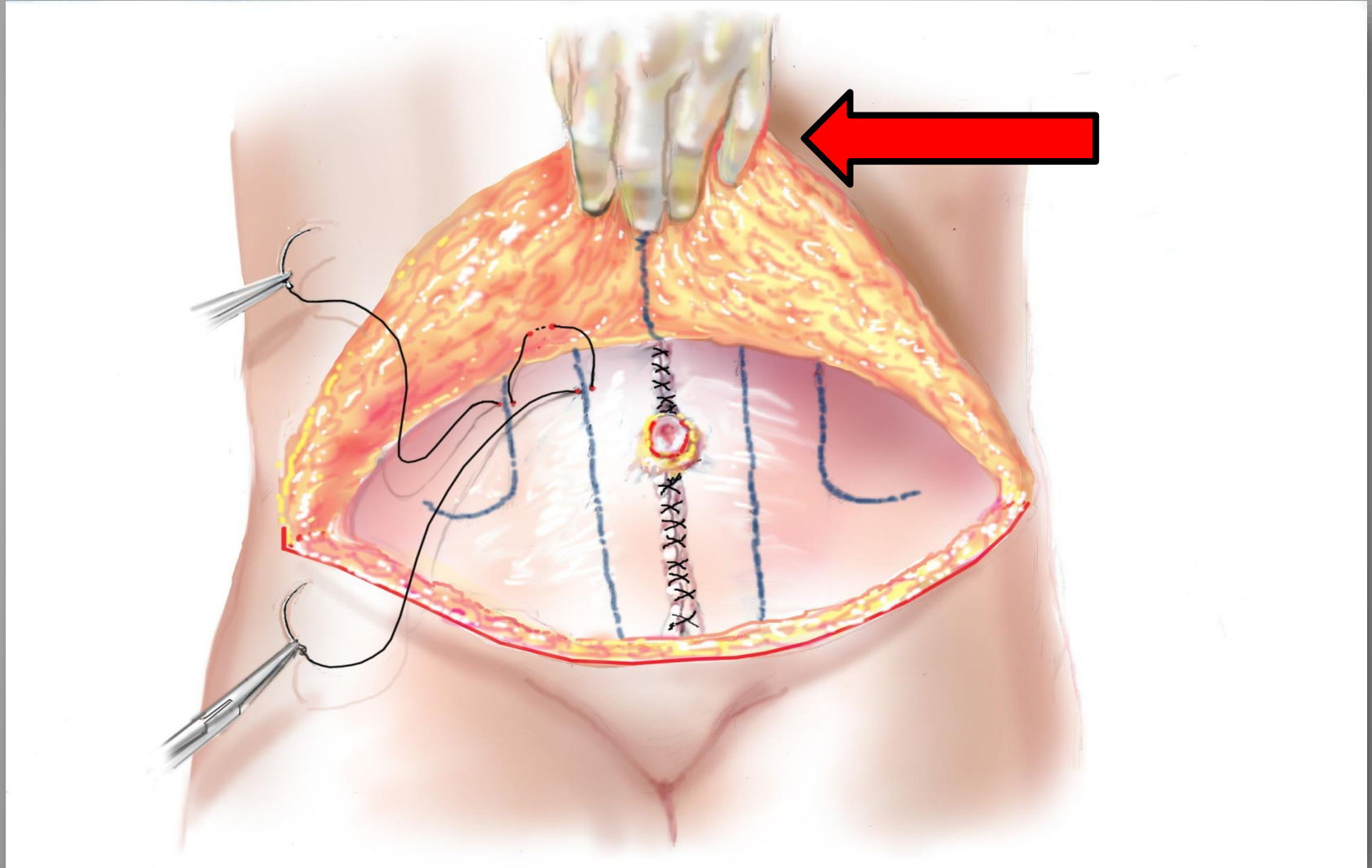
# Barbed Suture Technology



# Barbed Suture Technology



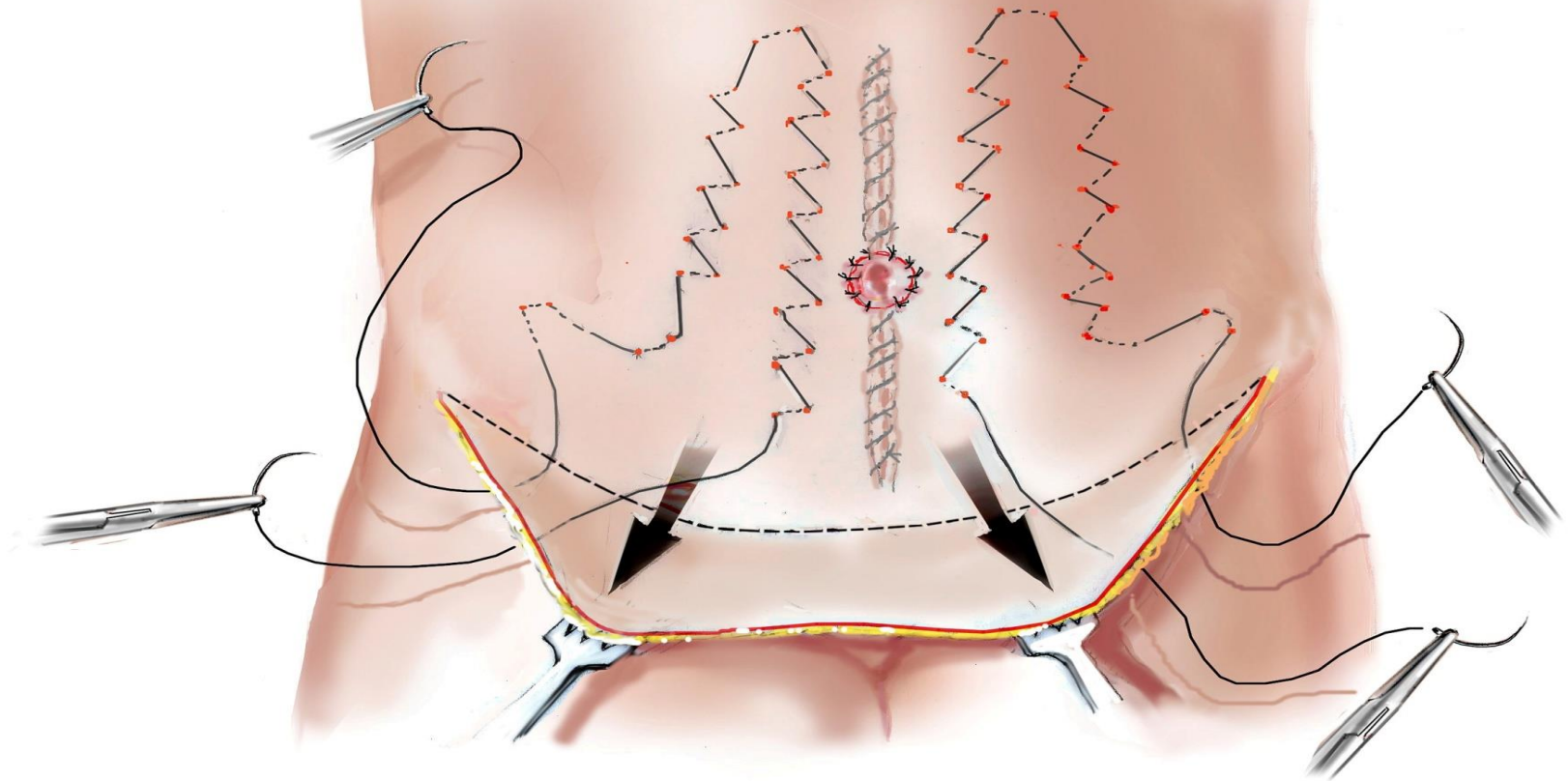
# Barbed Progressive Tension Sutures



# Barbed Progressive Tension Sutures

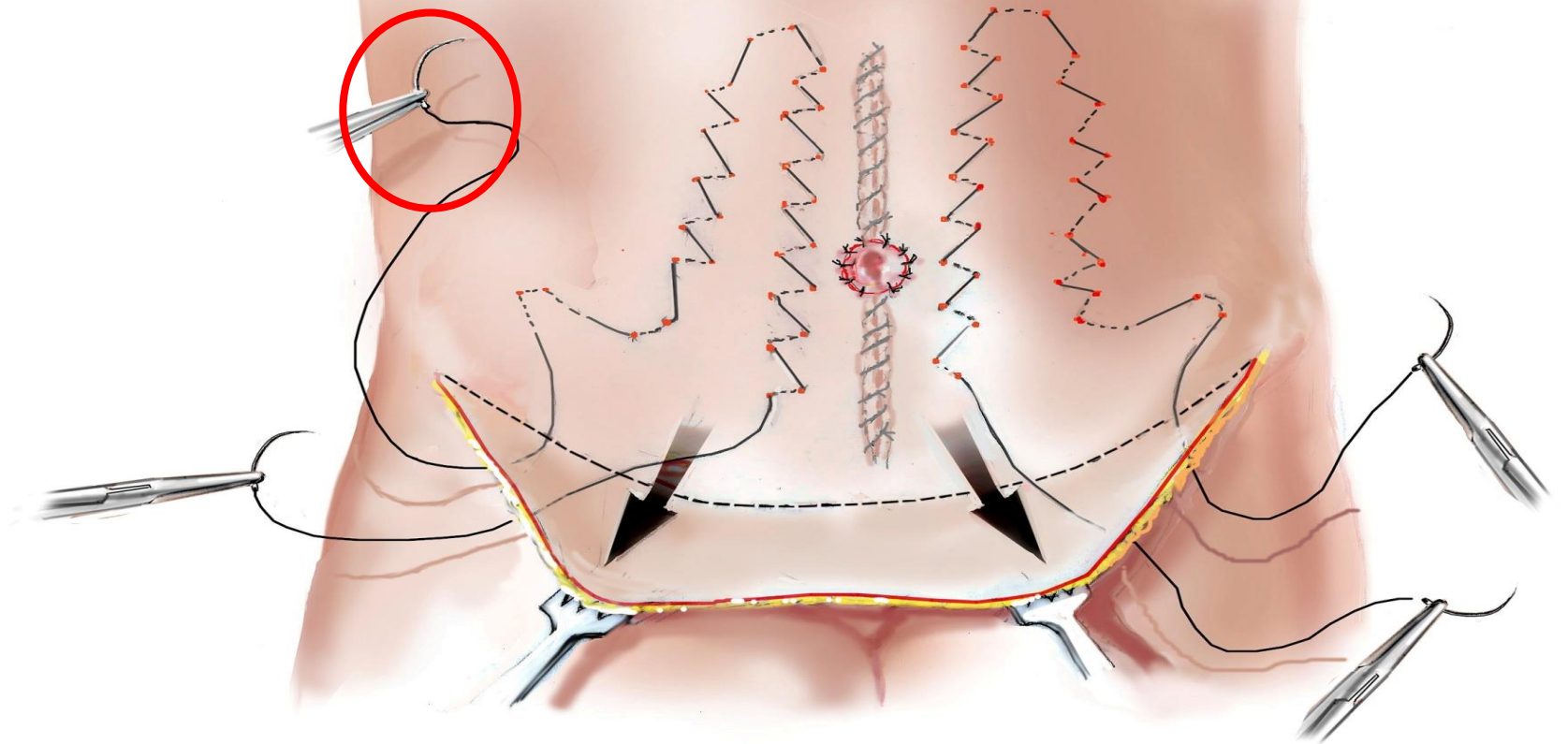
Finish lower abdominal PTS

Address the umbilical transposition



# Barbed Progressive Tension Sutures

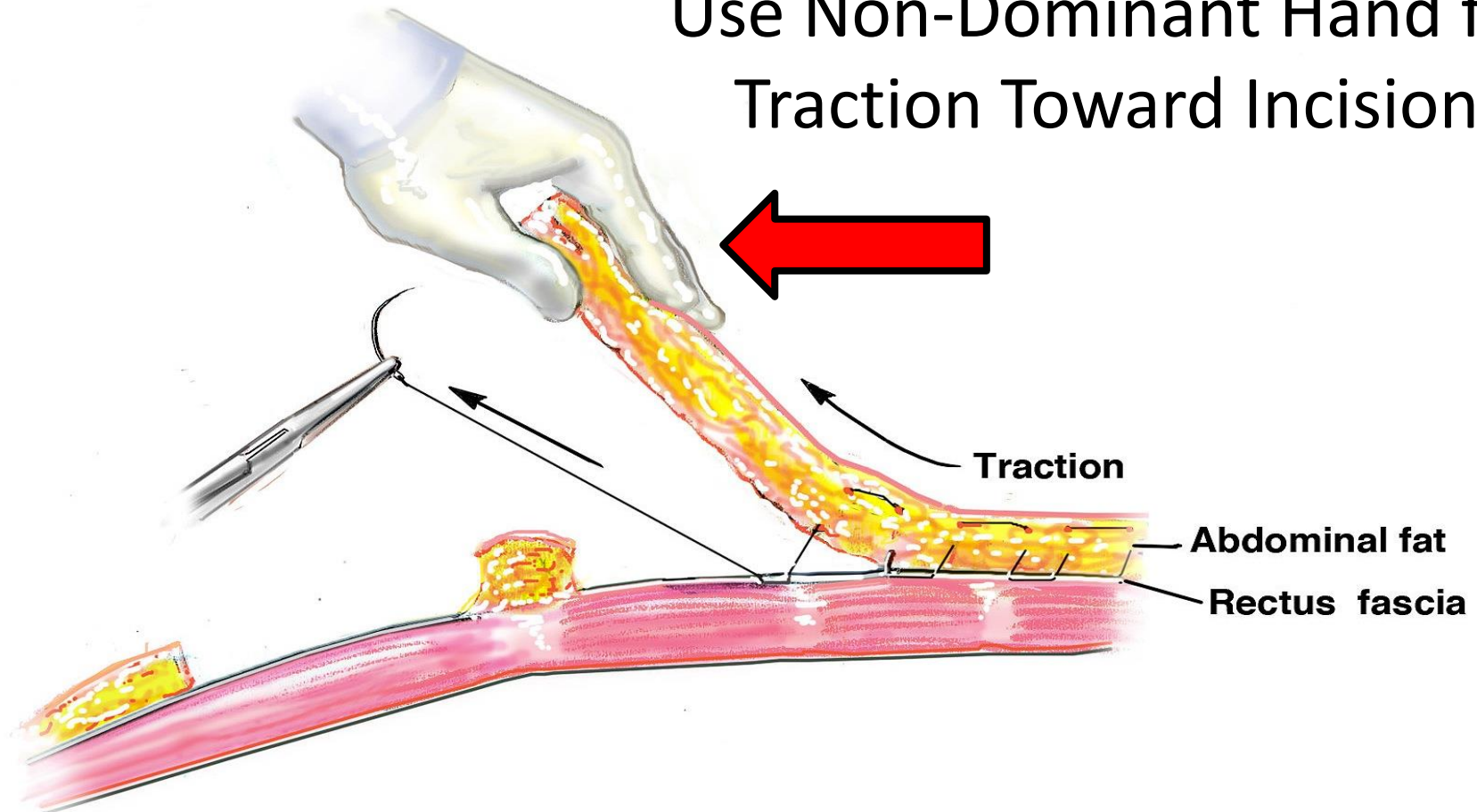
Protect the Needles



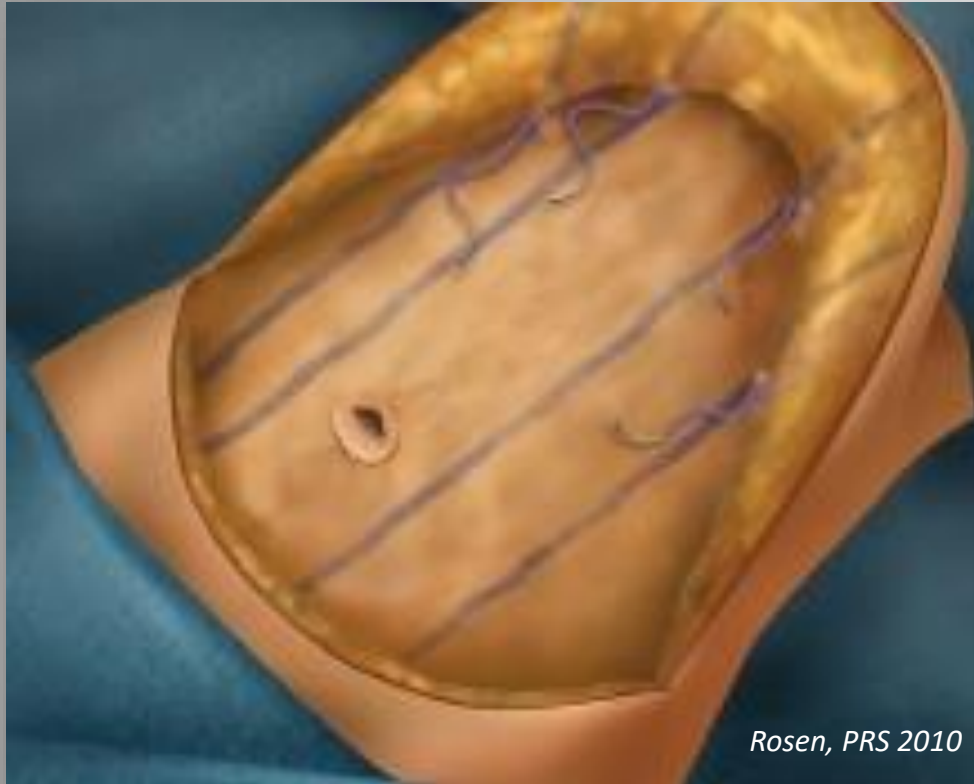


# Barbed Progressive Tension Sutures

Use Non-Dominant Hand for  
Traction Toward Incision

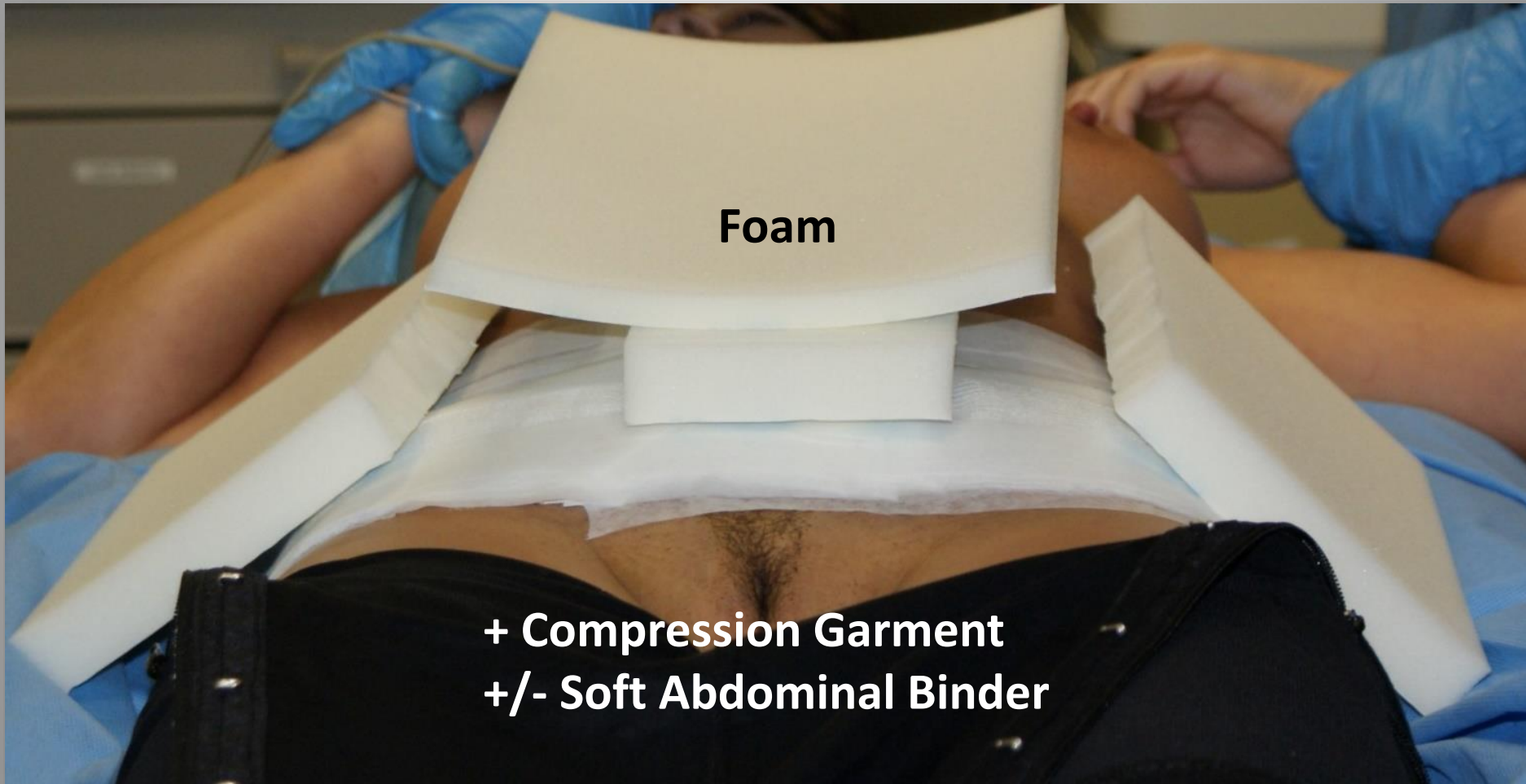


# Unidirectional Barbed Suture





# Compression



# Seroma Treatment

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



# Watch the Entire Video



Jul 2017 | Procedural Video

## No Drain Lipo-Abdominoplasty

Karol A. Gutowski, MD

Released: Jul 2017

45:37

Aesthetic



# Avoiding Seromas with Progressive Tension Sutures: Easier than You Think

*Karol A Gutowski, MD, FACS*

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**Presentation Available Next Week**

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