

# Diagnosis and Treatment of Patients with Primary and Metastatic Breast Cancer



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## Oncoplastic and Reconstructive Surgery

# Plastic-reconstructive aspects after mastectomy

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- **Versions 2002–2017:**  
**Audretsch / Bauerfeind / Blohmer /  
Brunnert / Dall / Fersis / Gerber /  
Hanf / Kümmel / Lux / Nitz / Rezai /  
Rody / Scharl / Solbach / Thomssen**
  
- **Version 2018:**  
**Ditsch/ Lux**

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# Definition of oncoplastic surgical procedures

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**Use of plastic surgical techniques at the time of tumor removal to enable safe resection margins and to preserve aesthetic breast contour.**

**Focus on favorable scar placement, adequate soft tissue formation, choice of proper reconstruction procedure (including in the context of radiation) and reconstruction of the contralateral side to achieve symmetric results.**

# Oncoplastic Breast Conserving Surgery

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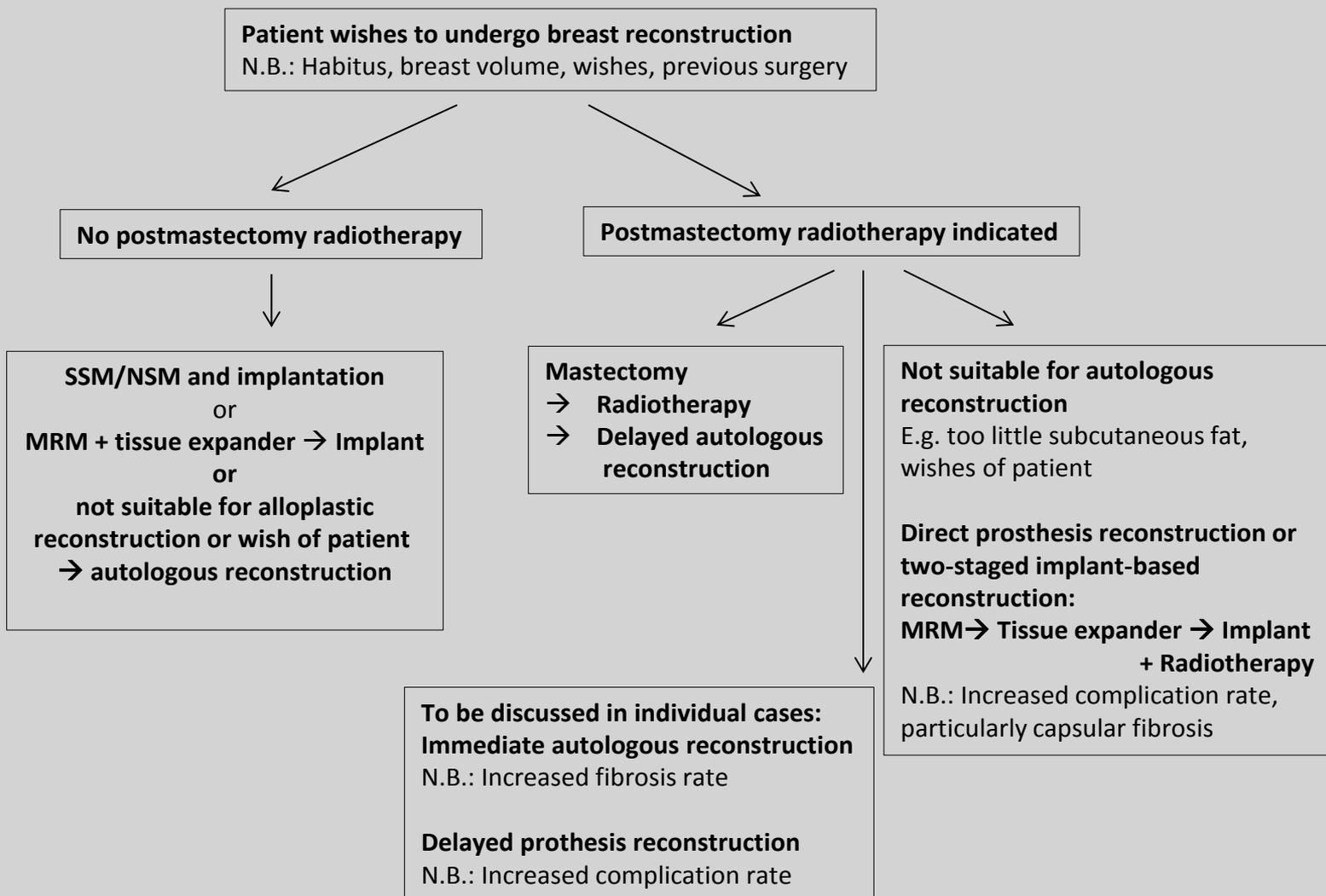
- Tumor-adapted reduction mammoplasty
- Local flap techniques
- Partial mastectomy with tissue transfer
- Oncological safety

Oxford		
LoE	GR	AGO
2a	B	+
2a	B	+
3b	B	+/-
2a	B	

# Algorithm of Breast Reconstruction

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# Breast Reconstruction Principles

## AGO: ++

- **Planning the reconstructive procedure by an interdisciplinary tumor board before mastectomy**
- **Counseling regarding all surgical techniques, including advantages and disadvantages**
- **Offer of a second opinion**
- **Discussion of neoadjuvant treatment in unfavourable tumor-breast-relation**
- **Consideration of the contralateral breast;**
  - **discuss possible alignment / sequencing surgical procedures to produce symmetry; usually after at least 3-6 months (Caveat: need for post-resections, consider effects of radiotherapy on the affected side)**
- **Preference for a less stressful surgical technique with long-term stable esthetic result**
- **Caveat: no delay in adjuvant therapy due to reconstruction**

# Postmastectomy Reconstruction

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- **Use of silicone gel filled breast implants  
one step or two steps after expander**
  - Safety comparable to saline implants
- **Autologous tissue reconstruction**
- **Pedicled tissue reconstruction**
- **Free tissue reconstruction  
(including vascular anastomoses)**
- **Autologous tissue procedure plus implants**

	Oxford		
	LoE	GR	AGO
2a	B		+
2b	B		
2a	B		+
2a	B		+
2a	B		+
3a	C		+

**Caveat: BMI >30, smoking status, diabetes, radiotherapy, age, bilateral mastectomy**

# Timing of Reconstruction

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	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>■ <b>Immediate Breast Reconstruction</b> <ul style="list-style-type: none"> <li>■ Mandatory: SSM/NSM</li> <li>■ Avoidance of a postmastectomy syndrome</li> </ul> </li> </ul>	<b>3b</b>	<b>B</b>	<b>++</b>
<ul style="list-style-type: none"> <li>■ <b>Delayed Breast Reconstruction</b> <ul style="list-style-type: none"> <li>■ No interference with adjuvant procedures (CHT, RT)</li> <li>■ Disadvantage: loss of the skin envelope</li> </ul> </li> </ul>	<b>3b</b>	<b>B</b>	<b>++</b>
<ul style="list-style-type: none"> <li>■ <b>„Delayed-immediate“ Breast Reconstruction</b></li> </ul>	<b>3b</b>	<b>B</b>	<b>+/-</b>

# Timing of implant Based Reconstruction and Radiotherapy



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- **Implant Rekonstruktion (IR)**
  - IR without radiotherapy
  - IR prior to radiotherapy
  - IR following radiotherapy
  - IR following secondary mastectomy (after BCS\* with radiotherapy)
  - Perioperatively antibiotic prophylaxis (at least 24 hours)

Oxford		
LoE	GR	AGO
2a	B	+
2a	B	++
2a	B	+
2b	B	+/-
2a	B	+/-
2b	B	+

# Radiotherapy and Implant-based Reconstruction

**Caveat: High complication rate in combination with radiotherapy (capsular contracture, revision surgery, reconstruction failure, reduced cosmetic outcome and patient satisfaction)**

**Caveat: Lower patient satisfaction with implant-based reconstruction plus radiotherapy compared to autologous reconstruction plus radiotherapy**

**LoE 2b B**

# Tissue Replacement Techniques and Meshes

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- **Autologous tissue**  
(e.g. autodermal graft, TDAP<sup>§</sup>, LDF<sup>\*</sup>)
- **Acellular dermal matrix (ADM)**
- **Synthetic meshes**

Oxford		
LoE	GR	AGO
3b	C	+
2a	B	+#
2b	B	+#

# Lipotransfer

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- **Lipotransfer following mastectomy and reconstruction**
- **Lipotransfer after BCS\***
- **Autologous adipose derived stem cells (ASCs)-enriched fat grafting**

Oxford		
LoE	GR	AGO
2a	B	+
2a	B	+
4	C	-

# Postmastectomy Pedicled Reconstruction

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## Breast reconstruction (BR) with autologous tissue

- TRAM, Latissimus-dorsi-flap (both can be performed as a muscle-sparing technique)
- Delayed TRAM in risk patients
- Ipsilateral pedicled TRAM
- Radiotherapy:
  - BR following radiotherapy
  - BR prior to radiotherapy

(higher rates of fibrosis, wound healing problems, liponecrosis and reduced aesthetic outcome)

	Oxford		
	LoE	GR	AGO
	<b>3b</b>	<b>C</b>	<b>+</b>
	<b>3a</b>	<b>B</b>	<b>+</b>
	<b>3b</b>	<b>A</b>	<b>+</b>
	<b>2a</b>	<b>B</b>	<b>+</b>
	<b>2a</b>	<b>B</b>	<b>+/-</b>

# Free flaps for reconstruction

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## Kind of free flap

- DIEP
- Free TRAM
- SIEA
- Glutealis flaps (SGAP- / IGAP, FCI)
- Free gracilis flap (TMG)

	Oxford		
	LoE	GR	AGO
DIEP	2a	B	+
Free TRAM	2a	B	+
SIEA	3a	C	+/-
Glutealis flaps (SGAP- / IGAP, FCI)	4	C	+/-
Free gracilis flap (TMG)	4	C	+/-

## Advantages

- DIEP and free TRAM are potentially muscle-sparing procedures. The DIEP has a lower rate of abdominal hernias.

## Disadvantages

- Time- and personnel consuming microsurgical procedure
- Intensified postoperative monitoring
- Higher reoperation rate
- Pre-reconstruction radiotherapy increases rate of vascular complications

# Stalked versus free tissue transfer

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Oxford		
LoE	GR	AGO

- Muscle-sparing techniques and accuracy of abdominal wall closure will lead to low rates of late donor site complications whatever method used**

3a	A	++
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- Autologous abdominal-based reconstructions have the highest satisfaction in all patient groups without any difference**
- Donor site morbidity (e.g. impaired muscle function) has to be taken into consideration in all flap techniques.**

# Flap-implant combination

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## LDF\* + Implant

- IR following RT
- IR prior to RT

## Additional flap techniques + implant

## Advantages:

- TRAM:staged procedure preferable
- Improved implant coverage
- Suitable for irradiated tissue

## Disadvantage:

- muscle contraction (LDF)

Oxford		
LoE	GR	AGO
2b	C	+
3b	C	+
5	D	-
5	C	+/-

\* LDF = Latissimus dorsi flap

# Skin-/nipple-sparing Mastectomy (SSM/NSM) and Reconstruction

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Oxford		
LoE	GR	AGO

- **Skin-/nipple-sparing Mastectomy (SSM/NSM)**

■ Safe (same recurrence rate as MX)	2b	B	++
■ Higher QoL for patients	2b	B	++
■ NAC can be preserved under special conditions	2b	B	++
■ Feasible after mastopexy / reduction mammoplasty	4	C	++
■ Use of ICG* to predict necroses of the skin	3b	C	+/-

- **Skin incisions - different possibilities:**

■ Periareolar			
■ Hemi-periareolar with/without medial/ lateral extension			
■ Reduction pattern: „inverted-T“ or vertical			
■ Inferior lateral approach, inframammary fold			
■ Lowest incidence of complications	2b	B	+

\* ICG = Indocyanine Green

# Risk-reducing bilateral mastectomy for healthy women (RRBM)

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- RRBM reduces breast cancer incidence
- RRBM in deleterious BRCA1/2 mutation
- RRBM in high risk situation without BRCA 1/2 mutation (individual decision depending on personal- family history and mutational status – e.g. high and moderate risk genes, Hodgkin lymphoma)
  - High risk and no BRCA counselling in specialized centre\*
  - Non-directive counselling prior to RRBM
  - RRBM should be considered with other prophylactic surgical options incl. bilateral salpingoophorectomy (BSO) and pre-existing diseases
  - Further need for education of physicians regarding possibilities and advantages of RRBM

Oxford		
LoE	GR	AGO
1b	A	++
2a	B	+*
4	D	+/-*
5	D	--
2b	B	++*
2a	A	++*
1b	A	++

\*Counselling, risk prediction and follow-up in specialized centres recommended

# Forms of risk-reducing (bilateral) mastectomy (RRBM)

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Oxford		
LoE	GR	AGO

**RRBM reduces breast cancer incidence;\*\*  
bc-spec mortality also likely reduced**

▪ Simple mastectomy	2b	B	+
▪ RRBM by SSM*	2b	C	+
▪ RRBM by NSM* (NAC# sparing)	2b	C	+
▪ Contralateral prophylactic mastectomy	4	C	+/-

\*SSM / NSM: Skin-/Nipple-Sparing Mastectomy  
# MAK: nipple-areola complex  
\*\* depending on previous illnesses, e. g. pre-existing ovarian cancer 1-2% (stage III-IV)