How to Standardize Techniques of Oncoplastic Surgery

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No disclosures
Standardization

- Definition (background and history)
- Usability
- Training
- Outcomes
- Conclusions
Conservative (BCT) vs Mastectomy

MRM vs BCT
Randomized trials
Meta-analysis


Comparable local control, Overall survival

Better cosmetic outcome
Breast conserving therapy and mastectomy revisited: Breast cancer-specific survival and the influence of prognostic factors in 129,692 patients

Mirelle Lagendijk, Marissa C. van Maaren, Sepideh Saadatmand, Luc J.A. Strobbe, Philip M.P. Poortmans, Linetta B. Koppert, Madeleine M.A. Tiitanus-Linthorst and Sabine Siesling

What’s new?
While breast-conserving therapy (BCT) and mastectomy have long been considered equivalent in terms of survival in early-stage breast cancer, recent studies suggest BCT offers superior survival over mastectomy. The findings of this study support

- Similar rates of recurrence
- Improved overall survival in BCS
- Lesser complications
- Better QOL

However...
Still 30% of fair/poor results

Can we improve those results

Oncoplastic Surgery
Concept evolution

ORBS (Oncoplastic and Reconstructive Breast Surgery)
“the best of both sides”

- optimal cancer surgery
- local reconstruction to correct excision defects
- immediate or delayed reconstruction with access to all techniques
- asymmetry correction on both sides

_Oncoplastic breast surgery--a guide to good practice._
_On behalf of BASO, BAPRAS and TIGBS_
Definition

- Appropriate adequate surgery to extirpate the cancer
- **Partial reconstruction** to correct wide excision defects
- **Immediate and delayed total reconstruction** with access to a full range of techniques
- Correction of asymmetry of the reconstructed and the contralateral unaffected breast.
Definition
- Definition is not standardized
Usability

Pros

- Correct defects of previous breast cancer conservative surgery
- Breast conservation and mastectomy
- Allows more alternatives with better cosmetic outcome

Cons

- More difficult choice for patients
- More difficult outcome evaluation (quality control)
- More expensive
- Non-evidence based
Usability

- Breast cancer conservative treatment
  - Simple
  - With local flaps
  - Therapeutic mammoplasty
  - LD miniflap
  - Perforator flaps
  - FAT injection

- Mastectomy
  - Implants
  - Implants with ADM
  - LD with implant
  - LD autologous
  - TRAM
  - DIEAP, SGAP....
  - FAT injection
  - CL breast
Usability

- LoE IV and LoE V - Expert opinion

AN EXPERT IS ONE WHO KNOWS TOMORROW WHY THE THINGS HE SAID YESTERDAY DIDN’T HAPPEN TODAY!

“You have to learn about thousands of diseases, but I only have to focus on fixing what’s wrong with ME! Now which one of us do you think is the expert?”
Usability

- LoE IV and LoE V - Expert opinion

Fashionable surgery
Oncoplastic breast conservation

A. VOLUME DISPLACEMENT smaller but shapely breast
Symmetrisation may be required

Level 1. Intraparenchymal ‘flaps’/rearrangement
Level 2. Therapeutic mammoplasty:
   Round block excision (Benelli)
   Reduction: variety of pedicles

B. VOLUME REPLACEMENT volume and shape maintained
Generally symmetrisation not required

Local vascularised (named/random) flaps:
   Cresenteric/Rotation
   Thoraco-epigastric, TDAP, LICAP etc
   Dermoglandular (Grissoti flaps)
   Mini LD

ALWAYS RADIOTHERAPY
## Usability – Decision aids

<table>
<thead>
<tr>
<th>Breast Size</th>
<th>Resection volume</th>
<th>Favourable location (lateral -external)</th>
<th>Conservative Surgery with local flaps</th>
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<tbody>
<tr>
<td>Small /medium (Cup A or B)</td>
<td>Small volume ressection</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Unfavourable location (central, inferior and upper-inner)</td>
<td>Marked ptosis (grade 3 or 4)</td>
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<td></td>
<td></td>
<td></td>
<td>Therapeutic reduction mammoplasty</td>
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<tr>
<td></td>
<td>Large volume ressection or with associated skin excision</td>
<td>Miniflap</td>
<td>Mastectomy with Reconstruction</td>
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<tr>
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<td>Large or High BMI (C or D)</td>
<td>Small volume ressection (&lt;20%)</td>
<td>Conservative Surgery with local flaps</td>
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<tr>
<td></td>
<td>Medium volume ressection (20 to 30%)</td>
<td>Conservative Surgery with local flaps</td>
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<td></td>
<td>Large ressection (&gt; 30%)</td>
<td>Therapeutic reduction mammoplasty</td>
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<td></td>
<td>Miniflap (LD or Perforans) - usually with symmetrisation of the CL breast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mastectomy with Reconstruction— usually with symmetrisation of the CL breast</td>
<td></td>
</tr>
</tbody>
</table>
**Objective decision making between conventional and oncoplastic breast-conserving surgery or mastectomy: An aesthetic and functional prospective cohort study.**

Figure 3. The algorithm used to determine the appropriate surgical strategy, considering the maximal volume of breast volume loss.
Improving Breast Cancer Surgery: A Classification and Quadrant per Quadrant Atlas for Oncoplastic Surgery

Krishna B. Clough, MD, Gabriel J. Kaufman, MD, Claude Nos, MD, Ines Bucicimazza, MD, and Isabelle M. Sarfati, MD
SIMPLE EXCISION WITH LOCAL FLAPS
LD Miniflap

The Kite Latissimus Dorsi Flap for Breast Reconstruction: An Attempt to Reduce Lateral Chest Wall Deformity and Axillary Bulking.
Correia Anacleto J, Gouveia P, Magalhães, Bastos Martins J, Moura, Pinto D, Cardoso MJ.
Oncoplastic breast conservation - tips

- Simpler solutions are almost always the choice of the patient
- Scar placement – be thoughtful but think of possible future mastectomy and reconstruction.
- Skin excision not required unless tumour very superficial/skin involved (Dimpling is usually traction on Cooper’s ligaments)
- Avoid removing more than required! 1cm macroscopic margin required to achieve no tumour on inked margin!
- Always remember Radiotherapy and marking of the tumor bed
Mastectomy with reconstruction

A. Immediate
   Implants – with or without ADM
   Combined – LD and implant
   Autologous-TRAM,DIEAP, SIEAP,etc

B. Immediate-Delayed
   Expander/Implants – with or without ADM
   Expander /Implants – with LD
   Expander/Autologous – TRAM,DIEAP, SIEAP,etc

C. Delayed
   Expander/Implants – with or without ADM
   Expander /Implants – with LD
   Autologous-TRAM,DIEAP, SIEAP,etc
   Fat transfer
Mastectomy with reconstruction

- thin/damaged flaps
- thin flaps
- thick flaps
- thick flaps
- no ptosis
- minor ptosis
- moderate ptosis
- major ptosis

Breast volume (ml):

- 1000
- 800
- 600
- 400
- 200

Implants

Expanders

Latissimus dorsi

Autologous flaps

Bostwick J
Plastic and
Reconstructive
Breast Surgery
QMP 1999
Breast Reconstruction - Facts

“Every women having the indication for mastectomy should be offered the possibility of a breast reconstruction”

- In general 10-20% of women submitted to mastectomy have IBR
- When offered IBR - 70-80% of women choose the procedure
- When offered DBR – 30%- of women choose the procedure
- Higher satisfaction in DBR – lower expectations
- Country differences regarding costs
- Country differences regarding team work

- Radiotherapy rises the rate of complications post-mastectomy
- However radiotherapy techniques suffered major improvements
- No evidence of significant delay in adjuvant treatments
- IBR is more cost-effective per year /life gained

Radiotherapy and breast reconstruction
Reconstruction with autologous tissue techniques

• Fat necrosis
• Atrophy and volume loss
• Flap contracture and fibrosis
• Need for more revisional surgery

*Berry, Ann Surg Oncol, 2010; Chang, Plast Recons Surg, 2013; Tran, Plast Recons Surg, 2001*
Radiotherapy and breast reconstruction

Implant-based reconstruction

- Capsular contracture (grade 3 or 4 in 30% of patients)
- Infection
- Skin necrosis
- Impaired wound healing
- Radiotherapy increases the rate of complications needing reoperation
- Conversion to tissue flap reconstruction

*Barry, Breast Cancer Res Treat, 2011*
### Timing – when?

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>RT first Events</th>
<th>Reconstruction first Events</th>
<th>Odds Ratio M-H, Fixed, 95% CI</th>
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<td><strong>1.8.1 Autologous</strong></td>
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<td>Baumann (2011)</td>
<td>19</td>
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<td>Haylary (2004)</td>
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<td>Mork (2012)</td>
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<td>Not estimable</td>
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<td>Nahabedian (2008)</td>
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<td>53</td>
<td>1.00 (0.24, 4.23)</td>
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<td>Temple (2005)</td>
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<td>Tran (2001)</td>
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<td>70</td>
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<tr>
<td><strong>Subtotal (95% CI)</strong></td>
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<td>68</td>
<td>1.00 (0.24, 4.23)</td>
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<tr>
<td><strong>Total events</strong></td>
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<td><strong>1.8.2 Implant</strong></td>
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<td><strong>Subtotal (95% CI)</strong></td>
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<td>0</td>
<td>Not estimable</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td>32</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

**J. Berbers et al. / European Journal of Cancer 50 (2014) 2752–2762**

*Reconstruction: Before or after postmastectomy radiotherapy?* A systematic review of the literature

Maria-Joao Cardoso: How to Standardize Techniques of Oncoplastic Surgery
Breast Reconstruction - FUTURE

All appropriate breast reconstruction options should be offered and discussed with patients, irrespective of whether they are all available locally.

IMPROVEMENTS

- BETTER IMPLANTS
- ALLOPLASTIC ADJUNCTS
- FAT GRAFTING
- DIVERSE TECHNIQUES
- BETTER TRAINED SURGEONS
- IMPROVED AND TAILORED RADIOTHERAPY
- MDT
The DBCG RT Recon Trial:
Delayed-immediate versus delayed breast reconstruction in early breast cancer patients treated with mastectomy and adjuvant loco-regional radiation therapy. A multicenter randomized clinical trial
Usability

- Choice of techniques is not standardized
Training

Viewpoints and Debate

Training in oncoplastic surgery: An international consensus. The 7th Portuguese Senology congress, Vilamoura, 2009

Maria João Cardoso\textsuperscript{a}, R Douglas Macmillan\textsuperscript{b}, Belén Merck\textsuperscript{c}, Alexandre Mendonça Munhoz\textsuperscript{d}, Richard Rainsbury\textsuperscript{e,*}

\textsuperscript{a} Breast Center, Hospital S. João, Al. Prof. Hernani Monteiro, 4200-319 Porto, Portugal
\textsuperscript{b} Nottingham Breast Institute, City Hospital, Nottingham NG5 1PB, UK
\textsuperscript{c} Surgery Department, Fundación Instituto Valenciano de Oncología, calle Beltrán Báguesa 8, 46009 Valencia, Spain
\textsuperscript{d} Division of Plastic Surgery, University of São Paulo School of Medicine, Rua da Consolação 3605 ap 91, 01461-001 São Paulo, Brazil
\textsuperscript{e} Oncoplastic Breast Unit, Royal Hampshire County Hospital, Ramsey Road, Winchester, Hampshire SO21 1QF, UK

Fig. 2. Comparison of procedures performed between 2010 and 2015 surveys.
Training

1. A Breast Reconstruction Unit is defined as a core component of the MDT with sufficient experience to offer patients access to the full range of procedures encompassed by oncoplastic breast surgery. Providers of oncoplastic education and training may require the trainee to attend one or more units as part of their education.

2. For training purposes, a Breast Reconstruction Unit will be classified according to the level of expertise and range of procedures available.

3. The status of the unit will depend on the level of service provided as defined by the caseload, case mix, timing of reconstruction, personnel, skills and experience and their capacity to meet the trainees’ needs.

A Level I Oncoplastic Training Unit
- A caseload of at least 25 major reconstructive procedures per annum as the minimum requirement
- No microsurgery

A Level II Oncoplastic Training Unit
- A caseload of more than 50 reconstructive procedures per annum as the minimum requirement
Training

Essential skills in oncoplastic breast surgery

1. All surgeons performing oncoplastic breast surgery should acquire core skills for a Level I oncoplastic service

2. The curricula for breast and plastic surgeons laid down by the parent specialties define a skill base

3. The knowledge-base of the oncoplastic surgeon should include a detailed understanding of: the basic sciences relevant to the prevention, diagnosis, treatment and clinical research of breast disease; planning, monitoring and evaluation of services for breast cancer; medical practice within an ethical framework.

4. Teamworking and communication skills should be reinforced by the opportunity to experience and observe cohesive integrated teams in action. This implies: Attendance at the multidisciplinary meeting; Joint consultations with other specialists; Joint operating lists, involving breast, plastic and oncoplastic surgeons; Exposure to different leadership and managerial styles; Opportunity to participate in clinical research.

5. The diagnostic and technical skill base of the oncoplastic trainee will include competency in: the investigation and management of breast abnormalities; the investigation and management of the axilla; a range of immediate and delayed reconstructive techniques; the management of complications associated with the above procedures.
Training

- No standardized training
Outcomes

- Oncological – recurrences (local and systemic)
- Reinterventions /conversion to mastectomy
- Complications – delay in adjuvant treatments
- Radiotherapy planning
- Cosmetic outcome (PROMs and Cosmesis)
Outcomes
Seventeen articles were identified that met the inclusion criteria, representing 1312 patients and 1324 oncoplastic cases (Table 1). Reported median follow-up ranged from 20 to 73 months.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Patients/Cases</th>
<th>Mean/Median Follow-up, mo</th>
<th>Stages Included</th>
<th>Local-Regional Recurrence Rate</th>
<th>Distant Recurrence Rate</th>
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<tbody>
<tr>
<td>Caruso et al(^1) (2008)*</td>
<td>61/63</td>
<td>68</td>
<td>I to III</td>
<td>1 (1.6%)</td>
<td>6 (9.8%)</td>
</tr>
<tr>
<td>Caruso et al(^2) (2011)*</td>
<td>50/52</td>
<td>72.6</td>
<td>0 to III</td>
<td>1 (1.9%)</td>
<td>1 (2%)</td>
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<tr>
<td>Chang et al(^3) (2004)</td>
<td>37/37</td>
<td>NR</td>
<td>NR</td>
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<tr>
<td>Chang et al(^4) (2012)</td>
<td>79/85</td>
<td>39</td>
<td>0 to IV</td>
<td>2 (2.3%)</td>
<td>2 (2.3%)</td>
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<tr>
<td>Clough et al(^5)</td>
<td>175/175</td>
<td>49</td>
<td>NR</td>
<td>3 (1.7%)</td>
<td>11 (6.3%)</td>
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<tr>
<td>Currie et al(^6)</td>
<td>20/20</td>
<td>36</td>
<td>I and II</td>
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<td>0</td>
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<tr>
<td>Denewer et al(^7)</td>
<td>50/50</td>
<td>20</td>
<td>I and II</td>
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<td>0</td>
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<td>Eaton et al(^8)</td>
<td>86/86</td>
<td>54</td>
<td>0 to III</td>
<td>6 (7%)</td>
<td>1 (1.2%)</td>
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<td>Grubnik et al(^9)</td>
<td>251/251</td>
<td>50</td>
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<td>Gulcelik et al(^10)</td>
<td>106/106</td>
<td>33</td>
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<td>Imahiyerobo et al(^11)</td>
<td>64/64</td>
<td>34.6</td>
<td>0 to III</td>
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<td>2 (3.1%)</td>
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</tbody>
</table>

*Studies that utilized intraoperative frozen section.

Outcomes Following Oncoplastic Reduction Mammaplasty: A Systematic Review.
Piper ML, Esserman LJ, Sbitany H, Peled AW.
Ann Plast Surg. 2016 May;76 Suppl 3:S222
Outcomes

Seventeen articles were identified that met the inclusion criteria, representing 1312 patients and 1324 oncoplastic cases (Table 1). Reported median follow-up ranged from 20 to 73 months.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Patients/Cases</th>
<th>Infection</th>
<th>Dehiscence</th>
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<th>Nipple Necrosis</th>
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<td>Barnea et al(^1)</td>
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<td>Caruso et al(^2)</td>
<td>61/63</td>
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<td>5 (7.9%)</td>
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<td>1 (1.6%)(\ast)</td>
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<td>Chang et al(^3) (2004)</td>
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<td>Clough et al(^5)</td>
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<td>5 (2.9%)</td>
<td>1 (0.6%)(\dagger)</td>
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<td>Grubnik et al(^8)</td>
<td>251/251</td>
<td>6 (2.4%)</td>
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<tr>
<td>Imahiyerobo et al(^9)</td>
<td>64/64</td>
<td>4 (6.3%)</td>
<td>8 (12.5%)</td>
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<td>10 (15.9%)</td>
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<td>McCulloch and Macmillan(^11)</td>
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<td>Munhoz et al(^12)</td>
<td>106/106</td>
<td>4 (3.7%)</td>
<td>12 (11.3%)</td>
<td>6 (5.6%)</td>
<td>2 (1.9%)(\ast); 1 (0.94%)(\dagger)</td>
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<td>Total</td>
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<td>9 (0.9%)</td>
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</tbody>
</table>

\(\ast\)Partial nipple necrosis.
\(\dagger\)Complete nipple necrosis.

Outcomes Following Oncoplastic Reduction Mammoplasty: A Systematic Review.
Piper ML, Esserman LJ, Sbitany H, Peled AW.
Ann Plast Surg. 2016 May;76 Suppl 3:S222
Outcomes Aesthetic outcomes were reported in 6 studies. Patient-reported outcomes were presented in 5 articles, All were based on questionnaires sent to patients and based on a 4-point scale.

<table>
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<tr>
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<td>Gulcelik et al</td>
<td>2013</td>
<td>106/106</td>
<td>33</td>
<td>Yes</td>
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<td>Imahiyerobo et al</td>
<td>2014</td>
<td>64/64</td>
<td>34.6</td>
<td>Yes</td>
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<td>Losken et al</td>
<td>2007</td>
<td>63/63</td>
<td>40</td>
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<td>Losken et al</td>
<td>2014</td>
<td>83/83</td>
<td>NR</td>
<td>No</td>
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<td>McCulley and Macmillan</td>
<td>2005</td>
<td>50/50</td>
<td>NR</td>
<td>Yes</td>
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<td>Munhoz et al</td>
<td>2011</td>
<td>106/106</td>
<td>47</td>
<td>Yes</td>
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<td>Santanelli et al</td>
<td>2009</td>
<td>11/11</td>
<td>26.5</td>
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<td>Yes</td>
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Outcomes Following Oncoplastic Reduction Mammaplasty: A Systematic Review.
Piper ML, Esserman LJ, Sbitany H, Peled AW.
Ann Plast Surg. 2016 May;76 Suppl 3:S222
Cardoso MJ, Cardoso JS, Oliveira HP, Gouveia P.
Outcomes

- Symmetry
- NAC position
- Scar visibility
- Colour differences

7 asymmetry measures
Plus 7 dimensionless asymmetry measures
8 colour change measures
8 scar visibility measures

http://medicalresearch.inescporto.pt/breastresearch

Towards an intelligent medical system for the aesthetic evaluation of breast cancer conservative treatment.
Cardoso JS, Cardoso MJ.
CINDERELLA trial

Comparing patients decision on aesthetic outcome with the BCCT.core objective evaluation after controlled teaching in patients proposed to breast cancer locoregional treatment. A prospective randomized trial.
AFTER CONTROLLED TEACHING OF AESTHETIC OUTCOME RESULTS
Outcomes

- No standardized outcome evaluation
Conclusions

- Oncoplastic surgery has come and will stay
- Although we lack standards in almost all aspects of Oncoplastic Surgery, progress can be made.
- Independently of the ground speciality, train is fundamental as is the knowledge about all aspects of breast disease
- The breast reconstruction team is part of the multidisciplinary team and should never decide with a proper discussion with other team members
- Evaluation of outcomes is the key for improvement and success
- Patient decision and expectations should always come first
Thank you!