

# Diagnosis and Treatment of Patients with early and advanced Breast Cancer

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

## Breast Cancer Surgery Oncological Aspects

# Breast Cancer Surgery

## Oncological Aspects

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **Versions 2002–2019:**

**Bauerfeind / Blohmer / Böhme / Brunnert / Costa / Fersis / Gerber /  
Hanf / Janni / Junkermann / Kaufmann / Kühn / Kümmel / Möbus / Nitz /  
Rezai / Simon / Solomayer / Thomssen / Thill / Untch**

- **Version 2020:**

**Thomssen / Wöckel**

# Breast Cancer Surgery

## Oncological Aspects

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

**AGO: ++**

**Surgery is one sub-step out of multiple steps in breast cancer treatment. Thus, both diagnostic and oncological expertise are an essential requirement for every breast surgeon.**

# Pre-therapeutic Assessment of Breast and Axilla

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **Clinical examination**
- **Mammography**
  - + Tomosynthesis (DBT)
  - + Contrast-enhanced mammography
- **Sonography (breast and axilla)**
- **MRI\***
- **Minimally invasive biopsy\*\***
  - CNB of axillary lymph nodes if suspicious
- **Breast-CT**

Oxford		
LoE	GR	AGO
5	D	++
2b	B	++
3b	B	+
3a	B	+/-
2b	B	++
1b	B	+
1b	A	++
2b	B	++
5	D	-

\* MRI-guided vacuum biopsy is mandatory in case of MRI-detected additional lesions. Individual decision for patients at high familial risk, with dense breast (density 3-4/diagnostic assessability C-D), lobular invasive tumors, suspicion of multilocular disease. No reduction in re-excision rate.

\*\*Histopathology of lesions if relevant for treatment

# Pre-therapeutic Staging

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

Oxford		
LoE	GR	AGO
5	D	++

## ■ History and clinical examination

**Additional diagnosis for patients with high metastatic potential and/or symptoms (in decision making for chemotherapy and/or anti-HER2-therapy):**

■ CT scan of thorax/abdomen	2a	B	+
■ Bone scan	2b	B	+
■ Chest X-ray	5	C	+/-
■ Liver ultrasound	5	D	+/-
■ In case of suspicious lesions further diagnosis (e.g. liver-MRI, CEUS*, biopsy etc.)	2a	B	+
■ FDG-PET or FDG-PET /CT	3a	C	+/-
■ Whole body MRI	4	C	+/-

\* Contrast enhanced ultrasound

# Evidence of Surgical Procedure

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

	Oxford		
	LoE	GR	AGO
■ Survival rates after lumpectomy + RT are equivalent to those after (modified) radical mastectomy	1a	A	
■ Local recurrence rates after skin sparing mastectomy are equivalent to those after mastectomy	2b	B	
■ Conservation of the NAC (nipple areola complex) is an adequate surgical procedure, if R0 resection is achieved	2b	C	

# Breast Conservation: Surgical Technical Aspects

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

	Oxford		
	LoE	GR	AGO
■ <b>Non-palpable lesion</b>			
■ Wire guided localisation	2b	B	++
■ Other procedures (Radionuclide guided localisation/RADAR reflection, Magnetic Seeds/RFID etc.)	2a	B	+/-
■ Specimen radiography or ultrasound	2b	B	++
■ <b>Tumor-free margins required</b> (also in unfavorable biology, „no ink on tumor“ is sufficient)	2a	A	++
■ <b>Immediate intraoperative re-excision for close margins</b> (specimen radiography or ultrasound and/or intra-operative pathology)	1c	B	++
■ <b>Re-excision required for involved margins (paraffin section)</b>	3b	C	+
■ <b>Therapeutic stereotactic excision alone</b>	4	D	--
■ <b>Ultrasound guided surgery to prevent re-excision</b>	1a	A	+/-
■ <b>Intraoperative margin evaluation (with Margin Probe®)</b>	1b	A	+/-

# Breast Conservation Surgery (BCS)

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **Multicentric disease (MF/MZ)  
(R0-Resection of all lesions)**
- **Positive microscopic margins after repeated excision**
- **Inflammatory breast cancer**

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

**For surgery after neoadjuvant chemotherapy  
see chapter „neoadjuvant chemotherapy“**



# Primary Axillary Lymph Node Dissection (ALND) I

Oxford

LoE GR AGO

▪ <b>Endpoint: Survival</b>	3	D	-
▪ <b>Endpoint Staging</b>	3	A	-
▪ <b>Endpoint: Locoregional control</b>	2a	A	+/-
▪ <b>pN+ (pre-surgery) without neoadjuvant systemic therapy</b>	2a	B	+
▪ <b>cN0 pN0(sn)(i+)</b>	1b	A	--
▪ <b>cN0 pN1(mi)</b>	2b	B	--
▪ <b>cN0 pN 1(sn) ( cT1/2 , &lt; 3 SN +, BCS + tangential radiation field, adequate systemic therapy)</b>	1b	A	-
▪ <b>cN0 pN1 (sn) and mastectomy (no chestwall radiotherapy)</b>	1b	B	+*
▪ <b>cN0 pN1(sn) and mastectomy (T1/2, &lt;3SN+) (chestwall radiotherapy)</b>	5	D	+/-*

## ▪ **ALND indicated, but not feasible**

▪ <b>Radiotherapy according to AMAROS-trial (validated for cN0 pN1sn)</b>	1b	B	+
---	----	---	---

\* Study participation recommended

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

www.ago-online.de

FORSCHEN  
LEHREN  
HEILEN

# Axillary Surgery and NACT

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

SLNE after NACT  
SLNE before NACT

cN-status (before NACT)	pN-status (before NACT)	N-status (after NACT)	Surgical Procedure (after NACT)			
cN0	pN0(sn)	ycN0	None	1a	A	+
cN0	pN+(sn) according to ACOSOG Z0011	ycN0	None	1b	B	+
cN0	pN+(sn) different from ACOSOG Z0011	ycN0	ALND or Axillary RT	2b	B	+
cN0	Not done (no SLNE)	ypN0 (sn)	SLNE only	2b	B	++
		ypN1 <sub>mic</sub> (sn)	ALND Axillary RT	2b 5	C D	+ +/-
		ypN1 (sn)	ALND Axillary RT	2b 5	C D	++ +/-
cN+	pN <sub>CNB</sub>	ycN0	SLNE only*	2b	B	+/-
			TAD (TLNE + SLNE)*	2b	B	+
			ALND*	2b	B	+
cN+	pN <sub>CNB</sub>	ycN+	ALND Axillary RT	2b 5	B D	++ -

NACT=Neoadjuvant chemotherapy; ALND=Axillary Lymph Node Dissection; SLNE=Sentinel Lymph Node Excision;  
TAD=Targeted Axillary Dissection; TLNE=Targeted Lymph Node Excision; RT=Radiotherapy – \*Trial participation recommended

# Improvement of the False-Negative Rate of SLNE in Patients with pN+<sub>CNB</sub> before NACT and ycN0 after NACT

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- Removal of > 2 SLNs  
(SLNE, no untargeted axillary sampling)
- Combined tracer
- IHC and serial sections to detect ITC or micrometastases
- Localization of pos. LN before NACT (clip/coil/tattoo)
- Targeted Axillary Dissection (TAD = TLNE + SLNE)\*\*
- TLNE only

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

\* Study participation recommended ;

\*\* TAD =Targeted axillary dissection; TLNE = Targeted lymph node excision; SLNE = Sentinel lymph node excision

# Reduction of individual failures for SLNB in pN1 ypN0

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **Predictive factors for axillary remission  
pN1 (before NACT) to ypN0<sub>sn/TAD</sub> (after NACT)**
  - Young age
  - Intrinsic Subtype (ER neg, HER 2 pos)
  - Grade 3
  - N1 (vs N2)
  - pCR (breast)

# Sentinel Lymph Node Excision (SLNE)

## Indications I

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **Clinically / sonographically negative axilla (cN0)**
  - Add CNB in cN1 (clinically/sonographically suspicious) in order to enable SLNB
- **cT 1–2**
- **cT 3–4c**
- **Multifocal / multicentric lesions**
- **DCIS**
  - Mastectomy
  - BCT
  - DCIS in male
- **Male breast cancer**
- **In elderly patients**

Oxford		
LoE	GR	AGO
<b>1b</b>	<b>A</b>	<b>++</b>
<b>2a</b>	<b>B</b>	<b>+</b>
<b>2b</b>	<b>A</b>	<b>++</b>
<b>3b</b>	<b>B</b>	<b>+</b>
<b>2b</b>	<b>B</b>	<b>+</b>
<b>3b</b>	<b>B</b>	<b>+</b>
<b>3b</b>	<b>B</b>	<b>-</b>
<b>5</b>	<b>D</b>	<b>+/-</b>
<b>2b</b>	<b>B</b>	<b>+</b>
<b>3b</b>	<b>B</b>	<b>+</b>

# Sentinel Lymph Node Excision (SNLE)

## Indications II

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- During pregnancy and / or breast feeding  
(only <sup>99m</sup>Tc-colloid, no blue dye)
- After prior tumor excision
- After prior major breast surgery  
(e.g. reduction mammoplasty)
- Ipsilateral breast recurrence after prior BCS  
and prior SNLE
- SLNE in the mammary internal chain
- After axillary surgery
- Prophylactic bilateral / contralateral mastectomy
- Inflammatory breast cancer

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

# Sentinel Lymph Node Excision (SLNE)

## Marking

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- **<sup>99m</sup>Tc Kolloid**
- **Preoperative lymphoscintigraphy (added information limited, but mandatory by legal regulations)\***
- **Patent blue dye**
- **Methylen blue**
- **Indocyanin green (ICG)**
- **SPIO<sup>#</sup>**

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

\* In Germany required for quality assurance of nuclear medicine

# SPIO: Superparamagnetic Iron Oxide

# Procedure after Neoadjuvant Therapy

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

- Early clip or coil marking of tumor (incl. detailed topographic documentation)
- Surgical removal of tumor/tumor bed
- Microscopically clear margins
- Tumor resection in new margins

Oxford		
LoE	GR	AGO
5	D	++
2b	C	++
2	B	++
2	C	+

**For „Surgery after neoadjuvant chemotherapy“  
see chapter „Neoadjuvant chemotherapy“**



# Adjuvant Therapy after Primary Surgery

© AGO e. V.  
in der DGGG e.V.  
sowie  
in der DKG e.V.

Guidelines Breast  
Version 2020.1

	Oxford		
	LoE	GR	AGO
■ <b>Start adjuvant systemic therapy and radiotherapy (RT) as soon as possible (asap) after surgery</b>	<b>1b</b>	<b>A</b>	<b>++</b>
■ <b>Start of adjuvant chemotherapy +/- HER2 therapy asap after surgery, prior to RT</b>	<b>1b</b>	<b>A</b>	<b>++</b>
■ <b>Without cytotoxic therapy +/- anti-HER2 therapy:</b>			
■ <b>Start RT 6–8 weeks after surgery</b>	<b>2b</b>	<b>B</b>	<b>++</b>
■ <b>Start endocrine therapy after surgery asap</b>	<b>5</b>	<b>D</b>	<b>++</b>
■ <b>Endocrine therapy concurrent with radiotherapy</b>	<b>3b</b>	<b>C</b>	<b>+</b>