

**Oncoplastic Surgery:
A New Approach to
Lumpectomy for
Breast Cancer**

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Oncoplastic Breast Surgery:

- What is it?
- Why is it important?
- Is it safe?
- How is it done?



Learning Objectives:

1. Describe the principles of an oncoplastic approach to breast conserving surgery
2. Differentiate between standard lumpectomy and oncoplastic lumpectomy
3. Recognize the importance of oncoplastic surgery in breast cancer care and survivorship



Options for Breast Cancer Surgery

- *Mastectomy*
 - Removal of the entire breast
- *Lumpectomy or Partial Mastectomy*
 - Removal of the tumor while preserving the rest of the breast
 - This is where oncoplastic surgery plays a role



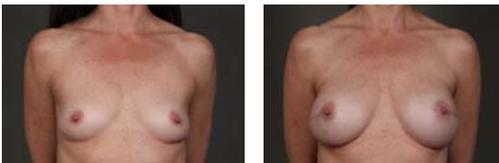
Simple Mastectomy

- Removal of the entire breast, nipple, areola, and breast skin
- Delayed reconstruction is an option



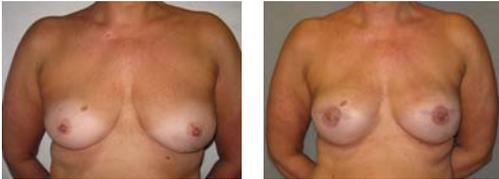
Nipple Sparing Mastectomy

- Removal of the entire breast while preserving the nipple and areola
 - Done with immediate breast reconstruction



Skin Sparing Mastectomy

- Removal of the entire breast, nipple, and areola while preserving the breast skin envelope
 - Done with immediate breast reconstruction
 - Nipples can be tattooed or reconstructed



Options for Breast Cancer Surgery

- Surgery for breast cancer also includes surgery on the lymph nodes in the underarm:
 - Sentinel Node Biopsy vs Axillary Node Dissection
 - Outside of the focus of this talk



Who Needs a Mastectomy?

- Large tumors or advanced disease
- Carriers of high risk genetic mutations
 - BRCA 1 or BRCA 2
 - Only about 5% of the population
- High risk family history in the absence of genetic mutations
- Very young patients in the absence of genetic mutations



Who Needs a Mastectomy?

- Large tumors or advanced disease
- Inflammatory cancer
- Unfavorable tumor to breast ratio
 - i.e. large tumor in a small breast
- Previous radiation to breast/chest wall



Breast Conserving Therapy (BCT)

- BCT = lumpectomy + radiation
 - Cornerstone in the management of breast cancer
 - Primary goal is complete excision of lesion to clear margins
 - Secondary goal is acceptable cosmesis



Why BCT?

- Survival outcomes are the same as mastectomy
- Local recurrence outcomes are similar to mastectomy
- Smaller surgery
 - Easier recovery
 - Fewer complications
- Keep your own breasts
 - Less psychological stress and adjustment
- Mastectomy is *NOT MEDICALLY NECESSARY* in many patients



What is Oncoplastic Surgery (OPS)?

- **Oncoplastic breast surgery** = marriage of lumpectomy and local tissue rearrangement
 - Use patient's own breast tissue to achieve a better aesthetic result
- **Goal** = complete resection of the lesion and excellent cosmesis in a single definitive procedure



What ISN'T Oncoplastic Surgery?

- Cosmetic surgery
- Tissue expander or implant based surgery
- Flap based reconstruction
 - Using patient's own non-breast tissue to reconstruct the breast
 - Usually from the abdomen or back



What ISN'T Oncoplastic Surgery

OPS is *NOT* vain or superficial!

It is important to feel whole again after breast cancer treatment and OPS can help with that.



Standard Lumpectomy

- Skin incision over tumor
- Dissect out tumor to clear margins
 - Removal of breast tissue creates empty space
- Close skin
- Empty space within breast fills with fluid (seroma)



What's the Problem?

- Seroma will eventually be absorbed by the body
- Empty space causes skin to pull in, dimple or divot
 - Creates a contour deformity
- Radiation makes the problem worse
- Up to 40% of women are dissatisfied with the way their breast looks after standard lumpectomy¹



How is OPS Different?

- Patient's own breast tissue is stitched together to close the empty space left once the tumor is removed
- No empty space = no contour deformity
- Scar placement is more carefully chosen
 - Not just directly over the tumor
- Skin and breast tissue can be removed to provide a breast reduction or lift at the same time
- The opposite breast can be reduced or lifted to provide better symmetry



Why is it Important?

- 40% is a lot of women!
- Improved cosmesis leads to improved quality of life and psychologic and social functioning^{2,3}
 - Better body image
 - Improved sexuality and sexual function
- Patients generally do well and therefore have to live with the results of their surgery long term
- Focus on survivorship in breast cancer care



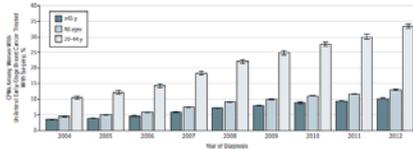
Why is it Important?

- **Contralateral Prophylactic Mastectomy (CPM)**
= removal of the unaffected (non-cancer) breast
- Rates are on the rise⁴
- Only ~5% of the population carry a high risk genetic mutation
- Many CPMs are medically unnecessary



Why is it Important?

Figure 1. Annual Nationwide Proportions of Contralateral Prophylactic Mastectomies (CPMs)



Annual nationwide percentages of CPMs among women with invasive unilateral early stage breast cancer treated with surgery by age category, 2004-2012. The bars represent the percentage of CPMs among women treated with surgery for unilateral early stage breast cancer. The vertical error bars represent 95% CIs.



Why Is It Important?

- The Midwest has the highest rates of CPM in the country⁴

Research Original Investigation Regional Variation in Contralateral Prophylactic Mastectomy in the United States

Table 2. Proportion of Patients Receiving a Contralateral Prophylactic Mastectomy (CPM) by State and Year Among Women 20 to 44 Years of Age

State	Overall (2004-2012), Patients, No. (%)		2010-2012, Patients, No. (%)		Change Between Time Periods, No. (95% CI)
	Total Cases	CPM	Total Cases	CPM	
South Dakota	417	161 (38.6)	137	41 (29.9)	136 (48.5)
Iowa	3644	532 (14.6)	614	132 (21.5)	478 (213 (84.9))
Colorado	2737	923 (33.7)	888	339 (38.2)	913 (407 (88.6))
Missouri	3343	868 (25.9)	1216	356 (29.3)	350 (443 (83.1))
Nebraska	943	328 (34.8)	342	77 (22.5)	269 (133 (82.8))

- 42.8% of women aged 20-44 with early stage, unilateral breast cancer underwent CPM between 2010 – 2012 in Nebraska⁴



How Bad Can It Be?

- Surgeons say:**
 - "Standard lumpectomies work just fine"
 - "My cosmetic outcomes are good"
 - "The seroma is your friend"
 - "Why are you making basic surgery more complicated?"
- Patients say:**
 - "Just get rid of the cancer"
 - "I don't care what it looks like"
 - "I'm not vain"
 - "It doesn't matter"



How bad can it be?

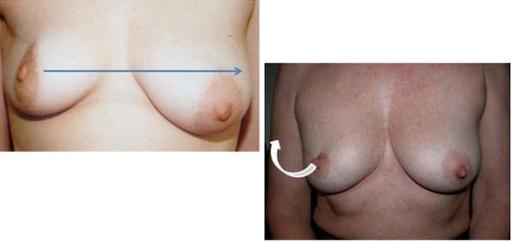


How bad can it be?





How bad can it be?





Common Causes of Deformities in BCS:

- Removal of >15-20% volume in A/B cup breast
- Removal of >20-30% volume in C/D cup breast
- Removal of tissue in cosmetically sensitive areas
- Skin adherence to underlying muscle
- Poor positioning of nipple areolar complex



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How safe is oncoplastic breast conservation?: Comparative analysis with standard breast conserving surgery^a

A. Chakravorty^{a,*}, A.K. Shrestha, N. Sanmugalingam, F. Rapisarda, N. Roche, G. Querci della Rovere, F.A. MacNeill

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Accepted 27 February 2012
 Available online 20 March 2012

Method: From June 2003 to Feb 2010 data was obtained from contemporaneously recorded electronic patient records on patients who had oBCS and sBCS within a single breast cancer centre. Re-excision rates and local recurrence rates were compared.
Results: A total of 640 oBCS and 150 sBCS (in 146 women) were included in this study. Median tumour size and specimen weight was 21 mm and 67 g for oBCS and 18 mm and 40 g in the sBCS group ($p < 0.001$). Re-excision was 2.7% (4/150) and 13.4% (9/640) for oBCS and sBCS respectively ($p < 0.001$). At a median follow-up of 28 months, local relapse was 2.7% (4) and 2.2% (10) and distant relapse 1.3% (2) and 7.5% (33) for oBCS and sBCS respectively.
Conclusion: Oncoplastic breast conserving techniques decrease re-excision rates. Early follow up data suggests oncological outcomes of oncoplastic breast conservation surgery are similar to standard breast conservation.
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The Breast (2007), 16, 387–393

THE BREAST
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ORIGINAL ARTICLE

Long-term oncological results of breast conservative treatment with oncoplastic surgery

M. Rietjens^a, C.A. Urban^a, P.C. Rey^a, G. Mazzaroli^c, P. Maisonneuve^d, C. Garusi^b, M. Intra^b, S. Yamaguchi^b, N. Kaur^b, F. De Lorenzi^{b,*}, A.G.Z. Matthes^b, S. Zurrida^b, J.Y. Petit^a

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Summary Oncoplastic surgery combining breast conservative treatment (BCT) and plastic surgery techniques may allow more extensive breast resections and improve aesthetic outcomes, but no long-term oncological results have been published. Long-term oncologic results of 148 consecutive BCT with concomitant bilateral plastic surgery have been analyzed and were compared to historical data of BCT trials.
Median follow-up was 74 months. Complete excision was obtained in 135 patients (91%); focally involved margins in 8 (5%); and close (<2 mm) margins in 5 (3%). Five patients developed ipsilateral recurrence (3%), 19 (13%) developed distant metastases and 11 patients died (7.33%). Patients with tumours larger than 2 cm were at greater risk of local recurrences and distant metastases.
Long-term oncologic results of BCT with oncoplastic surgery are comparable with



Original Study

Oncoplastic Surgery in Surgical Treatment of Breast Cancer: Is the Timing of Adjuvant Treatment Affected?

Lufti Degan, Mehmet Ali Gulcelik, Niyazi Karaman, Cihangir Ozaalan, Erhan Reis

Abstract

The aim of the study is to determine the time period needed for adjuvant therapy of the breast cancer patients after oncoplastic surgery. Two hundred eighty breast cancer patients were included. The time period needed for chemotherapy administration was 18.5 days. The adjuvant treatments of the patients operated with oncoplastic surgery and breast conserving surgery were not delayed.

Introduction: With the results of studies on the timing of adjuvant treatment, it currently appears that adjuvant treatment should be initiated as soon as possible. Breast conserving surgery and oncoplastic surgery is being used with increasing frequency. Therefore, studies about whether or not these applications delay the adjuvant treatment are needed. The aim of this study was to determine the time period needed for adjuvant chemotherapy and radiotherapy of the patients with breast cancer and to reveal associated factors related to the patient, tumor, and surgical technique. **Patients and Methods:** Two hundred eighty patients with breast cancer who had surgery and were given adjuvant treatments in our clinic were included in the study. Age, body mass index, concomitant diseases, smoking habits, menopausal status, neoadjuvant treatments, tumor characteristics, surgical technique, and surgical complications were recorded. The time period between surgery and initiation of chemotherapy and radiotherapy, the number of chemotherapy cycles, and the duration of chemotherapy and radiotherapy were calculated. **Results:** The numbers of patients who had modified radical mastectomy, breast conserving surgery, and oncoplastic surgery were 150 (53%), 41 (14.6%), and 78 (27.4%), respectively. The mean (SD) time period needed for chemotherapy administration was 18.5 ± 4.2 days (range, 13–41 days) and 3.9 ± 0.9 months for radiotherapy. Early wound complication of breast surgery was the only factor that delayed the adjuvant chemotherapy ($P = .001$). **Conclusion:** It has been well known that the time period between surgical treatment of breast cancer and adjuvant treatment affects survival. In our study, it has been shown that the time period between surgery and adjuvant treatment does not delay the initiation of adjuvant treatments. The adjuvant treatments of the patients who had modified radical mastectomy, breast conserving surgery, and oncoplastic surgery were not delayed. The cooperation between the disciplines for the timing of adjuvant treatments is important.

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Keywords: Adjuvant treatment, Breast cancer, Breast conserving surgery, Oncoplastic surgery



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LOCAL ORIGINAL EVALUATION AND THERAPY OF MAMMARY, SIXTH EDITION

Oncoplastic Breast Surgery: What, When and for Whom?
 R. Douglas Macmillan¹, Stephen J. McCulloch²

"It should be the standard of care."

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Keywords: Oncoplastic breast surgery; Breast conserving surgery; OERAP; Therapeutic mammoplasty



Who Can Have OPS?

- Patients who are already lumpectomy candidates
- Moderate to large sized breasts
 - Smaller breasts not an absolute contraindication
- Patients who desire smaller breasts or a breast lift
- Considerations:
 - OPS may be less successful in:
 - Heavy smokers
 - Poorly controlled diabetes
 - Very fatty breast tissue



Managing Expectations

- This is *NOT* cosmetic surgery
- May trade scars for breast contour
- Evaluate current breast asymmetry and ptosis
 - This will become more obvious after OPS unless a balancing procedure is done
- Consider breast size and shape
 - OPS will result in smaller, rounder breast
 - This will be more exaggerated by radiation
 - 10-15% volume loss



What Does OPS Look Like?

- Multiple different procedures and techniques
- Based on:
 - Tumor location (o'clock position)
 - Tumor size
 - Skin involvement
 - Breast size
 - Breast density
- Different levels of complexity



Level I vs. Level II OPS

Level I

- Reasonable to consider without plastic surgery or additional training
- <20% breast volume loss
- Use in 90% cases
- Avoid in fatty breasts

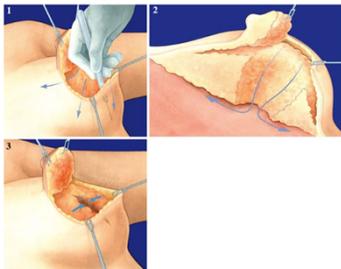
Level II

- Require plastic surgery support or additional training
- 20-50% breast volume loss
- Excision of skin to reshape breast
- Less utilized
- Safer in fatty breasts

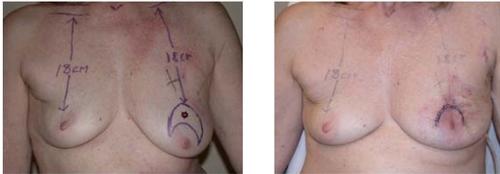


Level I – Local Flaps¹²

FIG. 1 Level I OPS- surgical concept. 1 Initial extensive skin undermining. 2 Excision of the lesion from subcutaneous tissue to pectoralis fascia. 3 Reapproximation and suturing of the gland.



Level I – Crescent Mastopexy



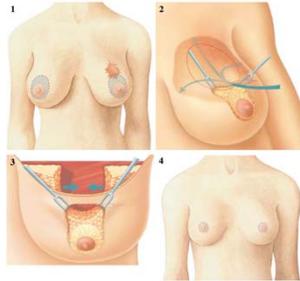
Level II – Hemi Batwing





Level II – Round Block¹²

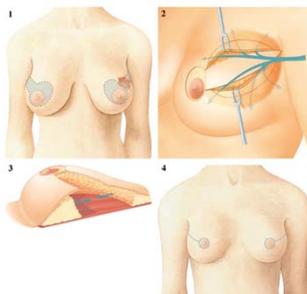
FIG. 6 Level II OPS: round block technique for upper pole lesion (11-1 o'clock). 1 Skin drawing and concrete periareolar incisions. 2 Circumferential skin undermining. 3 Reapproximation of the glandular flaps. 4 Resulting scars.



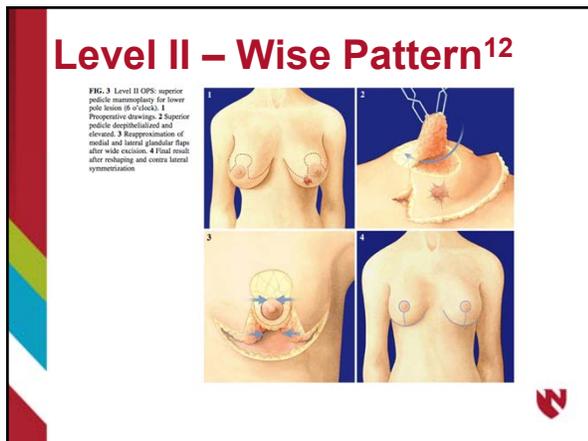


Level II – Racquet¹²

FIG. 7 Level II OPS: racquet technique for upper outer quadrant (1-3 o'clock). 1 Racquet technique preoperative drawings. 2 Skin excision and quadrant undermining. 3 Reapproximation and NAC recontouring. 4 Final result with periareolar and lateral scars.









If It's This Great, Why Isn't Everyone Doing It?

- Patient barriers:
 - Lack of awareness of this option
 - Difficulty finding a surgeon who performs OPS
- Physician barriers¹³:
 - Lack of training
 - Lack of access to plastic surgeons
 - Lack of support from colleagues
 - Lack of recognition at the organizational level



Conclusions

- OPS is a safe and cosmetically sensitive option for many women with breast cancer
- OPS contributes to psychological, social, and sexual wellbeing as a women goes through her breast cancer journey
- Many women are good candidates for this type of surgery



Questions?



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References

1. Al-Chalabi SK, Fallowfield L, Blamey RW. Does cosmetic outcome from treatment of primary breast cancer influence psychosocial morbidity? *Eur J Surg Oncol*. 1998;25:175-8.
2. Sweeney KC, Antonsson MK, Yamada B, Broderick M, Regan F, Bass G, Goddard A. Cosmetic and functional outcomes of breast conserving treatment for early stage breast cancer: 2. Relationship with psychosocial functioning. *Radiother Oncol*. 1992;25:383-6.
3. Jorgensen JF, Li L, Libal FA, Smith DA, Neuman LA, Alderman MK. Effect of cosmetic outcome after breast conserving surgery on psychosocial functioning and quality of life. *J Clin Oncol*. 2008;26:3321-7.
4. Nash K, Goodwin M, Liu CC, Freedman RA, Dietzfelb HL, Ward K, Jamal A. State Variation in the Receipt of a Contralateral Prophylactic Mastectomy Among Women Who Received a Diagnosis of Invasive Unilateral Early-Stage Breast Cancer in the United States, 2004-2012. *JAMA Surg*. 2017; Mar 26. Epub ahead of print.
5. Clough KB, Lewis D, Chahalwalji B, Trivedi A, Hsu C, Fisher MC. Oncoplastic Techniques Allow Consistent Application for Breast-Conserving Therapy of Breast Carcinoma. *Ann Surg Oncol*. 2003; 20:28-34.
6. Giacchino F, Riggi F, Chiodo G, El Ghez N, Deane JP, Laffargue F. Lumpectomy vs Oncoplastic Surgery for Breast-Conserving Therapy of Cancer: A Prospective Study About 89 Patients. *Annals de Chirurgie*. 2006; 132:296-81.
7. Chalabany A, Shrivastava AK, Sarvagalingam N, Rajaguru J, Roche N, Querci della Rossa G, MacNeill FA. How Safe is Oncoplastic Breast Conservation? Comparative Analysis with Standard Breast Conserving Surgery. *ESO*. 2012; 36:395-98.
8. Bergson M, Unger DA, Rao PC, et al. Long-term Oncological Results of Breast Conservative Treatment with Oncoplastic Surgery. *The Breast*. 2007; 16:387-95.
9. Dogan L, Kucubalik M, Kurban N, Ozkan C, Baki E. Oncoplastic Surgery in Surgical Treatment of Breast Cancer: Is Timing of Adjuvant Treatment Affected? *Clin Breast Cancer*. 2013; 3:265-5.
10. Association of Breast Surgery of BASO, BAPRAS, and the Training Interface Group in Breast Surgery. Oncoplastic Breast Surgery – A Guide to Good Practice. *ESO*. 2007; 33:13-23.
11. MacMillan RD, McCollay G. Oncoplastic Breast Surgery: What, When, and for Whom? *Curr Breast Cancer Rep*. 2016; 8:12-17.
12. Klough RB, Kaufman GS, Shi C, Succopanza S, Serfati M. Improving Breast Cancer Surgery: A Classification and Quaternary QIP Quadrant Atlas for Oncoplastic Surgery. *Ann Surg Oncol*. 2010; 17:1375-81.
13. Murrell J, Edwards A, Gil T, Somogyi G, Osman T. Current Practices and Barriers to the Integration of Oncoplastic Breast Surgery: A Canadian Perspective. *Ann Surg Oncol*. 2016; 30:2259-65.



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