BREAST AUGMENTATION

AACS BOARD REVIEW COURSE

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DISCLOSURE OF CONFLICTS OF INTEREST

E. Antonio Mangubat, MD

- **None for this lecture**

INTRODUCTION

- History
- Anatomy (reviewed in breast reduction)
- Implants types
- Approaches
- Implant placement
- Complications

HISTORY

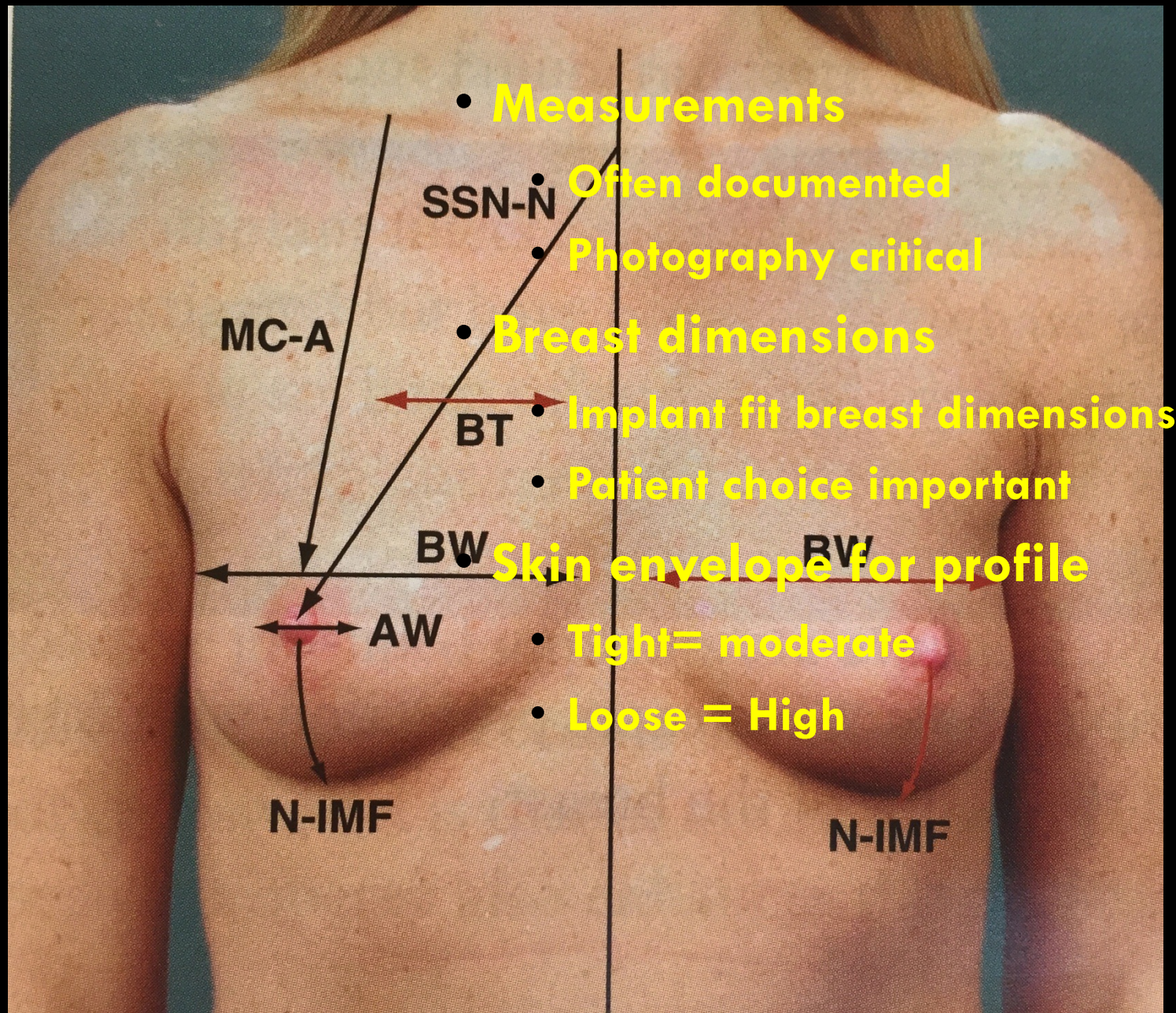
- Silicone gel
  - Early 1960s Cronin and Gerow (Dacron Patch)
  - Silicone bleeding or sweating
  - Dow Corning developed Silastic II to ↓ leak 90%
  - ↓ contracture rates
  - Possible human adjuvant disease
- Saline inflatable
  - 1965
  - High leakage rate due to
    - Faulty valve system
    - Crease fold failure

HISTORY

- Double lumen gel/saline
  - Saline outer shell
  - Gel inner shell
  - Volume adjustable
  - Semipermeable outer shell
    - Lower contracture rate than single lumen gels
    - Barrier to gel leakage
    - Antibiotics
    - Steroids
    - Betadine
  - Saline shell high leak rate

HISTORY

- Becker Implant
  - Gel outer shell
  - Saline inner shell
- Polyurethane covered gel
  - Foam cover implants ↓ contracture rates ~ 3%
  - Introduced in 1970
  - Texturing was the key
  - Transient erythema, rash, swelling
- FDA ban silicone implants is 1992
  - Enter the saline era
  - Only 2 of the 12 US breast implant manufacturers survived



- Measurements
  - Often documented
  - Photography critical
- Breast dimensions
  - Implant fit breast dimensions
  - Patient choice important
- Skin envelope for profile
  - Tight= moderate
  - Loose = High

SALINE VS. SILICONE

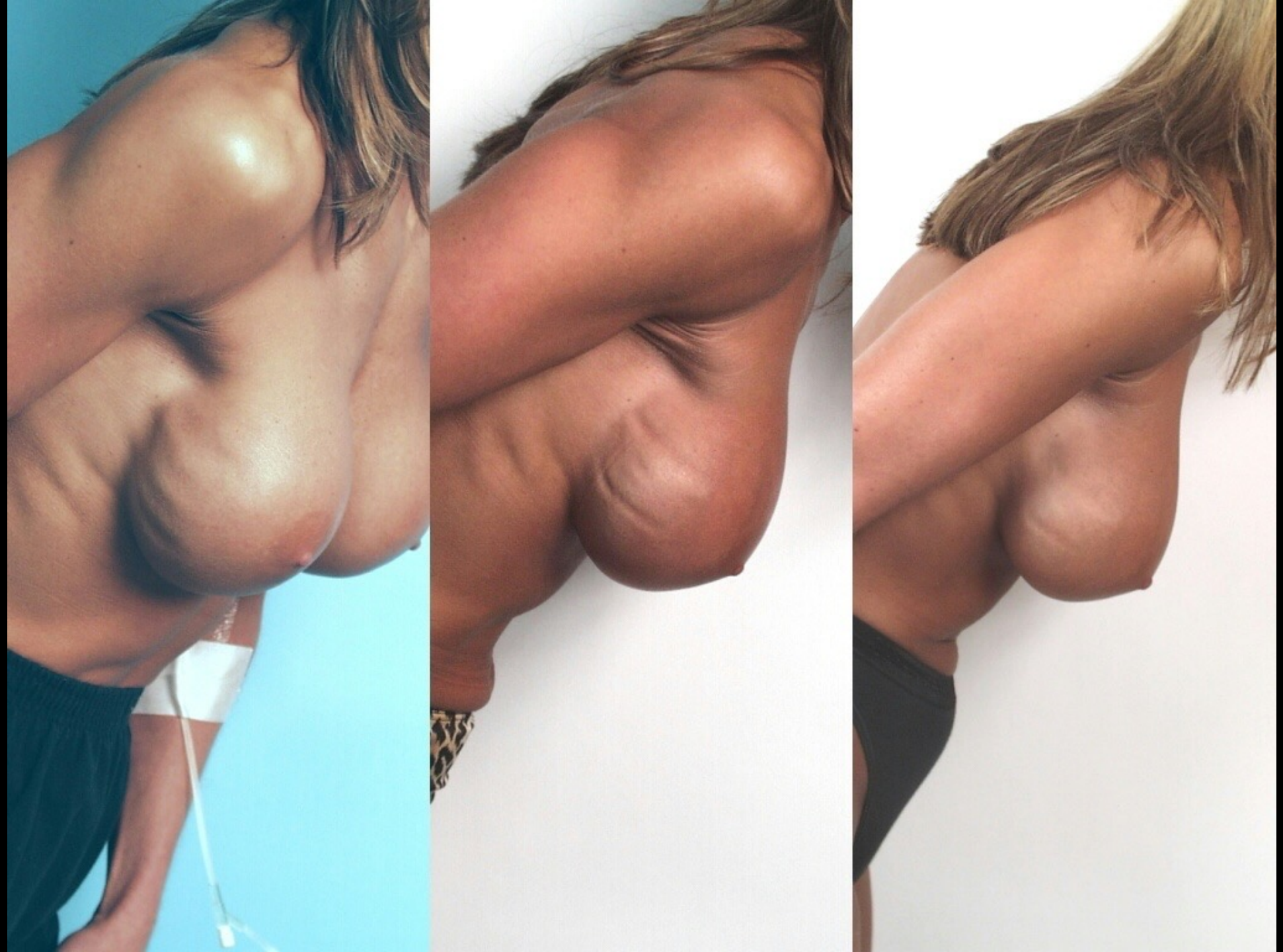
Physical Trait	Saline	Silicone
Appearance	Same	Same
Detectability to touch	More palpable	Less noticeable
Wrinkles/ ripples	Possible	Rare
Palpable "knuckle"	Possible	Rare
Spontaneous deflation	6% in 3 years	Does not occur
Silent rupture	Does not occur	Typical, semi-solid
Incision	Short	Slightly longer
Cost	Less	More costly
Monitoring recommended	None	MRI q3yr
Frequency of use	Less	More

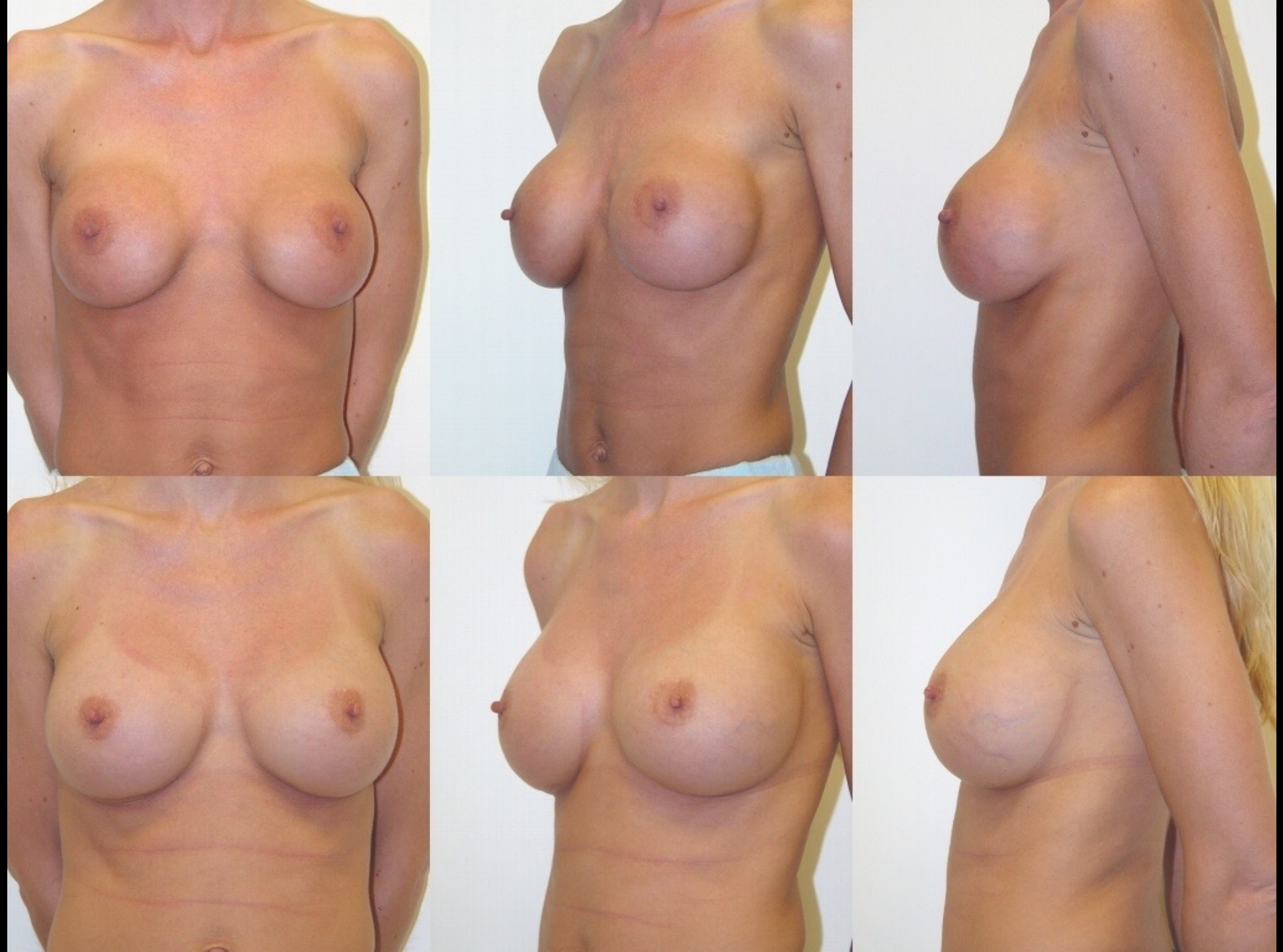
SALINE IMPLANTS

- Textured surface
  - Brought over from polyurethane gel technology
  - Thought to ↓ contracture
  - Rippling more prominent
  - Submuscular position preferred
  - Little or no implant movement postop
  - Associated with BIA-ALCL
- Smooth surface
  - Behave different than gels
  - Lower contracture rate
  - Capsule less bioactive than textured

BREAST AUGMENTATION
RIPPLING EXPERIENCE

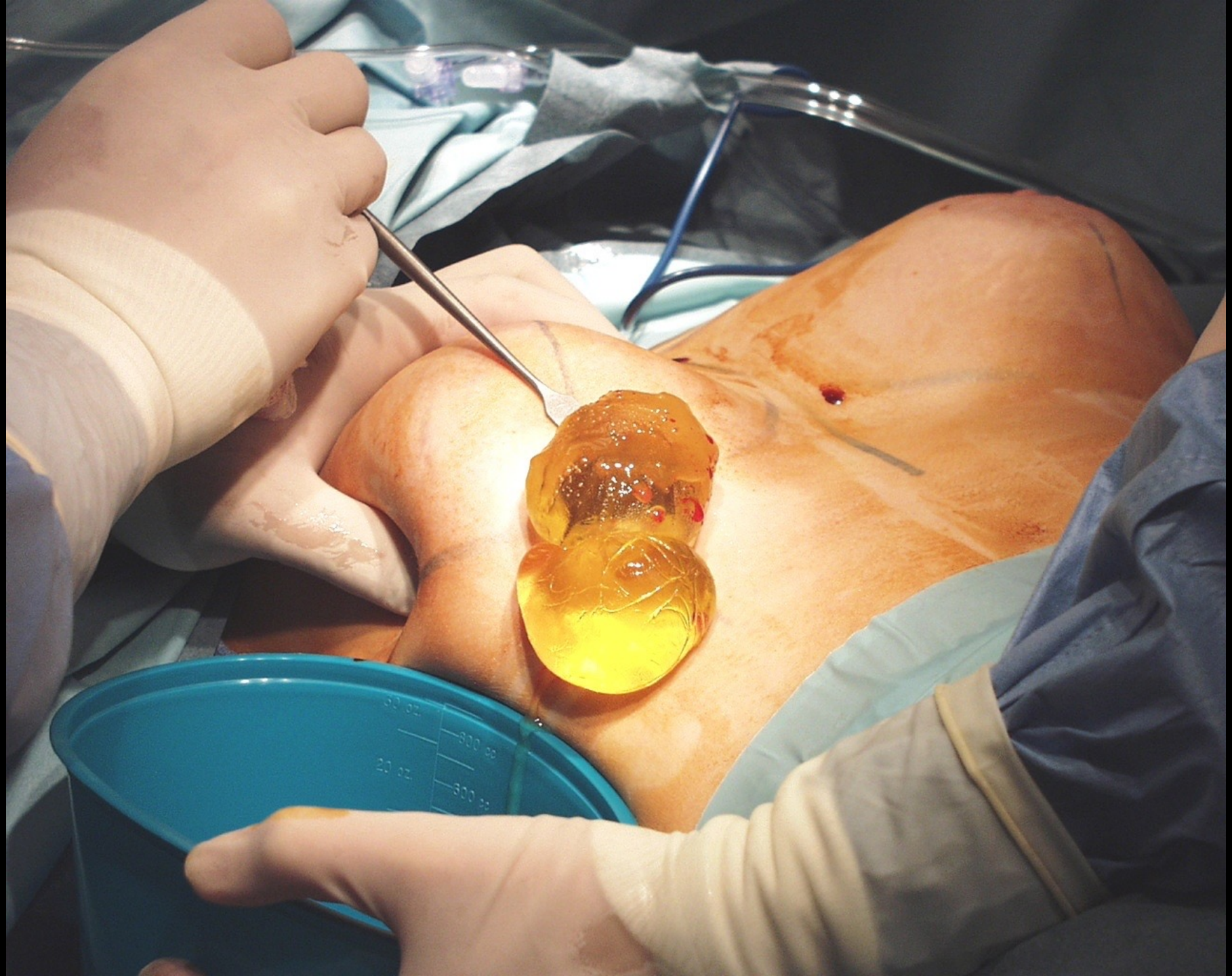
- Not much published
- Low body fat
- Subglandular placement + ptosis
- Most prominent w/ textured prostheses
- Treatment
  - Smooth saline implants or
  - Silicone implants

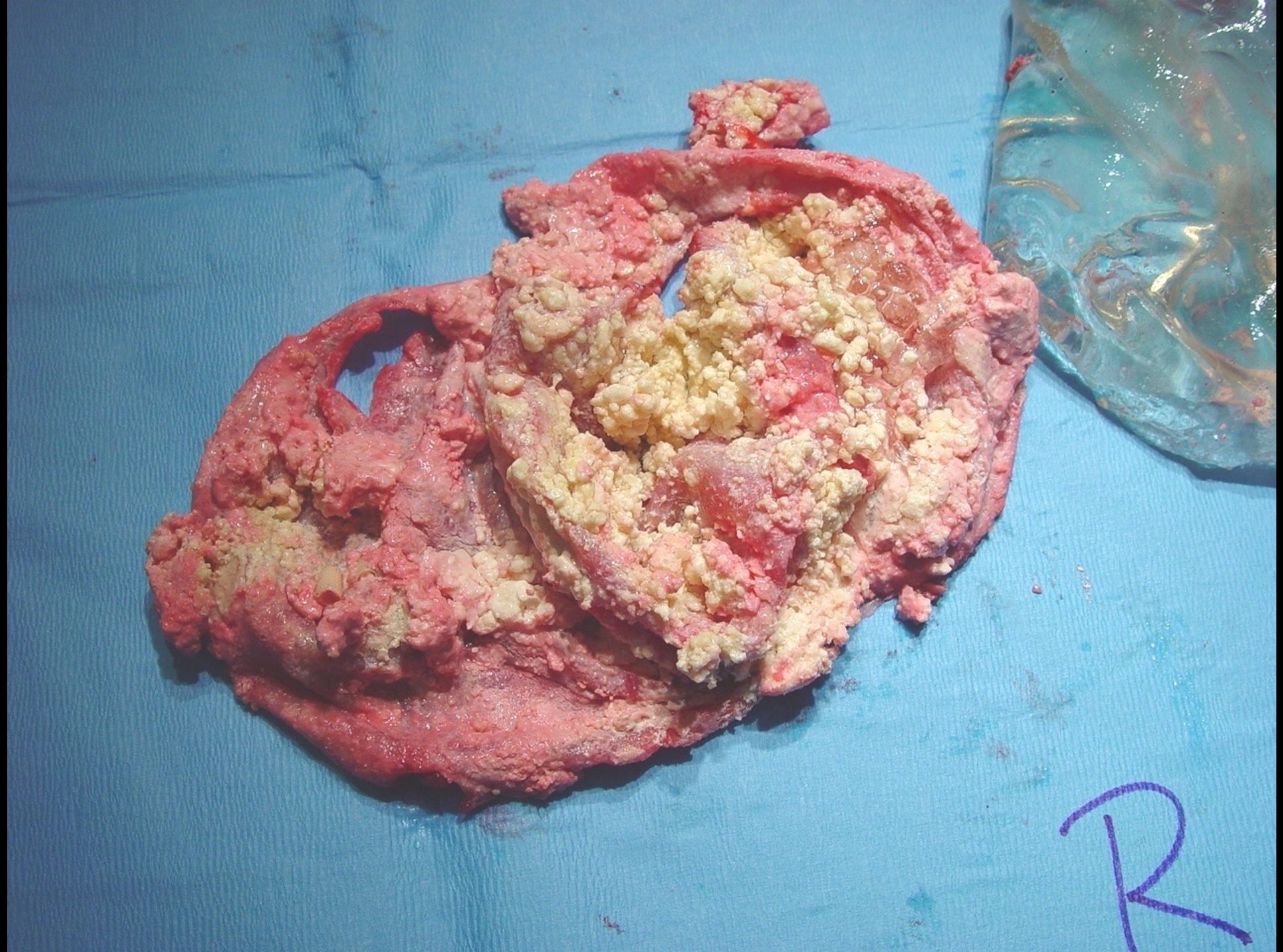




SILICONE IMPLANTS

- Silicone with Baker I capsule is superior to best saline results. Almost undetectable by touch.
- Modern implants by Mentor and Allergan:
  - Lower contracture rates ~9% vs. 30%
  - Cohesive gel, “gummy bear”, no longer liquid
  - Warranty available against contracture

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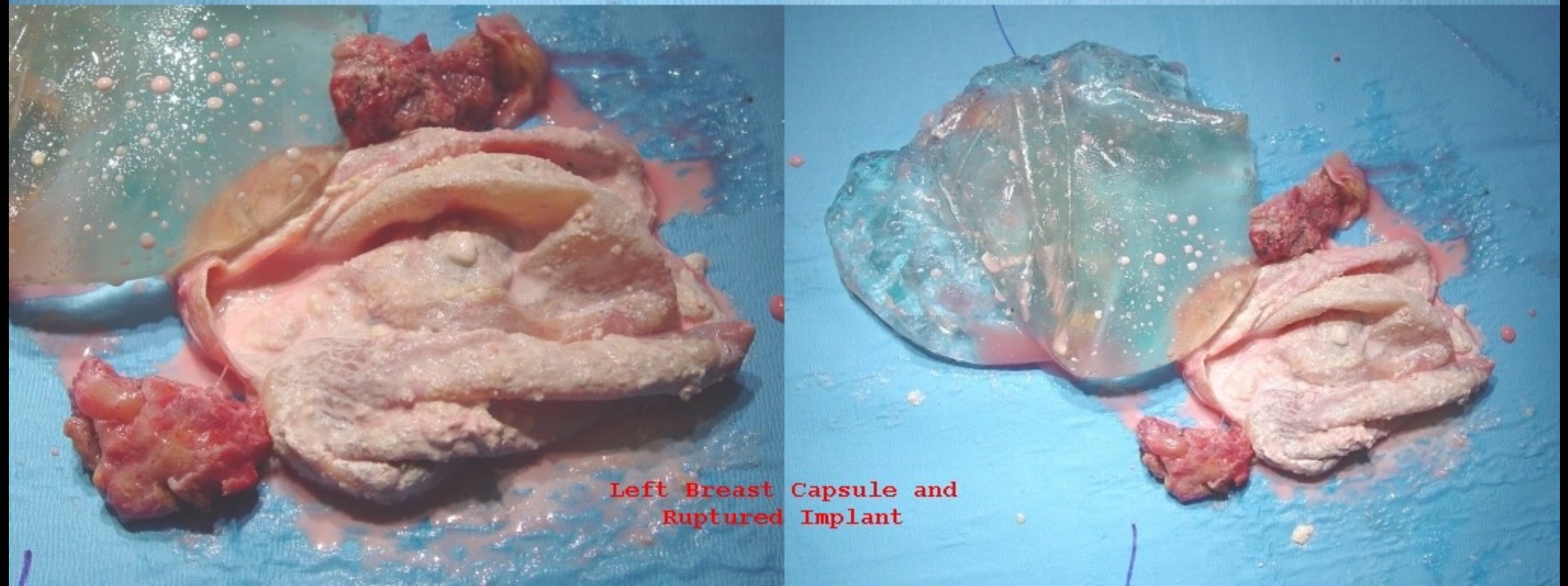
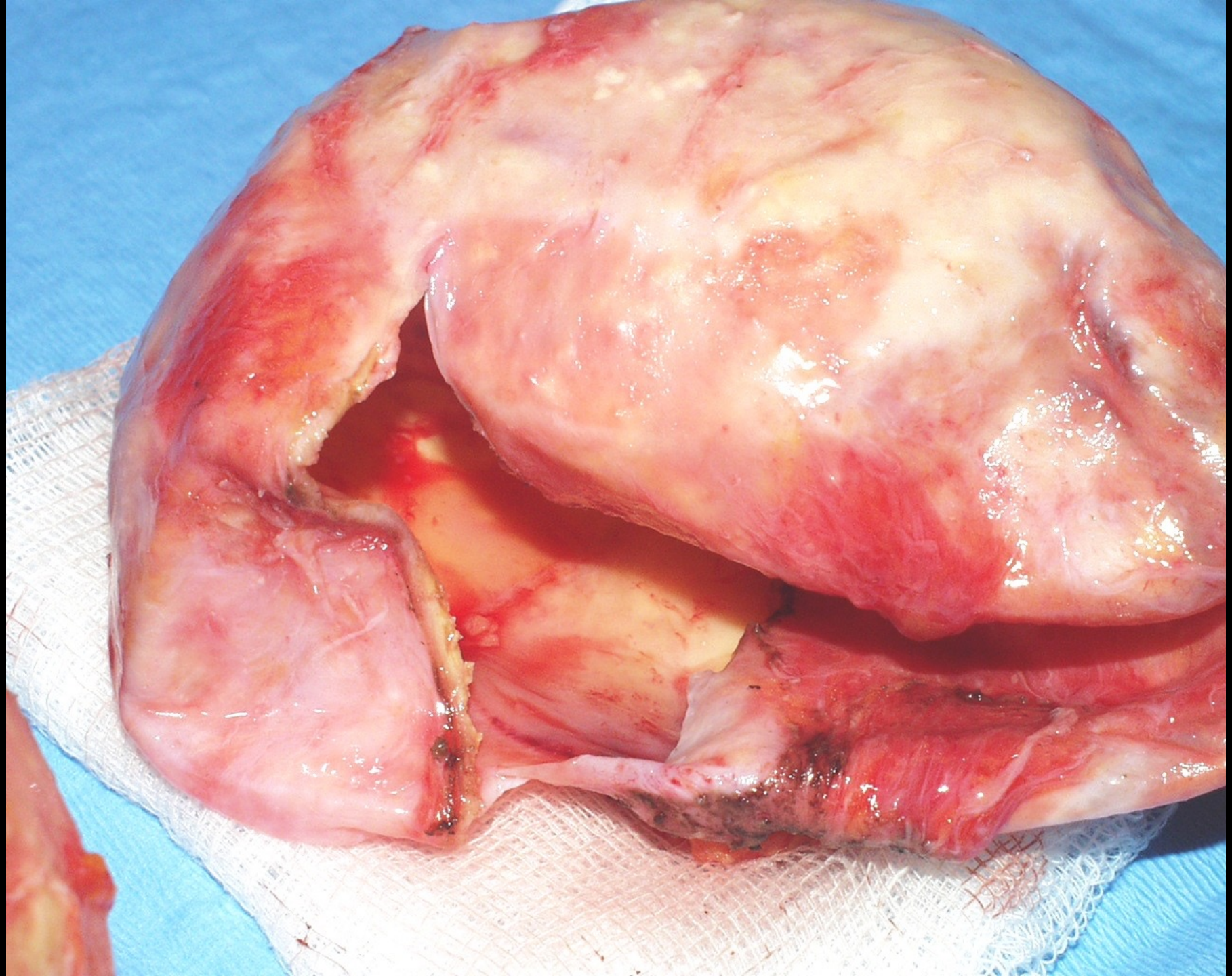
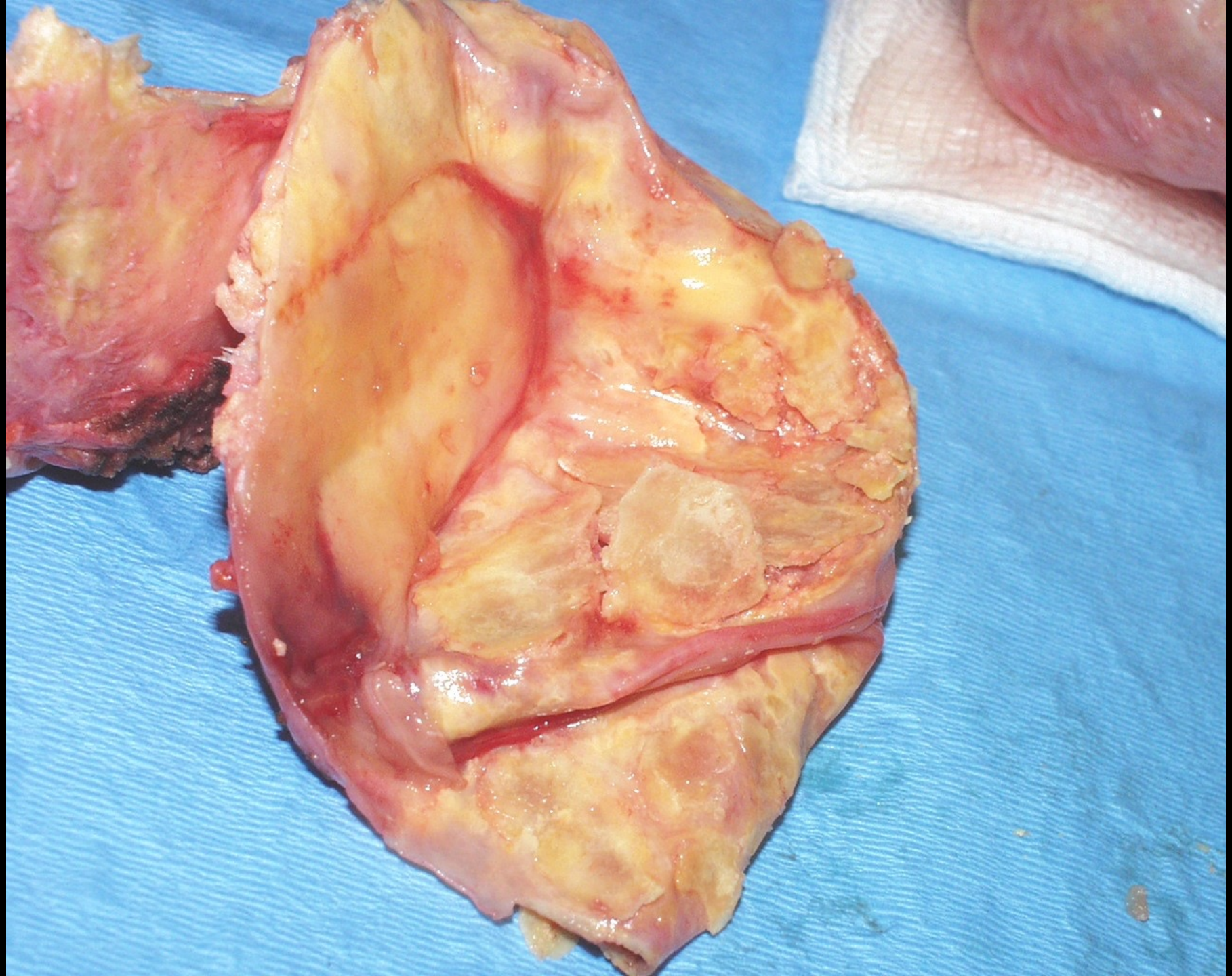
Right Breast Capsule and
Ruptured Implant



Left Breast Capsule and
Ruptured Implant





SALINE VS. SILICONE IMPLANTS LONGTERM COMPLICATIONS

- Saline:
  - Deflation is a simple fix
  - Current contracture rates ~9%
  - Calcifications rare
- Old Silicone:
  - Granulomatous reactions common often severe
  - Heavy calcifications
  - Messy revisions
- New implants avoid most of the prior complications

REVIEW OF RECENT LITERATURE:

SILICONE IMPLANT HEALTH SAFETY

Breast Implant Rupture and Connective Tissue Disease: A Review of the Literature

Lisbet Rosenkrantz Hölmich, M.D.
Loren Lipworth, Sc.D.
Joseph K. McLaughlin, Ph.D.
Søren Friis, M.D.

Herlev and Copenhagen, Denmark; Rockville, Md.; and Nashville, Tenn.

Background: Large-scale epidemiologic studies to date have not found any credible association between silicone breast implants and either well-defined connective tissue diseases or undefined or atypical connective tissue diseases. It has been hypothesized that implant rupture could prompt an immunologic reaction giving rise to autoimmune or related diseases. In this article, the authors review the available literature on implant ruptures and connective tissue disease.
Methods: Articles were identified from PubMed and by cross-checking reference lists of retrieved articles.
Results: Five publications were identified. In none of the studies were diseases or symptoms related to well-defined or ill-defined connective tissue diseases associated with rupture status.
Conclusions: There appears to be little scientific basis for any association between implant rupture and well-defined connective tissue disease or undefined or atypical connective tissue diseases. The concept of silicone-related disease was developed by rheumatologists based on highly selected groups of symptomatic breast implant patients seen in their practices. It is likely that nonspecific complications or symptoms related perhaps to capsular contracture or implant rupture may be misinterpreted as representing a systemic disease. (*Plast. Reconstr. Surg.* 120 (Suppl. 1): 62S, 2007.)

- **5 major studies reviewed**
- **No scientific basis for claim**

Adverse Health Outcomes in Offspring of Mothers with Cosmetic Breast Implants: A Review

Kim Kjøller, M.D.
Søren Friis, M.D.
Loren Lipworth, Sc.D.
Joseph K. McLaughlin, Ph.D.
Jørgen H. Olsen, M.D., Dm.Sc.

Copenhagen, Denmark; and Rockville, Md.

Background: To assess whether maternal cosmetic breast implants are associated with adverse health outcomes among offspring, the authors examined published findings of epidemiologic studies that addressed this hypothesis.
Methods: Four epidemiologic studies, all from Scandinavia, were identified. Women with breast implants were identified from existing public and private registers of patients, and their offspring were traced through nationwide population and birth registers. The studies included a total of 11,445 women with breast implants and 3248 children born after the mothers' implantation procedures. Comparison was made with children born to mothers who had undergone other cosmetic surgery or general population controls. Outcomes under study were congenital malformations, hospitalization for esophageal and rheumatic disorders, and perinatal mortality.
Results: Overall, the studied outcomes were similar between children born to mothers with breast implants and children of controls, and between children born before and after maternal breast implantation. In the Danish studies, significantly elevated rates of esophageal disorders were observed for children born before (observed-to-expected ratio, 2.0; 95 percent confidence interval, 1.3 to 2.8) but not after (observed-to-expected ratio, 1.3; 95 percent confidence interval, 0.5 to 2.9) the mother's breast implant surgery. Similar excesses were observed among control children born before and after maternal breast reduction. In the Swedish and Finnish studies, all risk estimates for malformations and perinatal health were close to unity.
Conclusion: Rates of esophageal and rheumatic disorders, congenital malformations, and perinatal mortality and hospitalization were comparable between children born to mothers with breast implants and children born to mothers who had undergone other cosmetic surgery. (*Plast. Reconstr. Surg.* 120 (Suppl. 1): 129S, 2007.)

- 11,445 women w/implants and 3248 children born after augmentation procedures.
- No difference in the rates of perinatal disorders, congenital malformations, and infant mortality in women with silicone breast implants versus women without implants.

Breast-Feeding and Silicone Implants

John L. Semple, M.D., M.Sc.

Toronto, Ontario, Canada

Background: Despite the overwhelming advantages of breast-feeding, there is a persistent concern that maternal exposure to chemical contaminants may result in contamination of breast milk and have an effect on the child's growth and development. A parallel concern regarding lactation in women with silicone implants over the past years has led to confusion and anxiety relating to the potential risks to the child.

Methods: The author reviewed the facts and issues as he knows them, including biomaterials, lactation toxicology, and a previous study where no difference was found in silicon (a proxy measurement of silicone) in women breast-feeding with silicone implants and those without.

Results: In the author's previous study, he compared women with implants to women without implants as controls and showed that mean silicon levels were not significantly different in breast milk (55.45 ± 35 and 51.05 ± 31 ng/ml, respectively) or in blood (79.29 ± 87 and 103.76 ± 112 ng/ml, respectively). However, silicon levels in alternative methods of infant nutrition were much higher. The mean silicon level measured in store-bought cow's milk was 708.94 ng/ml, whereas that for 26 brands of commercially available infant formula was 4402.5 ng/ml.

Conclusions: In this review, the author looked only at silicon/silicone and did not address other potential contaminants that may be associated with silicone gel or the elastomer shell. This report may provide plastic surgeons and other healthcare workers with information regarding silicon/silicone for discussion with women with gel implants who are contemplating breast-feeding. (*Plast. Reconstr. Surg.* 120 (Suppl. 1): 123S, 2007.)

- No difference in silicone levels in blood and breast milk in women with silicone breast implants when compared to matched cohort
- Levels of silicone in store bought cows milk was over 10 x higher
- Levels of silicone in infant formulas were almost 100 x higher

The Effect of Silicone Implants on the Diagnosis, Prognosis, and Treatment of Breast Cancer

Neal Handel, M.D.

Santa Barbara, Calif.

Background: Because of the prevalence of breast cancer, many augmented women eventually will develop the disease. This article reviews what is known about the effect of implants on the detection, prognosis, and treatment of carcinoma of the breast.
Methods: Observations were made on 4082 breast cancer patients (3953 non-augmented and 129 augmented) treated over a 23-year time span. Findings in the two groups were compared and differences analyzed statistically. Mammograms of all women with palpable lesions were reviewed to assess mammographic sensitivity in patients with and without implants. Cosmetic outcomes in augmented patients treated with breast conservation therapy were reviewed.
Results: Augmented patients presented more frequently with palpable lesions, invasive tumors, axillary nodal metastases, and false-negative mammograms. However, there was no significant difference in stage of disease, tumor size, recurrence rates, or survival between the two groups. Augmented patients treated with breast conservation therapy often experienced poor cosmetic results and frequently required reoperation.
Conclusions: Despite the diminished sensitivity of mammography in women with implants, augmented and nonaugmented patients are diagnosed at a similar stage of disease and have a comparable prognosis. Implants may impair mammography but appear to facilitate tumor detection on physical examination. Magnetic resonance imaging and breast ultrasound may be useful adjuncts, but conventional mammography remains the most reliable tool for diagnosing early breast cancer in augmented patients. Breast implants do not interfere with mastectomy or breast reconstruction but may compromise the outcome of breast conservation therapy. (*Plast. Reconstr. Surg.* 120 (Suppl. 1): 81S, 2007.)

- Observations were made on 4082 breast cancer patients (3953 non-augmented and 129 augmented) treated over 23-years
- Implants may impair mammography but appear to facilitate tumor detection on physical examination.
- Conventional mammography remains most reliable for breast cancer detection in augmented patients

SILICONE VS. SALINE SUMMARY

- No current evidence of health hazard
- Higher manufacturing standards
- Higher cost of both
- Silicone gel is:
  - Softer Baker I
  - Less wrinkling
  - Lower contracture rate (latest FDA data)
- Saline rupture simple and clean repair
- Silicone fewer granulomatous reactions, cohesive gel

INFECTION & EXTRUSION

- Common Bacteria
  - Staph Epi, Staph Aureus, Strep
  - Mycobacterium
  - Culture often negative
- Prevention
  - Maintain sterility
  - No touch technique
  - Pocket irrigation c ABX
- RX
  - Cx & Broad spectrum ABX
  - Explant/irrigation/ drain
- EXTRUSION
  - BLUE WINDOW
  - Soft vs. Firm
  - Abx, debride, Capsular flap vs. Muscle flap, drains

CAPSULAR CONTRACTURE

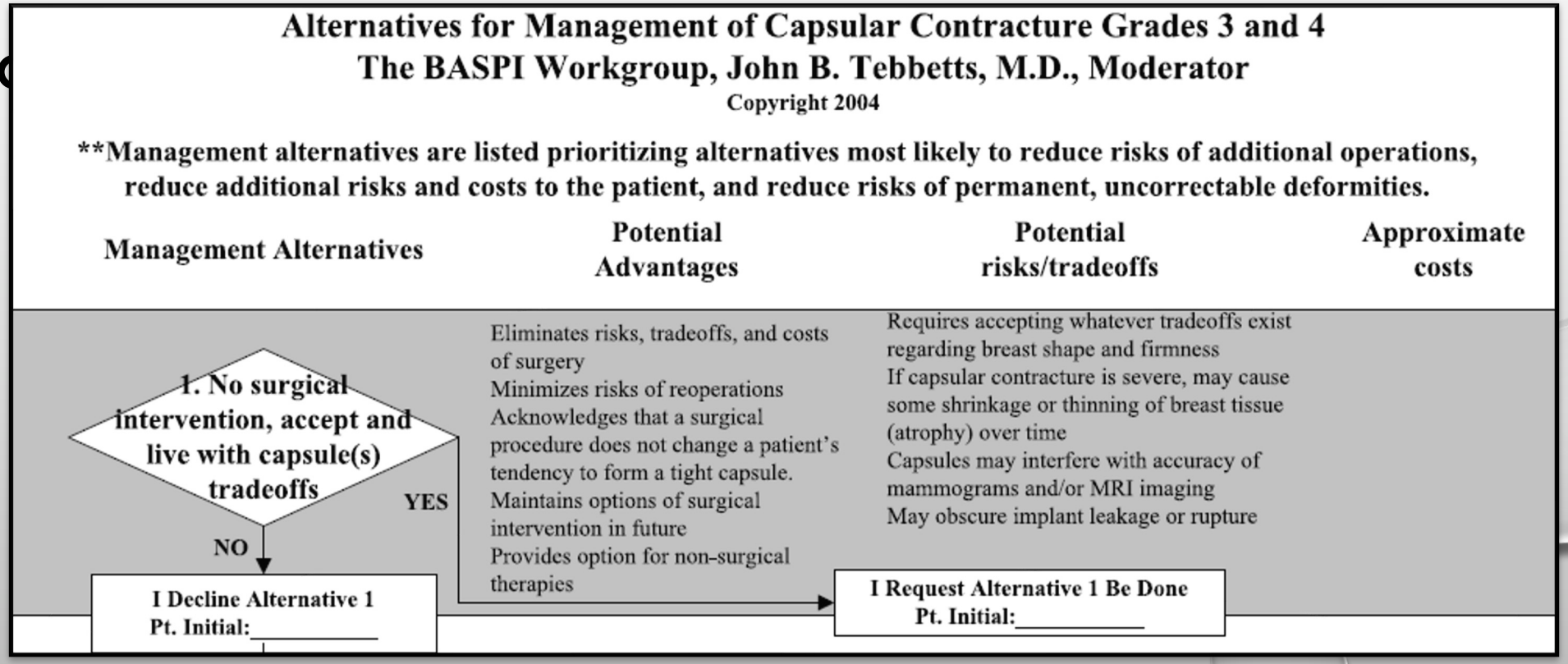
Grade I	Breast is soft and looks natural
Grade II	Breast is slightly firm but looks normal
Grade III	Breast feels and looks firm
Grade IV	Breast is hard, painful and looks abnormal

- 2-20%
- Bacterial Theory MC: Staph Epidermidis
- Hypertrophic Scar Theory
- Prevention
  - ABX irrigation, No touch technique, Hemostasis
- Tx
  - GII: Non surgical Singulair, Fish oil, Vitamin E, Papaverine, US, Massage
  - III/IV Surgical
- BASPI, capsulectomy/ Resite pocket , acellular dermal matrix, fat grafting

B. Bengtson

BREAST AUGMENTATION SURGEONS FOR PATIENTS INITIATIVE (BASPI)

- Focus: reducing BA reoperation rates
- Decision & management algorithms offered
- Co



Alternatives for Management of Capsular Contracture Grades 3 and 4
The BASPI Workgroup, John B. Tebbetts, M.D., Moderator
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****Management alternatives are listed prioritizing alternatives most likely to reduce risks of additional operations, reduce additional risks and costs to the patient, and reduce risks of permanent, uncorrectable deformities.**

Management Alternatives	Potential Advantages	Potential risks/tradeoffs	Approximate costs
1. No surgical intervention, accept and live with capsule(s) tradeoffs	Eliminates risks, tradeoffs, and costs of surgery Minimizes risks of reoperations Acknowledges that a surgical procedure does not change a patient's tendency to form a tight capsule. Maintains options of surgical intervention in future Provides option for non-surgical therapies	Requires accepting whatever tradeoffs exist regarding breast shape and firmness If capsular contracture is severe, may cause some shrinkage or thinning of breast tissue (atrophy) over time Capsules may interfere with accuracy of mammograms and/or MRI imaging May obscure implant leakage or rupture	

YES → **I Request Alternative 1 Be Done**
Pt. Initial:_____

NO → **I Decline Alternative 1**
Pt. Initial:_____

Alternatives for Management of Capsular Contracture Grades 3 and 4
The BASPI Workgroup, John B. Tebbetts, M.D., Moderator

****Management alternatives are listed prioritizing alternatives most likely to reduce risks of additional operations, reduce additional risks and costs to the patient, and reduce risks of permanent, uncorrectable deformities.**

Management Alternatives	Potential Advantages	Potential risks/tradeoffs	Approximate costs

1. No surgical intervention, accept and live with capsule(s) tradeoffs

YES:
- Eliminates risks, tradeoffs, and costs of surgery
- Minimizes risks of reoperations
- Acknowledges that a surgical procedure does not change a patient's tendency to form a tight capsule.
- Maintains options of surgical intervention in future
- Provides option for non-surgical therapies

Risks/tradeoffs:
- Requires accepting whatever tradeoffs exist regarding breast shape and firmness
- If capsular contracture is severe, may cause some shrinkage or thinning of breast tissue (atrophy) over time
- Capsules may interfere with accuracy of mammograms and/or MRI imaging
- May obscure implant leakage or rupture

I Request Alternative 1 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 1**
Pt. Initial:_____

2. Remove both implants and do not replace; do not remove capsules*

YES:
- Minimizes risks and costs of future reoperations
- If concerned about health effects of silicone in any way, minimizes future concerns
- Minimizes risks and costs of removing capsules
- Eliminates risks of recurrent capsular contracture

Risks/tradeoffs:
- Leaving capsules in place may leave small amounts of silicone contained in capsule in your body
- Leaving capsule may impair optimal reshaping of your tissues after implant removal, leaving irregularities
- Small risk of seroma (fluid accumulation) inside capsule that is left in place.

I Request Alternative 2 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 2**
Pt. Initial:_____

*** If capsules are calcified, or if the capsule is restrictive (restricts optimal tissue reshaping or restricts accuracy of imaging, the capsule(s) should be removed.**

3. Remove both implants and do not replace; remove both capsules

YES:
- Minimizes risks and costs of future reoperations
- If concerned about health effects of silicone in any way, minimizes future concerns
- Surgically removes as much silicone as possible
- May allow tissues to reshape better following implant removal

Risks/tradeoffs:
- More extensive surgical procedure required to remove most of capsule
- Usually necessitates placement of drain tubes for several days following surgery
- Does not remove all traces of silicone
- Increased costs, tradeoffs, and risks compared to not removing capsules

I Request Alternative 3 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 3**
Pt. Initial:_____

4. *Remove* capsule(s) (capsulectomy), replace implant(s) with *new* implant(s)*

YES:
- Removal of as much capsule as possible (capsulectomy)may reduce risks of recurrent capsular contracture compared to simply releasing the capsule (capsulotomy).
- More costs, risks, tradeoffs compared to leaving capsules
- Replacing old implants with new implants increases implant options, use of newer technology, and may provide longer implant shell life compared to replacing old implants.

Risks/tradeoffs:
- Additional costs of new implants
- Failure to remove as much capsule as possible may produce a higher risk of recurrent capsular contracture, requiring additional reoperations, costs, risks, or removal.
- Release instead of removal of the capsule may not achieve as optimal correction of shape distortion or firmness

*** see tissue coverage criteria page 2 before replacing implants**

I Request Alternative 4 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 4**
Pt. Initial:_____

Alternatives for Management of Capsular Contracture Grades 3 and 4
The BASPI Workgroup, John B. Tebbetts, M.D., Moderator, Page 2

****Management alternatives are listed prioritizing alternatives most likely to reduce risks of additional operations, reduce additional risks and costs to the patient, and reduce risks of permanent, uncorrectable deformities.**

Continued from Page 1

Management Alternatives	Potential Advantages	Potential risks/tradeoffs	Approximate costs

5. *Remove* capsule(s) (capsulectomy), replace *existing* implant(s)

YES:
- Removal of as much capsule as possible (capsulectomy)may reduce risks of recurrent capsular contracture compared to simply releasing the capsule (capsulotomy).
- More costs, risks, tradeoffs compared to leaving capsules
- Replacing old implants less expensive compared to replacing with new implants

Risks/tradeoffs:
- Removing capsule (capsulectomy) is more extensive surgically with more costs, risks and tradeoffs compared to simply releasing and not removing capsule (capsulotomy)
- Older implant may fail sooner compared to newer implant, necessitating reoperation

I Request Alternative 5 Be Done
Pt. Initial:_____

If replacing current implants with new implants, go to Option 9 page 2

NO → **I Decline Alternative 5**
Pt. Initial:_____

6. *Release* capsule(s) (capsulotomy) but *do not remove complete capsules*, replace implant(s) with *new* implant(s)

YES:
- Lower costs, risks, tradeoffs compared to removing capsules
- Releasing capsule is less extensive surgically compared to removing capsule
- Replaces older implants with newer implants
- Allows exchange to different or more state-of-the-art implant
- Allows adjustment of new implants to changes in patient's tissues that have occurred

Risks/tradeoffs:
- Additional costs of new implants
- Failure to remove as much capsule as possible may produce a higher risk of recurrent capsular contracture, requiring additional reoperations, costs, risks, or removal.
- Release instead of removal of the capsule may not achieve as optimal correction of shape distortion or firmness

I Request Alternative 6 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 6**
Pt. Initial:_____

7. *Release* capsule(s) (capsulotomy) but *do not remove capsules*, replace *existing* implant(s)

YES:
- Lower costs, risks, tradeoffs compared to removing capsules
- Replacing old implants less expensive compared to replacing with new implants
- Releasing capsule is less extensive surgically compared to removing capsule

Risks/tradeoffs:
- Failure to remove as much capsule as possible may produce a higher risk of recurrent capsular contracture, requiring additional reoperations, costs, risks, or removal.
- Release instead of removal of the capsule may not achieve as optimal correction of shape distortion or firmness

I Request Alternative 7 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 7**
Pt. Initial:_____

If considering implant replacement with any option above:

8. If soft tissue pinch thickness in any area overlying implant is less than 0.5 cm., do not replace implant

YES:
- Reduces risks of visible implant shell or edges
- Reduces risks of visible traction rippling
- Reduces risks of future reoperations or uncorrectable deformities

See potential risks and tradeoffs under options 2 and 3 on page 1.

I Request Alternative 8 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 8**
Pt. Initial:_____

9. Replace current implants with textured surface implants

YES:
- May reduce risks of recurrent capsular contracture

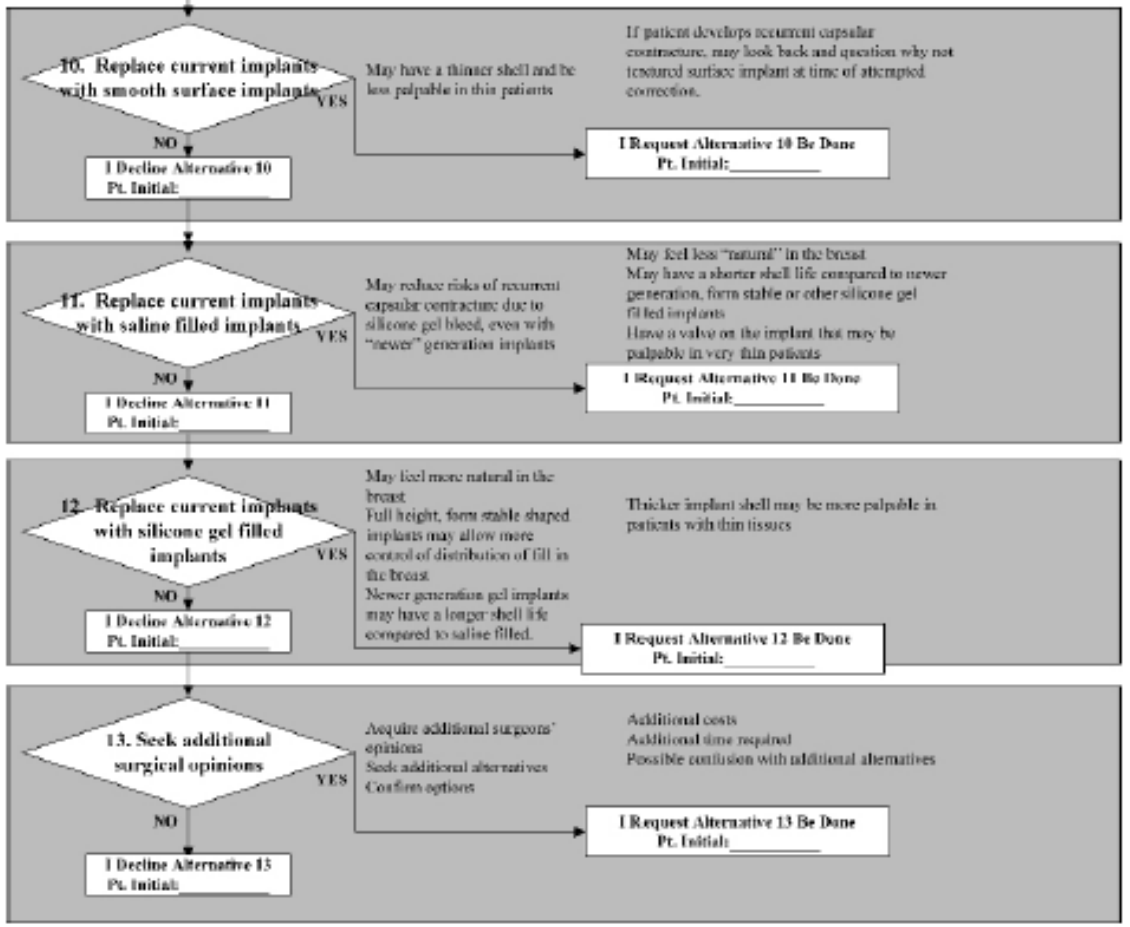
Risks/tradeoffs:
- Thicker implant shell may be more palpable in patients with thin tissues

I Request Alternative 9 Be Done
Pt. Initial:_____

NO → **I Decline Alternative 9**
Pt. Initial:_____

Continued on Page 3

Continued from Page 2



OUT POINTS

1) Recurrent capsular contracture after one complete capsulectomy and replacement with textured surface implants, or one conversion from submammary to dual plane or subpectoral
2) Soft tissue coverage over any area of the implant is less than 0.5cm. pinch thickness
3) Patient requests implant removal without replacement at any time

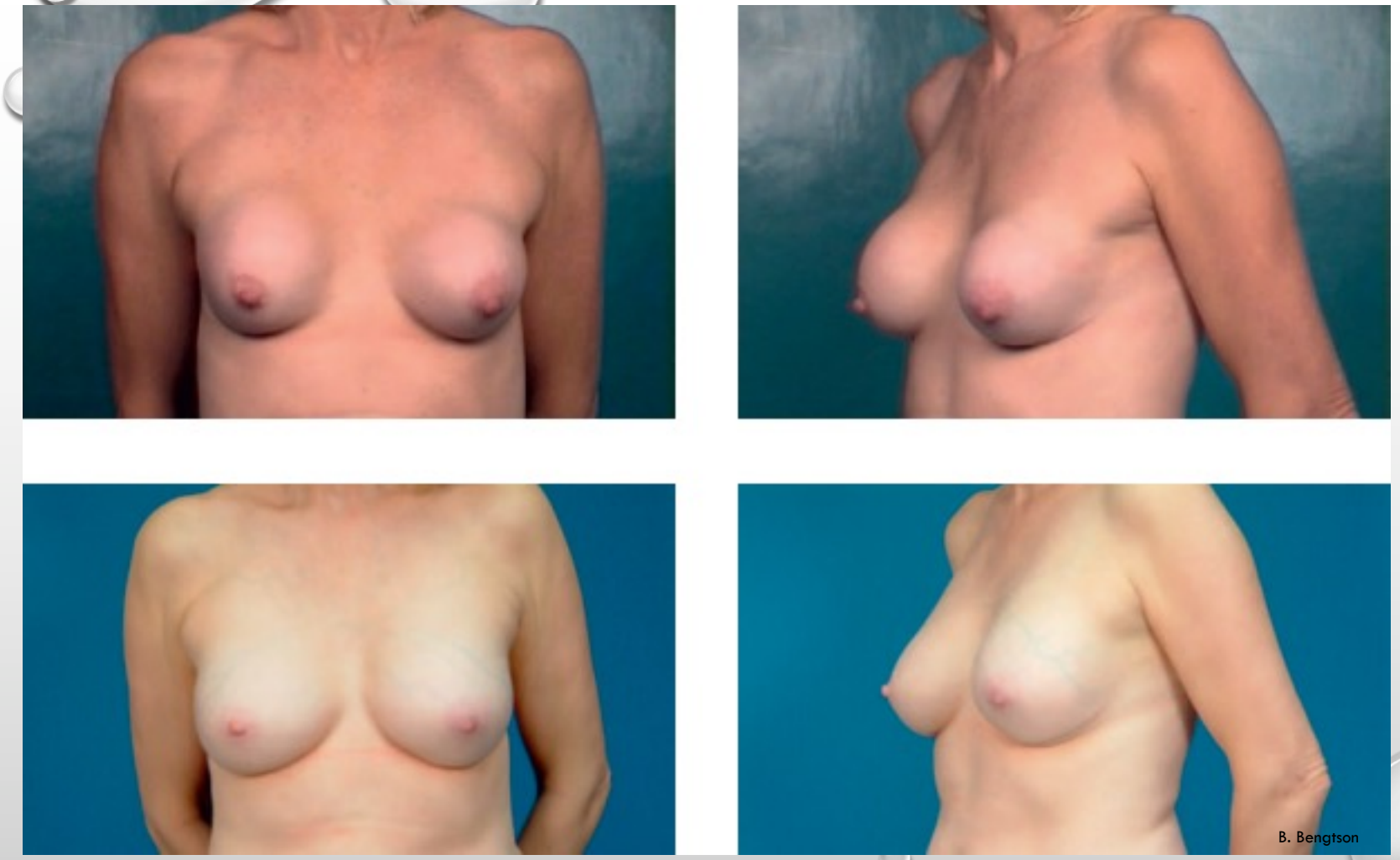
**If patient, surgeon, or patient's family are concerned about any aspect of silicone causing symptoms or possible associated conditions, see additional information and flowchart alternatives entitled "If Patient Has Symptoms or Concerns Related to Silicone"

Patient Name (please print):_____ Witness Name (please print): _____

Patient Signature:
Date:

Witness Signature:
Date:

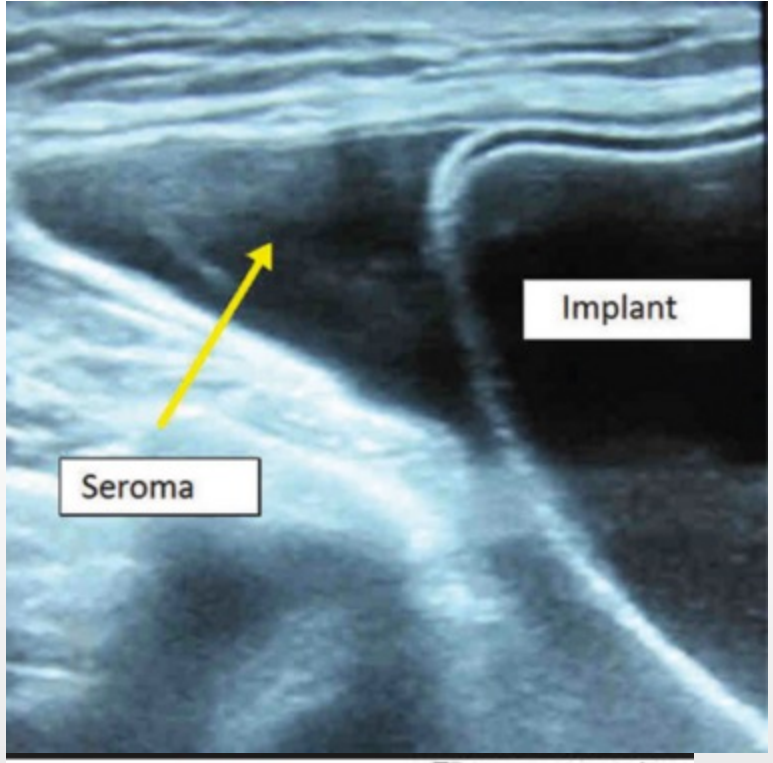
CAPSULAR CONTRACTURE

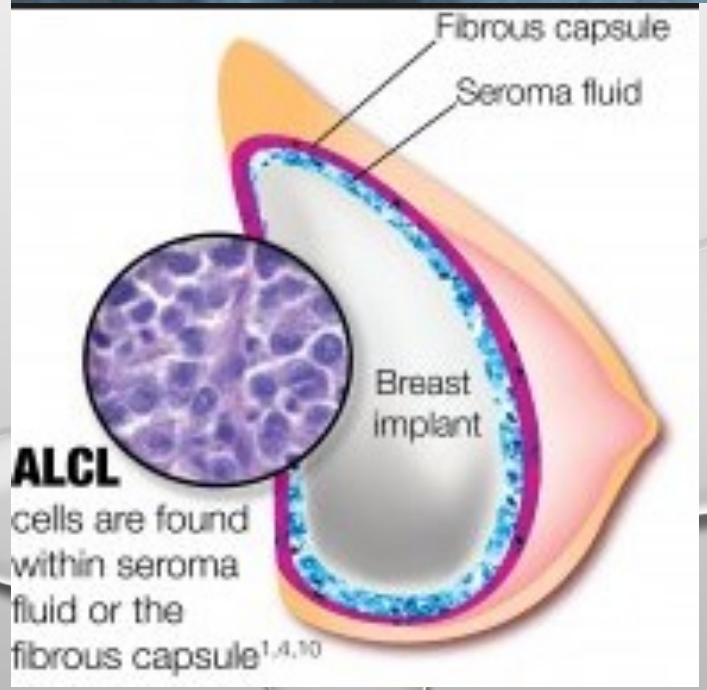


B/L CC grade IV. 240mL subglandular. 13 cm BW. 8.5 N-IMF. Correction with style 410 350cc's dual plane

SEROMA

- 1-2%
- Swollen breast
- Trans illuminates
- Tx
  - Initial Abx or steroids x 2 tries
- Not resolved
  - Blunt Cannula drainage/ abx irrigation, steroid instillation
  - Explant, irrigate, re-implant in 3 months
- Late Seroma, consider Anaplastic Large Cell Lymphoma (ALCL)
  - Very rare, 60 cases reported 1997-2010 world wide
  - Incidence 1:30,000
  - Associated with "salt loss" textured implants



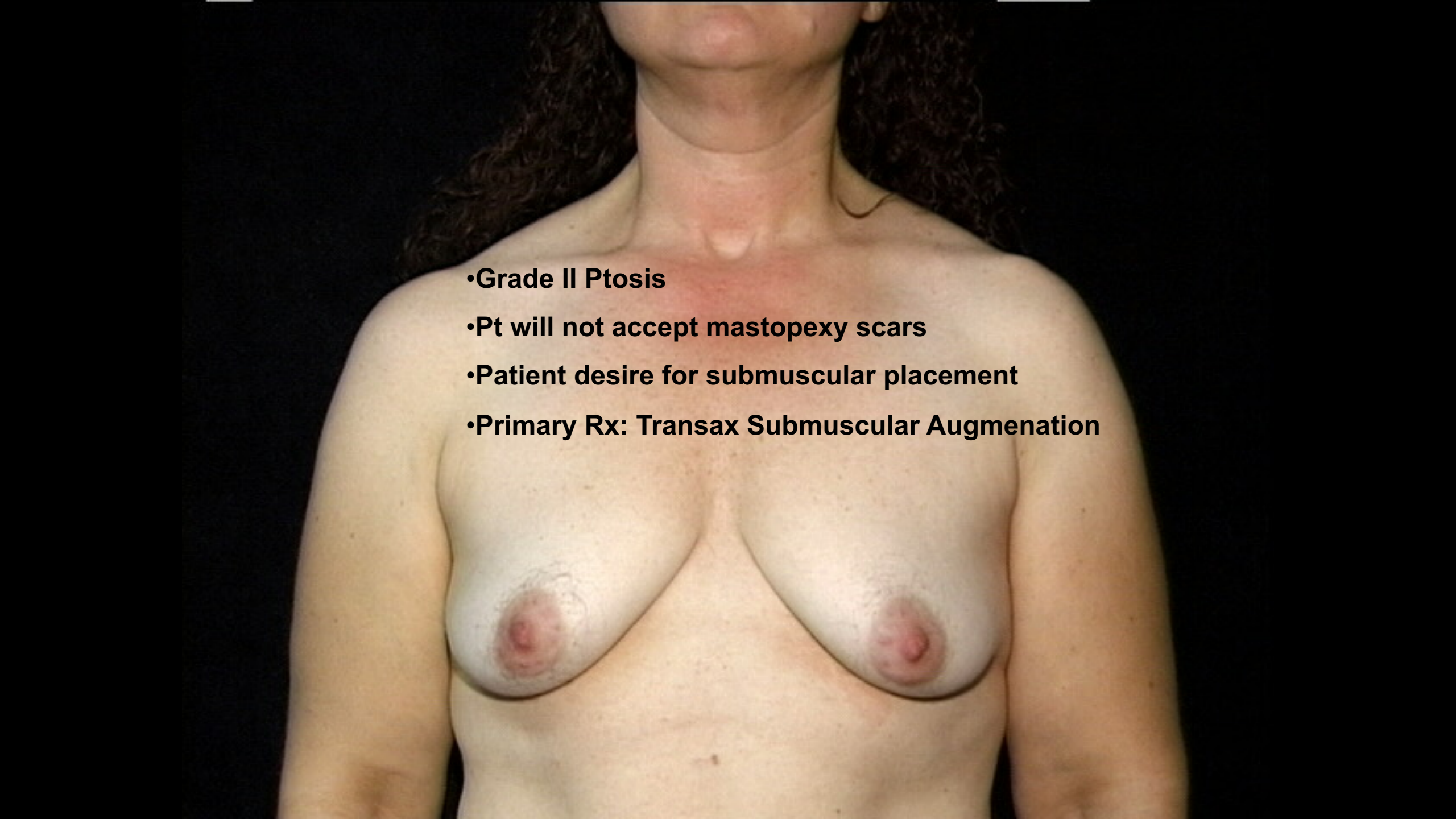


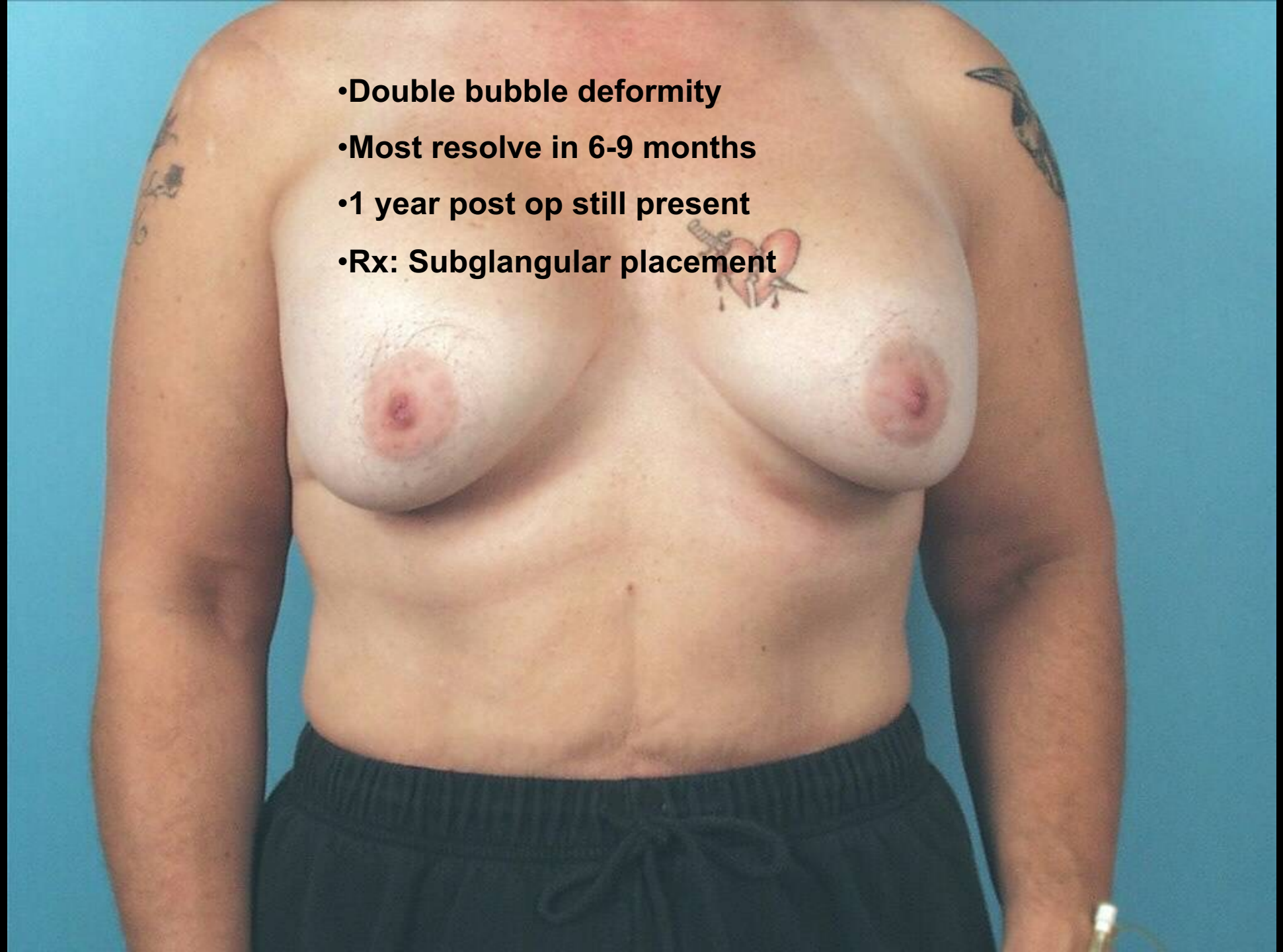
COMPLICATIONS

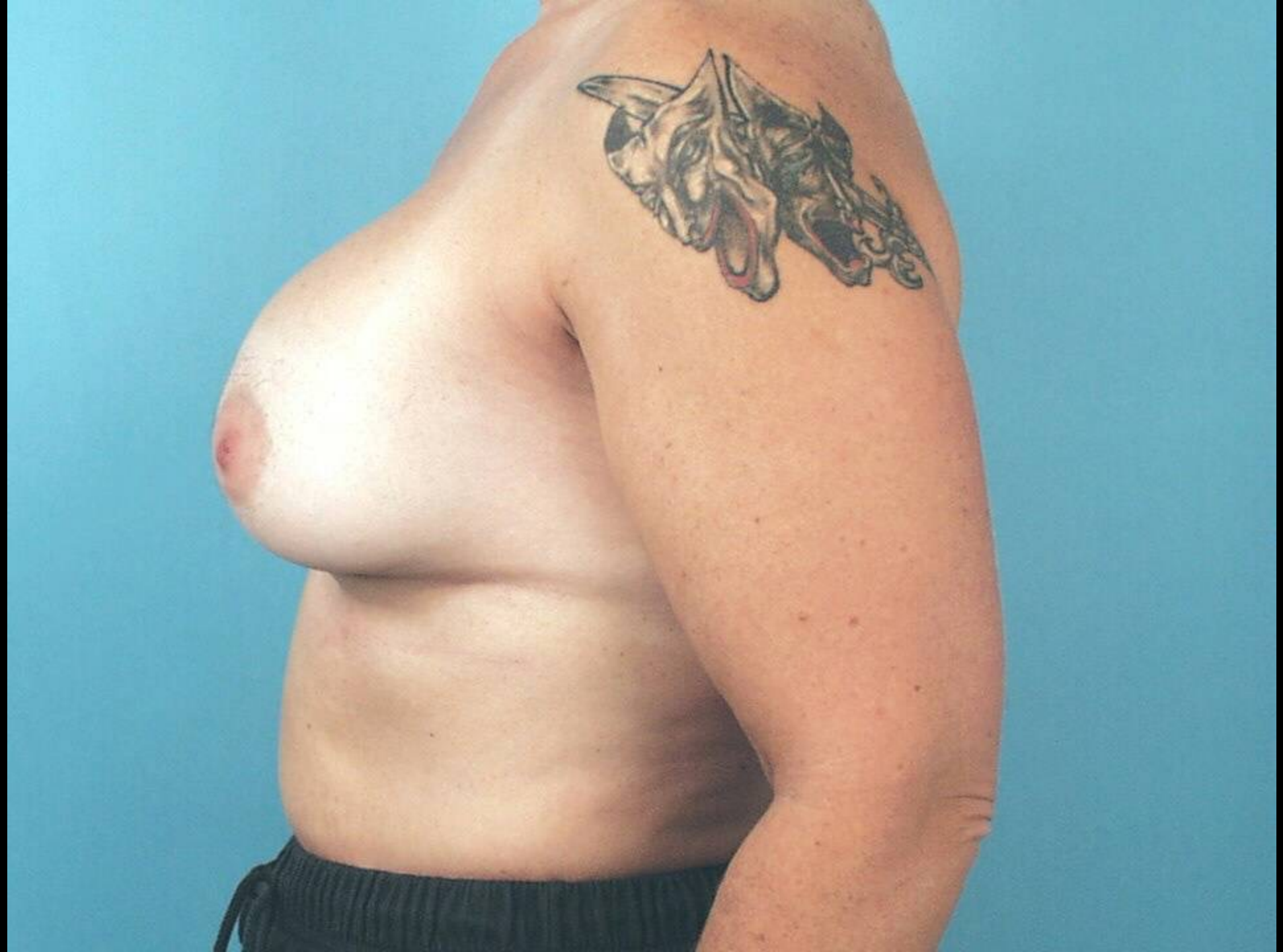
- Ptosis- BA public enemy #1
- Double bubble deformity
- Options
  - Subglandular placement
  - Mastopexy

BREAST PTOSIS CLASSIFICATION (REGNAULT)

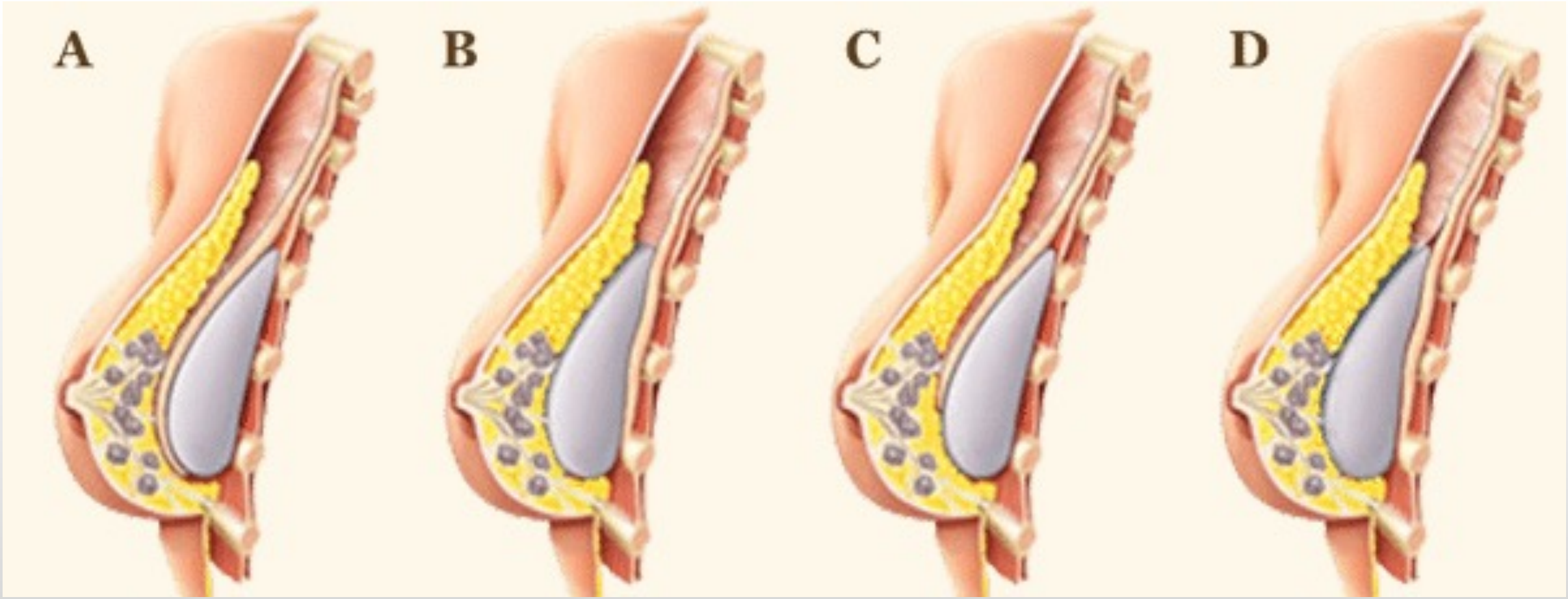
Normal	**= Nipple above IMF + lower pole at IMF**
Pseudoptosis	**= Nipple above IMF + lower pole below IMF**
Grade I	**= Nipple at IMF**
Grade II	**= Nipple below IMF but above lower pole**
Grade III	**= Nipple below IMF but below lower pole**


•Grade II Ptosis
•Pt will not accept mastopexy scars
•Patient desire for submuscular placement
•Primary Rx: Transax Submuscular Augmenation


•Double bubble deformity
•Most resolve in 6-9 months
•1 year post op still present
•Rx: Subglangular placement



POCKET SELECTION

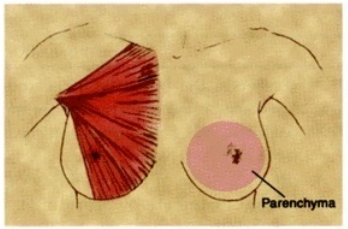
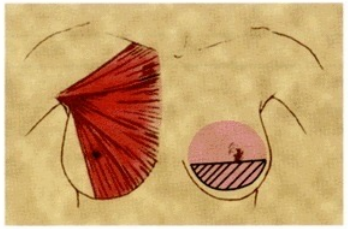
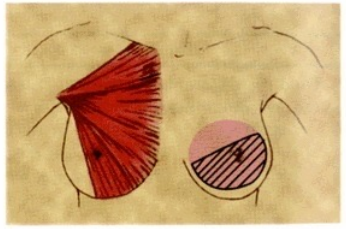
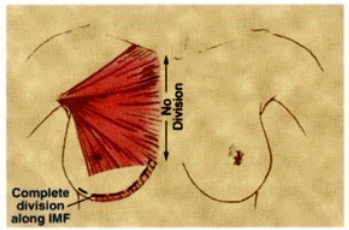
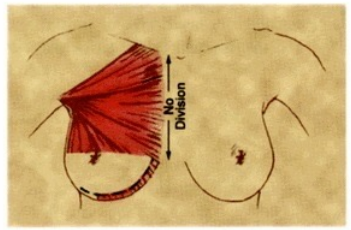
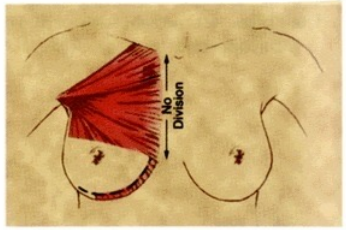
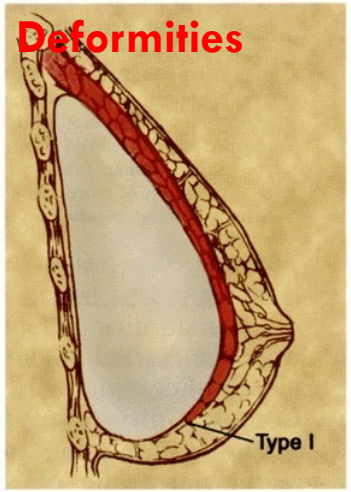
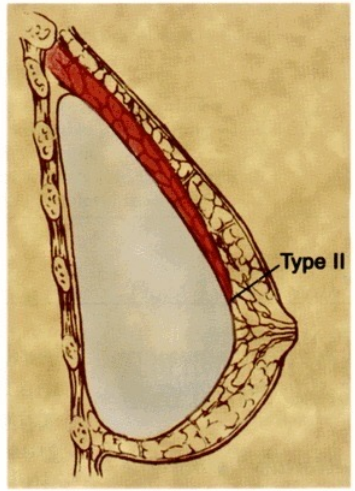
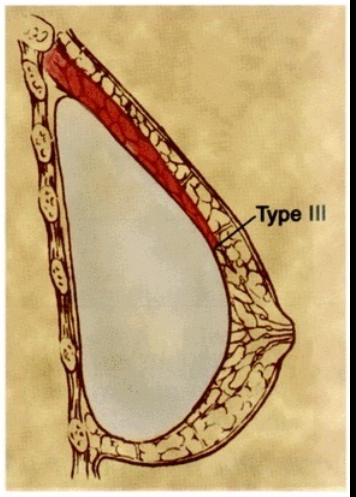


A. Submuscular

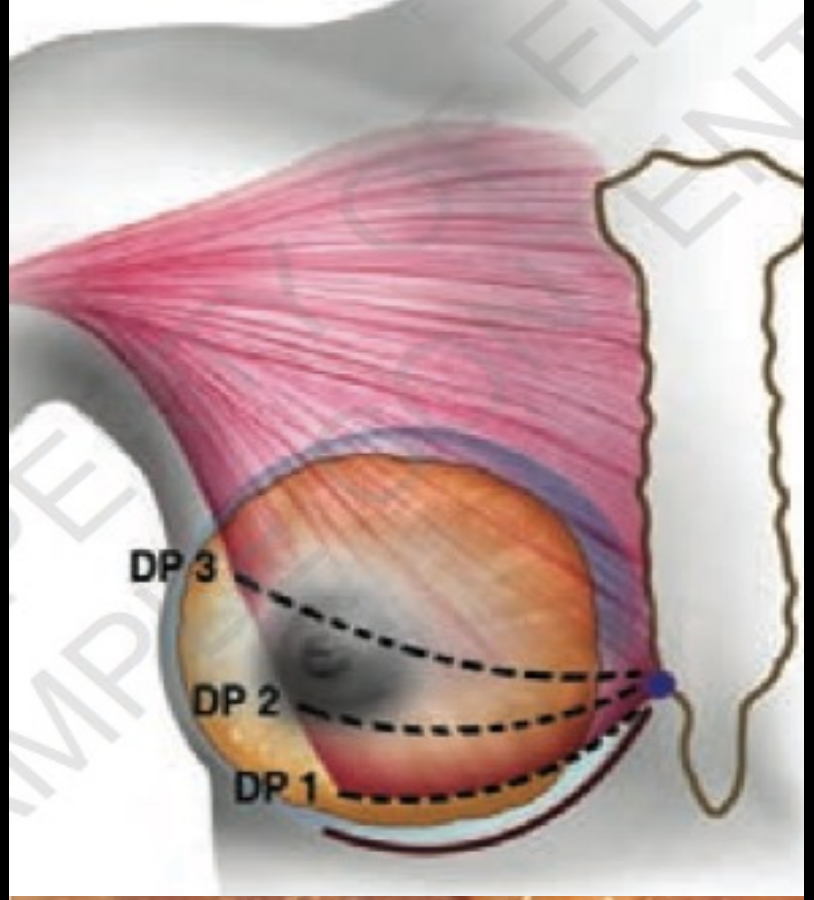
B. Subglandular

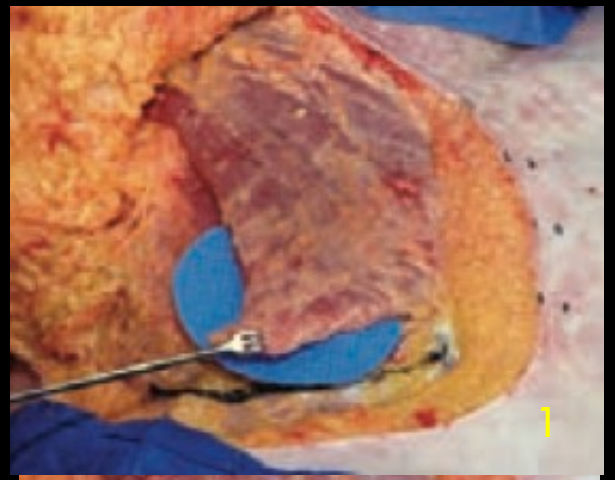
C. Partial Submuscular (Dual Plane)

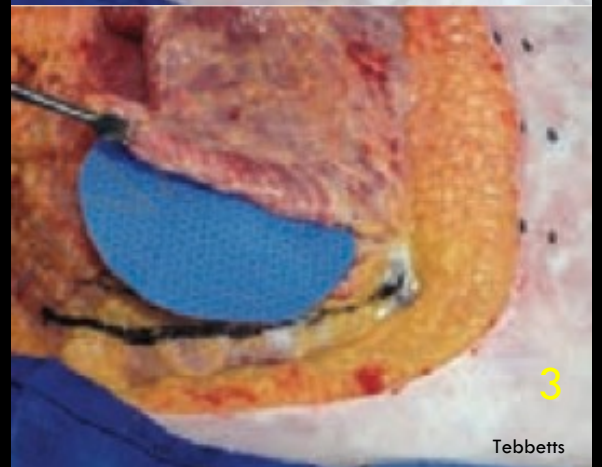
D. Subfascial

	I	II	III
Parenchyma-Muscle (PM) Interface Separation	 No PM interface separation	 PM interface separation to inferior edges of areola	 PM interface separation to superior edge of areola
Pectoralis Muscle Division	 Most Common 90+% BAs Deformities	 Glandular Ptosis	 Constricted
Lateral View Pectoralis Position Related to Anatomic Implant			
Apply to Following Breast Types	Most routine breasts (Type I)	Breasts with mobile parenchyma-muscle interface (Type II)	Glandular ptotic and constricted lower pole breasts (Type III)

Pectoralis
Fascia
0.2mm







MALPOSITION

- Inferior Pole Malposition
- Fold Malposition
- Lateral Malposition
- Synmastia/ Symmastia
- Double bubble deformity

INFERIOR POLE MALPOSITION

"Bottoming out" Lower Pole Stretch

Not to be confused with IMF malposition

Increased N:IMF distance + appropriate fold positio

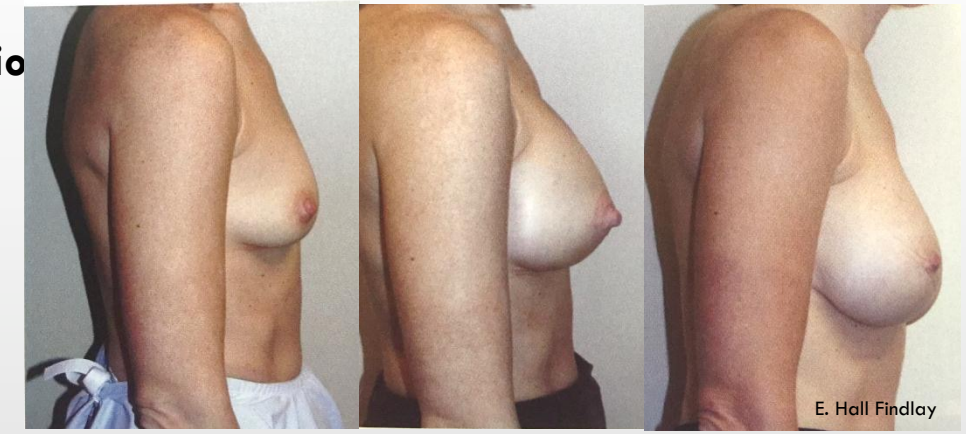
Can exist with implant malposition

Causes

- **Large implants**
- **Release IMF/poor pocket dissection**
- **Tight skin envelope**
- **Gravity**

Avoidance

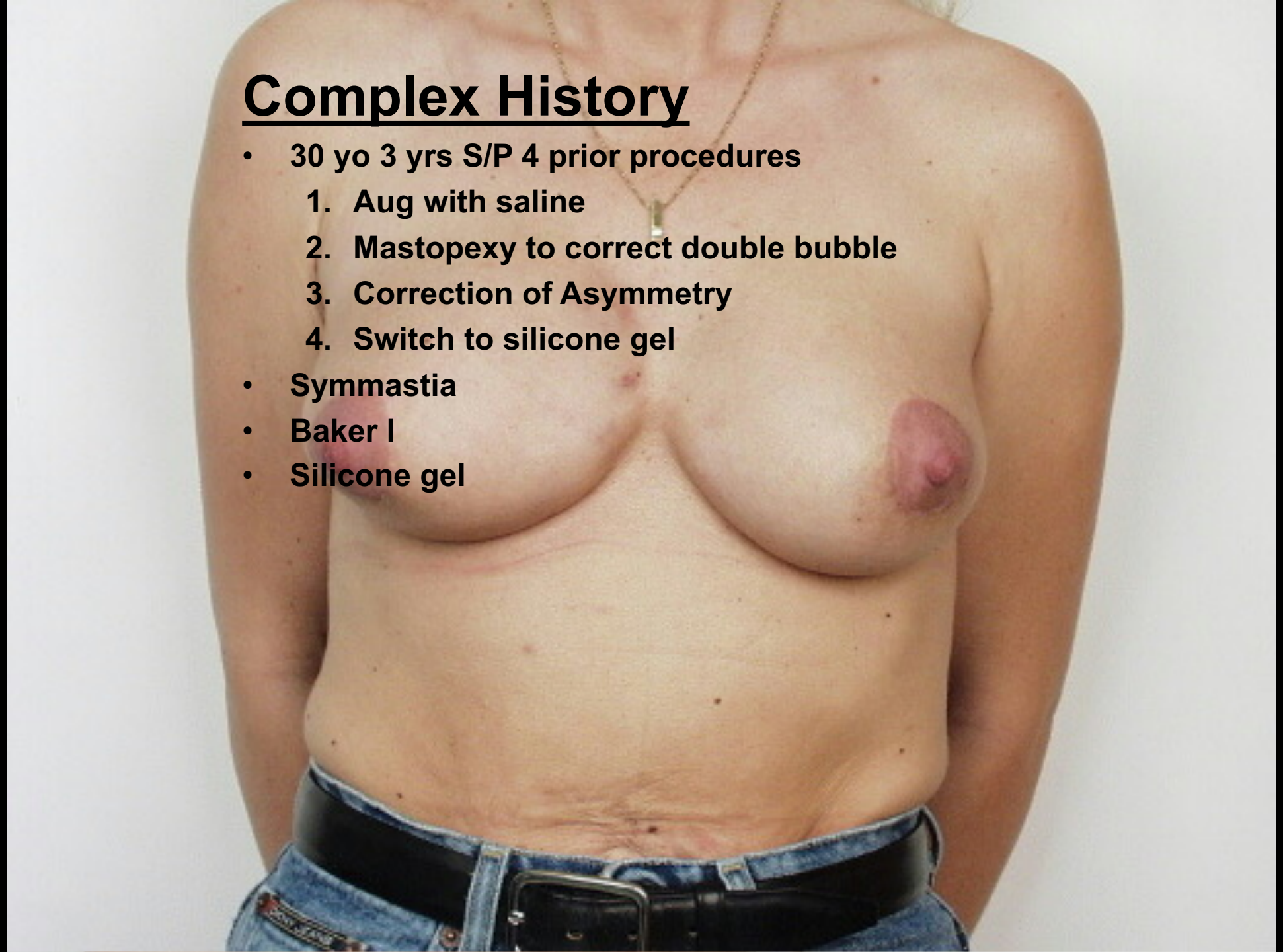
- **Some bottoming out expected**
- **Nipple drops 2 cm on average**
- **Appropriate fitting implant selection**
- **Silicone vs. Saline**



Implant width (cm)	New nipple to inframammary fold distance (cm)
11.0	7.5 ± 0.5
11.5	8.0 ± 0.5
12.0	8.5 ± 0.5
12.5	9.0 ± 0.5
13.0	9.5 ± 0.5

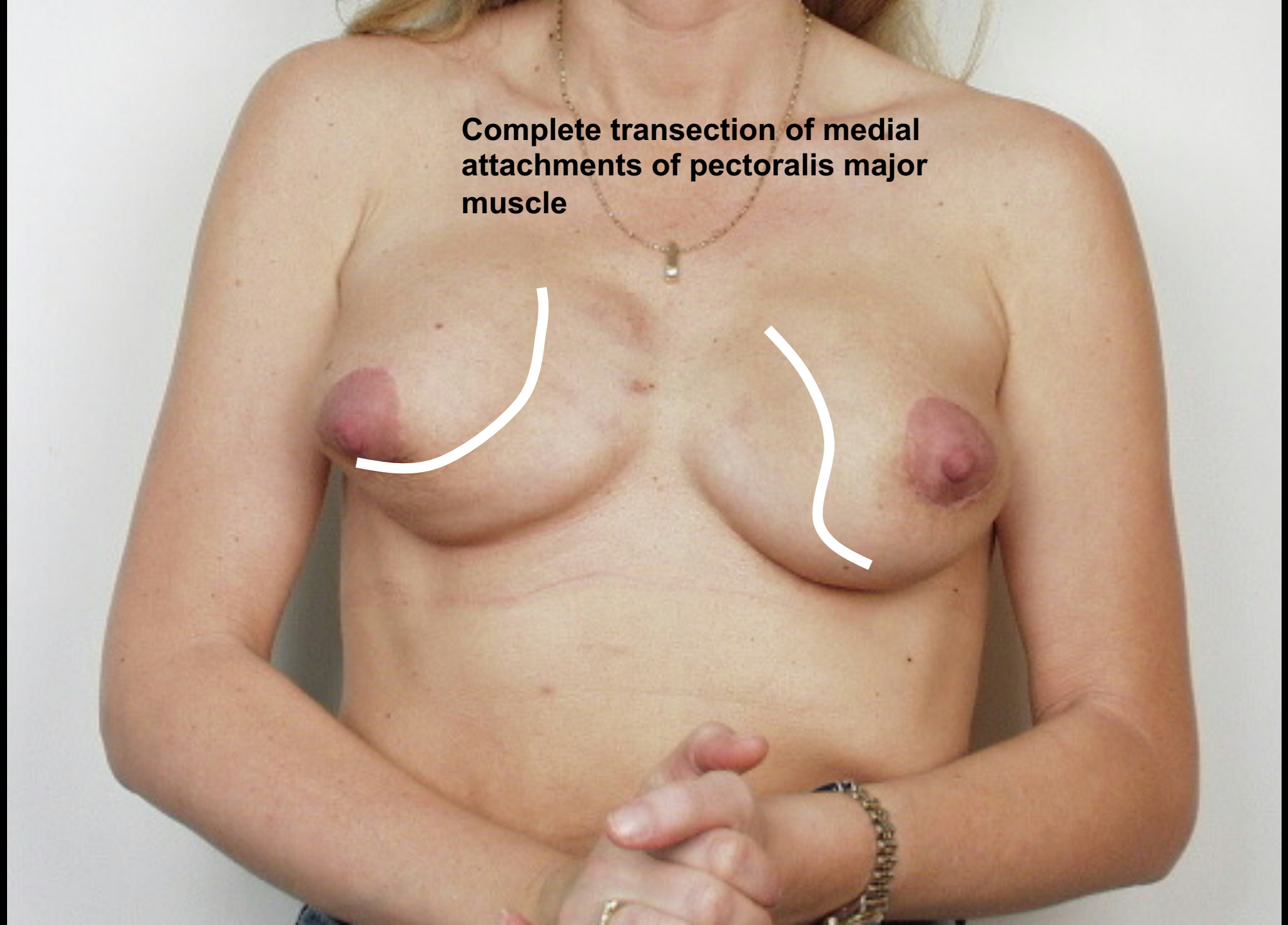
SYNMASTIA/IATROGENIC

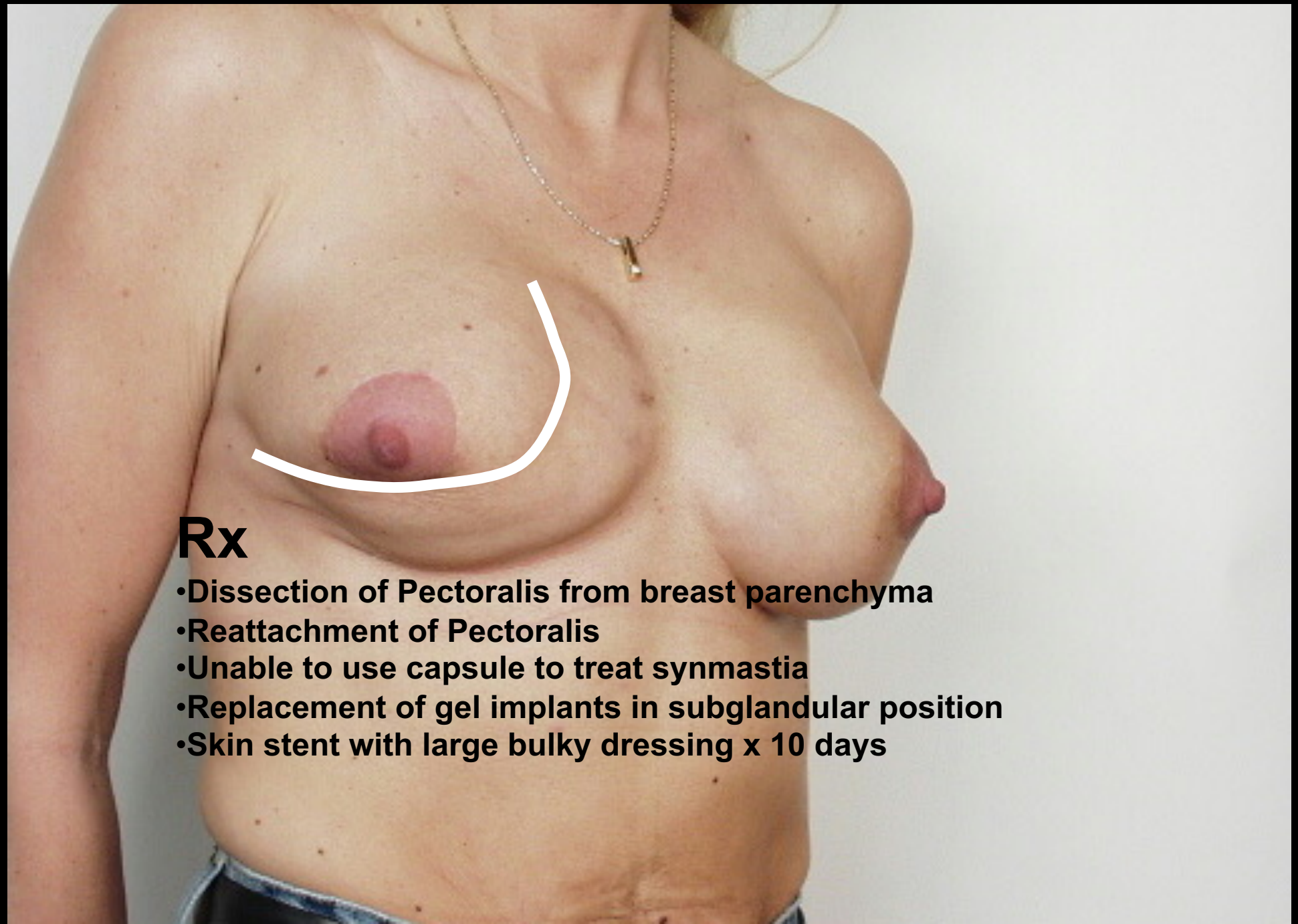
- Overaggressive dissection
- Midline pectoral sternal attachments disrupted
- Most difficult challenge
- Manage expectations – critical
- Stress breast are sisters NOT twins
- May require combination of all surgical skills
  - Augmentation
  - Mastopexy
  - Expanders
  - Reconstruction



Complex History

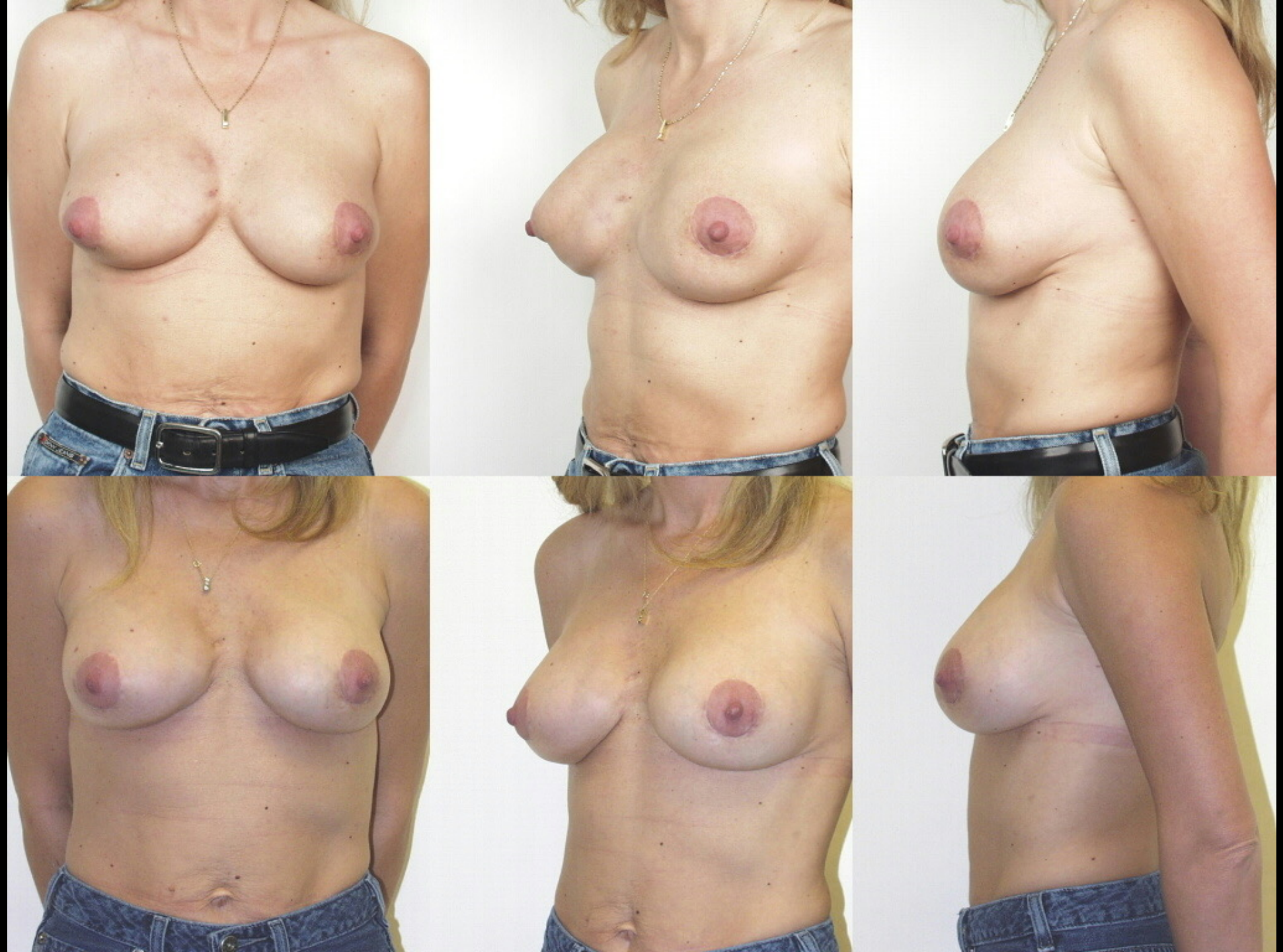
- 30 yo 3 yrs S/P 4 prior procedures
  1. Aug with saline
  2. Mastopexy to correct double bubble
  3. Correction of Asymmetry
  4. Switch to silicone gel
- Symmastia
- Baker I
- Silicone gel


Complete transection of medial attachments of pectoralis major muscle



Rx

- Dissection of Pectoralis from breast parenchyma
- Reattachment of Pectoralis
- Unable to use capsule to treat synmastia
- Replacement of gel implants in subglandular position
- Skin stent with large bulky dressing x 10 days



DOUBLE BUBBLE

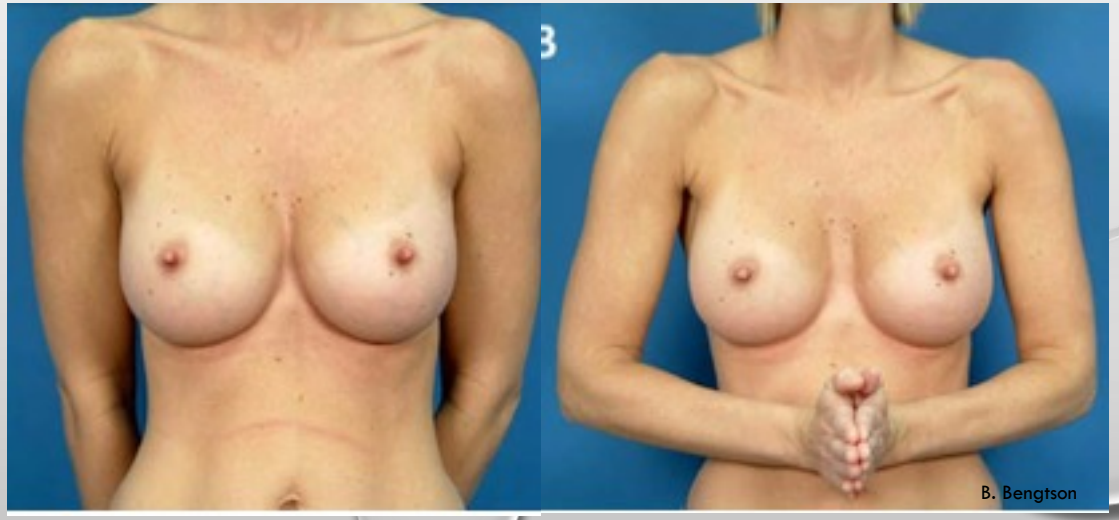
- 3 TYPES
- 1. Waterfall effect
- 2. Persistence of the old IMF
- 3. Scar tissue causing Pectoral-dermal insertion

- Implant/Breast Mismatch?
- Blunt Dissection

- Prevention
- Correct size implant BW
- Scoring IMF fibers

DANCING BREASTS

- Expected Side effect.
  Not a complication
- Submuscular placement
- Thin, active patients
- Body Builders
- Avoidance
  - Dual Plane
  - Subglandular



TUBEROUS BREAST DEFORMITY

DIAGNOSIS AND TREATMENT

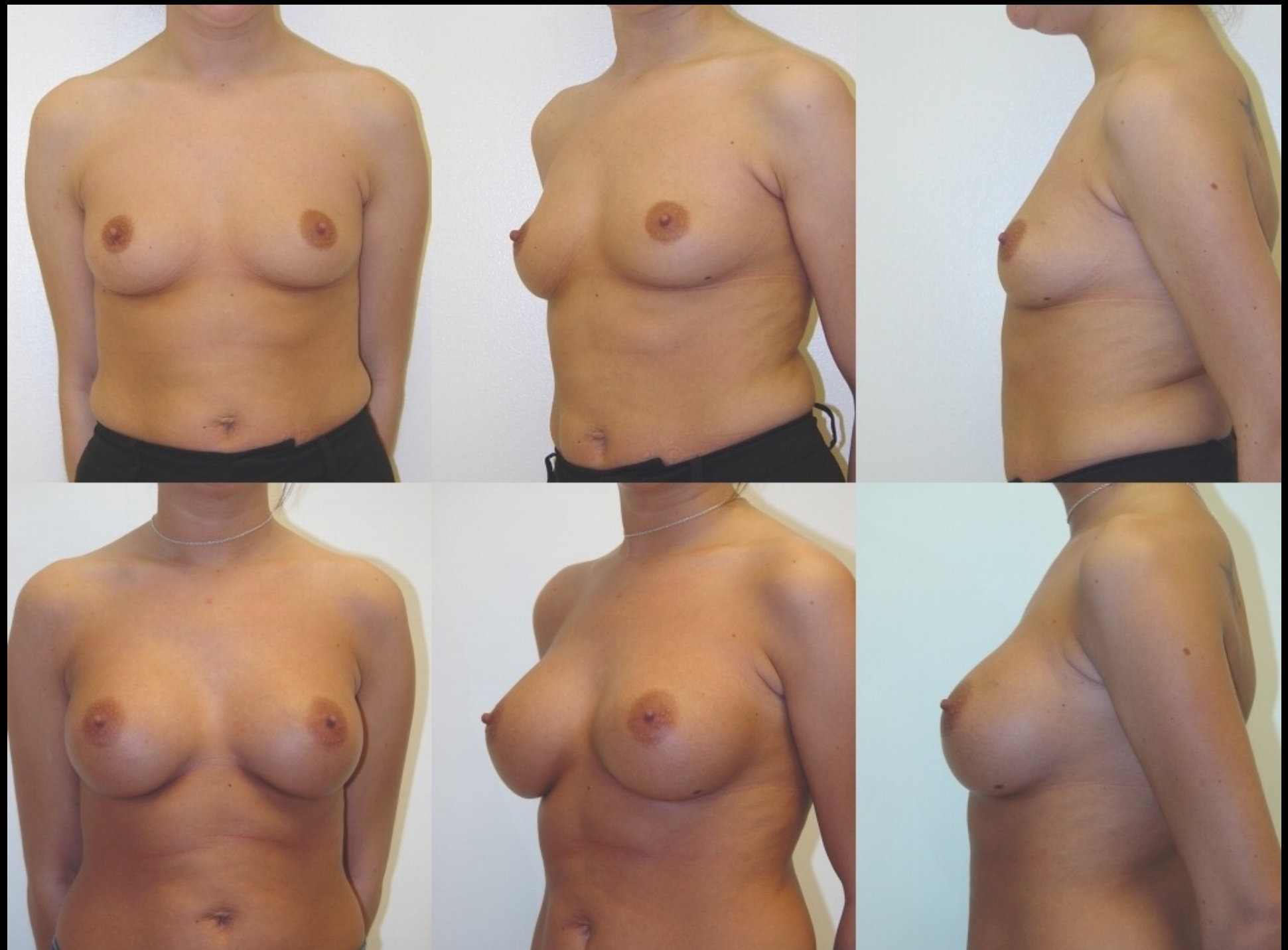
E. Antonio Mangubat, MD

Seattle, WA

DISCLOSURE OF CONFLICTS OF INTEREST

E. Antonio Mangubat, MD

- **Solta Medical**
- **KMI**
- **Shippert Medical Technologies Corp.**

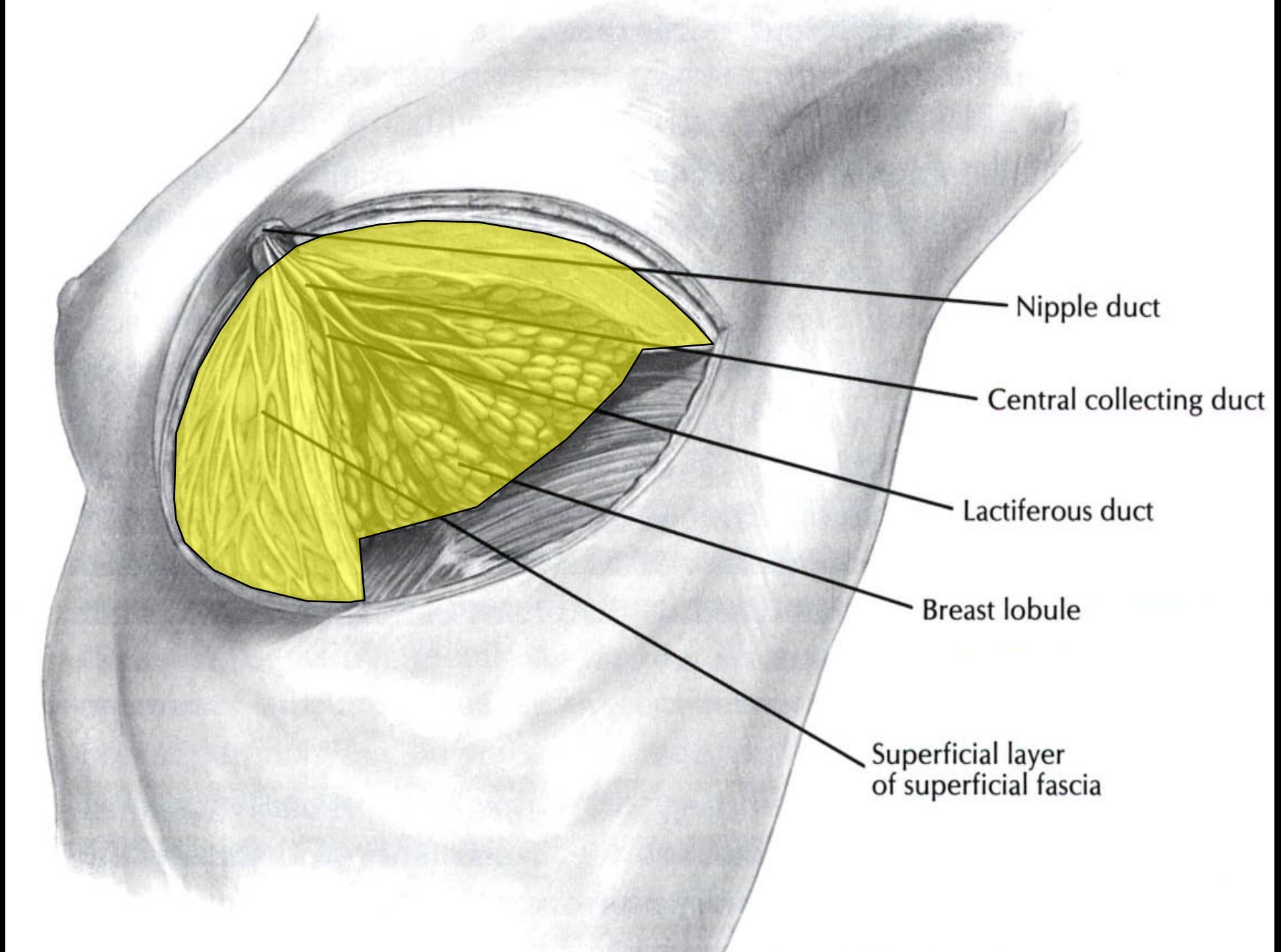


TUBEROUS BREAST HALLMARK FEATURES

- Deficient skin envelope
- Short nipple-IMF distance
- Short vertical & horizontal base diameter creates tubular appearance.
- Excessively prominent NAC caused by herniation of breast tissue against a constricted base
- Usually hypoplastic breast
- Ptosis common with high IMF

TUBEROUS BREAST HALLMARK FEATURES

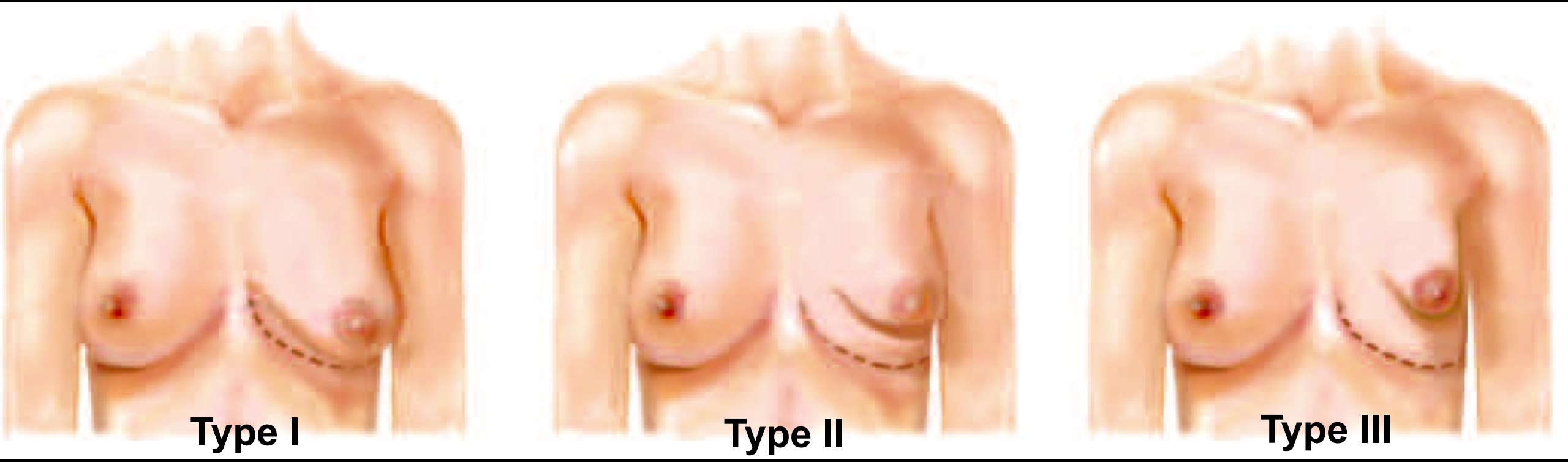
- Symmetry difficult to achieve
  - Breast parenchymal volume difference
  - Significantly different nipple IMF distances
- Contralateral breast often requires
  - Mastopexy
  - Reduction

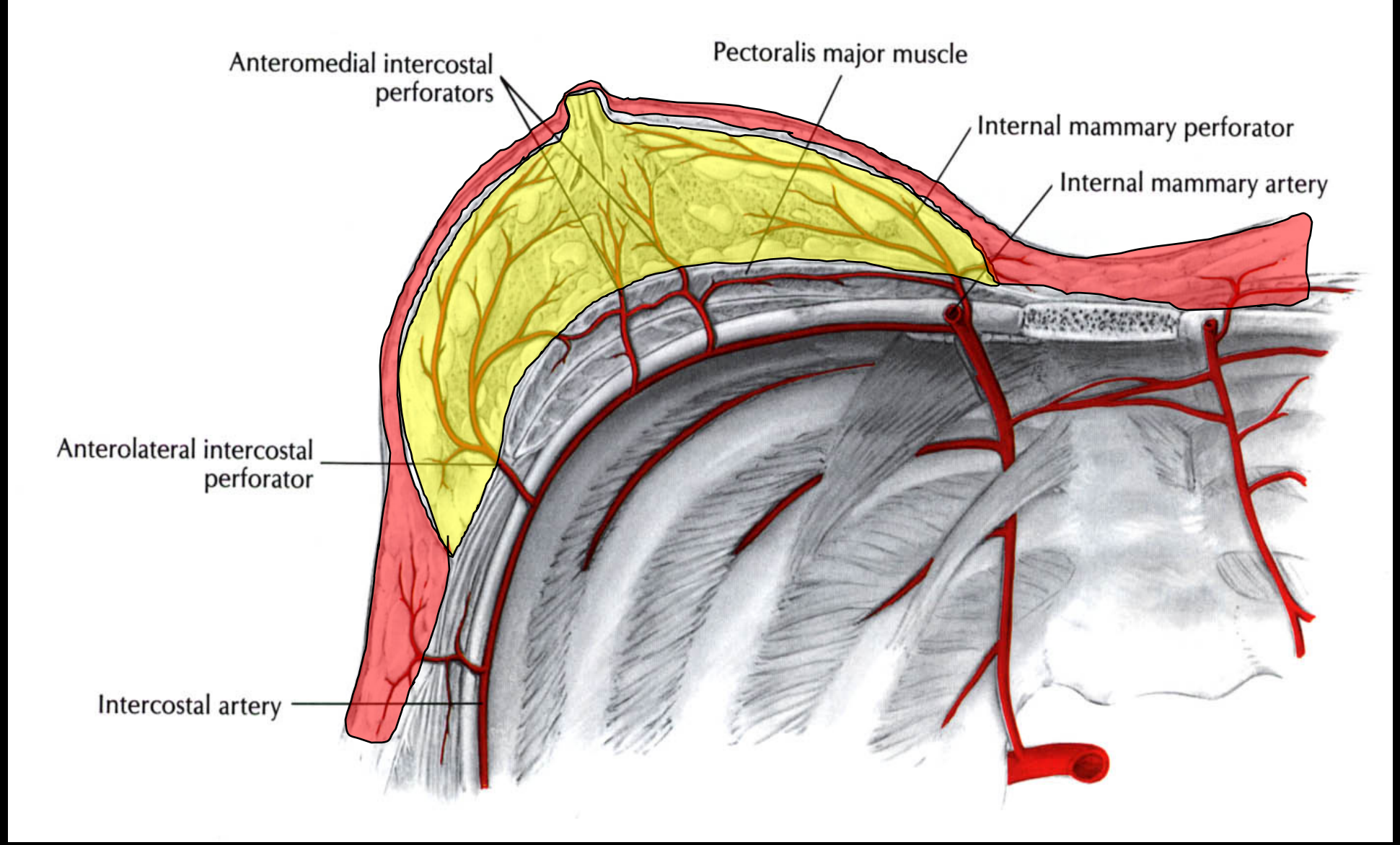

Nipple duct
Central collecting duct
Lactiferous duct
Breast lobule
Superficial layer
of superficial fascia

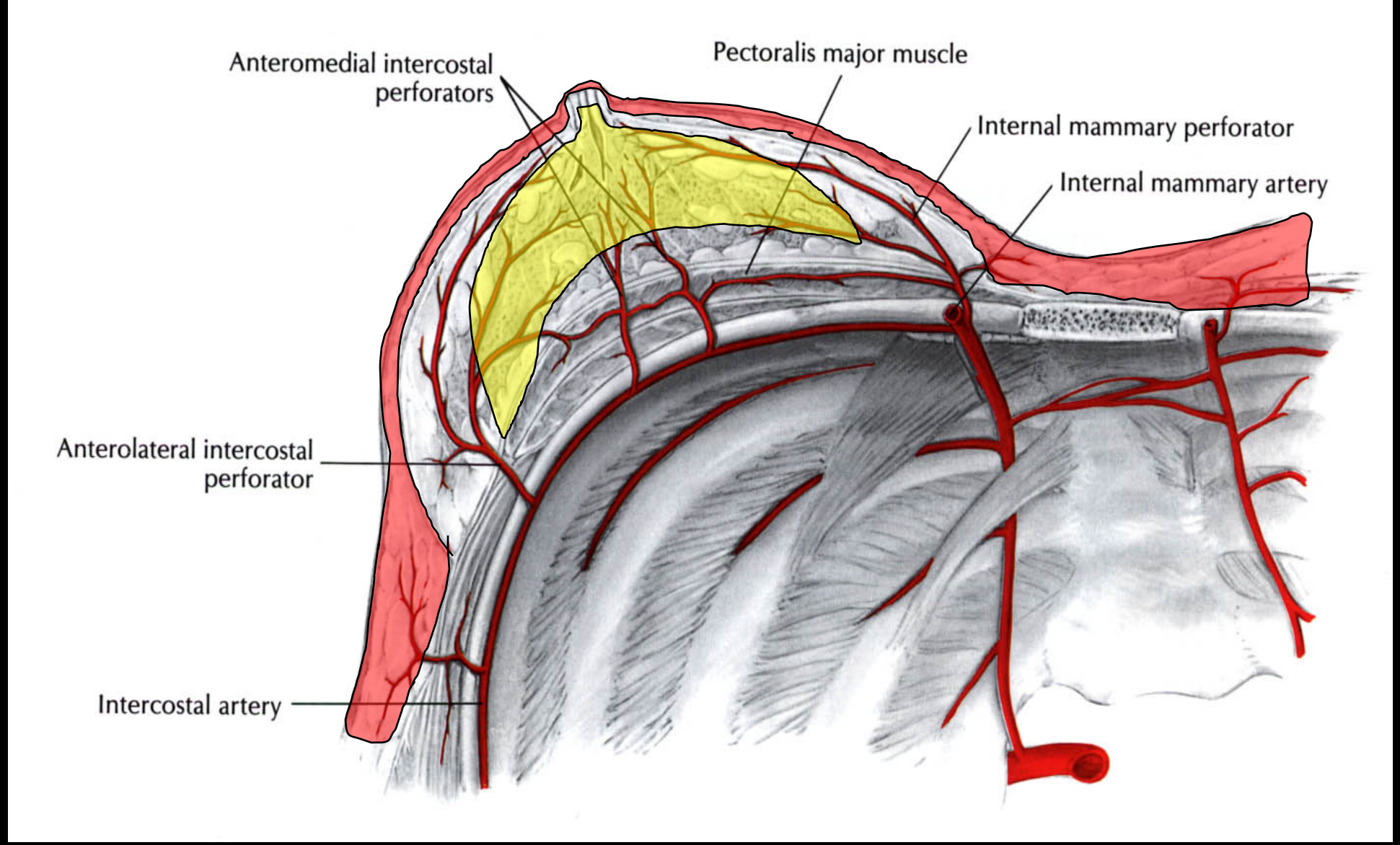
TUBEROUS DEFORMITY CLASSIFICATION

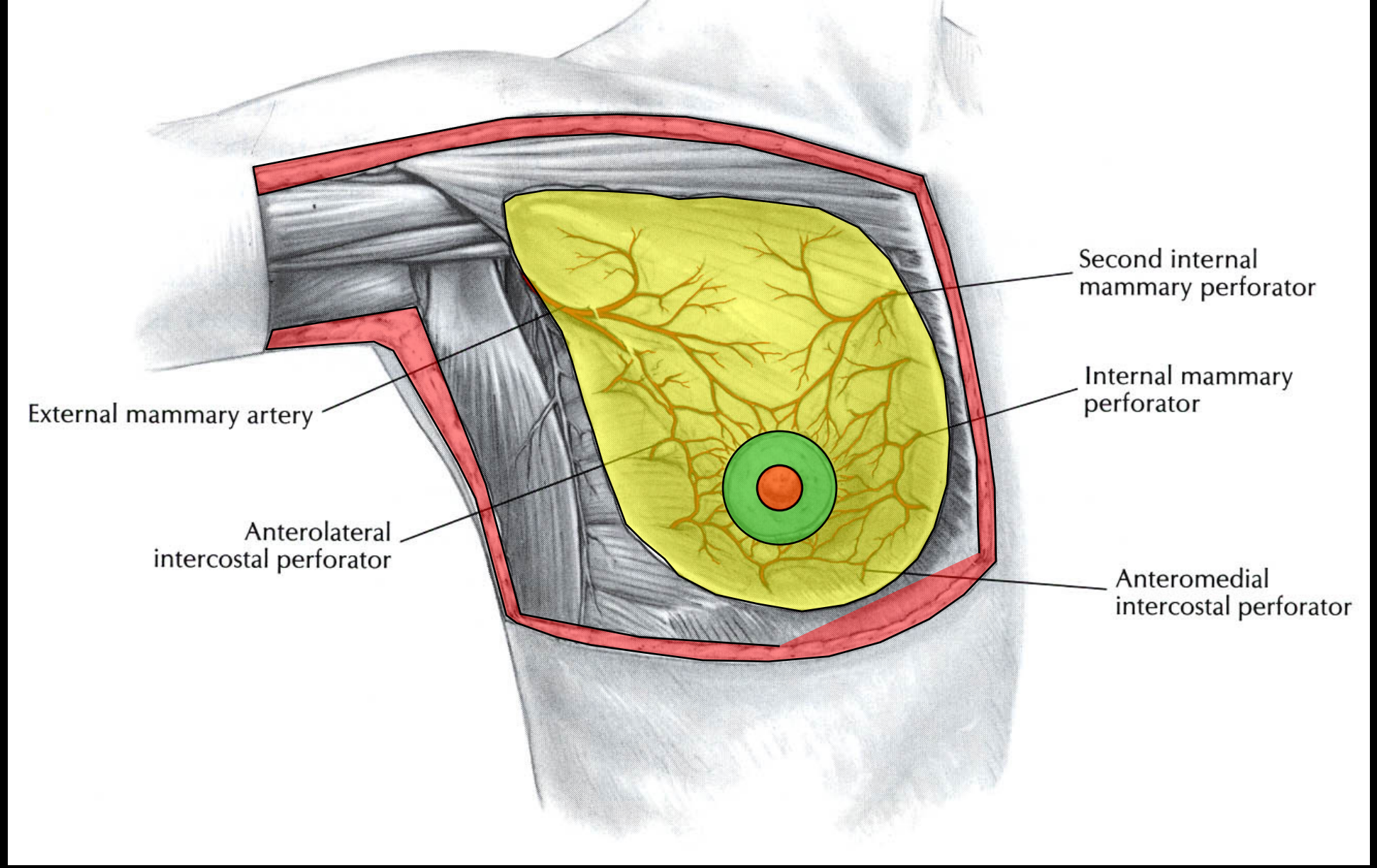
Classification	Features
Type I	Lower medial quadrant deficient
Type II	Both lower quadrants deficient
Type III	All four quadrants deficient with constriction of breast base horizontally and vertically.

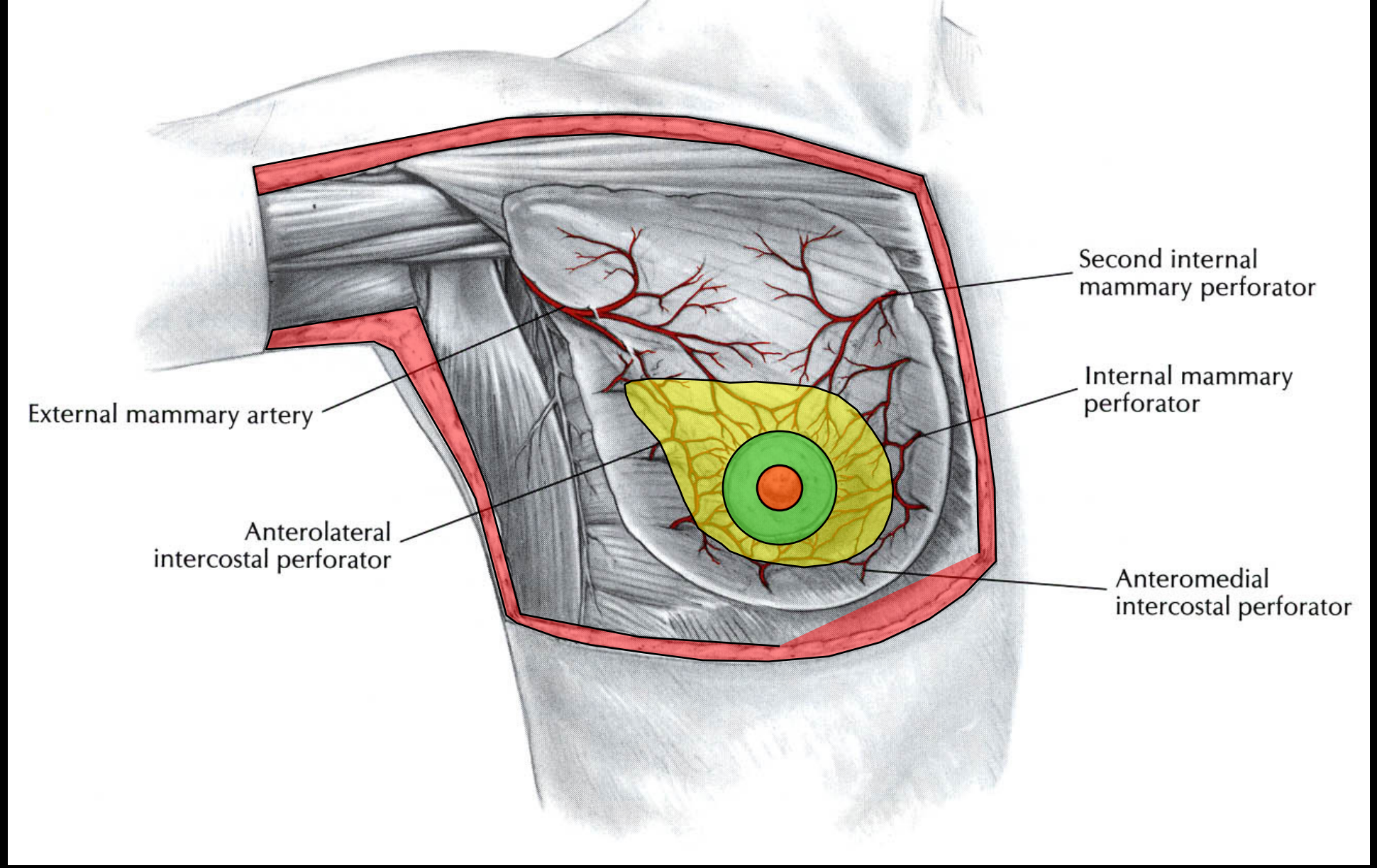
Grolleau, J. L., Lanfrey, E., Lavigne, B., et al. Breast base anomalies: Treatment strategy for tuberous breasts, minor deformities, and asymmetry. *PRS*. 104: 2040, 1999


Type I
Type II
Type III


Anteromedial intercostal perforators
Pectoralis major muscle
Internal mammary perforator
Internal mammary artery
Anterolateral intercostal perforator
Intercostal artery


Anteromedial intercostal perforators
Pectoralis major muscle
Internal mammary perforator
Internal mammary artery
Anterolateral intercostal perforator
Intercostal artery


Second internal
mammary perforator
Internal mammary
perforator
External mammary artery
Anterolateral
intercostal perforator
Anteromedial
intercostal perforator


Second internal
mammary perforator
Internal mammary
perforator
External mammary artery
Anterolateral
intercostal perforator
Anteromedial
intercostal perforator

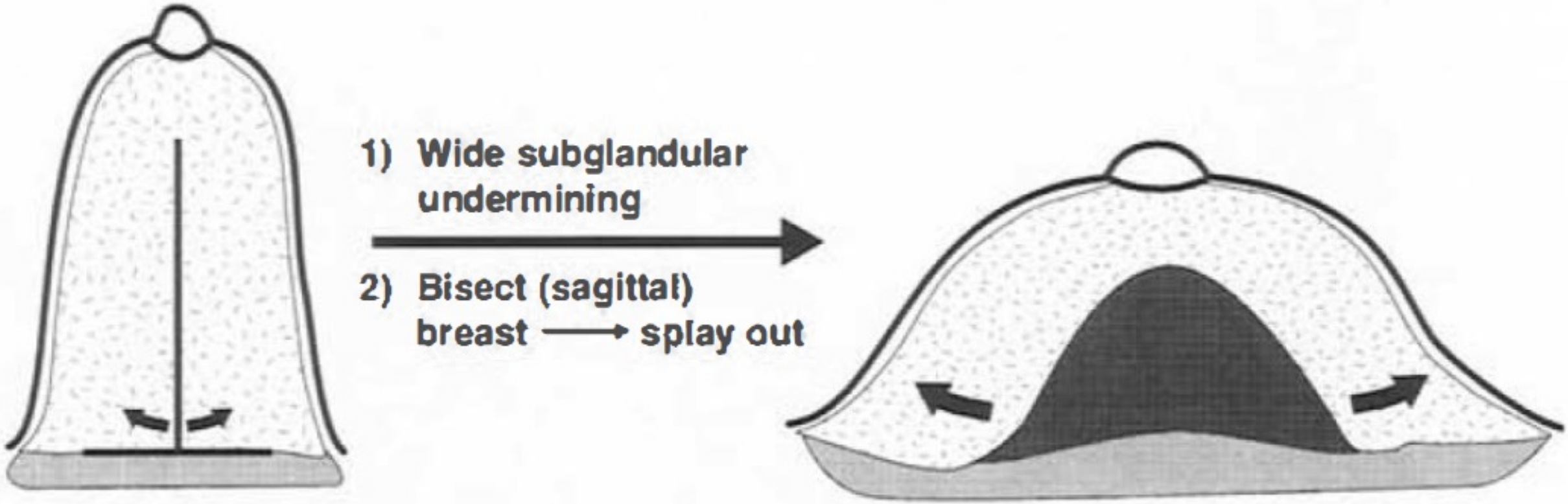
BREAST CONSTRICTION & ASYMMETRY

- Difficult challenge
- Manage expectations – critical
- Stress breast are sisters NOT twins
- Requires combination of surgical skill
  - Augmentation for size
  - Mastopexy for ptosis
  - Expanders often needed with deficient skin envelope

TUBEROUS BREAST TREATMENT

- Common universal maneuver=disrupt ring of tissue constriction
  - Incisions
  - Blunt spreading
- Transposing skin
  - lengthen NAC to IMF distance
  - Increase base width

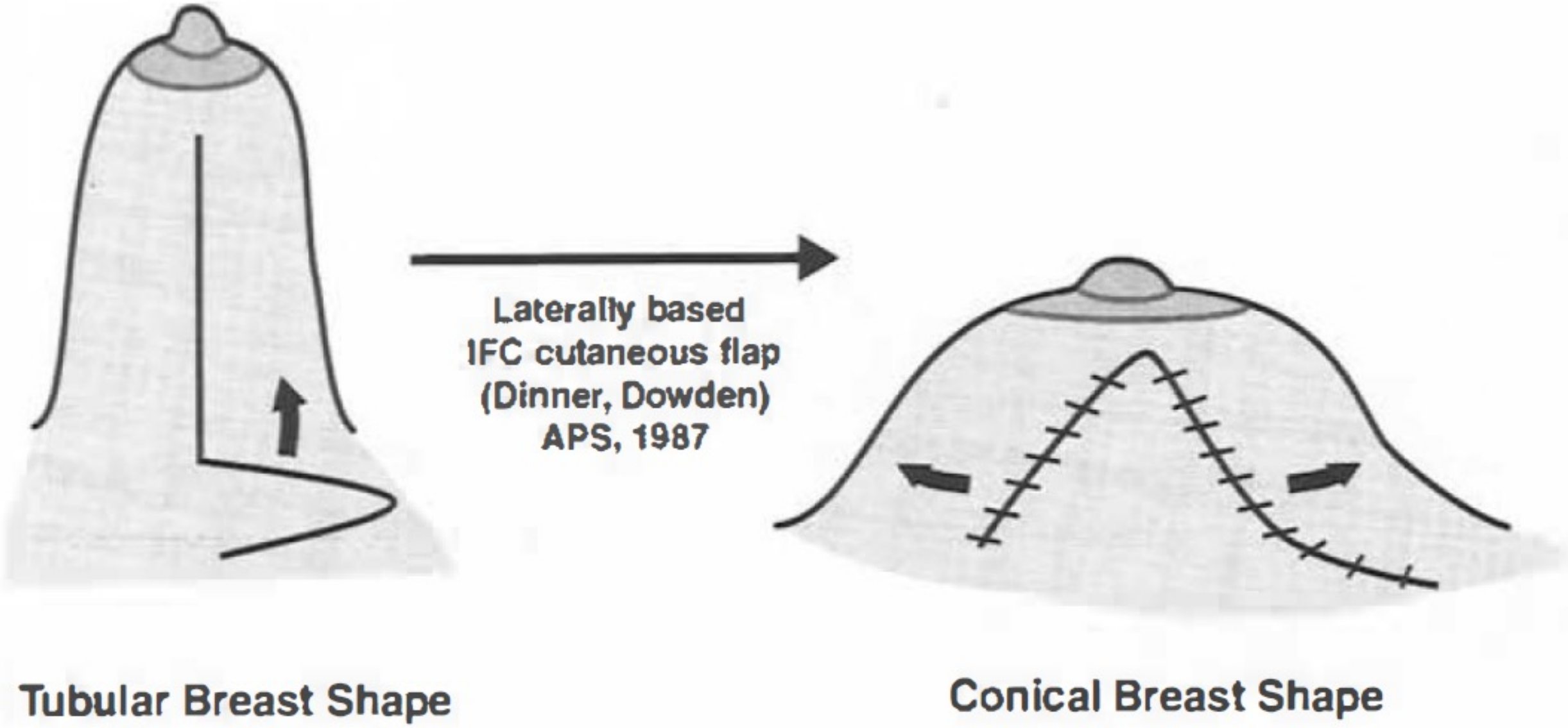
CONSTRICTED PARENCHYMA TREATMENT



Tubular Breast Shape

Conical Breast Shape
(with or without an implant)

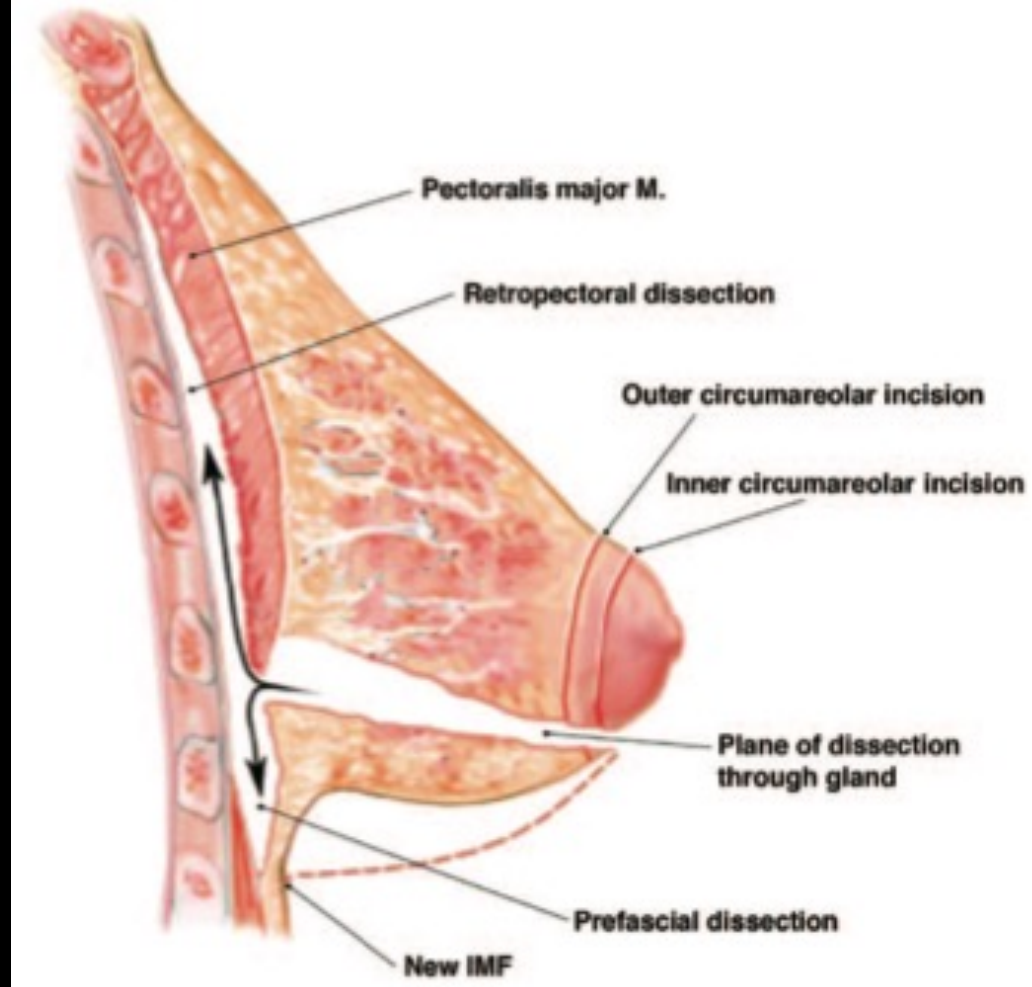
SKIN ENVELOPE TREATMENT

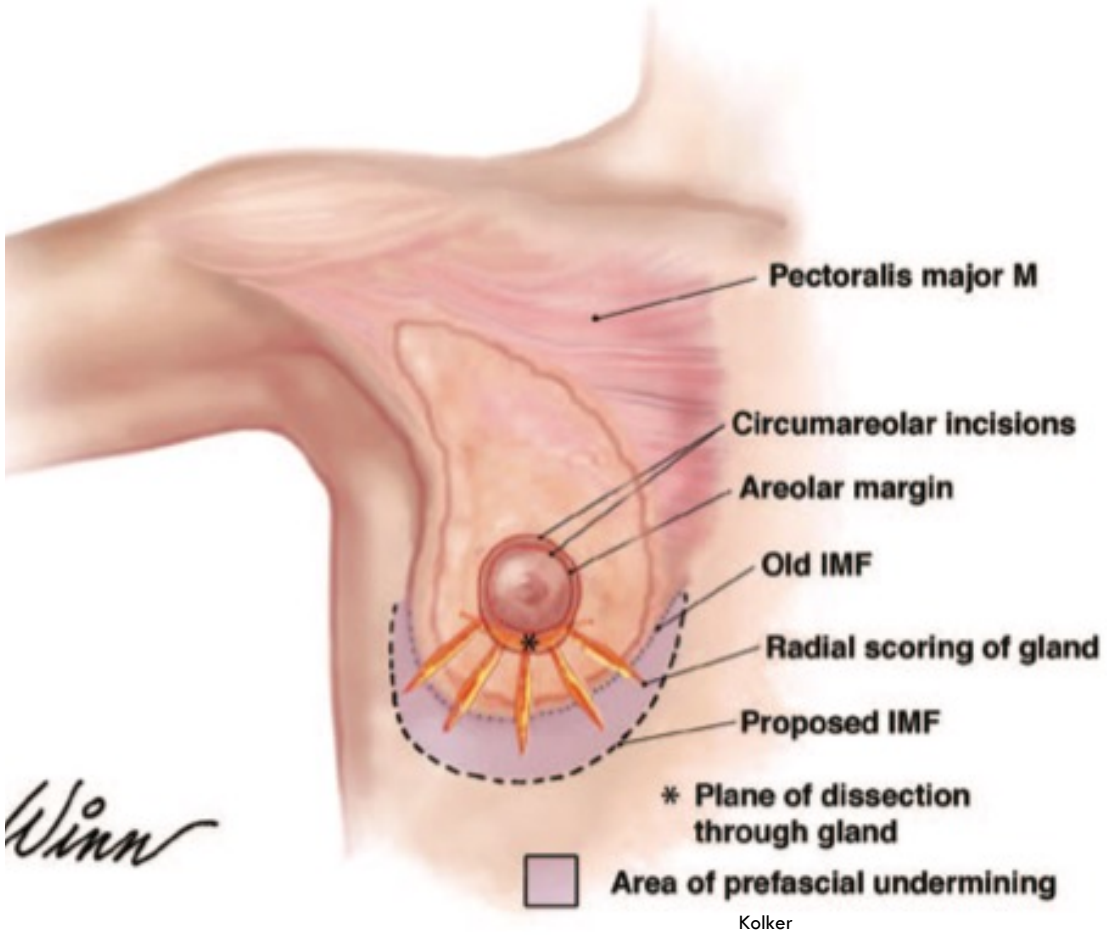


MOST COMMON MANEUVER

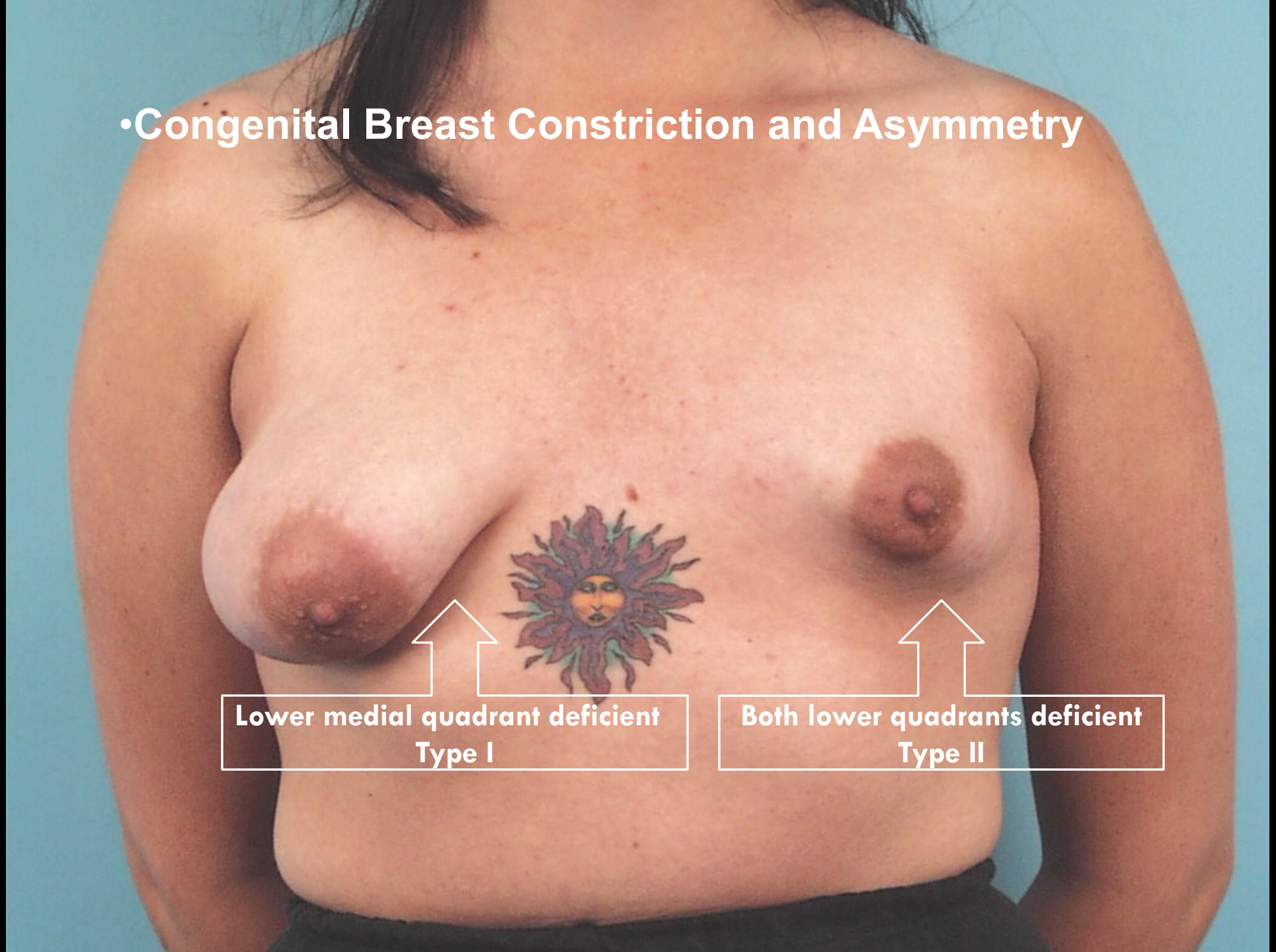
- Transaxillary breast augmentation
- Placement of implants
- Inspect for constriction pliability
  - Soft and resolve over time
  - Stiff requiring release
- Release transaxillary with iconoclast instrument
- Breast parenchyma distributes more evenly
- If NAC is still too prominent -> donut mastopexy
- Progressively more aggressive to include expanders and mastopexy

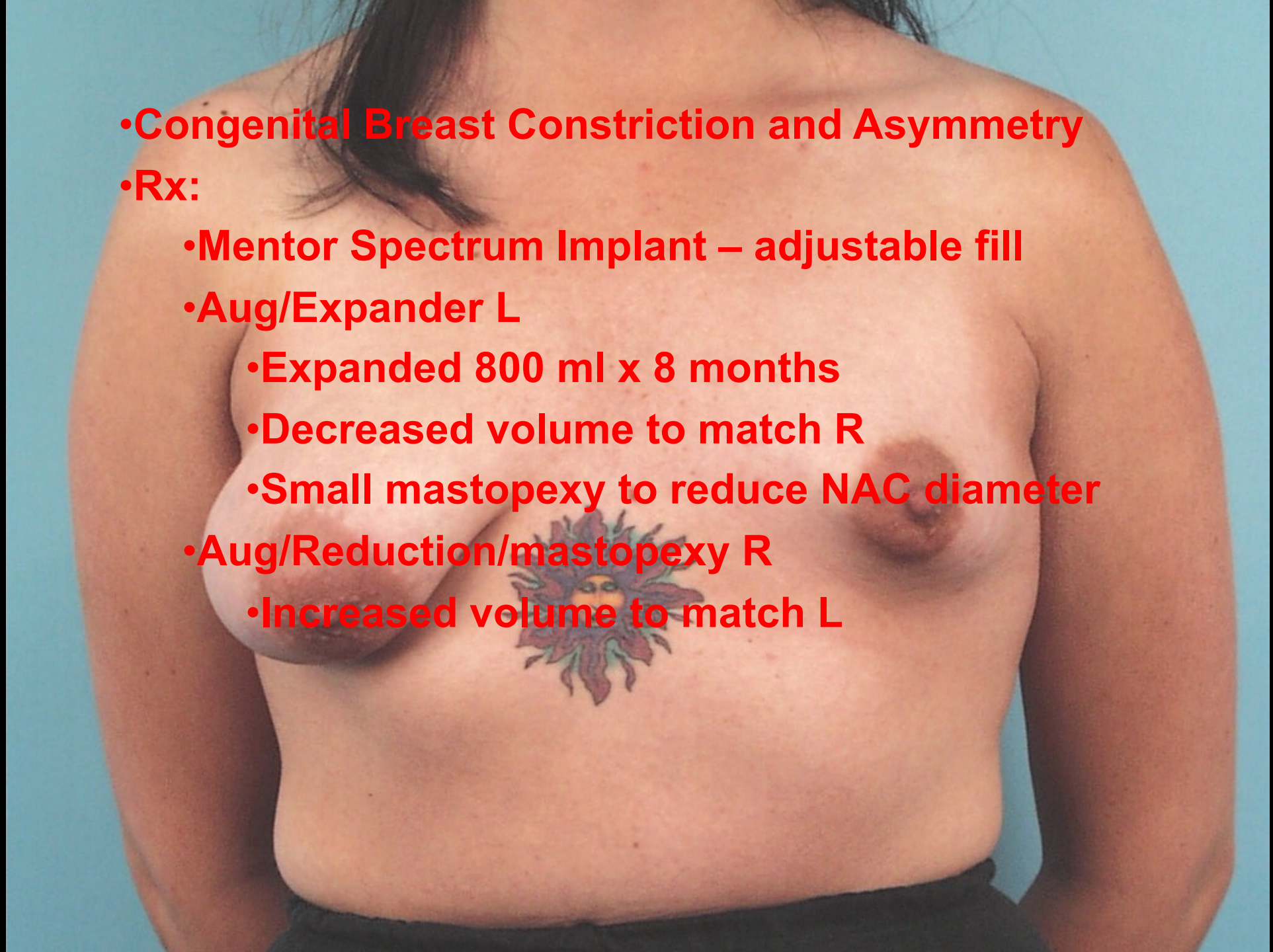
Type	Base	Inframammary Fold	Skin Envelope	Breast Volume	Ptosis	Areola
I	Minor constriction	Normal laterally, minor elevation medially	Sufficient	Minimal deficiency, no deficiency, or hypertrophy	Mild, moderate, or severe	Enlargement
II	Moderate constriction	Medial and lateral elevation	Inferior insufficiency	Moderate deficiency	None or mild	Normal, mild, or moderate herniation
III	Severe constriction	Elevation of entire fold, or fold absence	Global insufficiency	Severe deficiency	Mild/moderate	Severe herniation



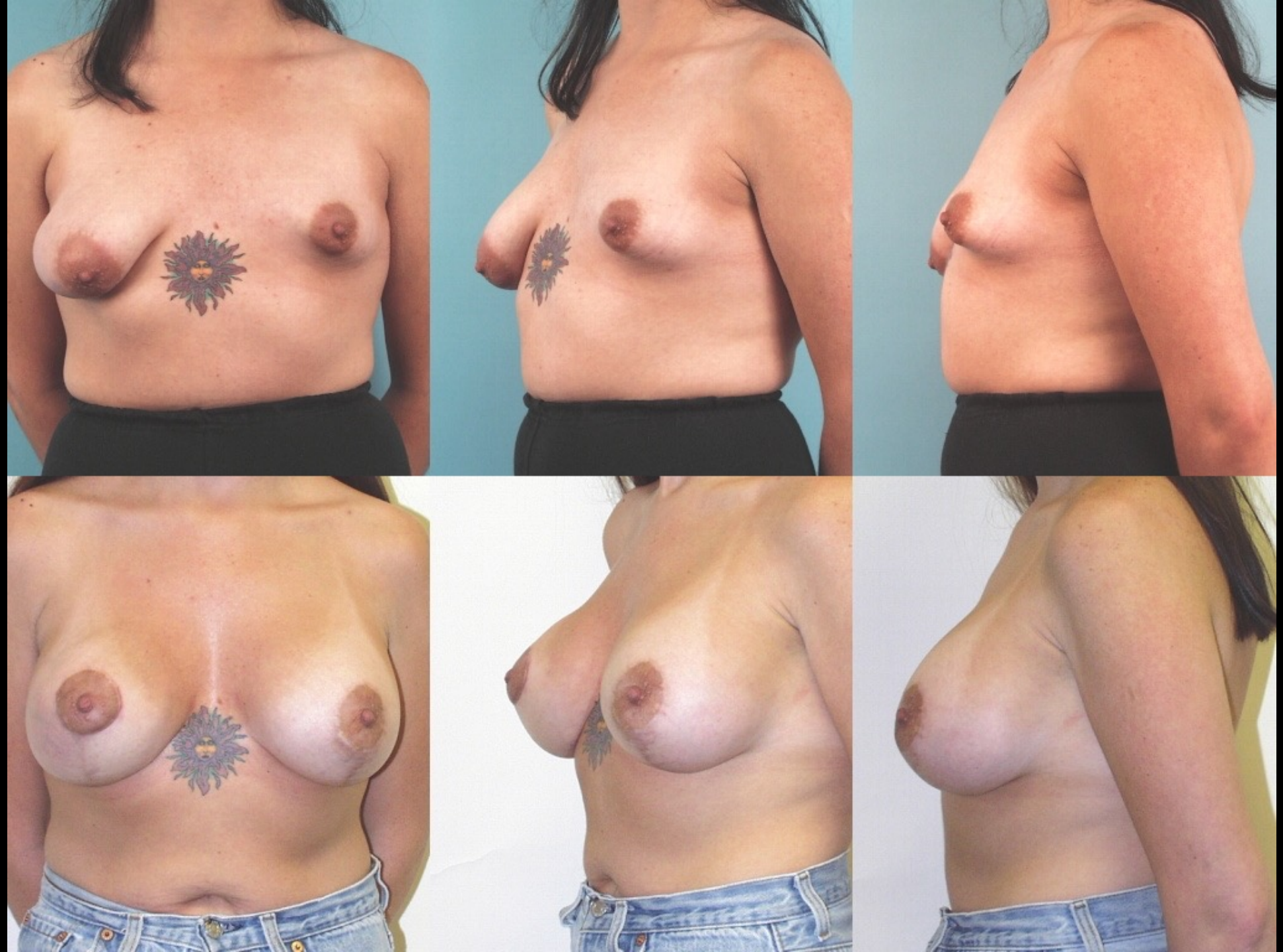


Kolker


•Congenital Breast Constriction and Asymmetry
Lower medial quadrant deficient
Type I
Both lower quadrants deficient
Type II



- Congenital Breast Constriction and Asymmetry
- Rx:
  - Mentor Spectrum Implant – adjustable fill
  - Aug/Expander L
    - Expanded 800 ml x 8 months
    - Decreased volume to match R
    - Small mastopexy to reduce NAC diameter
  - Aug/Reduction/mastopexy R
    - Increased volume to match L



TUBEROUS BREAST SUMMARY

- Can be challenging
  - Asymmetry
  - Inadequate skin envelope
- Redistributing breast parenchyma common
- Redistributing skin uncommon in my practice
- Beware of vascular compromise with augmentation mammaplasty
  - Undermining parenchyma cuts central supply
  - Must rely on medial and lateral perforators
- Results typically satisfying for patient & surgeon

BREAST AUGMENTATION

THANK YOU!

E. Antonio Mangubat, MD

Seattle, WA

Acknowledge Robert Dragotti, DO

REFERENCE CHARTS INCLUDED FOLLOWING LECTURE FOR STUDY

Fig. 1. Classification of tuberous breast deformity. Type I, hypoplasia of the lower medial quadrant; type II, hypoplasia of the lower medial and lateral quadrants; and type III, severe breast constriction and global hypoplasia.

Type I: hypoplasia of the lower medial quadrant
Type II: hypoplasia of the lower medial and lateral quadrants with sufficient skin in the subareolar area
Type III: hypoplasia of the lower medial and lateral quadrants with a deficiency of the subareolar skin
Type IV: severe breast constriction with minimal breast base

Grolleau et al.[14] simplified the Heimburg classification into three types by combining types II and III:

Type I: lower medial quadrant deficiency
Type II: lower medial and lateral quadrant deficiency
Type III: deficiency of all four quadrants

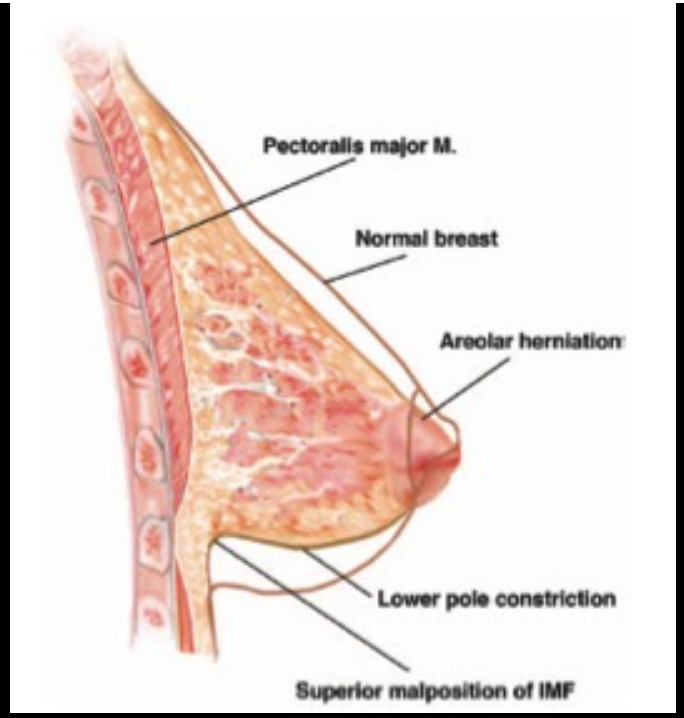
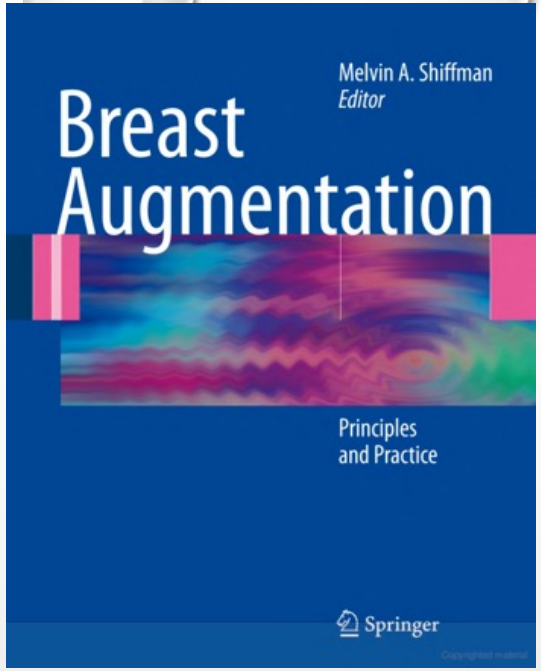


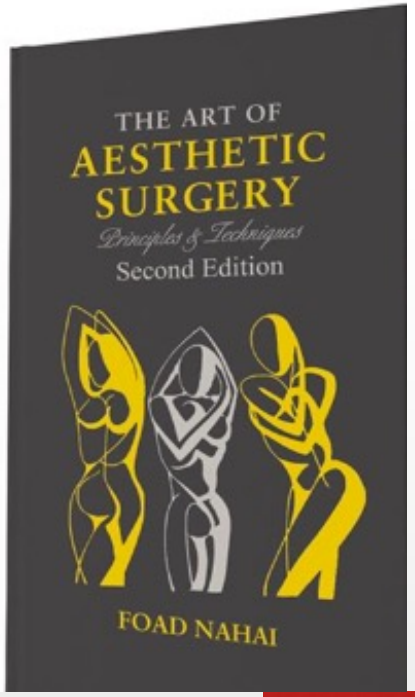
Table 4
Classification of breast augmentation complications and secondary breast deformities

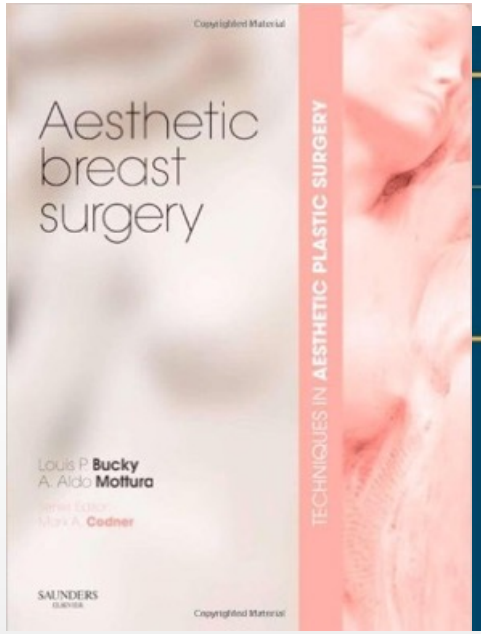
Patient Concern/Complaint	Underlying Etiology	Anatomic Deformity/Diagnosis	Treatment Options*
Malposition problems			
Breasts are different	Present preoperatively? Underestimated	Asymmetry	Multiple various approaches including explanation
Too far out/arm rubs against	Over dissection of pocket, implant size	Lateral malposition	Capsulaorraphy, capsular flap, soft tissue matrix
Too far in/breasts touching	Release of pectoralis of sternum	Medical malposition/ synmastia	Capsular flap, neopocket/soft tissue matrix, staged
Double bubble/breast coming off implant	Mismatch implant and breast, IMF malposition	Unrecognized constricted breast/double bubble	Plane position change, breast scoring, smaller implant, mastopexy
One breast too low/ bottomed-out	Technical error, unrecognized asymmetery preop	Fold malposition	IMF reconstruction, soft tissue matrix
	Implant too large		
Skin stretched out, nipple too high	Lower pole skin stretch	Lower pole stretch deformity/bottoming out	IMF reconstruction, crescent skin resection
Implant spinning/moving/ wrong shape	Rotation of shaped implant	Shaped implant rotation/ pocket stretch	Exchange to round device, capsular flap-neopocket
Capsular contraction			
Breast too tight	? Etiology unknown	Significant capsular contraction	Capsulotomy
Breast too high	Bacterial theory	Baker III-IV capsule	Capsulectomy
Breast too hard	Hypertrophic scar blood-fluid theory		Antibiotic irrigation
Painful			Implant explanation or exchange
			Change planes
Visible wrinkling/rippling	Thin/poor coverage		Exchange to textural implant
I feel my implants too much	Implant visibility/ palpability		Soft tissue matrix/Acellular Dermis
Soft tissue coverage issues			
Visible wrinkling/rippling	Poor-thin coverage	Wrinkling/rippling	Multiple surgical options
I feel my implants too much	Implant visibility/ palpability	Implant palpability	Pocket change capsular flap, soft tissue matrix

Table 4
(continued)

Patient Concern/Complaint	Underlying Etiology	Anatomic Deformity/Diagnosis	Treatment Options*
Short of breath	Puncture of lung	Pneumothorax	Chest tube
Sensory changes			
Nipple or breast is numb	Intercostal/lower pole nerve stretch or division	Sensory changes	Avoid division
			Tincture of time
Skin cellulitis			
Skin is red and hot	Erythema	Cellulitis	Appropriate antibiotics
Mondors bands			
Weird band/string beneath my breast	Occluded veins, superior epigastric vein	Mondors bands	Tincture of time/ reassurance
Prolonged bruising			
Black and blue	Blood	Bruising	Tincture of time
Bruising	Hematoma	Hematoma with textured device	Consider evacuation if with form-stable device


Melvin A. Shiffman
Editor
Breast Augmentation
Principles and Practice
Springer


THE ART OF
AESTHETIC SURGERY
Principles & Techniques
Second Edition
FOAD NAHAI


Aesthetic breast surgery
Louis P. Bucky
A. Aldo Mottura
Mark A. Codner
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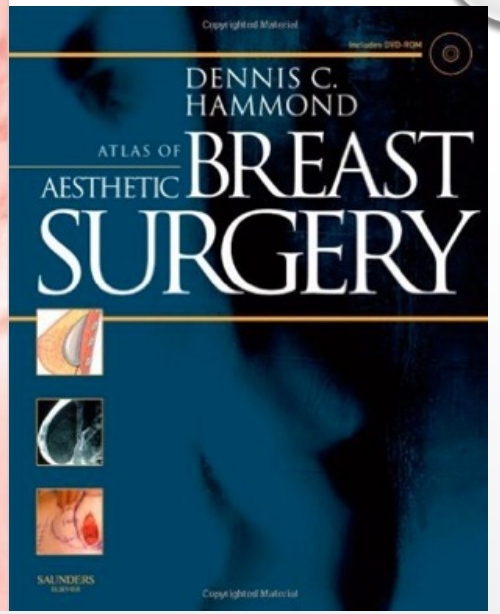
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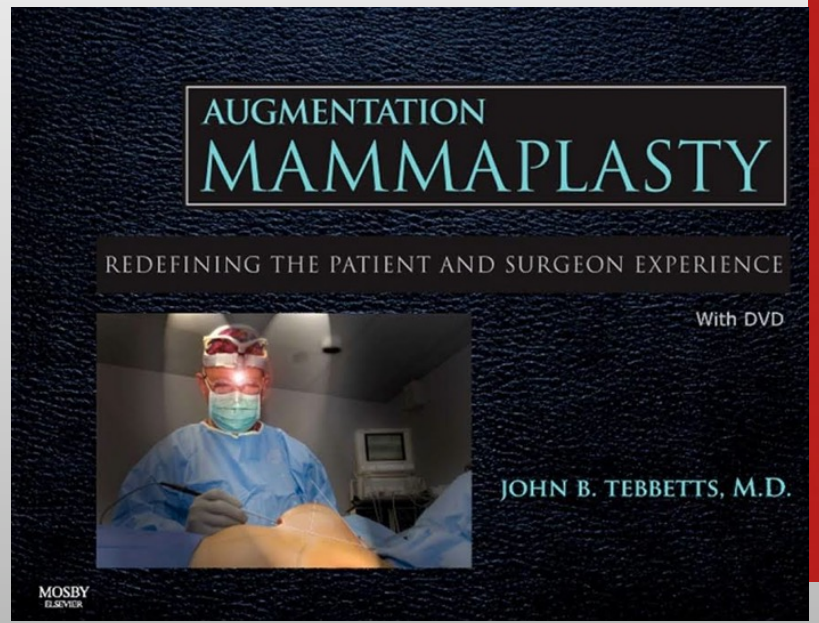
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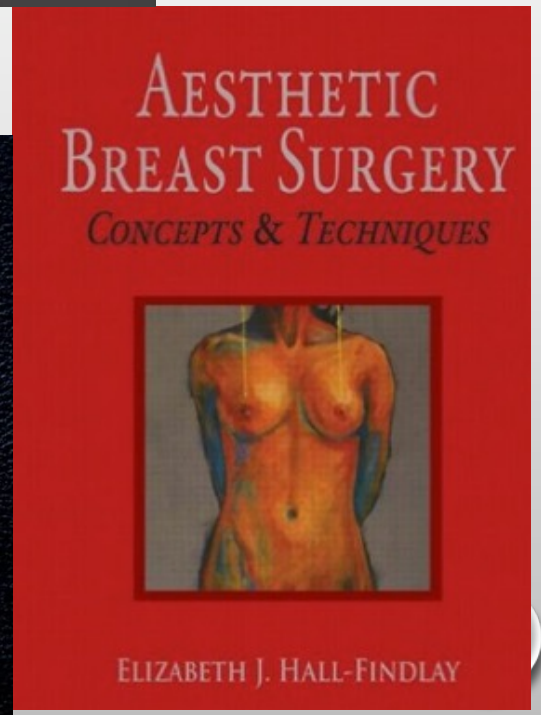
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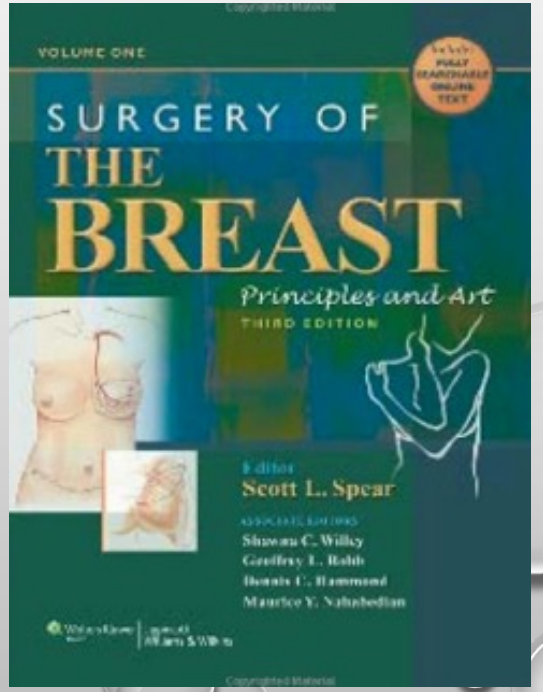
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REFERENCES

- Allergan Natrelle Instruction Manual
- Araco, A. Complications of Silicone Breasts. www.araco.it
- Bengtson, Bradley. *Complications, Reoperations, and Revisions in Breast Augmentation*. Clinics in Plastic Surgery 2009:36(1) 136-156
- Bucky, L Aesthetic Breast Surgery. Saunders. 2009
- Epstein, M Breast Implant 103. www.epsteinplasticsurgery.com
- FDA Anaplastic Large Cell Lymphoma in women with Breast Implants. 2011. FDA.gov
- Fisher,J andHandel, Neal. *Problems in Breast surgery*. CRC Press. 2014
- Goes,. JCS. Et al. Decisions and Applications in Aesthetic and Reconstructive Breast surgery. Innovations in Plastic Surgery vol1(3) 2007 53-73
- Grabb & Smith's Plastic Surgery Lippincott. 7th ed. 2014
- Hall Findlay,E. Aesthetics Breast Surgery Concepts and Techniques.QMP. Missouri. 2011
- Headon,H. et al. Capsular Contracture after Breast Augmentation: An Update for Clinical Practice Arch Plast Surg 2015; 42: 532-543
- Hidalgo,D. and Spector,J. *Breast Augmentation* Plast. Reconstr. Surg. 133: 567e, 2014.
- Jacobson,J., et al. Effect of Incision Choice on Outcomes in Primary Breast Augmentation. Aes Sur 32(4) 456-462
- Kim,Y et al. Prevention of Implant Malposition in Inframammary Augmentation Mammoplasty. Arch Plast Surg. 2014 Jul; 41(4): 407–413
- Kolker, A., Collins, M. Tuberous Breast Deformity: Classification Treatment Strategy for Improving….Aesthetic Correction Plas Recon Surg 135:73, 2015
- Liu,X .,et *al Comparison of the Postoperative Incidence Rate of Capsular Contracture among Different Breast Implants* PLoS One.2015;10(2) e0116071.
- Mentor Quick Facts
- Nahabedian, M. Breast Deformities and Mastopexy Plast Recon surg 127: 91e 2011
- Schlenz I, Kuzbari R, Gruber H, et al. The sensitivity of the nipple-areola complex: an anatomic study. Plast Reconstr Surg 2000;105:905-9.
- Spear,S., Jacobsen, J., and Reisin, E,, Periareolar approach to Augmentation Mammoplasty. Surgery of the Breast. Chp 111. Lippincott2010 1277-1282
- Spear, S. Et al. Breast Augmentation.Plas. Recon. Surg. 114: 73e, 2004
- Shiffman,M, Breast Augmentation. Principles and Practice. Springer Berlin. 2009
- Tebbetts,J. Augmentation Mammaplasty: Redefining the Patient and Surgeon Experience. Elsevier 2009