

Diagnosis and Treatment of Patients with early and advanced Breast Cancer



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Oncoplastic and Reconstructive Surgery

Plastic-reconstructive aspects after mastectomy

- **Versions 2002–2018:**
**Audretsch / Bauerfeind / Blohmer / Brunnert / Dall /
Ditsch / Fersis / Gerber / Hanf / Kümmel / Lux / Nitz /
Rezai / Rody / Scharl / Solbach / Thomssen /**
- **Version 2019:**
Kümmel / Friedrich



Definition of oncoplastic surgical procedures

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.

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**FORSCHEN
LEHREN
HEILEN**

Oncoplastic Breast Conserving Surgery

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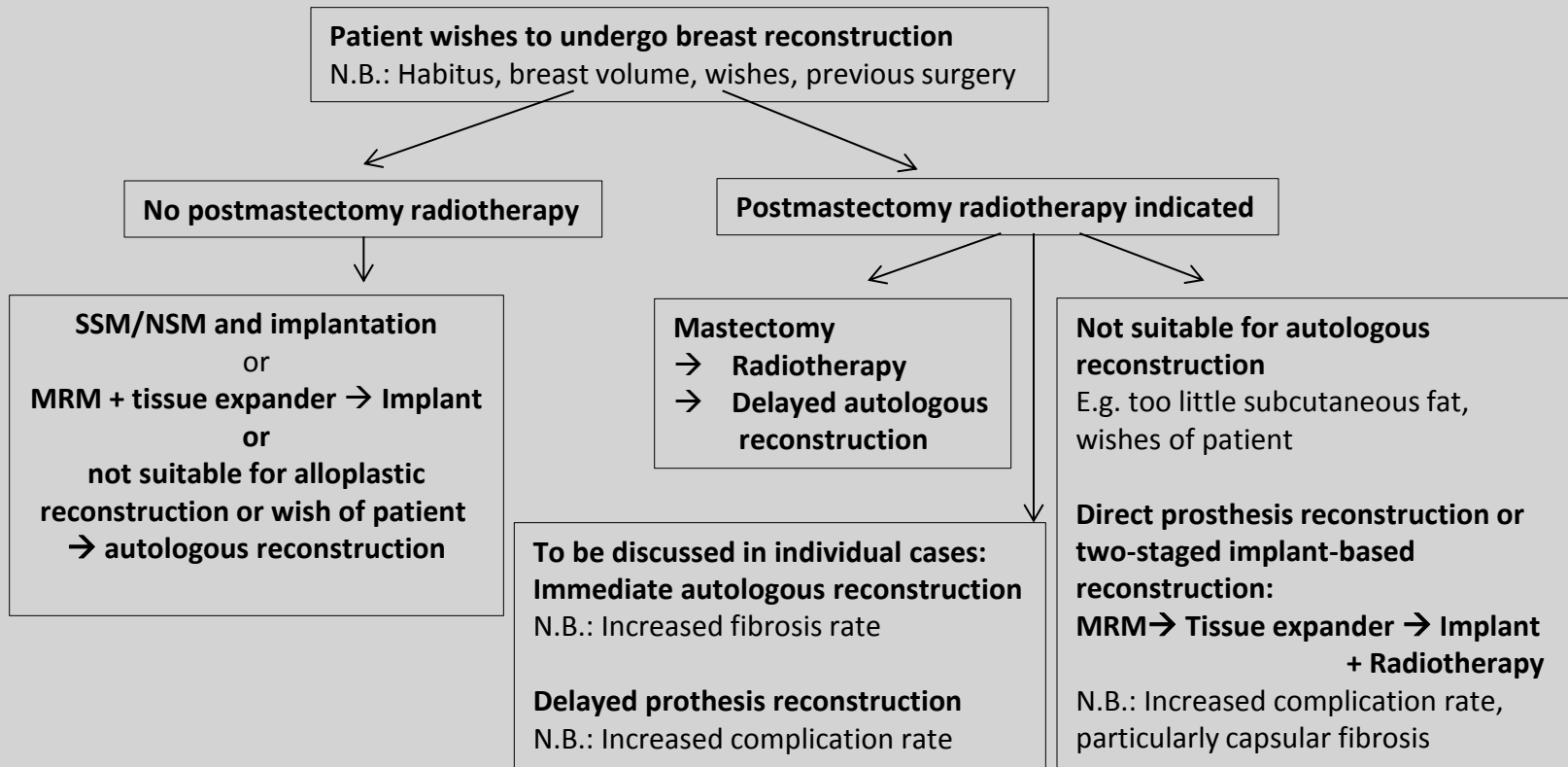
- **Tumor-adapted reduction mammoplasty**
- **Local flap techniques**
- **Partial mastectomy with tissue transfer**
- **Oncological safety**

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 (to prefer BCS over mastectomy)**
- **Caveat: no delay in adjuvant therapy due to reconstruction**

Postmastectomy Reconstruction

	Oxford		
	LoE	GR	AGO
■ Use of silicone gel filled breast implants one step or two steps after expander	2a	B	+
	2b	B	
■ Autologous tissue reconstruction	2a	B	+
■ Pedicled tissue reconstruction	2a	B	+
■ Free tissue reconstruction (including vascular anastomoses)	2a	B	+
■ Autologous tissue procedure plus implants	3a	C	+

- 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

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

Possible Associations between Implants and rare Diseases

- **US FDA Breast Implant Postapproval Studies (LPAS)**
Long-term Outcomes in 99,993 Patients
(Primary Augmentation: N= 71.937 / Primary Reconstruction: N= 9942)
- 56% of implants were silicone implants
- **Possible Associations:**
 - Sjogren syndrome: (SIR*8.14)
 - scleroderma: (SIR 7.00)
 - rheumatoid arthritis: (SIR5.96)
 - stillbirth: (SIR4.50)
 - melanoma: (SIR3.71)
- **At 7 years, reoperation rate is 11.7% for primary augmentation, and 25% for primary/revision reconstruction.**
- **One case of BI-ALCL**

Associations need to be further analyzed with
patient-level data to provide conclusive evidence !

*Standardized incidence ratio

Possible Associations between Implants and rare Diseases

Rare Systemic Harms Compared With the General Population:

	Manufacturer ,y	Study Events	Study Event Rate (Per 10,000 Person Yr)	General Population Event Rate (Per 10,000 Person Yr)	SIR	SIR 95% CI	P Value
Fibromyalgia	Allergan	9	1.8	112.8	0.02	0.01–0.03	<0.001
	Mentor	307	28.4	112.8	0.25	0.22–0.28	<0.001
Rheumatoid arthritis	Allergan	4	0.8	5.4	0.15	0.04–0.38	<0.001
	Mentor	349	32.2	5.4	5.96	5.35–6.62	<0.001
Scleroderma	Mentor	46	4.2	0.6	7.00	5.12–9.34	<0.001
Sjogren syndrome	Mentor	62	5.7	0.7	8.14	6.24–10.44	<0.001
Systemic lupus erythematosus	Allergan	3	0.6	5.4	0.11	0.02–0.32	<0.001
	Mentor	66	6.0	5.4	1.11	0.86–1.41	0.398
Cancer	Allergan	80	16.0	41.3	0.39	0.31–0.48	<0.001
	Mentor	532	63.8	41.3	1.54	1.42–1.68	<0.001
Breast cancer	Mentor	116	13.9	12.5	1.11	0.92–1.33	0.26
Lung cancer	Mentor	5	0.6	5.2	0.12	0.04–0.27	<0.001
Brain cancer	Mentor	3	0.4	0.6	0.67	0.14–1.95	0.639
Melanoma	Mentor	65	7.8	2.1	3.71	2.87–4.73	<0.001
Neurological disorder	Allergan	18	3.6	22.5	0.16	0.09–0.25	<0.001
	Mentor	394	35.8	22.5	1.59	1.44–1.76	<0.001
Multiple sclerosis	Mentor	47	4.3	2.5	1.72	1.26–2.29	0.001
Myositis	Mentor	17	1.5	0.8	1.88	1.09–3.00	0.018

Allergan follow-up 2 years
Mentor follow-up 7 years

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Tissue Replacement Techniques and Meshes

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- **Autologous tissue
(e.g. autodermal graft, TDAP[§], LDF^{*})**
- **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
	3b	C	+
	3a	B	+
	3b	A	+
	2a	B	+
	2a	B	+/-

Free flaps for reconstruction

	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	+/-

Kind of free flap

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

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

Oxford		
LoE	GR	AGO
3a	A	++

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

* LDF = Latissimus dorsi flap

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

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



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

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

■ 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

Oxford		
LoE	GR	AGO
2b	B	++
2b	B	++
2b	B	++
4	C	++
3b	C	+/-
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 risk-reducing 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

Surgical Prevention for Healthy Female *BRCA1/2* Mutation Carriers

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	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> Risk-reducing bilateral salpingo-oophorectomy (RRSO) <ul style="list-style-type: none"> Reduces BrCa incidence and mortality Reduces OvCa incidence and mortality Reduces overall mortality 	2c	B	* +/-* ++* ++*
<ul style="list-style-type: none"> Risk-reducing bilateral mastectomy (RRM) <ul style="list-style-type: none"> Reduces BrCa incidence and mortality 	2a	B	+*

RR-BSO is recommended after completion of family planning
RR-BM revealed a high incidence of premalignant lesions

* study participation recommended

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

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

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

- Simple mastectomy
- RRBM by SSM*
- RRBM by NSM* (NAC# sparing)
- Contralateral prophylactic mastectomy

* 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)