The Breast Surgeon and the High Risk Individual

The Breast Centre

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Victorian Pink Hope Information Day 2019
Sunday July 28th 2019

Jane O'Brien
Specialist Oncoplastic Breast Surgeon
thebreastcentre.com.au
facebook/DrJaneOBrien

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"Every breast or ovarian cancer patient with a BRCA1 or BRCA2 mutation detected after diagnosis is a missed opportunity to prevent a cancer. No woman with a BRCA1 or BRCA2 mutation should die from breast or ovarian cancer"

Mary Claire King

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RISK ASSESSMENT

- Basic Risk assessment

RISK MANAGEMENT

- High Risk Screening
- Risk-Reduction Surgery
- Treatment of Breast Cancer in the patient with a known or suspected BRCA mutation

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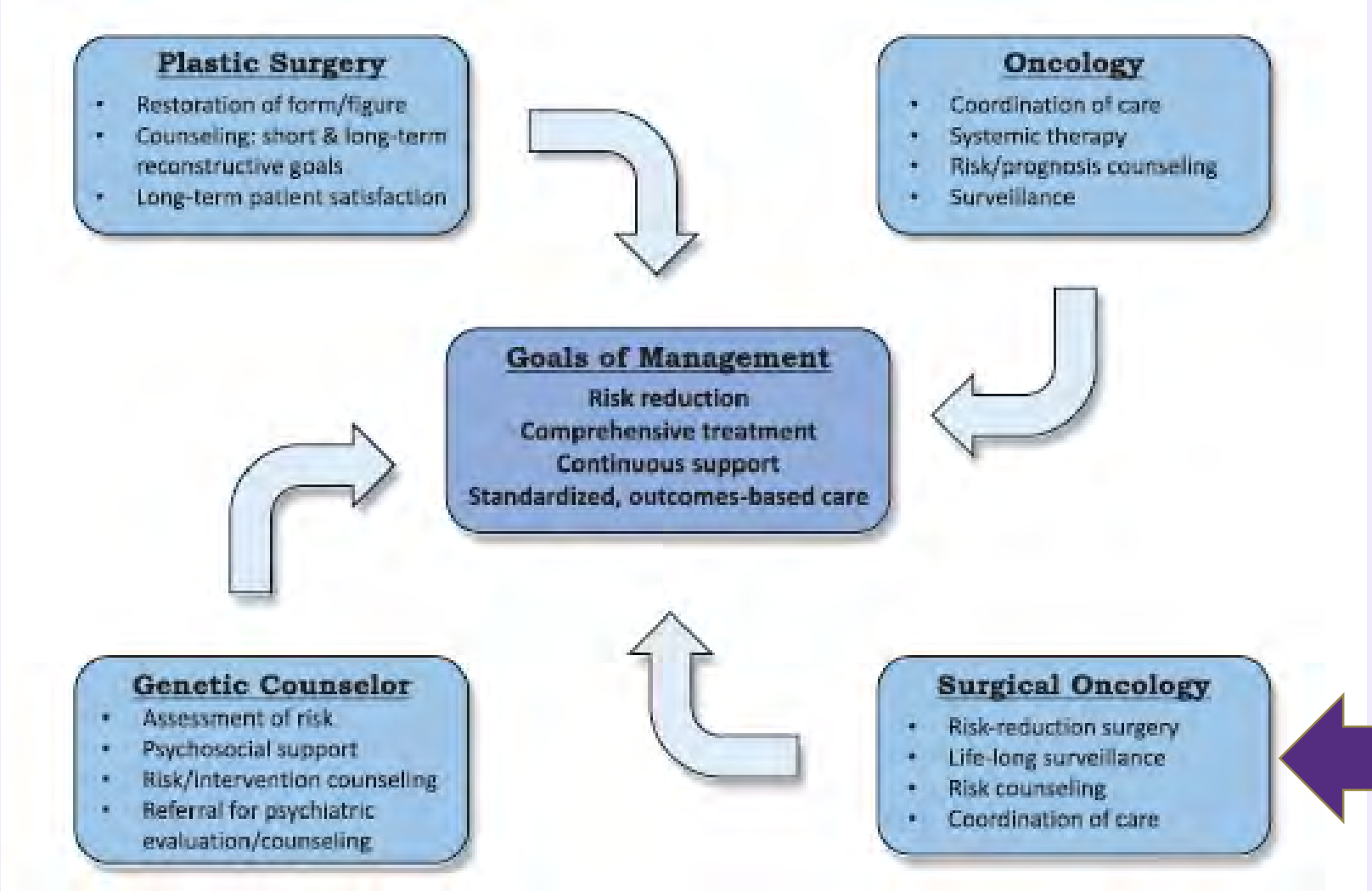
Role of the Breast Surgeon



RISK-REDUCING SURGERY

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- Why ?
- For Whom ?
- If ?
- When ?
- By Whom ?
- **What ?**
- Where ?

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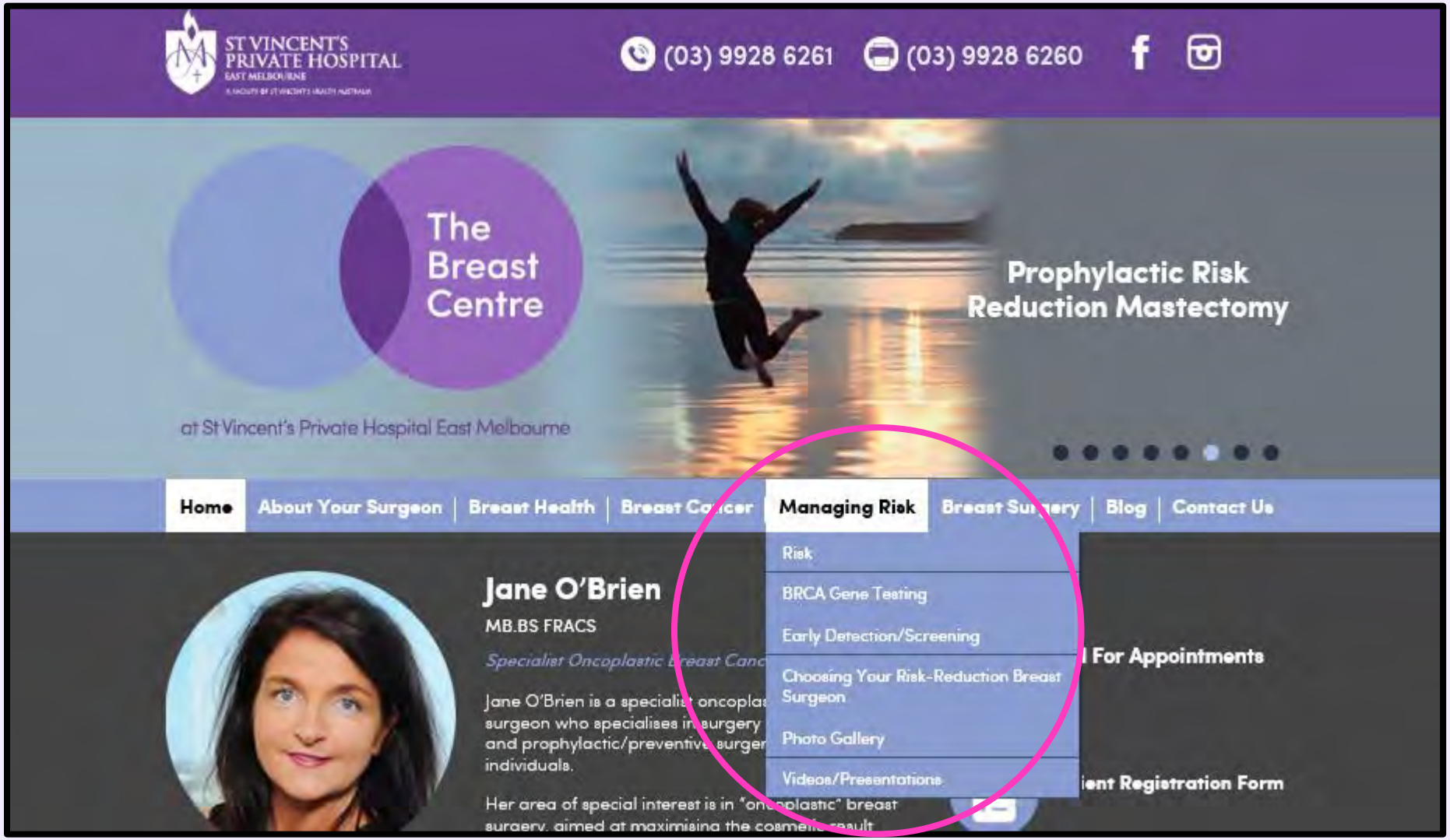

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www.melbournebreastcancersurgery.com.au

www.thebreastcentre.com.au

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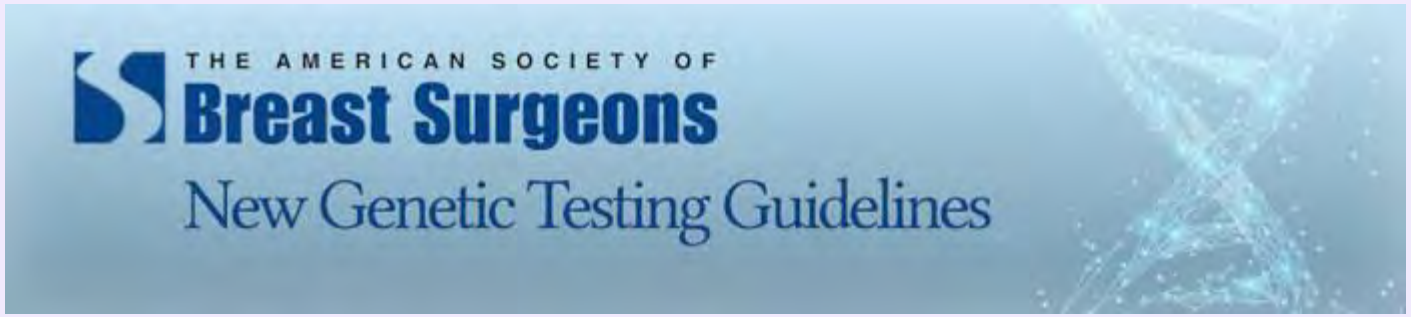
Recent Developments

Genetic and Surgical

GENETIC UPDATE

- Expanded Indications for Genetic Testing
- Access to Testing-rebatable and self-funded
- Widespread introduction of Panel Testing
- Insurance Issues



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- The American Society of Breast Surgeons (ASBrS) in February 2019 announced new genetic testing guidelines for hereditary breast cancer, calling for genetic testing to be available to ALL patients diagnosed with breast cancer
- A recent American study published in the Journal of Oncology (JCO) found that the rate of pathogenic mutations in breast cancer patients was similar among patients who "did" and "did not" meet 2017 American NCCN guidelines for genetic testing.

- The results of the study suggested that a strategy that simply tests ALL patients with a personal history of breast cancer would almost double the number of patients identified as having a clinically actionable genetic test result.

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ACCESS TO GENETIC TESTING

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- Medicare rebatable genetic testing was introduced in Australia in November 2017

- The test must be ordered by a specialist, and eligibility criteria are such that funded testing in those with a breast cancer diagnosis is restricted to those in whom there is a 10% or greater chance of a genetic mutation being present, as calculated using one of the using the validated risk prediction models such as the Manchester Score, BOADICEA or BRCAPRO

- The result is that many (most) women are not eligible for funded tested

- Self funded testing is currently around $450 AUD, for BRCA1/2+ Panel Testing.

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PANEL TESTING

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- Panel testing significantly increases the rate of detection of pathogenic variants

- The most frequently identified pathogenic variants (outside BRCA1 and BRCA2) are
- PALB2
- CHEK2
- ATM

- ASBrS recommends patients tested prior to 2014 be retested

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JULY 1ST 2019
MORATORIUM ON GENETIC TESTS IN LIFE INSURANCE

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- Australian Financial Services Council's (FSC) introduced a moratorium on genetic tests in life insurance on 1 July 2019
- The FSC stated that Australia is now the only country in the world outside the United Kingdom where a favourable genetic test result can be disclosed, but an adverse result doesn't have to be.
- The moratorium enables Australians to access up to $500,000 of life... cover without disclosing an adverse genetic test result to their life insurer, and will be in place until at least 30 June 2024.
- FSC Standards are mandatory for FSC members and all companies offering life insurance in Australia are members.
- The moratorium on genetic testing will enable to access up to $500,000 of life cover without having to disclose an adverse genetic test result, while other elements included in the moratorium include:
  * Consumers won't be required to take a genetic test when applying for life insurance
  * Consumers won't be required to disclose genetic tests taken as part of research if the consumer isn't receiving the results
  * Consumers can choose to disclose a favourable genetic test result if they wish
  * Life insurers will take account of any protective treatment an applicant might have had

  Under the moratorium, insurers will only be able to use relevant genetic tests if consumers apply for more than:
  * $500,000 life cover
  * $500,000 TPD cover
  * $200,000 trauma cover
  * $4,000 per month income protection cover

www.fsc.org.au/resources/standards.

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SURGICAL UPDATE

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- Increasing Acceptance of Nipple-Sparing Mastectomy (NSM)
- Availability of "Mesh" Products –biological and synthetic, including complications eg "red breast"
- Single Stage Direct-to-Implant (DTI) Reconstruction
- Introduction of "Prepectoral" Implant Based Reconstruction
- Implant Related Issues- "implant illness" and BIA-ALCL
- Australian Breast Device Registry (ABDR)

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Ann Surg Oncol (2017) 24:375–397
DOI 10.1245/s10434-016-5688-z

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

CrossMark

CONTINUING EDUCATION– BREAST ONCOLOGY

Society of Surgical Oncology Breast Disease Working Group Statement on Prophylactic (Risk-Reducing) Mastectomy

Kelly K. Hunt, MD[1], David M. Euhus, MD[2], Judy C. Boughey, MD[3], Anees B. Chagpar, MD[4], Sheldon M. Feldman, MD[5], Nora M. Hansen, MD[6], Swati A. Kulkarni, MD[6], David R. McCready, MD[7], Eleftherios P. Mamounas, MD[8], Lee G. Wilke, MD[9], Kimberly J. Van Zee, MD[10], and Monica Morrow, MD[10]

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- From the published data it is clear that bilateral prophylactic mastectomy (BPM) confers a reduction in the risk of developing a primary breast cancer approaching **100%** when meticulous surgical technique is used to remove the vast majority of breast tissue.
- The breast cancer risk reduction from BPM is greatest in healthy, unaffected women with a known genetic predisposition or a strong family history of breast and ovarian cancer.
- Almost all new breast cancers after BPM occur in patients who had significant breast tissue remaining, such as those who underwent subcutaneous mastectomy and those who had residual breast tissue in the axillary tail after surgery.
- Often, BPM is combined with risk-reducing bilateral salpingo-oophorectomy (BSO), which can further decrease breast cancer risk.

Annals of Surgical Oncology, 2017

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Multidisciplinary Team

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- Clinical Geneticist
- Specialist Breast Surgeon
- Plastic Surgeon
- Medical Oncologist
- Gynaecological Oncologist
- Fertility Specialist
- Endocrinologist
- General Practitioner
- Psychiatrist
- Pathologist

PATIENT

- Radiologist
- Genetics Counsellor
- Breast Care Nurse
- Genetics Nurse
- Other Specialist Nurses
- Social Worker
- Clinical Psychologist
- Physiotherapist
- Dietician
- Radiographer
- Research Staff

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WHAT ?

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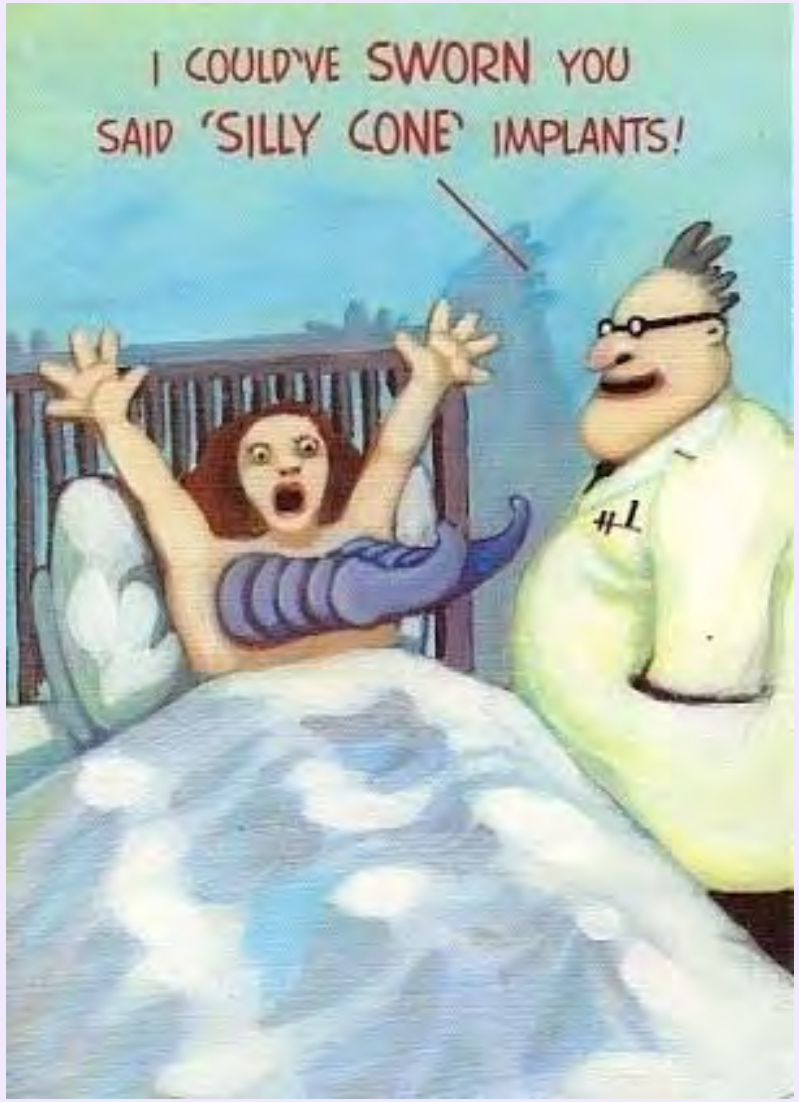

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Expectations need to be be realistic and achievable

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Risk-Reducing surgery should NOT be undertaken under the following circumstances:

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- Immoveable, unrealistic expectation of outcome
- Individual risk cannot be substantiated
- Factitious family history
- Munchausen's syndrome
- Gene test result imminent
- Surgery is not the woman's own choice
- Choice of surgery is for cosmetic rather than oncological reasons
- Psychiatric disorder, clinical depression, cancer phobia, dysmorphic syndrome
- Co-morbidity outweighs potential clinical benefit

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Guidelines for Surgeons Caring for High Risk Individuals

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Preoperative consultation
Ensure patients have access to appropriate genetic and oncologic counseling
Determine patients' capacity to understand lifelong implications of mastectomy and breast reconstruction
Arrive at a mutual decision on the most appropriate reconstructive technique
Clearly discuss goals of reconstruction
Ensure patient comprehension of risks of reconstruction and possible complications (including long-term complications, such as capsular contracture, implant malposition, ALCL, and others)
Immediate postoperative follow-up
See patients as often as necessary to meet needs
Manage any possible complications quickly and attentively
Review expectations for reconstruction
Continue to build on patient-doctor rapport to establish continuous support
Long-term follow-up
Continually assess patient satisfaction
Maintain standardized data on patient and reconstruction outcomes
Regularly monitor for late-onset complications
Maintain awareness of other prophylactic/therapeutic treatments for *BRCA* mutation
Coordinate with oncologic colleagues to ensure appropriate and continued cancer surveillance
Continue to offer and sustain support as needed

ALCL, anaplastic large cell lymphoma.

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Types of Risk-Reducing Mastectomy

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- Simple Mastectomy
- Skin-Sparing (SSM)
- Skin-Reducing Mastectomy
- Nipple-Sparing (NSM)

Type of mastectomy depends on:

- Whether there is to be immediate reconstruction
- Patient characteristics and preference

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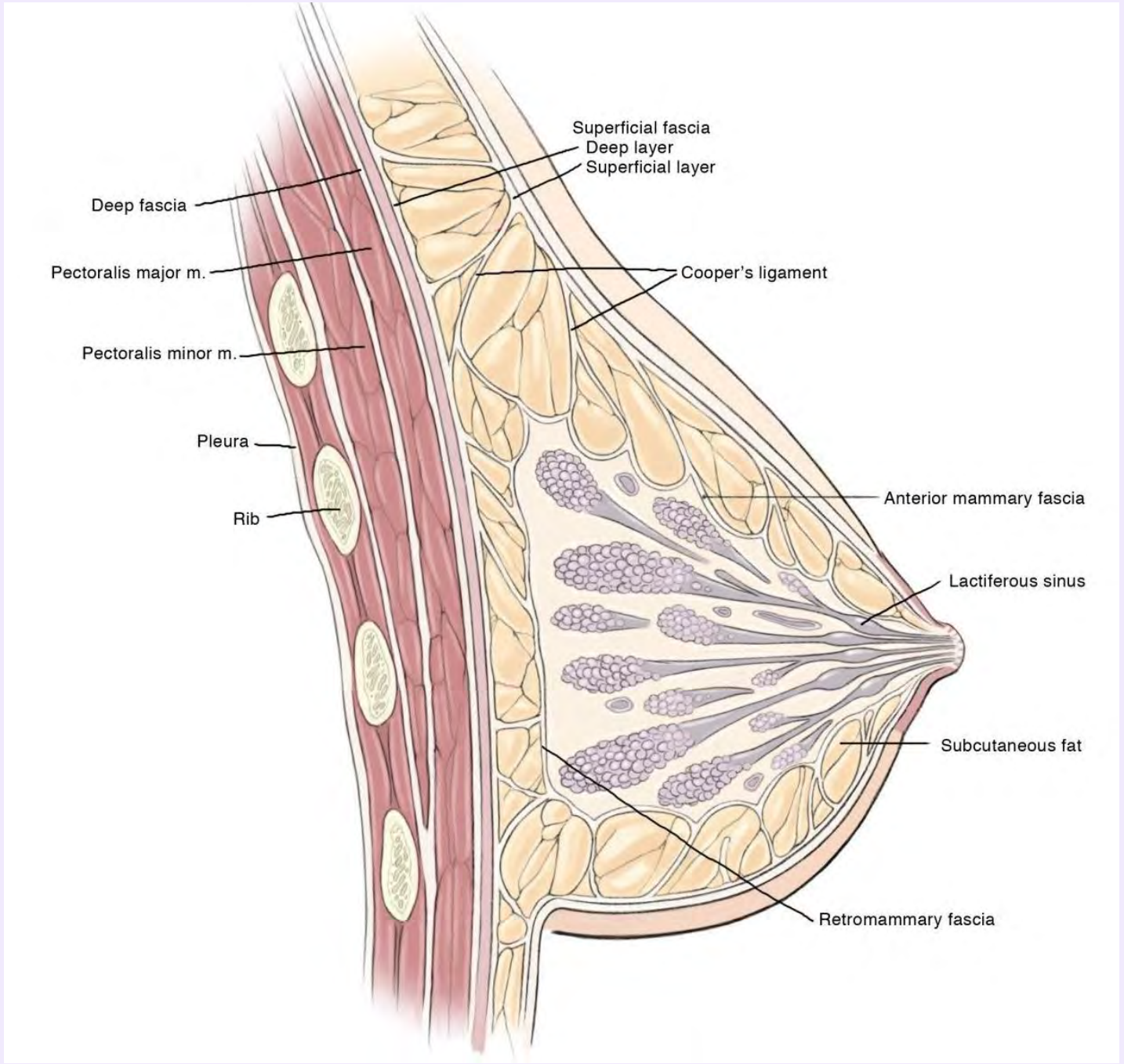

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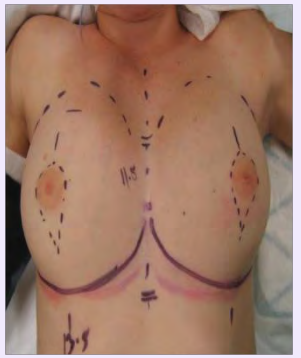
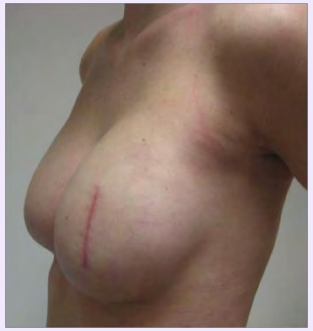






Simple Mastectomy

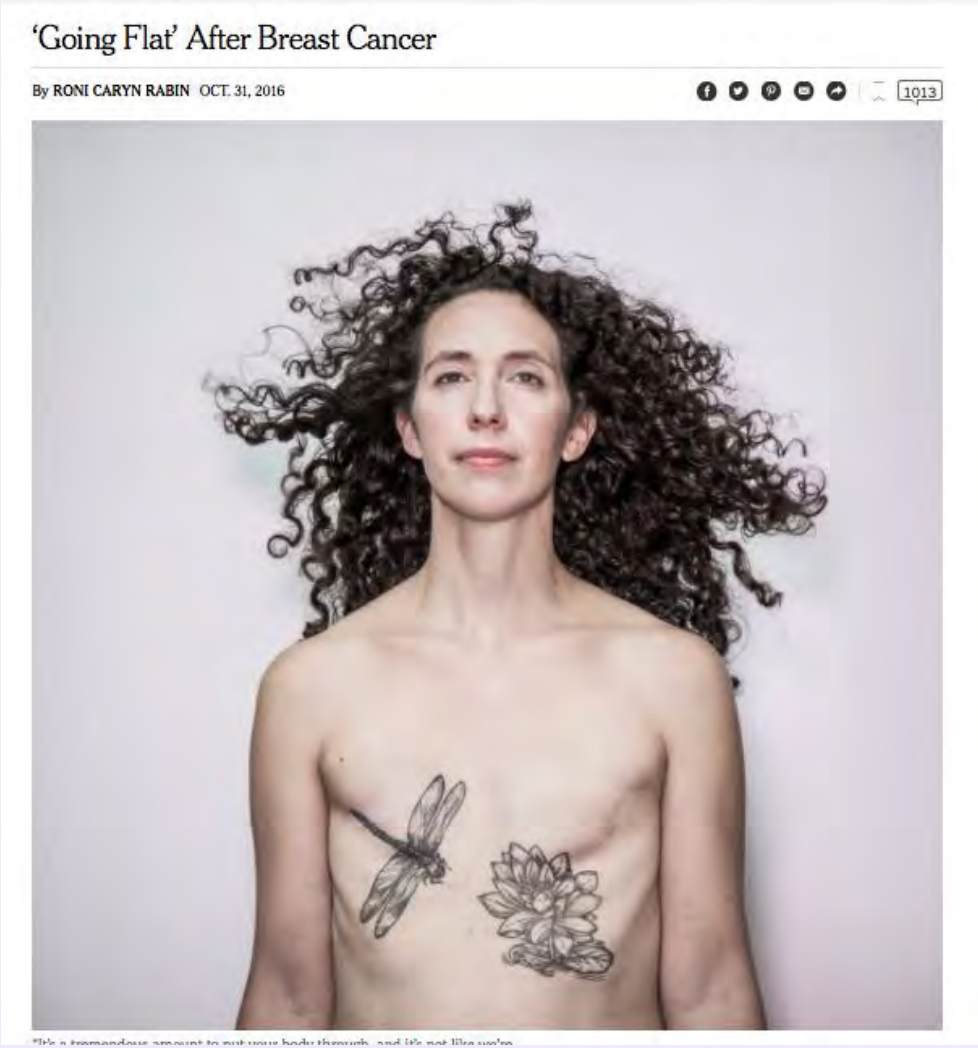
Skin-Sparing Mastectomy




Nipple-Sparing Mastectomy

Simple Mastectomy

"Going Flat"



'Going Flat' After Breast Cancer

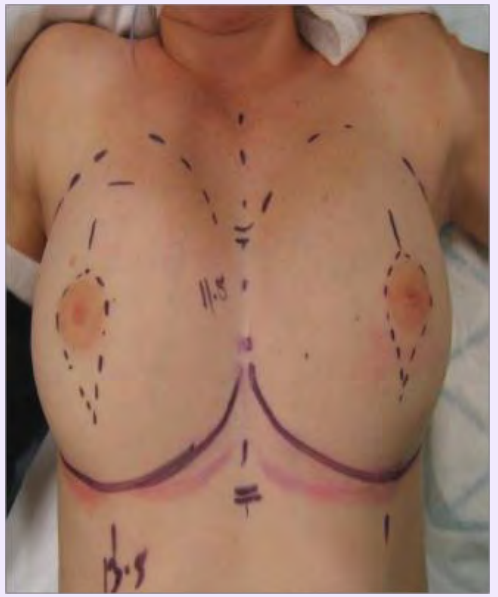
By RONI CARYN RABIN OCT. 31, 2016

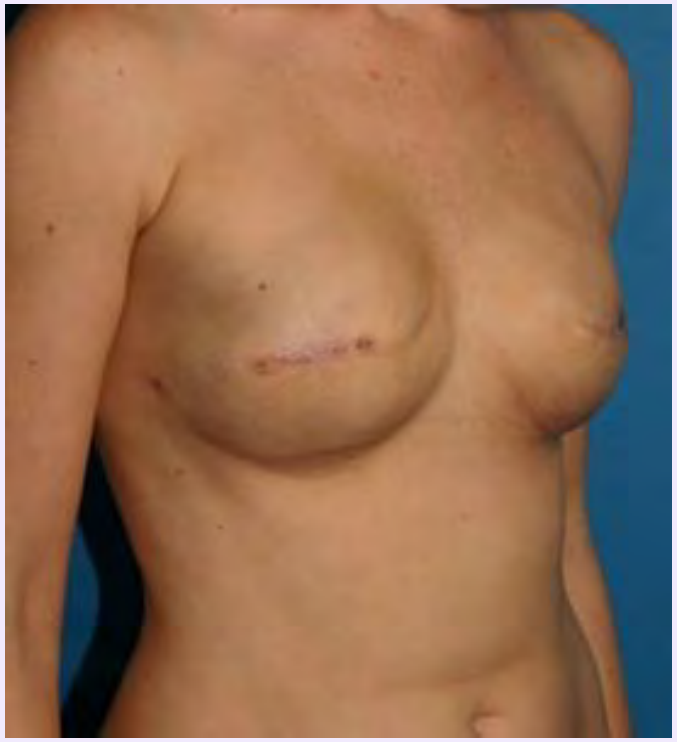
1013

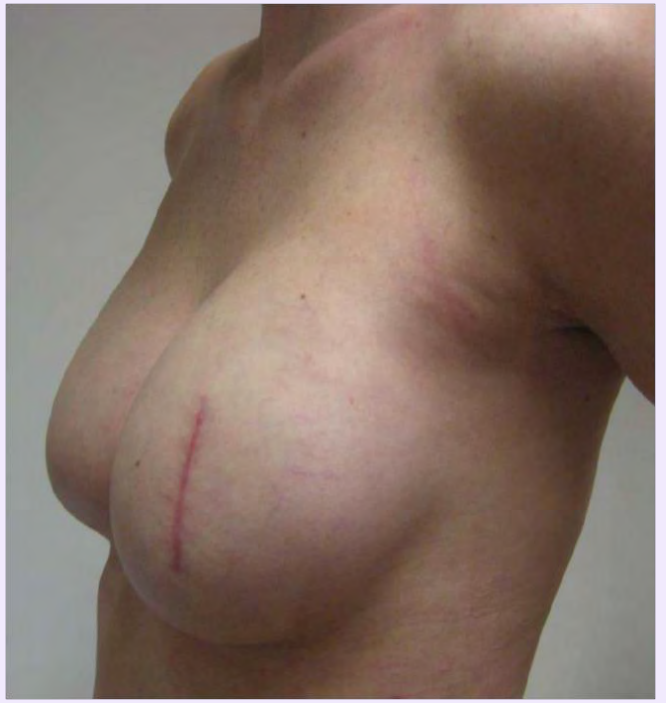
New York Times, Oct 2016

http://www.flatandfabulous.org

Skin-Sparing Mastectomy (SSM)







Nipple-Sparing Mastectomy (NSM)

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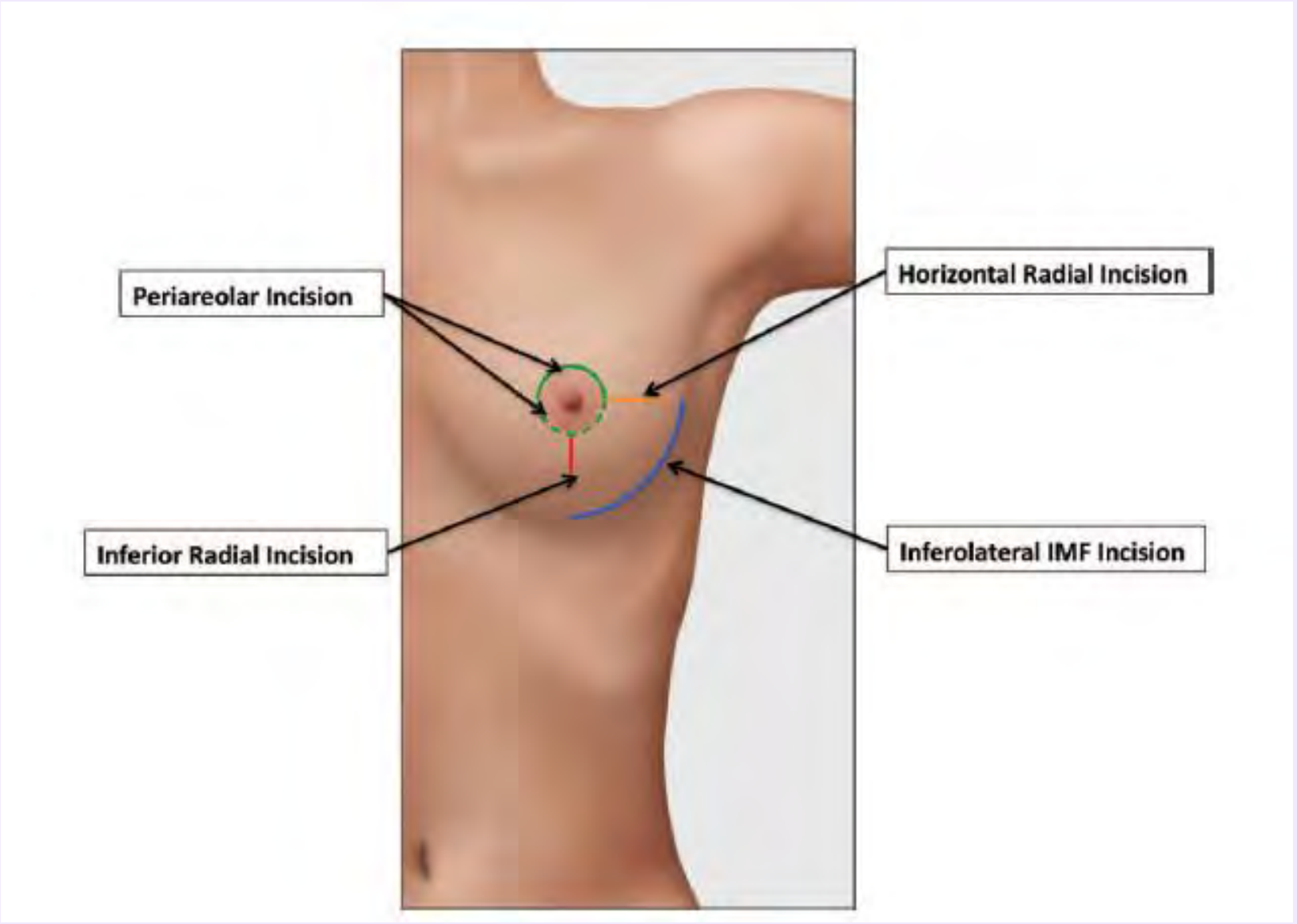

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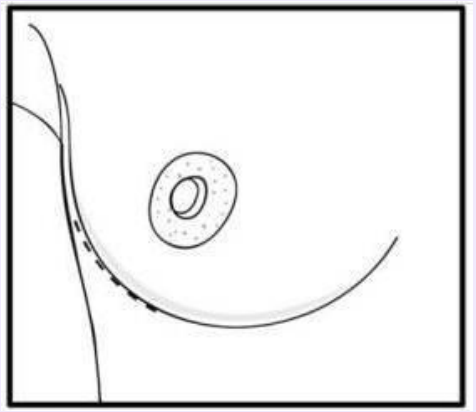

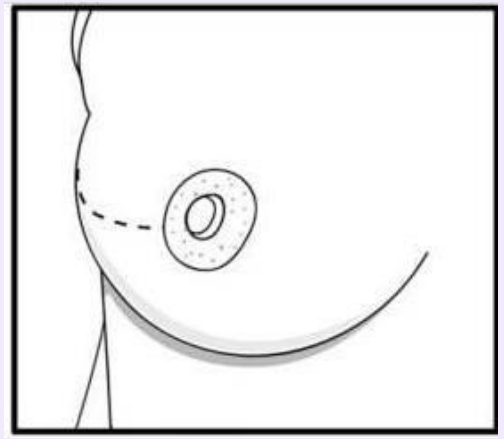

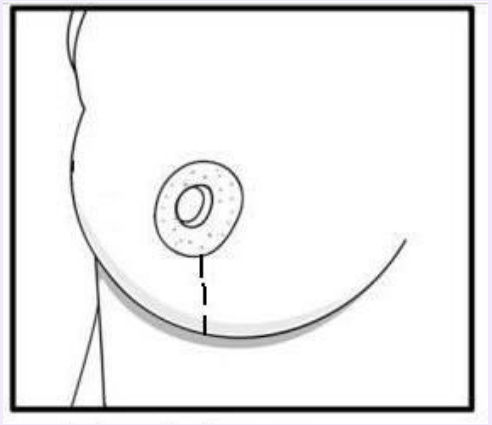

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Breast Reconstruction

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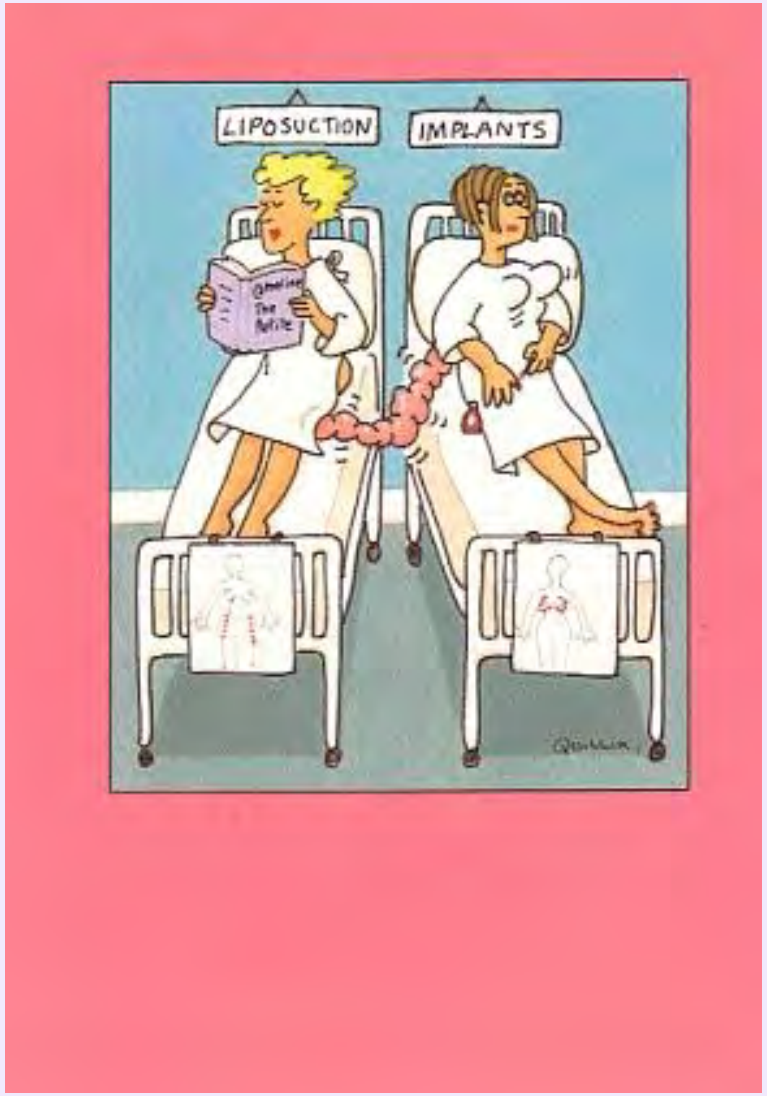

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International Reconstruction Rates Post Risk Reducing Mastectomy

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Ann Surg Oncol (2013) 20:3817–3822
DOI 10.1245/s10434-013-3040-4

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – BREAST ONCOLOGY

International Rates of Breast Reconstruction After Prophylactic Mastectomy in *BRCA1* and *BRCA2* Mutation Carriers

John Semple, MD[1], Kelly A. Metcalfe, RN, PhD[1,2], Henry T. Lynch, MD[3], Charmaine Kim-Sing, MD[4], Leigha Senter, MS, CGC[5], Tuya Pal, MD[6], Peter Ainsworth, MD[7], Jan Lubinski, MD, PhD[8], Nadine Tung, MD[9], Charis Eng, MD, PhD[10,11,12,13], Donna Gilchrist, MD[14], Joanne Blum, MD, PhD[15], Susan L. Neuhausen, PhD[16], Christian F. Singer, MD[17], Parviz Ghadirian, PhD[18], Ping Sun, PhD[1], Steven A. Narod, MD[1] and The Hereditary Breast Cancer Clinical Study Group

Ann Surg Onc 2013

- 70 % BRCA 1/ 2 mutation carriers have reconstruction after prophylactic mastectomy
- Compared to 5-29% of women having a mastectomy for breast cancer

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Rates of Breast Reconstruction after Prophylactic Mastectomy in BRCA 1 and 2 carriers

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TABLE 1 Reconstruction by country and groups

Country	Total no.	Subject groups *n* (%)			Reconstructions, *n* (%)
		Bilateral PM (no cancer)	Contralateral PM after mastectomy	Contralateral PM after lumpectomy	
Austria	26	10 (38.5)	8 (30.8)	8 (30.8)	15 (57.5)
Canada	664	293 (44.1)	217 (31.8)	154 (23.2)	444 (66.9)
France	7	1 (14.3)	2 (28.6)	4 (57.1)	6 (85.7)
Hong Kong, China	6	1 (14.9)	5 (83.3)	0	3 (50)
Italy	17	3 (17.7)	10 (58.8)	4 (23.5)	14 (82.4)
Norway	10	8 (80.0)	2 (20.0)	0	8 (80.0)
Poland	63	19 (30.2)	40 (63.5)	4 (6.4)	42 (66.7)
United States	842	310 (36.8)	392 (46.6)	140 (16.6)	605 (71.9)
Total	1,635	645	676	314	
Total no. of reconstructions	1,137	514 (79.7 %)	387 (57.1 %)	236 (75.2 %)	1,137 (69.1)

PM prophylactic mastectomy

Ann Surg Onc 2013

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International Immediate Reconstruction Rates in Patients with Breast Cancer

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ELSEVIER

Available online at www.sciencedirect.com
SciVerse ScienceDirect

EJSO
the Journal of Cancer Surgery

EJSO 39 (2013) 527–541
www.ejso.com

Review

Uptake and predictors of post-mastectomy reconstruction in women with breast malignancy – Systematic review

M.E. Brennan [a,b,*], A.J. Spillane [a,b,c]

[a] Breast and Surgical Oncology at the Poche Centre, Northern Clinical School, Sydney Medical School, 40 Rocklands Rd, North Sydney, Australia
[b] Northern Clinical School, Sydney Medical School, The University of Sydney, Sydney, Australia
[c] Royal North Shore and Mater Hospitals, Sydney, Australia

Accepted 20 February 2013
Available online 15 March 2013

EJSO 2013

- USA- 30 %
- Stockholm – 30%
- UK- 11%
- Australia – 10%

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Occult Malignancy in Prophylactic Mastectomy

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- The chance of finding an occult synchronous invasive tumour during prophylactic mastectomy is low -about 5%
- Higher in CPM compared to Bilat RRM
- **Routine use of SLNB in this setting is not recommended**

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Implant Based Breast Reconstruction (IBBR)

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One or Two stage?

- Tissue Expander/ Implant Reconstruction (Two Stage)
- Direct-to-Implant (DTI) (One Stage) Reconstruction with Acellular Dermal Matrix (ADM)

WHERE IS THE PROSTHESIS PLACED?

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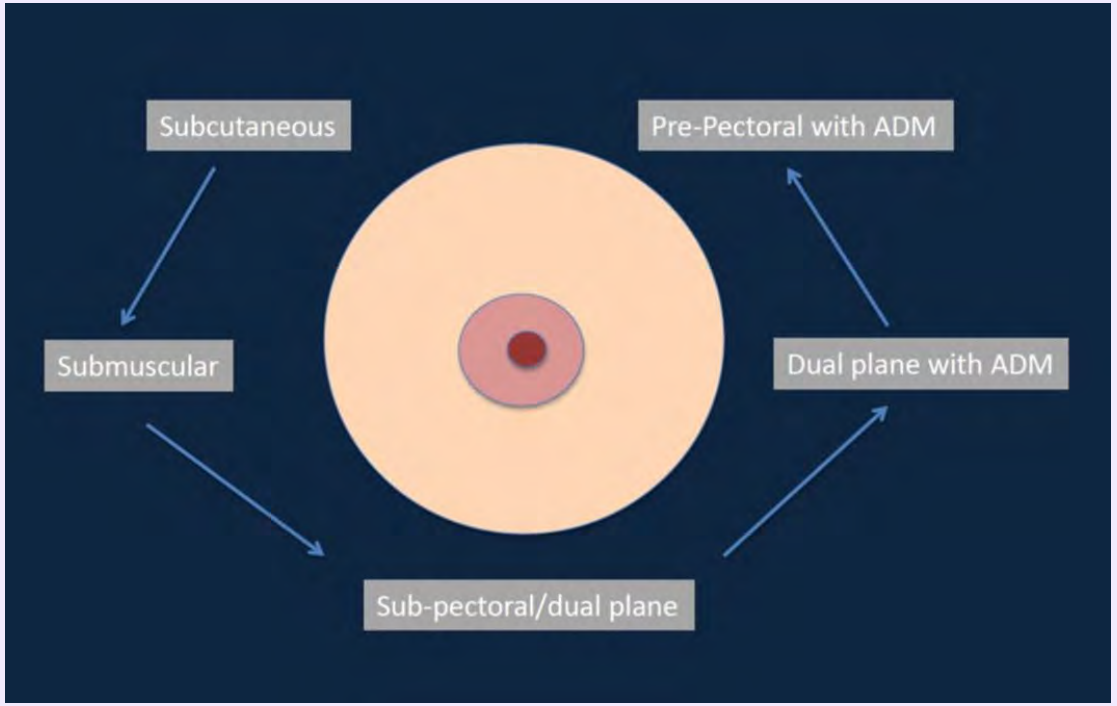

- Submuscular
- Dual Plane (with ADM)
- Prepectoral (with ADM)

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Submuscular

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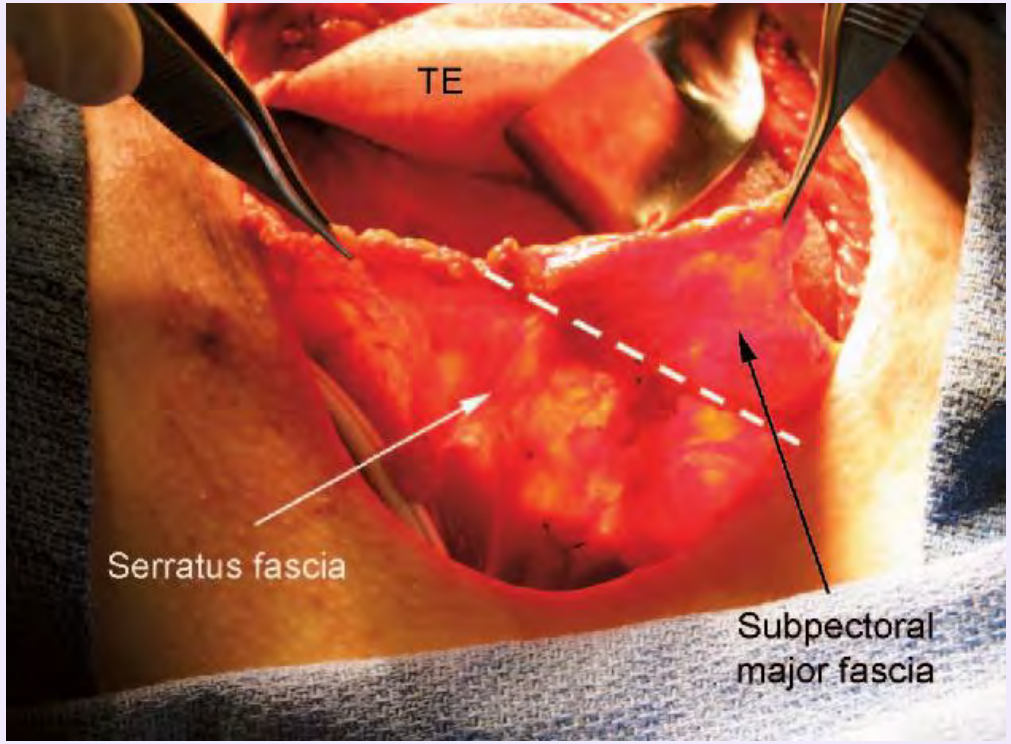

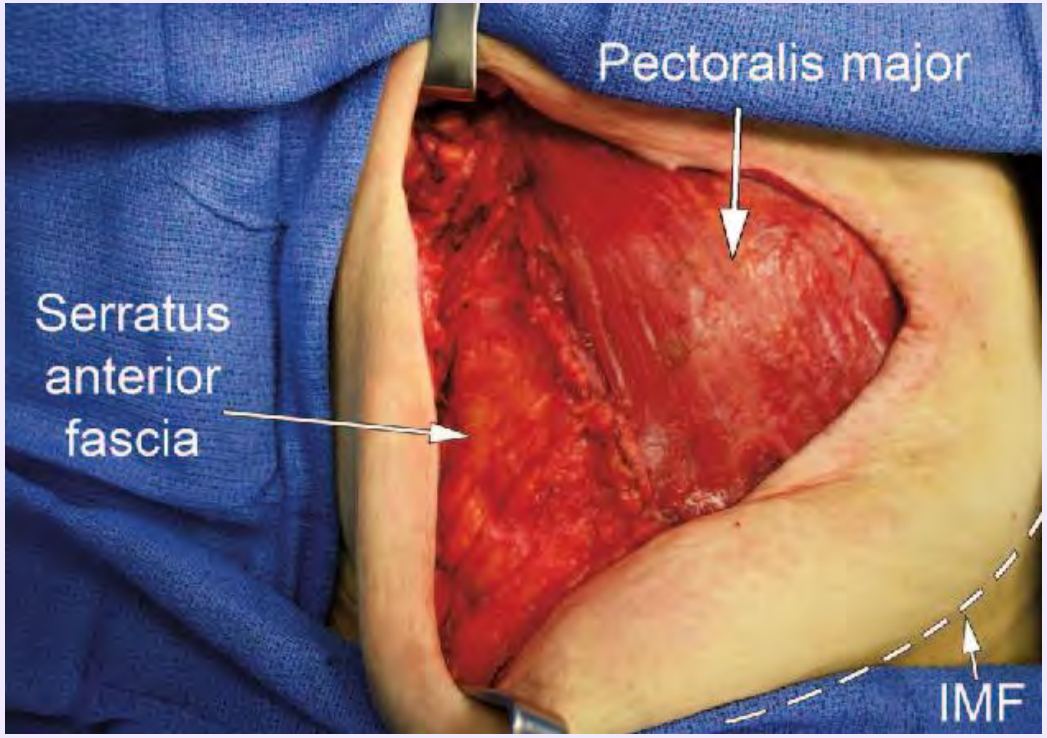

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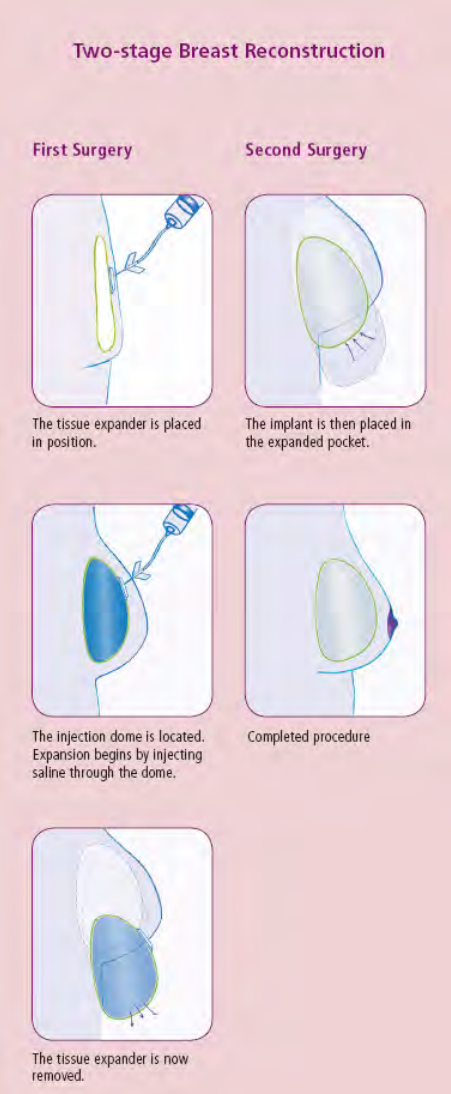
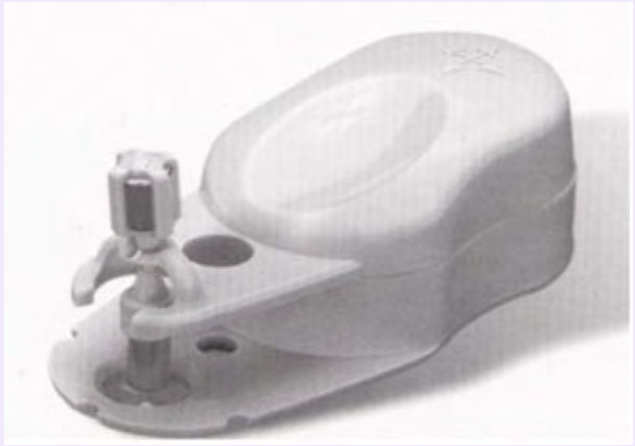
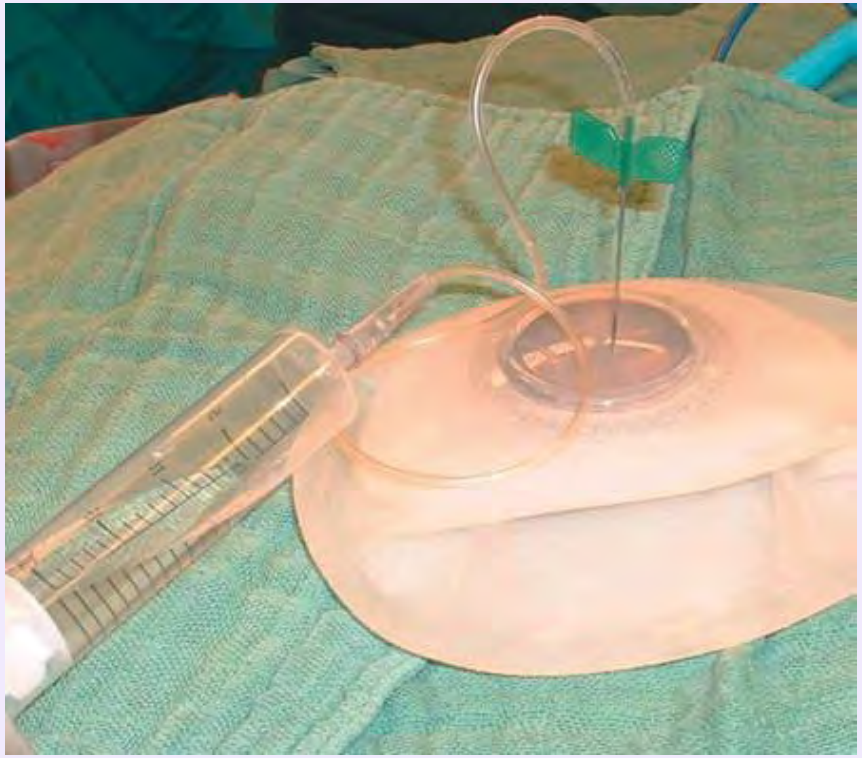
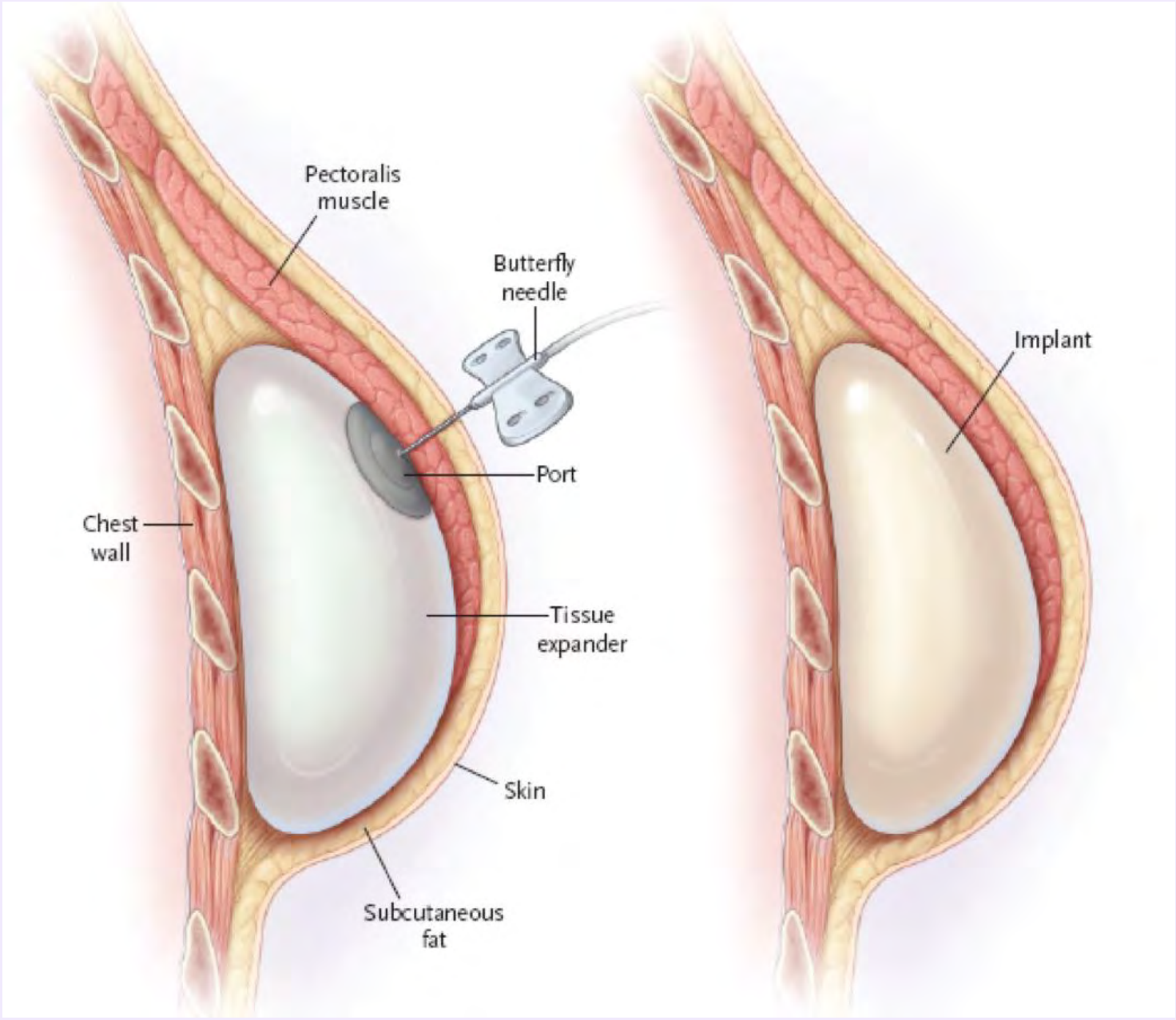
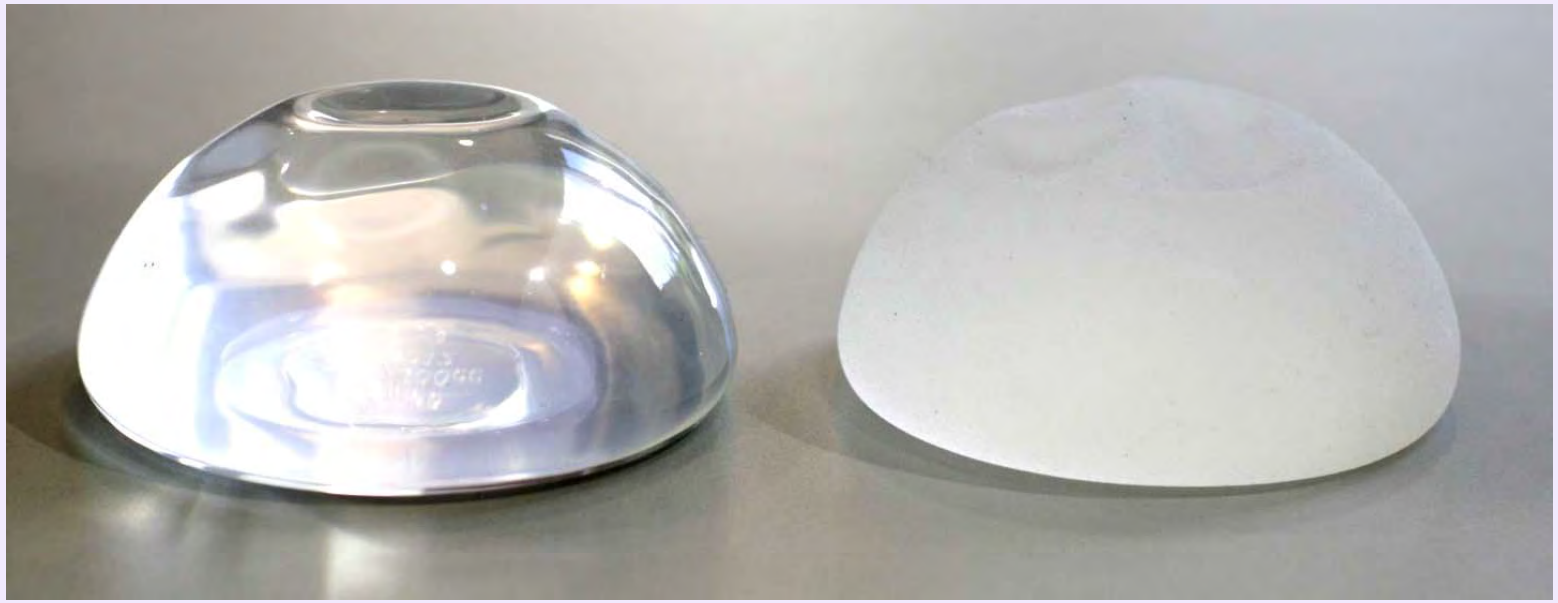
Tissue Expander/ Implant Reconstruction (Two Stage)








Pectoralis muscle
Butterfly needle
Port
Chest wall
Tissue expander
Skin
Subcutaneous fat
Implant



Dual Plane
Single Stage Direct-to-Implant (DTI) Reconstruction

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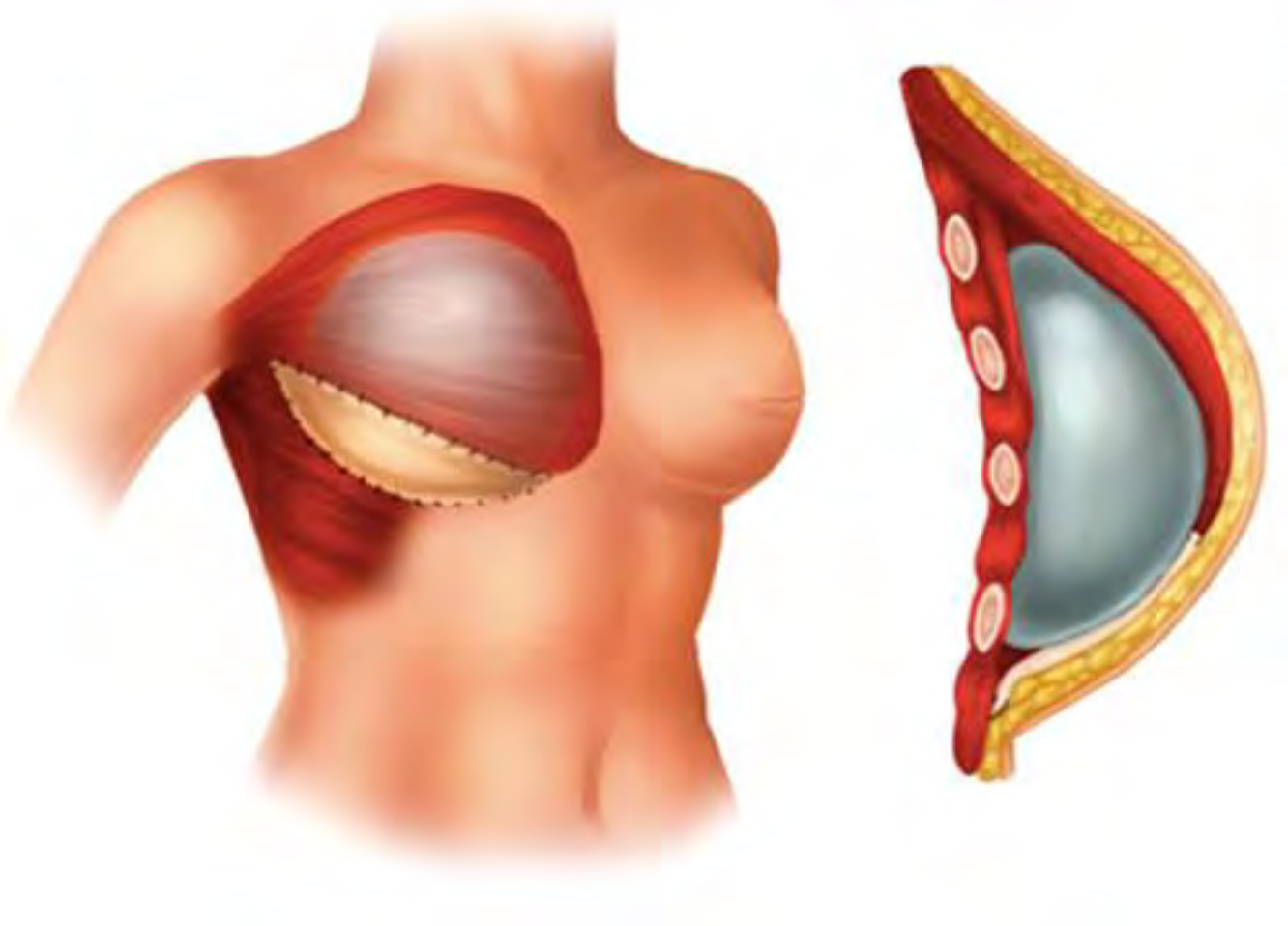

Dual-plane Reconstruction- Partial muscle overage + ADM approach:
the pectoralis muscle reinforces the upper pole and ADM reinforces the lower pole

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Acellular Dermal Matrices (ADM)

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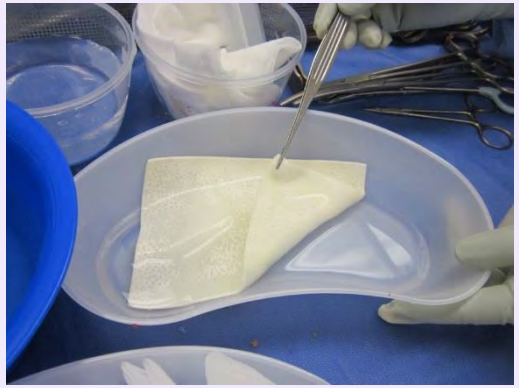

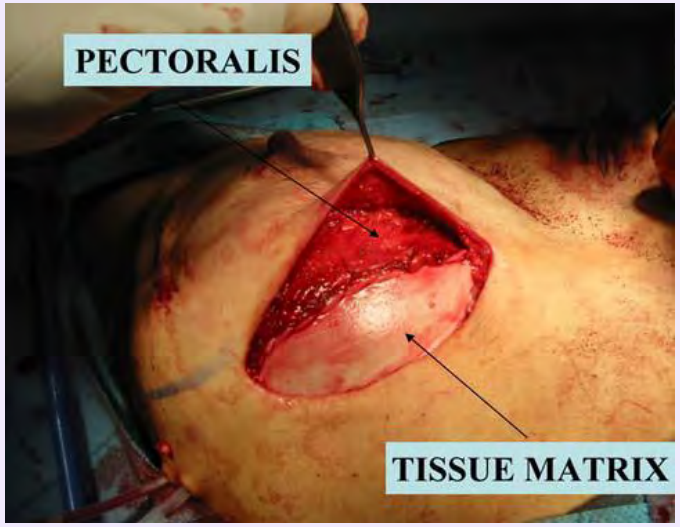

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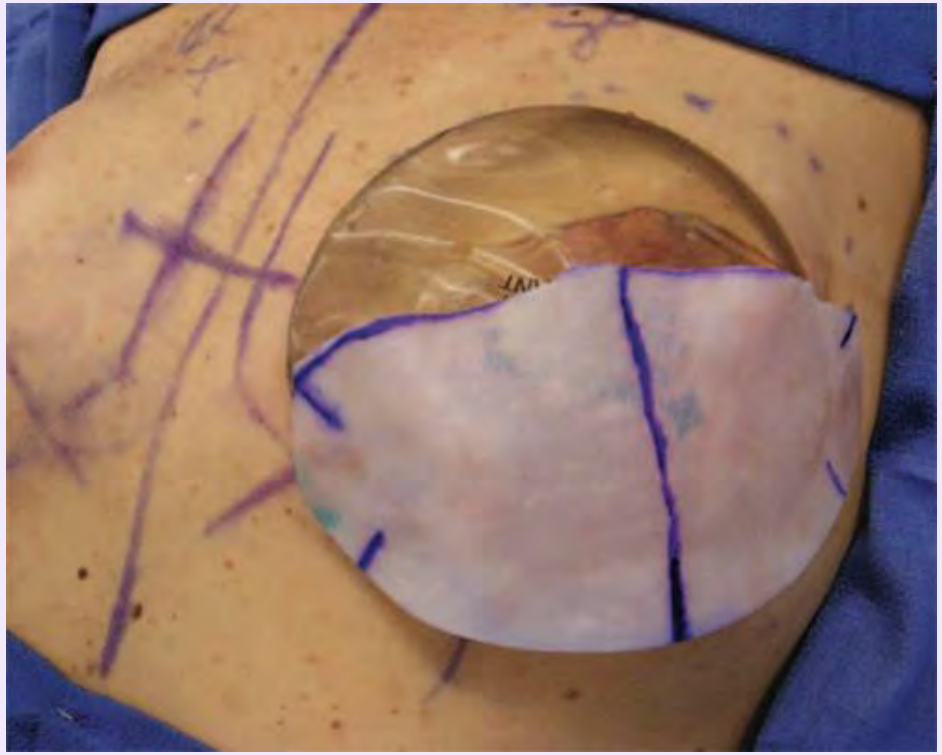

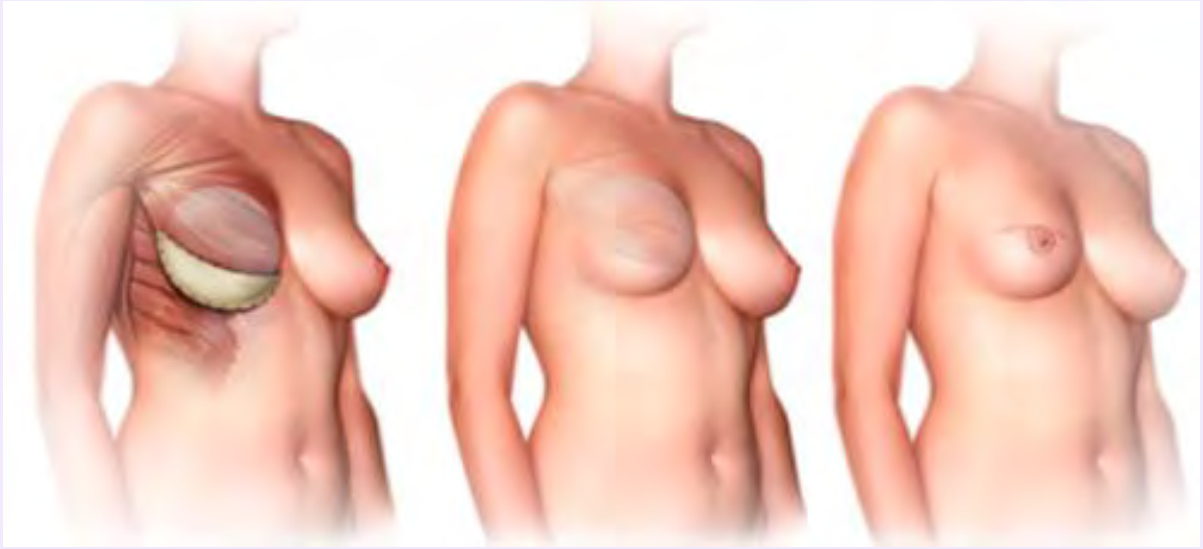

Embrace the Change: Incorporating Single-Stage Implant Breast Reconstruction into Your Practice

Jose Rodriguez-Feliz, M.D.
Mark A. Codner, M.D.
Atlanta, Ga.

Background: Multiple studies have reported on the safety of nipple-sparing mastectomy and low complication rates associated with single-stage implant breast reconstruction. Yet many plastic surgeons continue to be resistant to change. This article presents the senior author's (M.A.C.) experience during his transition period from the latissimus dorsi flap with adjustable implants to a "one-and-done" approach using shaped implants and fetal bovine acellular dermal matrix.
Methods: A literature review was performed selecting articles discussing single-stage implant reconstruction, indications, outcomes, technique, and complications. Additional articles were selected after review of the references of identified articles. Clinical pearls discussed include patient selection, implant selection, and mastectomy incision choices, with a detailed description of the senior author's operative technique.
Results: Twenty-seven single-stage implant reconstructions were performed. Average mastectomy weight was 343.82 g. The average implant volume was 367 cc. Shaped implants were most commonly used. Acellular dermal matrix was used in all breasts. Complications included erythema requiring intravenous antibiotics (three patients), skin ischemia caused by methylene blue (one patient), seroma (one patient), unilateral partial nipple necrosis (one patient), mastectomy skin necrosis (one patient), and exposed/infected implants that were salvaged using a sequential irrigation protocol described by Sforza et al. in 2014 (two patients).
Conclusions: Breast reconstruction after mastectomy has evolved toward less invasive, single-stage procedures. Aesthetic refinements include nipple-sparing mastectomy, use of acellular dermal matrix, shaped implants, and fat grafting. Selected patients will benefit from a one-and-done breast implant reconstruction with no additional oncologic risk. Surgeons must embrace the change and provide their patients with a procedure that will offer the best aesthetic outcomes. (*Plast. Reconstr. Surg.* 136: 221, 2015.)
CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

PRSJ, Aug 2015

"Breast in a Day": Examining Single-Stage Immediate, Permanent Implant Reconstruction in Nipple-Sparing Mastectomy

Mihye Choi, M.D.
Jordan D. Frey, M.D.
Michael Alperovich, M.D.
Jamie P. Levine, M.D.
Nolan S. Karp, M.D.

New York, N.Y.

Background: Nipple-sparing mastectomy with immediate, permanent implant reconstruction offers patients a prosthetic "breast in a day" compared to tissue expander techniques requiring multiple procedures.
Methods: Patients undergoing nipple-sparing mastectomy with immediate, permanent implant reconstruction were reviewed with patient demographics and outcomes analyzed.
Results: Of 842 nipple-sparing mastectomies from 2006 to June of 2015, 160 (19.0 percent) underwent immediate, permanent implant reconstruction. The average age and body mass index were 46.5 years and 23.3 kg/m^2. The majority of implants were either Allergan Style 20 (48.1 percent) or Style 15 (22.5 percent). The average implant size was 376.2 ml, and 91.3 percent of reconstructions used acellular dermal matrix. The average number of reconstructive operations was 1.3. Follow-up was 21.9 months. The most common major complication was major mastectomy flap necrosis (8.1 percent). The rate of reconstructive failure was 5.6 percent and implant loss was 4.4 percent. The most common minor complication was minor mastectomy flap necrosis (14.4 percent). The rates of full-thickness and partial-thickness nipple necrosis were 4.4 and 7.5 percent, respectively. Age older than 50 years ($p = 0.0276$) and implant size greater than 400 ml ($p = 0.0467$) emerged as independent predictors of overall complications. Obesity ($p = 0.4073$), tobacco use ($p = 0.2749$), prior radiation therapy ($p = 0.4613$), and acellular dermal matrix ($p = 0.5305$) were not associated with greater complication rates.
Conclusion: Immediate, permanent implant reconstruction in nipple-sparing mastectomy provides patients with a breast in a day in less than two procedures, with a low complication rate. (*Plast. Reconstr. Surg.* 138: 184e, 2016.)
CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

PRSJ, Aug 2016

31% reoperation rate

Ideal Candidate for DTI Reconstruction:

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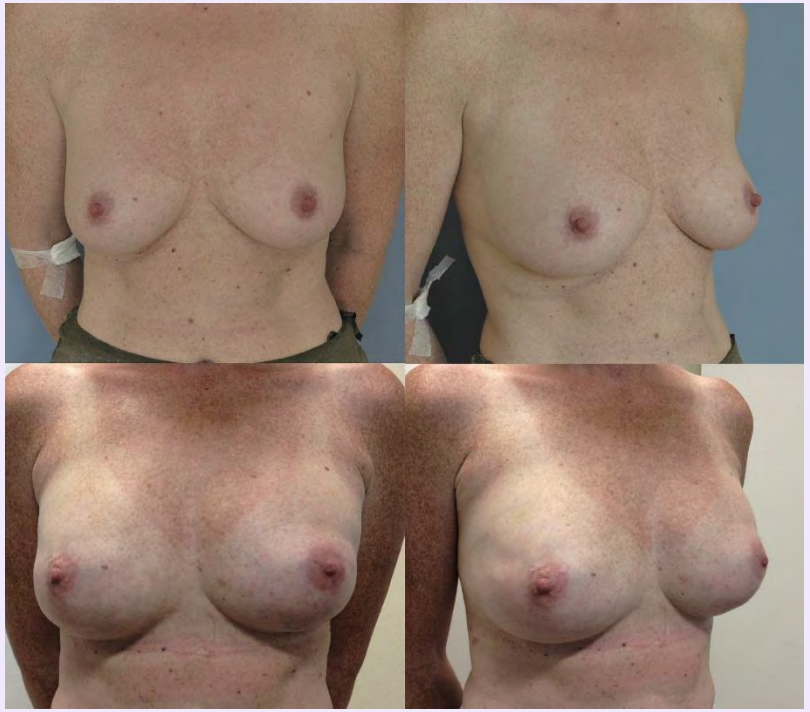
- Healthy, non-smoker
- Small to moderate sized breast
- Undergoing NSM
- Desires to be a similar breast size



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Animation Deformity

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- The unnatural movement of the breast when the pectoral muscle is activated
- It occurs with any movement of the pectoralis major muscle, and results in visible contraction and displacement of the breast
- The unnatural movement wrinkles the skin and pushes the implant down and outward.

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"Prepectoral" Implant Based Reconstruction

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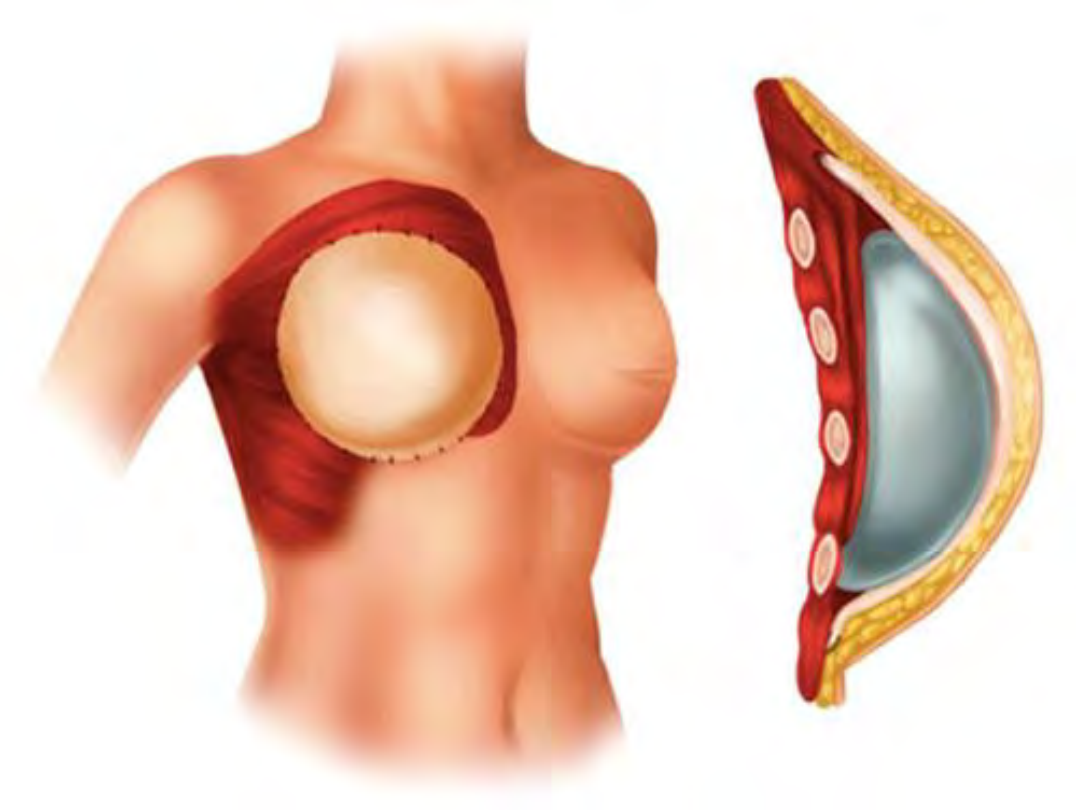

Prepectoral approach:

- Implant is placed in the subcutaneous, prepectoral plane
- ADM provides overlying reinforcement

- Prepectoral reconstruction is an alternative to the more common "subpectoral" and "dual-plane" approaches
- Autologous tissue flap reconstructions such as DIEP flaps are routinely placed prepectorally

3 Benefits of Pre-Pectoral Reconstruction

- The patient experiences less pain compared to implants placement under the chest muscle.
- Movement and contraction of the chest muscle will not affect the implant and therefore limits animation deformity.
- A more natural-appearing, shaped breast can be achieved with this method.

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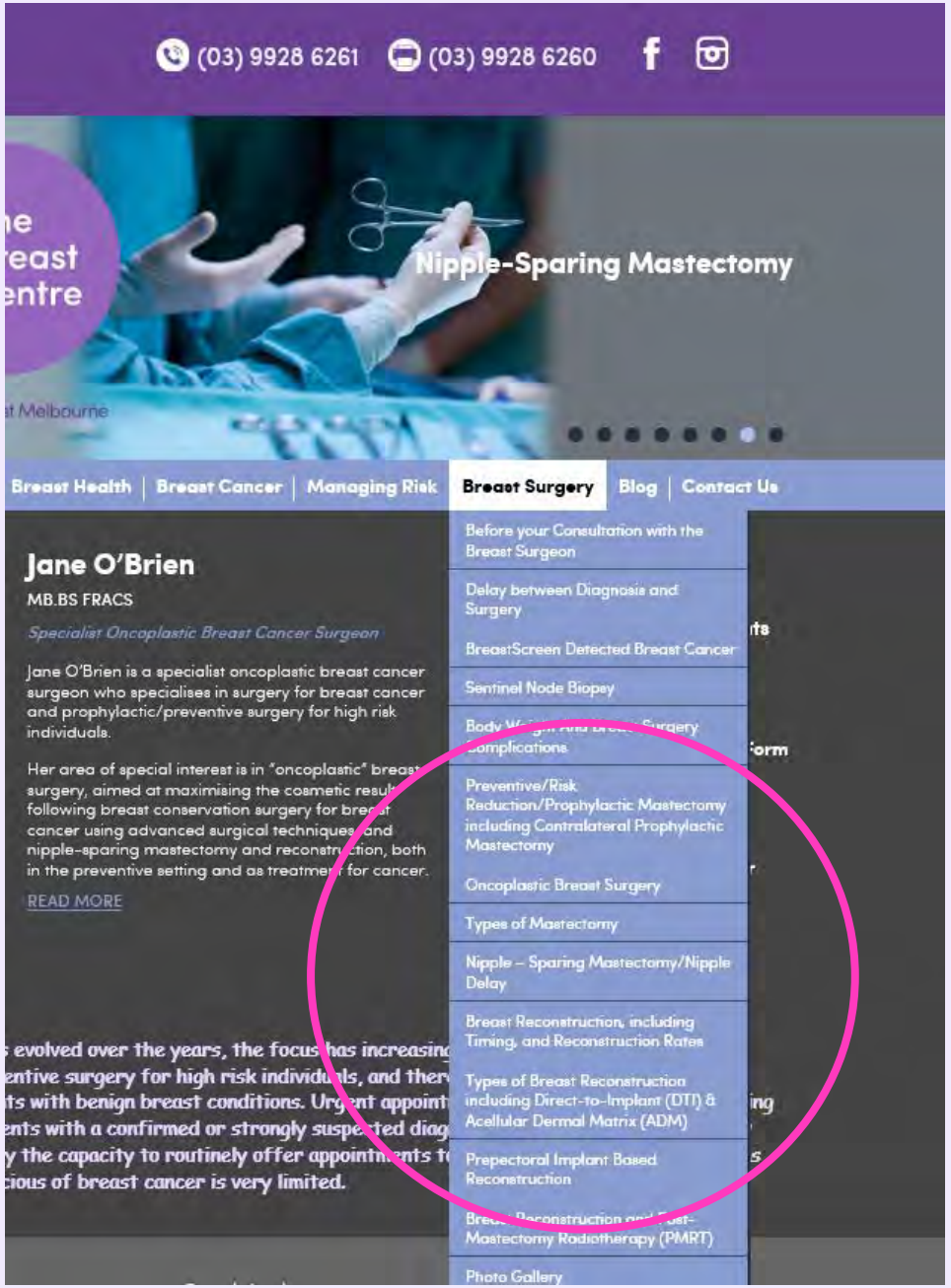

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www.melbournebreastcancersurgery.com.au

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Patient Selection Criteria for Prepectoral Reconstruction

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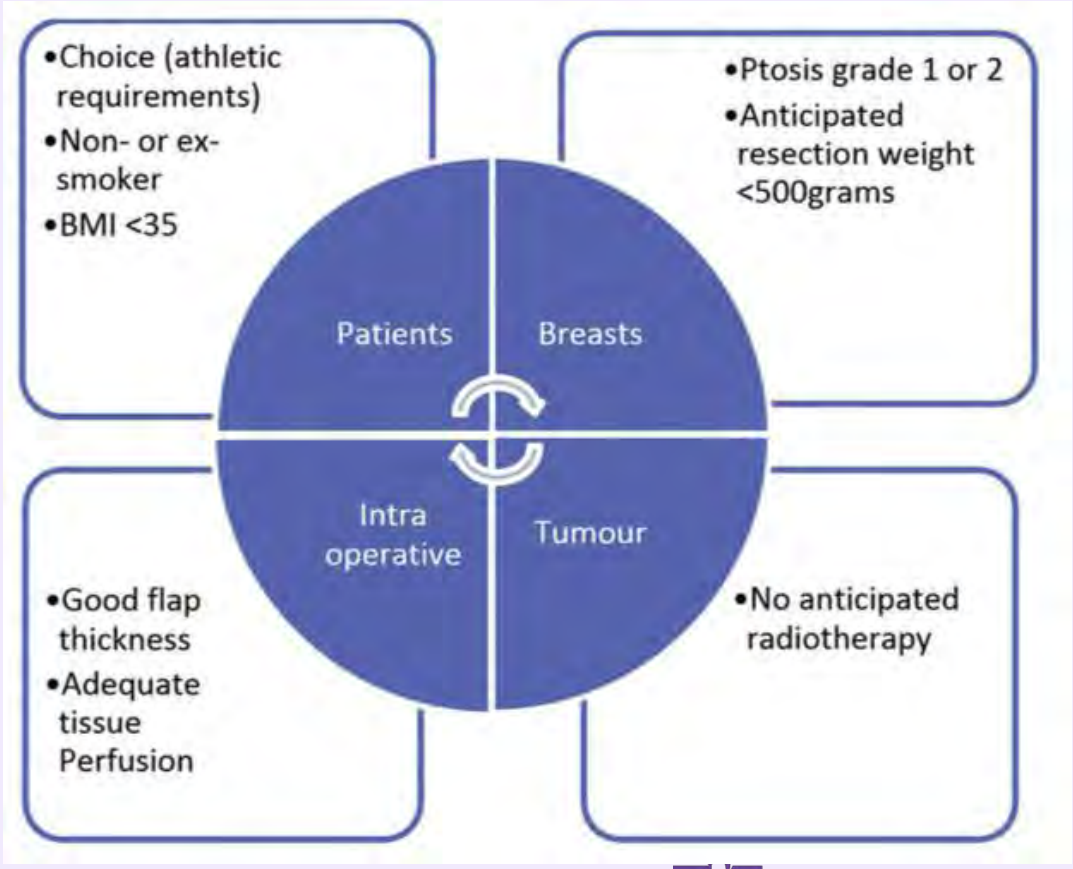
- Patients with minimal comorbidities, an active lifestyle, small- to medium-sized breasts, and good intraoperative tissue perfusion are good candidates for this surgery
- Body mass index (BMI) < 35 kg/m2
- Non or ex-smokers
- Grade 1 or 2 ptosis (ie breasts that are not very saggy)
- Anticipated breast volume of resection less than 500g
- Patient lifestyle should be taken into consideration, particularly athletes who require extensive pectoralis major use and require preserve shoulder functionality.



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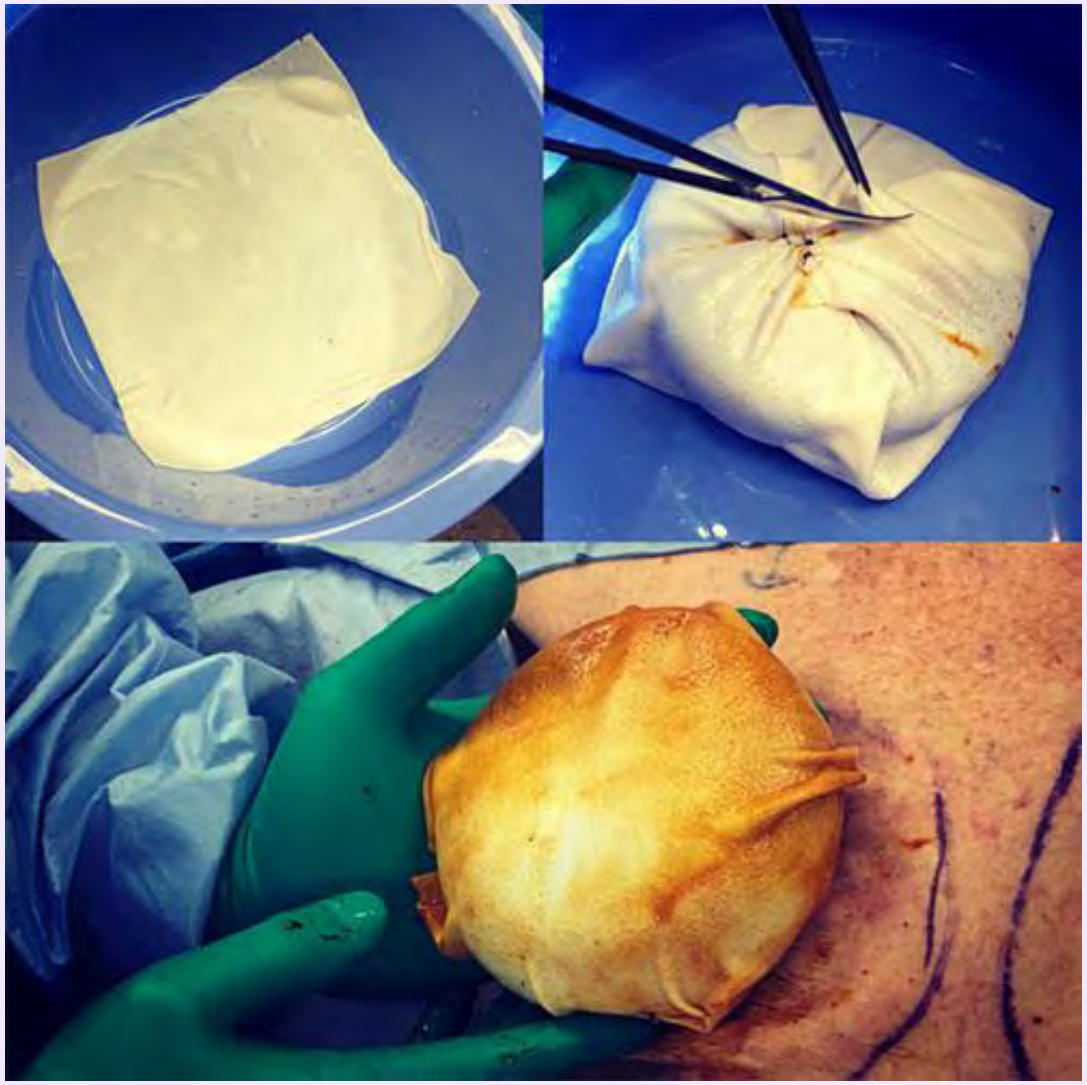

In last 12 months in my practice:

* 38% implant based reconstructions at the time of mastectomy for breast cancer were prepectoral (with ADM)

*60% of patients undergoing bilateral risk reduction mastectomy with implant based recon underwent prepectoral direct-to-implant (DTI) reconstruction with ADM.

Rippling

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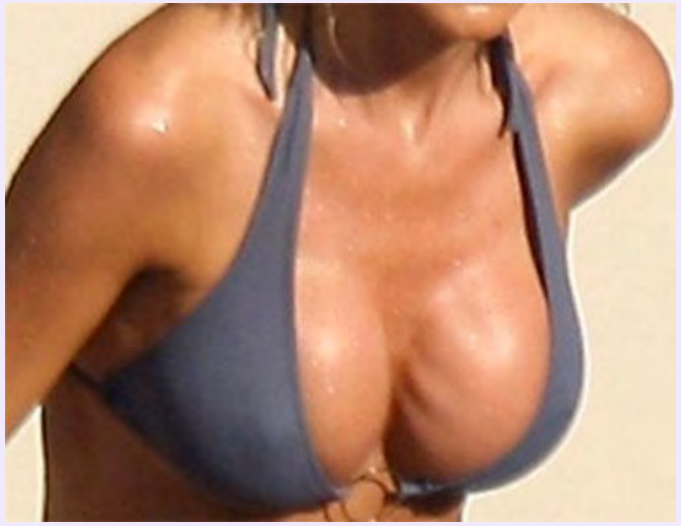

- Rippling refers to visible folds on the surface of the reconstructed breast, transmitted from an underlying breast implant, and is typically most apparent in the upper inner portions of the breast
- In prepectoral breast reconstruction, the pectoralis major muscle is not available to provide an additional layer of soft tissue coverage over the upper pole of the implant
- The thinner flaps provide less fullness in the upper pole of the breast and do less to camouflage the edges of the implant or wrinkles in the outer shell that manifest themselves as skin rippling or contour irregularities.
- One potential risk of prepectoral breast reconstruction therefore is a higher rate of visible "rippling" over the permanent implants, given the thinner upper pole coverage, compared with submuscular/dual plane reconstruction.

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Fat Grafting

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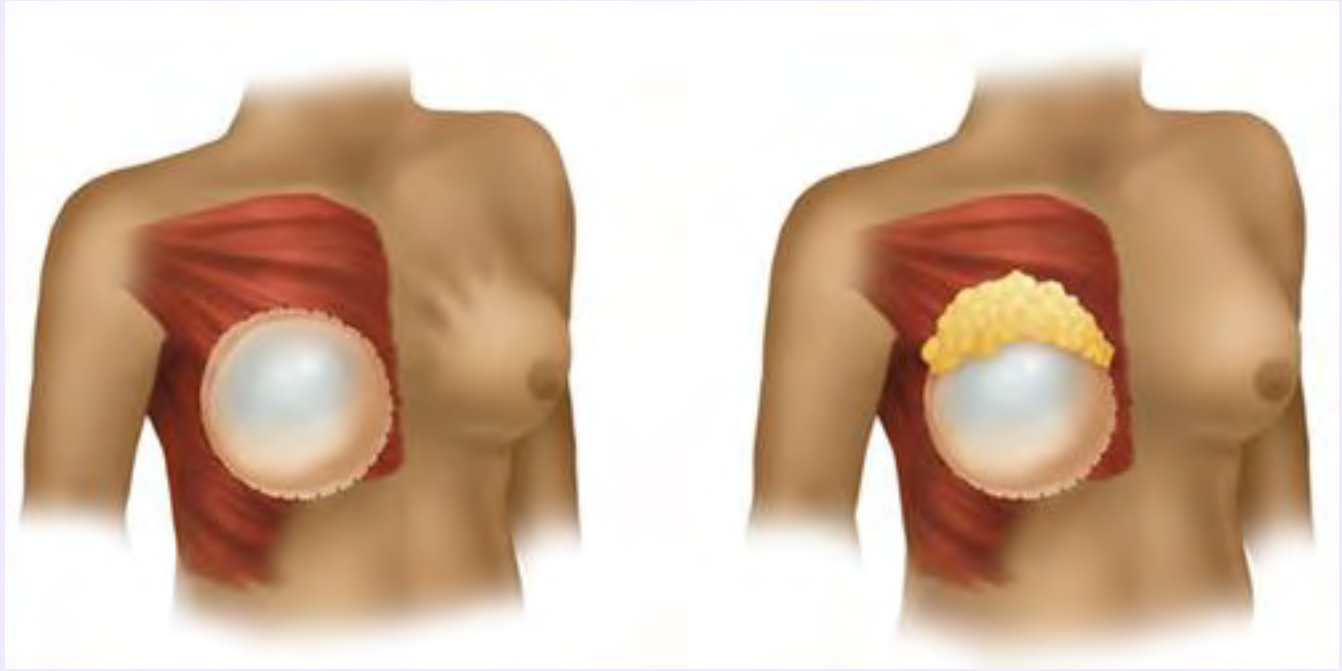
- Without submuscular or partial subpectoral placement of the implant, there may be a clear "step-off" visible between the chest wall and the prepectoral implant

- The primary means for correcting these deformities is autologous fat grafting.



Prepectoral implant reconstruction (left), demonstrating "rippling" deformity. Fat grafting to upper pole (right) corrects defect.

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Autologous Tissue Based Reconstruction

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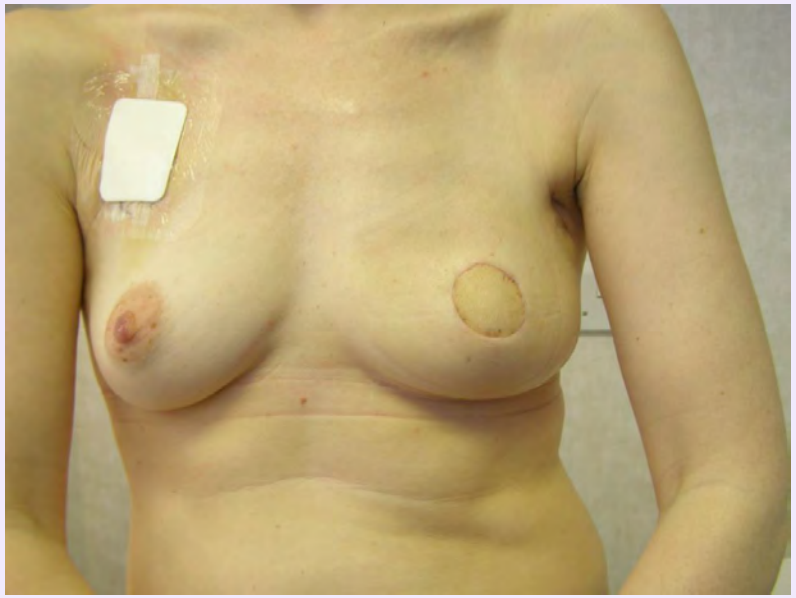

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How Did NSM Regain Acceptance?

The New England
Journal of Medicine

VOLUME 340 JANUARY 14, 1999 NUMBER 2

EFFICACY OF BILATERAL PROPHYLACTIC MASTECTOMY IN WOMEN WITH A FAMILY HISTORY OF BREAST CANCER

LYNN C. HARTMANN, M.D., DANIEL J. SCHAID, PH.D., JOHN E. WOODS, M.D., THOMAS P. CROTTY, M.D., JEFFREY L. MYERS, M.D., P.G. ARNOLD, M.D., PAUL M. PETTY, M.D., THOMAS A. SELLERS, PH.D., JOANNE L. JOHNSON, R.N., SHANNON K. MCDONNELL, M.S., MARLENE H. FROST, PH.D., R.N., AND ROBERT B. JENKINS, M.D., PH.D.

Hartmann, L.C. et al, Efficacy of Bilateral Prophylactic Mastectomy in Women with a Family History of Breast Cancer. *N Engl J Med*, 340: 77-84, 1999

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Time to reconsider subcutaneous mastectomy for breast-cancer prevention?

Kelly A Metcalfe, John L Semple, Steven A Narod

Lancet Oncol 2005; 6: 431–34

Faculty of Nursing, University of Toronto, Ontario, Canada (K A Metcalfe PHD); Division of Plastic Surgery, Department of Surgery, Sunnybrook and Women's College Hospital, Toronto, Ontario, Canada (K A Metcalfe PHD, J L Semple MD); and Centre for Research in Women's Health, Toronto, Ontario, Canada (Prof S A Narod MD)

Correspondence to: Prof Steven Narod, Centre for Research in Women's Health, 790 Bay Street, 7th Floor, Toronto, Ontario, M5G 1N8, Canada

stevennarod@sw.ca

Genetic testing for women at increased risk of developing breast cancer has moved from the research setting to become part of established clinical practice. By testing for inherited mutations in *BRCA1* and *BRCA2*, we are identifying more and more women who have an 80% or more lifetime risk of developing breast cancer. Since the discovery of *BRCA1* in 1994, several clinical studies have led to strategies for reducing the risk of developing breast cancer, including prophylactic mastectomy, prophylactic oophorectomy, and preventive tamoxifen. We believe that in 2005, all prophylactic options, including subcutaneous and total mastectomy should be discussed and made available to women who find themselves unfortunate enough to have inherited a BRCA mutation.

For women with a *BRCA1* or *BRCA2* mutation, prophylactic mastectomy offers the greatest protection against the development of breast cancer. Initially, the effectiveness of prophylactic mastectomy (figure) was unknown and it was regarded as an extreme technique. The procedure has been described as a desperate measure[1] and a drastic option,[2] and many investigators did not recommend the procedure because its benefit was not proven. However, many women felt that they had seen enough cancer in their families and had the operation anyway—these women were later enrolled onto several research studies (table) that showed the effectiveness of prophylactic mastectomy in prevention of breast cancer.[3–6,10]

In the first study, Hartmann and colleagues[3] at the Mayo clinic location reported on cancer risk in a large cohort of women with a family history of breast cancer who had undergone bilateral prophylactic mastectomy. The researchers estimated that the risk of breast cancer was reduced by more than 90% with bilateral prophylactic mastectomy. In a subsequent study[6] on a subcohort of these women the investigators identified 26 women who had a *BRCA1* or *BRCA2* mutation. In this small sample of women, prophylactic mastectomy was associated with a risk reduction of between 89·5% and 100%. Researchers[10] in the Netherlands followed up 139 women with *BRCA1* and *BRCA2* mutations; after about 3 years of follow-up, no woman who had had a prophylactic mastectomy had developed breast cancer, compared with eight women who underwent regular breast surveillance (p=0·003). Although follow-up was short, updated data supports the preliminary result.[10] Finally, in a historical cohort study[5] of 483 women who were carriers of *BRCA1* and *BRCA2* mutations (105 patients who underwent bilateral prophylactic mastectomy were matched with 378 control who had intact breasts), prophylactic mastectomy was associated with a reduction in risk of breast cancer of about 95%.

Acceptance of prophylactic surgery

Many factors determine the rates of prophylactic surgery, including social and cultural context, physician willingness, and the patient and doctor's belief in the effectiveness of the procedure (and of alternate preventive measures). Rates of prophylactic mastectomy in mutation carriers differ widely by country. The highest reported frequency is in the Netherlands, where 54% of eligible women have had a prophylactic mastectomy.[10] Two US studies surveyed women who had received genetic test results and reported much fewer prophylactic mastectomies than in the Netherlands. In an early study, Lerman and co-workers[11] reported that only 3% of carriers underwent prophylactic mastectomy within 1 year, and Botkin and colleagues[12] reported that no women had prophylactic mastectomy within 2 years of receiving her result. In Canada, 20% of carriers of the

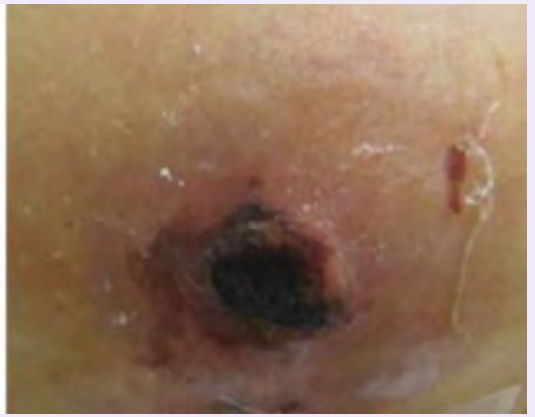
Figure: 45-year-old woman who had prophylactic bilateral subcutaneous mastectomy and immediate reconstruction with tissue expanders placed under the pectoralis muscle
(A, C) Preoperative appearance. (B, D) 3 months' follow-up. Tissue expanders have been exchanged for implants. Mastectomy was done through an inframammary incision.

Lancet Oncology 2005

Authors predicted that predict that the number of women requesting the procedure will rise from 20% to 50% if subcutaneous mastectomy were offered

Surgical Complications

-skin flap /nipple necrosis



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Skin Flap/ Nipple/Areolar Necrosis

- Larger breasts
- Volume of implant
- Smoking
- Obesity
- Incision type
- Age

Ann Surg Oncol (2012) 19:3171–3176
DOI 10.1245/s10434-012-2528-7

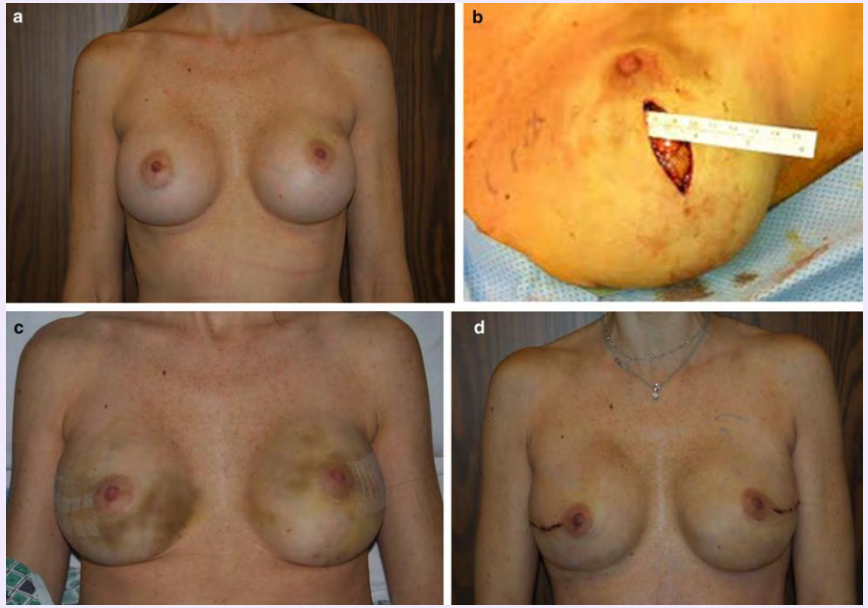
Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – BREAST ONCOLOGY

Surgical Delay of the Nipple–Areolar Complex: A Powerful Technique to Maximize Nipple Viability Following Nipple-Sparing Mastectomy

J. Arthur Jensen, MD[1,2], Jennifer H. Lin, MD[2], Nimmi Kapoor, MD[2,3], and Armando E. Giuliano, MD[2,4]

[1]Division of Plastic Surgery, Geffen School of Medicine at U.C.L.A., Los Angeles, CA; [2]Division of Surgical Oncology, John Wayne Cancer Institute at Saint John's Health Center, Santa Monica, CA; [3]Division of Surgery, Cedars Sinai Medical Center, Los Angeles, CA; [4]Division of Surgical Oncology, Cedars-Sinai Medical Center, Los Angeles, CA



Ann Surg Onc 2012

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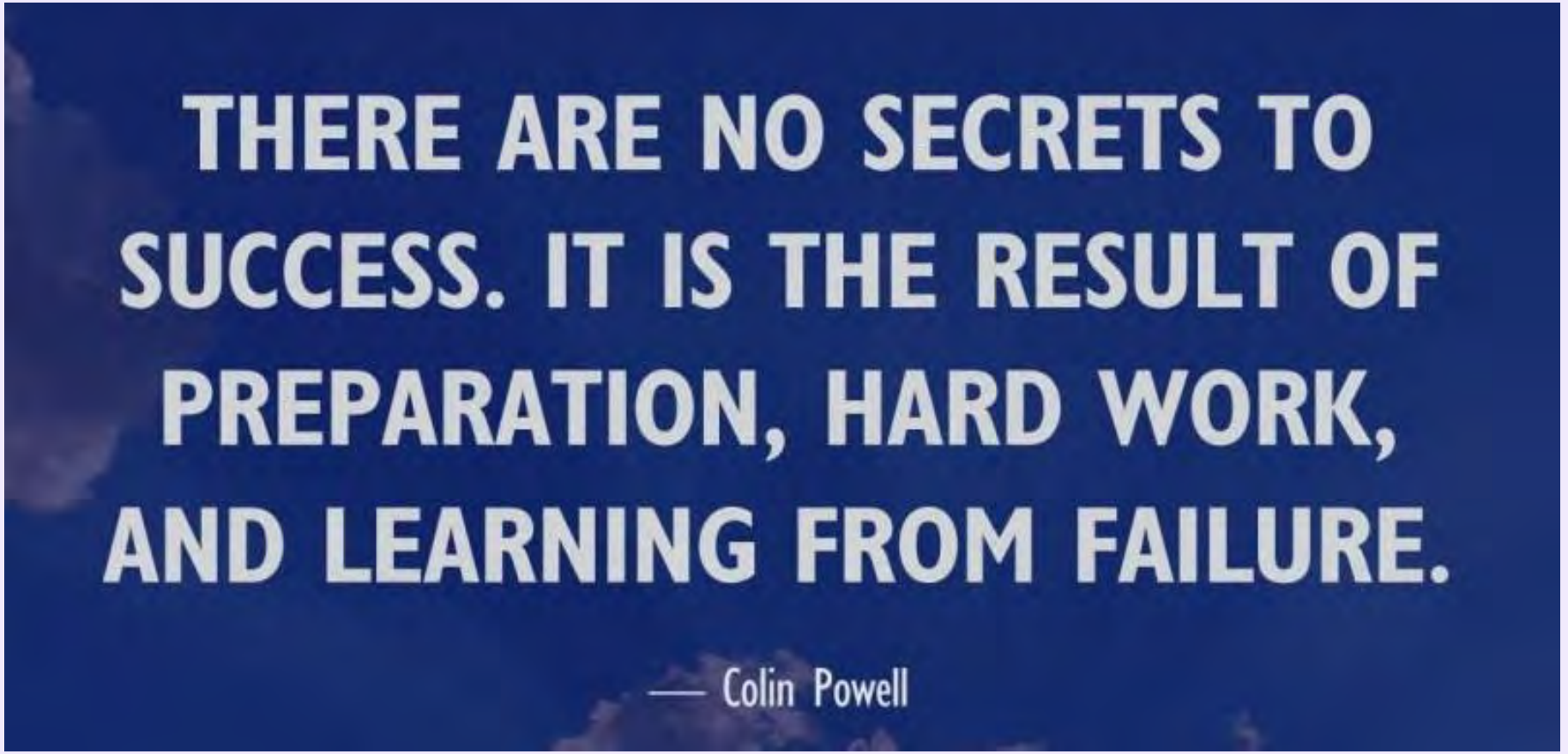

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Risk Analysis and Stratification of Surgical Morbidity after Immediate Breast Reconstruction

John P Fischer, MD, Ari M Wes, BA, Charles T Tuggle, MD, Joseph M Serletti, MD, FACS, Liza C Wu, MD, FACS

BACKGROUND: Surgical complications after breast reconstruction can be associated with significant morbidity, dissatisfaction, and cost. We used the ACS-NSQIP datasets from 2005 to 2011 to derive predictors of morbidity and to stratify risk after immediate breast reconstruction (IBR).

STUDY DESIGN: Surgical complications after implant and autologous reconstruction were assessed using the ACS-NSQIP 2005 to 2011 datasets. Patient demographics, clinical characteristics, and operative factors were associated with the likelihood of experiencing a surgical complication. A "model cohort" of 12,129 patients was randomly selected from the study cohort to derive predictors. Weighted odds ratios derived from logistic regression analysis were used to create a composite risk score and to stratify patients. The remaining one-third of the cohort (n = 6,065) were used as the "validation cohort" to assess the accuracy value of the risk model.

RESULTS: On adjusted analysis, autologous reconstruction (odds ratio [OR] 1.41, $p < 0.001$), American Society of Anesthesiologists physical status ≥ 3 (OR 1.25, $p = 0.004$), class I obesity (OR 1.38, $p < 0.001$), class II obesity (OR 1.91, $p < 0.001$), class III obesity (OR 1.70, $p < 0.001$), and active smoking (OR 1.46, $p < 0.001$) were associated with complications. Risk factors were weighted and patients were stratified into low (0 to 2, n = 9,133, risk = 7.14%), intermediate (3 to 4, n = 1,935, risk = 10.90%), high (5 to 7, n = 1,024, risk = 16.70%), and very high (8 to 9, n = 37, risk = 27.02%) risk categories based on their total risk score ($p < 0.001$). Internal validation of the "model cohort" using the "validation cohort" was performed demonstrating accurate prediction of risk across groups: low (7.1% vs 7.1%, respectively, $p = 0.9$), intermediate (10.9% vs 12.0%, respectively, $p = 0.38$), high (16.7% vs 16.8%, respectively, $p = 0.95$), and very high (27.0% vs 30.0%, respectively, $p = 1.0$).

CONCLUSIONS: Surgical complications after IBR are related to preoperatively identifiable factors that can be used to accurately risk stratify patients, which may assist with counseling, selection, and perioperative decision-making. (J Am Coll Surg 2013;217:780–787.

J Am Coll Surg 2013

- Obesity
- Smoking

EJSO 2002; **28**: 815–820
doi:10.1053/ejso.2002.1308, available online at http://www.idealibrary.com on IDEAL®

EJSO
European Journal of Surgical Oncology

Smoking as a risk factor for wound healing and infection in breast cancer surgery

L. T. Sørensen*, J. Hørby*, E. Friis*, B. Pilsgaard* and T. Jørgensen†

*Department of Surgical Gastroenterology K, Bispebjerg University Hospital, Copenhagen Hospital Corporation, Denmark and †Centre for Preventive Medicine, Glostrup University Hospital, Copenhagen County, Denmark

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- Pts with a smoking history have a 6.5 times greater risk of complications following breast surgery
- Wound infection increased by 3.46 in heavy smokers and 2.95 in light smokers
- Flap necrosis- 9.22 times in heavy and 6.85 in light smokers

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The Larger or Ptotic Breast

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- Skin Reducing Mastectomy
- Staged NSM following mastopexy or reduction

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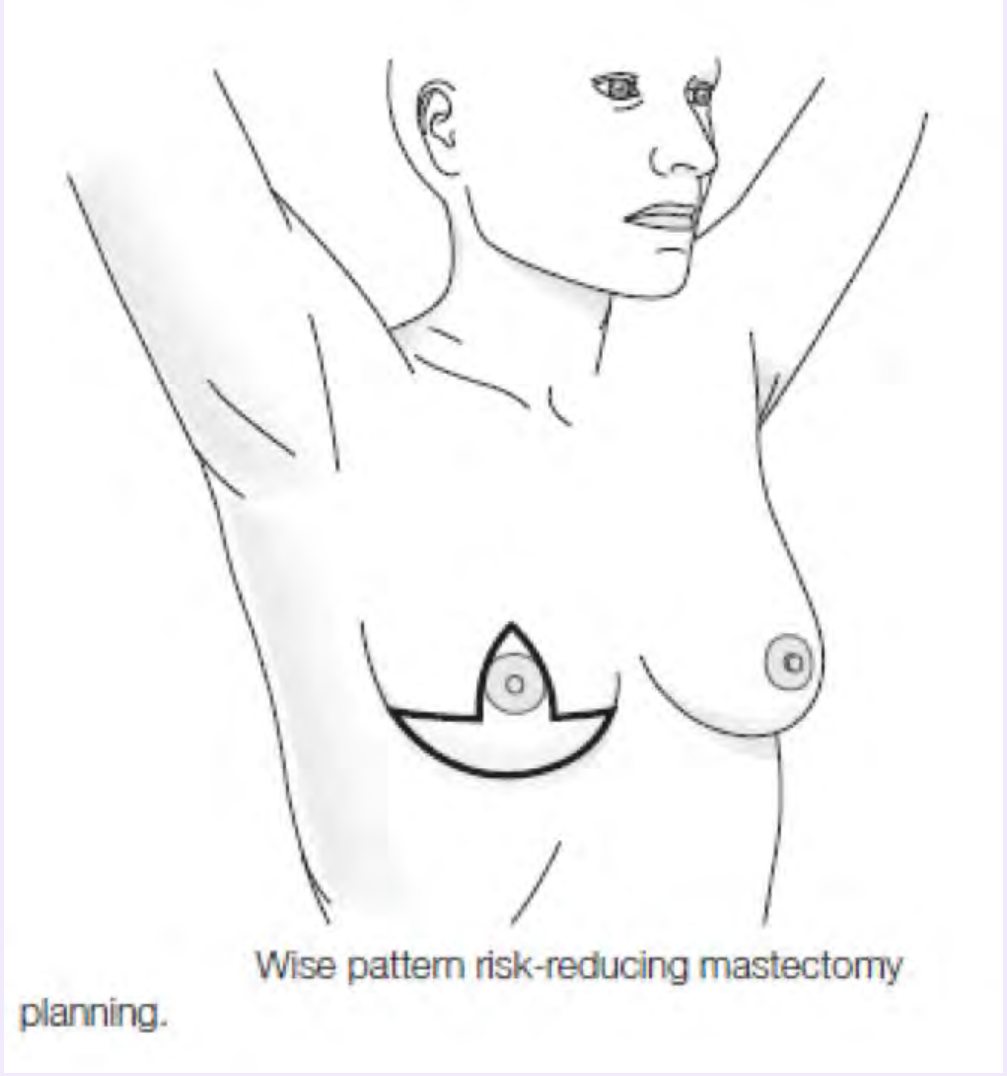
Skin Reducing Mastectomy
"Wise Pattern"



Wise pattern risk-reducing mastectomy planning.

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Skin Reducing Mastectomy
"Hemibatwing Pattern"

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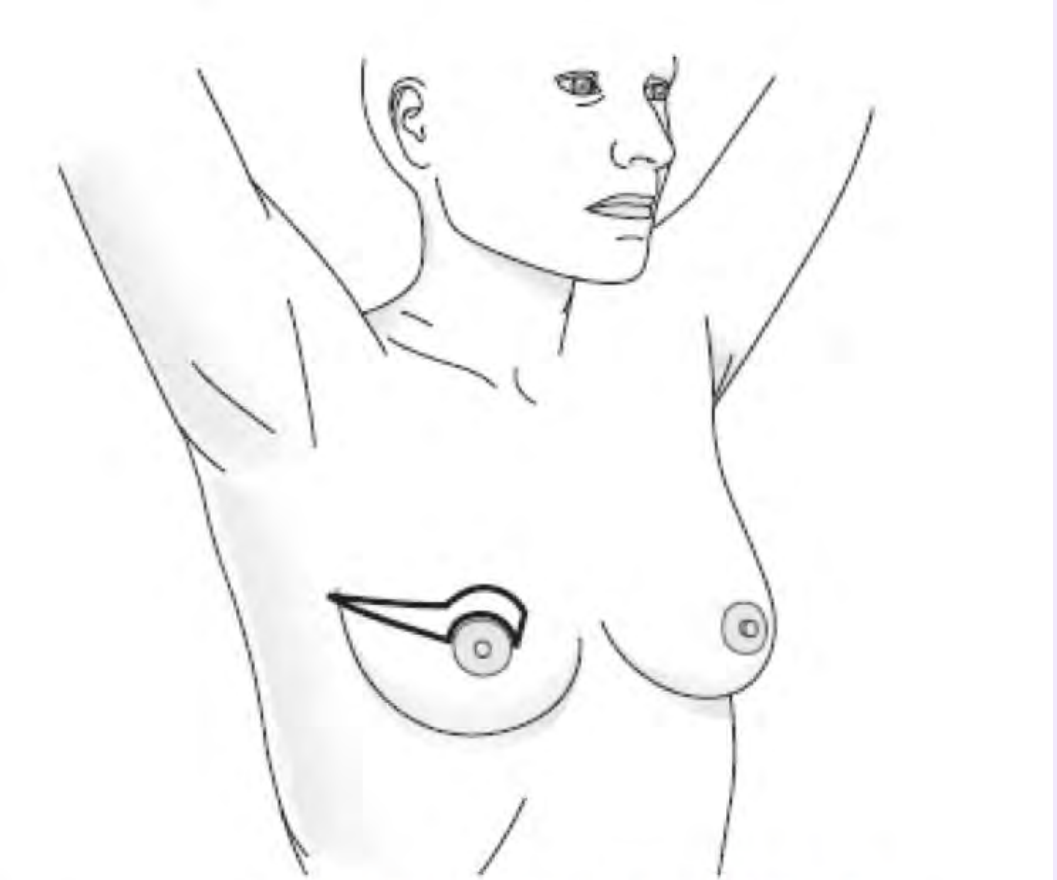

Batwing incision to reduce the upper skin and elevate the nipple.

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Extending NSM Eligibilty

The Larger or Ptotic Breast

BREAST

Breast Reconstruction Using a Staged Nipple-Sparing Mastectomy following Mastopexy or Reduction

Scott L. Spear, M.D.
Steven J. Rottman, M.D.
Laura A. Seiboth, M.D.
Catherine M. Hannan, M.D.
Washington, D.C.

Background: To address those patients who do not meet anatomical criteria for nipple-sparing mastectomy, the authors use a staged approach: (1) mastopexy or breast reduction, (2) nipple-sparing mastectomy through the mastopexy incisions after a minimum of 3 to 4 weeks, and (3) the final reconstruction.

Methods: Fifteen patients underwent nipple-sparing mastectomy at Georgetown University Hospital between 2007 and 2010 after planned or unrelated mastopexy or reduction. An institutional review board–approved retrospective chart review recorded demographic information and outcomes such as skin necrosis and device failure.

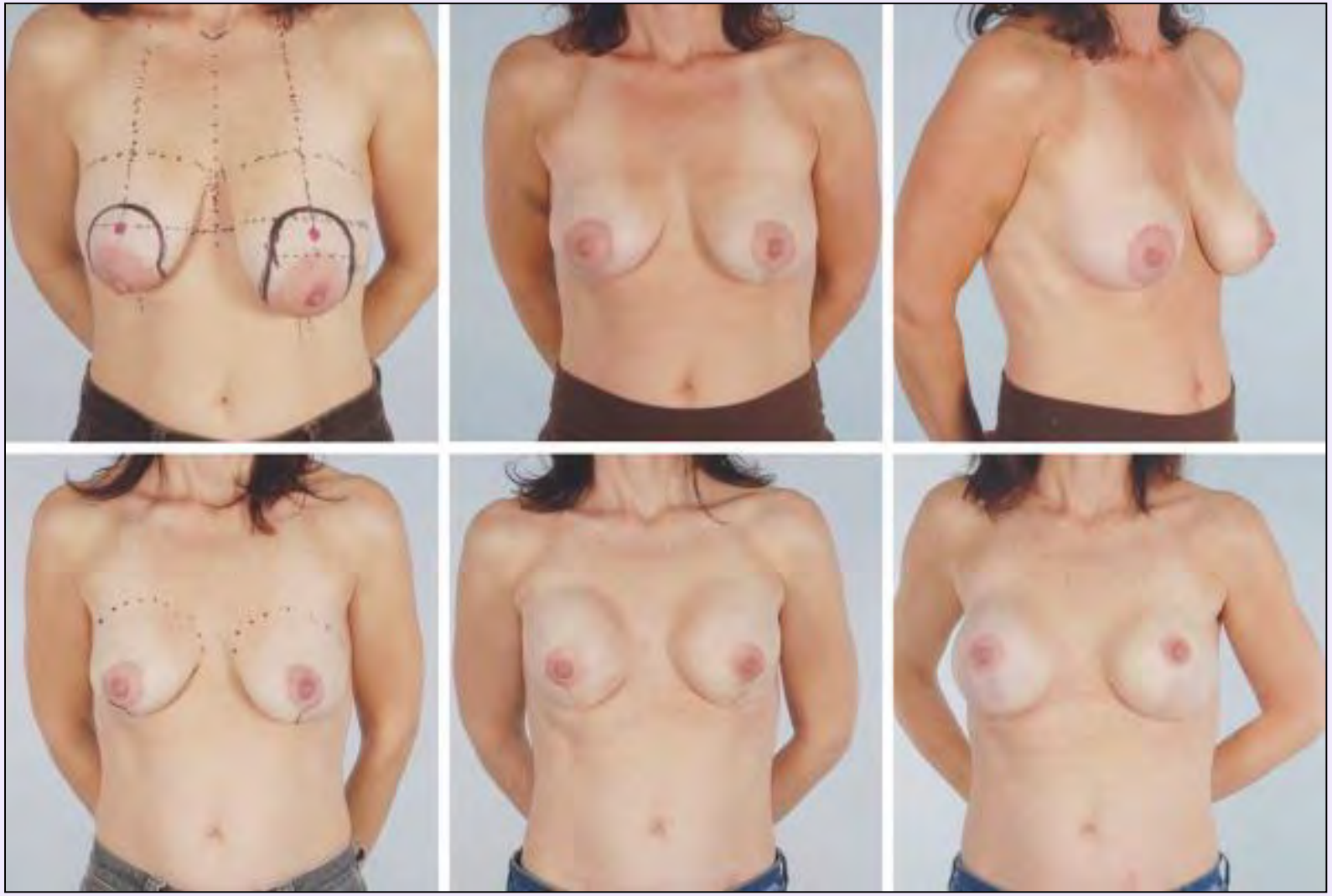
Results: Fifteen patients (24 breasts) underwent nipple-sparing mastectomy after mastopexy or reduction with an average follow-up of 13 months. The staged procedure was planned in 10 patients [19 breasts (79 percent)] and unplanned, or coincidental, in five [five breasts (21 percent)]. The mastectomy was prophylactic in 17 breasts (71 percent) and therapeutic in seven (29 percent). Four of the 24 operated breasts (17 percent) experienced a complication. Two patients [two breasts (8 percent)] developed skin flap necrosis. Two patients [three breasts (13 percent)] developed minimal partial nipple-areola complex necrosis. One patient [one breast (4 percent)] had an expander explanted for infection related to skin flap necrosis. Fourteen patients [23 breasts (96 percent)] successfully recovered following nipple-sparing mastectomy and prior mastopexy or reduction without residual effects of nipple-areola complex or skin flap necrosis.

Conclusions: The authors are comfortable offering the staged approach to nipple-sparing mastectomy to patients with moderately large or ptotic breasts. It may not be suitable for the very large or ptotic breast. (*Plast. Reconstr. Surg.* 129: 572, 2012.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

THERAPEUTIC

Plastic and Reconstructive Surgery 2012



Personal Practice Audit
Bilateral Risk-Reduction Mastectomy
2015-2019

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- Patient undergoing bilateral risk reduction mastectomy: age range 22-57 years
- Average age 39
- Increasing numbers of younger women: 22, 27, 27, 28, 28, 29

	%
Interstate	29
Regional Victoria	33

- All but 3 patients proven mutation carriers

Personal Practice Audit
Bilateral Risk-Reduction Mastectomy
2015-2019

	%
NSM	81
SSM	14
NSM undergoing prior nipple-delay	88

Personal Practice Audit
Bilateral Risk-Reduction Mastectomy
2015-2019

The Breast Centre

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	% of Bilateral Mastectomy with Reconstruction
Implant Based	90
DIEP	10
	% of Implant Based Reconstructions
Single Stage DTI with ADM	89
2 stage tissue expander/implant	11
	% of DTIs
Dual Plane	83
Prepectoral	17 (60% of DTIs in last 12 months)

*All but one pt underwent Immediate Reconstruction

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Preparation for Risk-Reducing Surgery

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- No Smoking
- Healthy weight (BMI 20-25)
- Core Strength eg pilates

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Follow up after RRM

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- New lifetime risk 3-5%
  - ie 90-95% reduction of 60-85% lifetime risk
- Tumours detectable by clinical examination
- No role for routine surveillance imaging of reconstructed breast

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RESOURCES

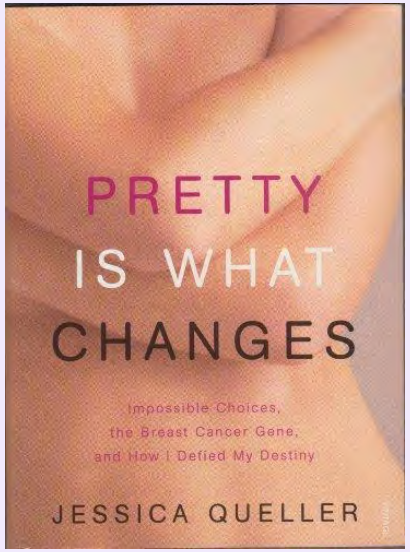
- Books
- Organisations
- Online Groups
- Social Media

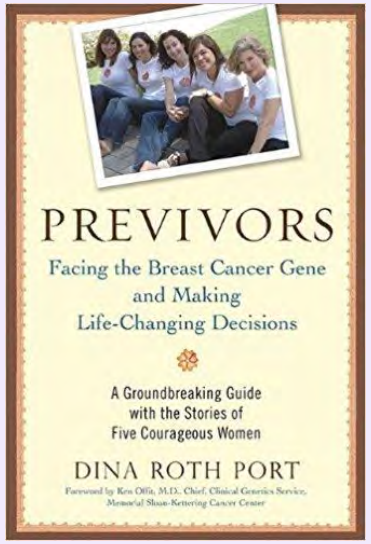
The Breast Centre

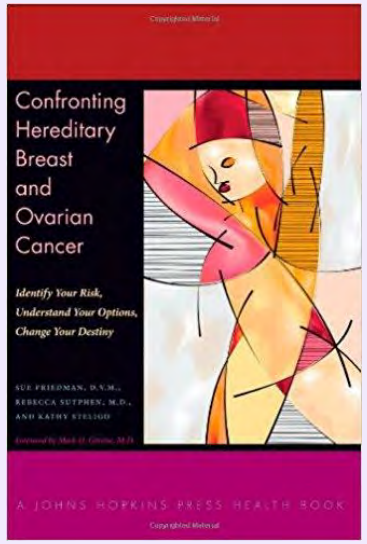
thebreastcentre.com.au

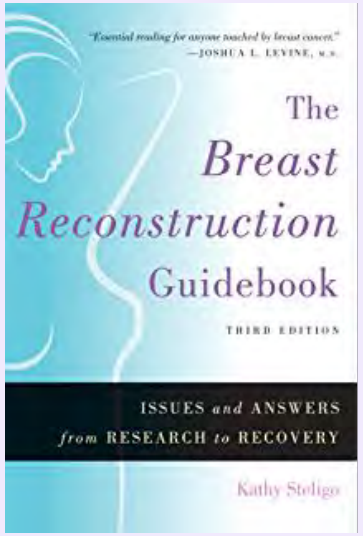
ST VINCENT'S PRIVATE HOSPITAL
EAST MELBOURNE

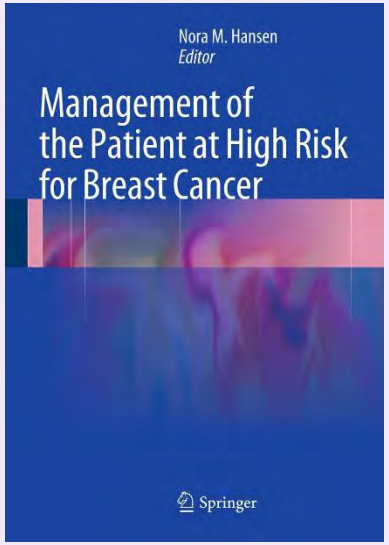

A story of courage, hope and bright pink lipstick
The LUCKY ONE
KRYSTAL BARTER


PRETTY IS WHAT CHANGES
Impossible Choices, the Breast Cancer Gene, and How I Defied My Destiny
JESSICA QUELLER


PREVIVORS
Facing the Breast Cancer Gene and Making Life-Changing Decisions
A Groundbreaking Guide with the Stories of Five Courageous Women
DINA ROTH PORT


Confronting Hereditary Breast and Ovarian Cancer
Identify Your Risk, Understand Your Options, Change Your Destiny
A JOHNS HOPKINS PRESS HEALTH BOOK


The Breast Reconstruction Guidebook
THIRD EDITION
ISSUES and ANSWERS from RESEARCH to RECOVERY
Kathy Sologo


Nora M. Hansen
Editor
Management of the Patient at High Risk for Breast Cancer
Springer

Books

Organisations

The Breast Centre
thebreastcentre.com.au

- Pink Hope

http://pinkhope.org.au

- Force

http://www.facingourrisk.org/index.php

- Bright Pink

https://www.brightpink.org/high-risk-support/high-risk-resources/

- Basser Center for BRCA

https://www.basser.org

ST VINCENT'S PRIVATE HOSPITAL
EAST MELBOURNE

The Breast Centre

at St Vincent's Private Hospital East Melbourne

The Breast Centre

thebreastcentre.com.au

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