



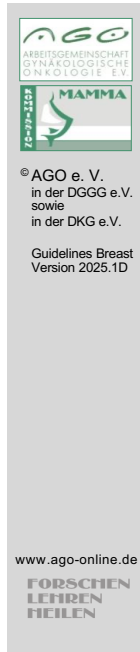
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# Diagnostik und Therapie früher und fortgeschrittener Mammakarzinome

## Behandlungen in Abhängigkeit der Lokalisation der Metastasierung



## Behandlungen in Abhängigkeit der Lokalisation der Metastasierung

### ■ Versionen 2002–2024:

Albert / Bauerfeind / Bischoff / Böhme / Brunnert / Dall / Diel / Fehm / Fersis / Friedrich / Friedrichs / Gerber / Hanf / Janni / Kolberg-Liedtke / Kreipe / Loibl / Lück / Lüftner / Lux / Maass / Mundhenke / Oberhoff / Park-Simon / Reimer / Rezai / Rody / Schaller / Schütz / Seegenschmiedt / Solbach / Solomayer / Souchon / Thomssen

### ■ Version 2025:

Gerber / Untch

1. Cardoso F, Paluch-Shimon S, Senkus E et al. 5th ESO-ESMO international consensus guidelines for advanced breast cancer (ABC 5). Ann Oncol. 2020 Dec;31(12):1623-1649.



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# Metastasenlokalisationen

- **Leber- und Lungenmetastasen**
- **Maligne Pleura- und Perikardergüsse**
- **Aszites**
- **Knochenmarkinfiltration (Verdrängungsmielopathie)**
- **Weichteilmetastasen**
- **Kontralaterale Axillametastase**

Siehe auch Kapitel „ZNS-Metastasen“ / „Lokoregionäres Rezidiv- Behandlungsoptionen bei nicht kurativen Fällen“/  
„Osteonkologie“

## Allgemeine Aspekte der Metastasentherapie

	Oxford		
	LoE	GR	AGO
▪ <b>Histologischer Nachweis der Metastasierung</b>	3	B	++
▪ <b>Zytologischer Nachweis der Metastasierung, wenn histologischer Nachweis nicht möglich</b>	3	B	+
▪ <b>Bevorzugung systemischer Therapien</b>	2a	B	++*
▪ <b>Metastasenresektion bei gutem Therapieansprechen der systemischen Therapie, Oligometastasierung (cave: keine einheitliche Definition verfügbar)</b>	2b	C	+/-
▪ <b>Stereotaktische Radiotherapie bei Patientinnen mit Oligometastasierung</b>	2b	B	+/-
▪ <b>Lokal-interventionelle ablative Maßnahmen</b>	3b	C	+/-
▪ <b>Lokale Behandlung bei Schmerzen, Exulzeration, Ileus, persistierender(n) Metastase(n) nach Abschluss der Systemtherapie, Hydrocephalus occlusus, spinalem Kompressionssyndrom</b>	5	D	+/-
▪ <b>Systemische Behandlung nach Chirurgie</b>	2c	B	++

\* Siehe auch Kapitel zur Systemtherapie in der metastasierten Situation

### Wording

Stereotactic Therapy can be referred to as:

#### SBRT

Stereotactic Body Radiation Therapy

#### SABR

Stereotactic Ablative Radiotherapy

#### IGRT

Image Guided Radiation Therapy

### Histology

1. Kasraeian S, Allison DC, Ahlman ER et al. A comparison of fine-needle aspiration, core biopsy, and surgical biopsy in the diagnosis of extremity soft tissue masses. Clin Ortop Relat Res. 2010;468:2992-3002.

### Local surgery

1. Warschkow R, Güller U, Tarantino I et al. Improved Survival After Primary Tumor Surgery in Metastatic Breast Cancer: A Propensity-adjusted, Population-based SEER Trend Analysis. Ann Surg. 2016 Jun;263(6):1188-98.

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9. Khan SA Plenary Session ASCO 2020 Late Breaking Abstract 2
10. Lopez-Tarruella S, Escudero MJ, Pollan M et al. Survival impact of primary tumor resection in de novo metastatic breast cancer patients (GEICAM/El Alamo Registry). *Sci Rep.* 2019 Dec 27;9(1):20081.
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12. Soran A, Ozmen V, Ozbas S et al. MF07-01 Study Group. Primary Surgery with Systemic Therapy in Patients with de Novo Stage IV Breast Cancer: 10-year Follow-up; Protocol MF07-01 Randomized Clinical Trial. *J Am Coll Surg.* 2021 Dec;233(6):742-751.
13. Stahl K, Wong W, Dodge D et al. Benefits of Surgical Treatment of Stage IV Breast Cancer for Patients With Known Hormone Receptor and HER2 Status. *Ann Surg Oncol.* 2021 May;28(5):2646-2658.
14. Chen YQ, Xu JW, Xu XF et al. Predicting the survival benefit of local surgery in patients aged 70 years or older with stage IV breast cancer: A population-based analysis. *Breast.* 2021 Oct;59:124-134.

#### Radiotherapy in oligometastatic breast cancer

1. Trovo M, Furlan C, Polesel J et al.: Radical radiation therapy for oligometastatic breast cancer: Results of a prospective phase II trial. *Radiother Oncol.* 2018 Jan;126(1):177-180.
2. Thelen WSME, Peulen HMU, Lalezari F et al. Effect of pembrolizumab after stereotactic body radiotherapy vs pembrolizumab alone on tumor response in patients with advanced non—small cell lung cancer: results of the PEMBRO-RT phase 2 randomized clinical trial. *JAMA Oncol* 2019; 5:1276–1282
3. Weykamp F, König L, Seidensaal K et al. Extracranial Stereotactic Body Radiotherapy in Oligometastatic or Oligoprogressive Breast Cancer. *Front Oncol.* 2020 Jun 26;10:987.
4. Palma DA, Olson R, Harrow S et al. Stereotactic ablative radiotherapy versus standard of care palliative treatment in patients with oligometastatic cancers (SABR-COMET): a randomised, phase 2, open-label trial. *Lancet.* 2019 May 18;393(10185):2051-2058.
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9. Chmura S, Winter KA, Robinson C et al. Evaluation of Safety of Stereotactic Body Radiotherapy for the Treatment of Patients With Multiple Metastases: Findings From the NRG-BR001 Phase 1 Trial. *JAMA Oncol.* 2021 Jun 1;7(6):845-852.
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### Overviews

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2. Caswell-Jin JL, Plevritis SK, Tian L, et al. Change in survival in metastatic breast cancer with treatment advances: meta-analysis and systematic review. 2018. <https://doi.org/10.1093/jncics/pky062>.
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10. Puztai L, Rozenblit M, Dubsky P, et al. De Novo Oligometastatic Breast Cancer. *J Clin Oncol*. 2023 Dec 1;41(34):5237-5241. doi: 10.1200/JCO.23.00911. Epub 2023 Aug 22. PMID: 37607325; PMCID: PMC10691789.

### Combined surgery of the primary side and metastasis

1. Bilani N, Yaghi M, Singh Jabbal I et al. Survival benefit of a combined surgical approach in patients with metastatic breast cancer. *J Surg Oncol*. 2021 Dec;124(8):1235-1241.
2. Bilani N, Elson L, Liang H et al. Effect of Surgery at Primary and Metastatic Sites in Patients With Stage IV Breast Cancer. *Clin Breast Cancer*. 2021 Jun;21(3):170-180.

Societies / Organisations or inclusion criteria of prospective clinical trials (selection)	
ESMO	limited or low-volume metastatic disease; up to five lesions in total, not necessarily in the same organ; all potentially amenable to receive local treatment
ESTRO/ASTRO	1-5 metastatic lesions; controlled primary tumor optional, all metastatic sites must be safely treatable
ESTRO/EORTC OligoCare project	Different clinical scenarios of OMD: synchronous vs. metachronous, repeat vs. de novo OMD, oligorecurrence vs. oligoprogression, oligopersistence vs. oligoprogression, induced vs. genuine OMD.
ABC-7	Low volume metastatic disease (up to 5 lesions and not necessarily in the same organ), potentially amenable for local treatment, aimed at achieving a complete remission status; highly dependent on the imaging method used. <b>Note:</b> OMD sites need to be solid; excludes pleural effusions, ascites, leptomeningeal disease.
SABR-COMET trial (NCT05784428)	≤5 metastatic sites; small subset for breast cancer patients (n = 18)
NRG-BR002 trial (NCT02364557)	controlled locoregional disease and ≤4 metastases (standard imaging), ≤12 months systemic therapy without progression
OLIGOMA trial (NCT04495309)	up to 5 clinically manifest metastases, maximum of 3 cerebral metastases known

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4. ABC-7 consensus: Cardoso F et al., *Breast* 2024 (in preparation)

## Lokale Therapie in der primär metastasierten Situation

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>Operation (R0) des Primärtumors (individuelles Vorgehen bei Oligometastasierung)</b> <ul style="list-style-type: none"> <li>▪ Bei alleiniger ossärer Metastasierung</li> <li>▪ Bei viszeralen Metastasen</li> </ul> </li> <li>▪ <b>Axillaoperation bei cN1</b></li> <li>▪ <b>Sentinellymphonodektomie bei cN0</b></li> <li>▪ <b>Radiotherapie des Primärtumors</b> <ul style="list-style-type: none"> <li>▪ Ohne Operation</li> <li>▪ Nach brusterhaltender Operation oder nach Mastektomie (analog der adjuvanten Situation)</li> </ul> </li> </ul>			
	1b	B	+/-
	1b	B	-
	3b	B	+/-
	5	D	-
	3a	C	+/-
	2c	B	+/-

### Surgery of the primary tumor (R0)

1. Xiao W, Zou Y, Zheng S et al. Primary tumor resection in stage IV breast cancer: A systematic review and meta-analysis. Eur J Surg Oncol. 2018 Oct;44(10):1504-1512.
2. Tosello G, Torloni MR, Mota BS et al. Breast surgery for metastatic breast cancer. Cochrane Database Syst Rev. 2018 Mar 15;3:CD011276. doi: 10.1002/14651
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8. Kahn SA. Educational Session SABCS 2021, Thursday 9th Dec; Session: Local Therapy of the Primary and Beyond in Patients with Advanced Disease, Presentation: Local therapy of the primary tumor in de novo Stage IV breast cancer.


9. Peng P, Chen JY, Han YT et al. Impact of surgery on survival in breast cancer with bone metastases only: a SEER database retrospective analysis. BMC Surg. 2021 Oct 26;21(1):378.

#### Axillary surgery


1. Bitencourt A, Rossi Saccarelli C, Morris EA et al. Regional Lymph Node Involvement Among Patients With De Novo Metastatic Breast Cancer. JAMA Netw Open. 2020 Oct 1;3(10):e2018790.
2. De Wit A, Arbion F, Desille-Gbaguidi H et al. Role of surgery in patients with synchronous metastatic breast cancer: Is there a need for axillary lymph node removal? J Gynecol Obstet Hum Reprod. 2021 Apr;50(4):101771.

#### Primary metastatic breast cancer - Locoregional therapy (local RT vs. surgery + RT vs. surgery)

1. Choi SH, Kim JW, Choi J et al. Locoregional Treatment of the Primary Tumor in Patients With De Novo Stage IV Breast Cancer: A Radiation Oncologist's Perspective . Clin Breast Cancer. 2018 Apr;18(2):e167-e178.
2. Pons-Tostivint E, Kirova Y, Lusque A. Survival Impact of Locoregional Treatment of the Primary Tumor in De Novo Metastatic Breast Cancers in a Large Multicentric Cohort Study: A Propensity Score-Matched Analysis. Ann Surg Oncol. 2019 Feb;26(2):356-365.
3. Wang W, Liu J, Wang J et al. Impact of Locoregional Treatment on Prognosis of de novo Stage IV Breast Cancer: A Retrospective Long-Term Study of Chinese Population. Gynecol Obstet Invest. 2019;84(3):248-258.
4. Bourgier C, Khodari WA, Vataire AL et al. Breast radiotherapy as part of loco-regional treatments in stage IV breast cancer patients with oligometastatic disease. Radiother Oncol. 2010 Aug;96(2):199-203
5. Stahl K, Wong W, Dodge D et al. Benefits of Surgical Treatment of Stage IV Breast Cancer for Patients With Known Hormone Receptor and HER2 Status. Ann Surg Oncol. 2021 May;28(5):2646-2658.
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## Randomized Phase III Trials ST +/- Surgery of the Primary Tumor

Trial	n	Therapy prior to randomization	Local Control	Improved OS Primary Endpoint	QoL
ECOG 2108 * <sup>1,2</sup> (USA/Kanada) 2001-2016	256	4-8 months systemic therapy	yes	no	ns
Tata Memorial Hospital * <sup>3</sup> (India) 2005-2012	350	chemotherapy	yes	no	-
MF07-01 * <sup>4,5,6,7</sup> (Turkey) 2008-2012	278	no systemic therapy	no 10 y LRP: LRT 1% vs. 14% ST	10 y fu OS: LRT 19% vs. ST 5%, (HR+, HER2-, < 55 y, solitary bone only metastasis)	ns
ABCSG-28#* <sup>8,9</sup> (Austria) 2010-2019	90	no systemic therapy	yes	no	ns
JCOG 1017 (Japan) 2011-2018	410	primary ST	Completed, results not reported so far		

ns not significant, s: significant # trial terminated due to poor recruitment  
ST = systemic therapy, LRT= locoregional therapy, LRP = locoregional progression

1. Khan SA Plenary Session ASCO 2020 Late Breaking Abstract 2
2. Kahn SA. Educational Session SABCS 2021, Thursday 9th Dec; Session: Local Therapy of the Primary and Beyond in Patients with Advanced Disease, Presentation: Local therapy of the primary tumor in de novo Stage IV breast cancer.
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## Prospective Registry Study (Bone only)

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Trial	n	Randomization	Local Control	Improved OS Primary Endpoint	QoL
BOMET MF 14-01 <sup>#</sup> 2014-	505	ST vs. LRT (LRT+ST vs. ST+LRT)	yes	3y fu: improved OS in the LRT group (HR 0.40)  HR+, HER2-, HER2+ subgroups, no benefit in triple neg. patients	-

ST = systemic therapy, LRT = locoregional therapy,

1. Soran A, Dogan L, Isik A et al. The Effect of Primary Surgery in Patients with De Novo Stage IV Breast Cancer with Bone Metastasis Only (Protocol BOMET MF 14-01): A Multi-Center, Prospective Registry Study. Ann Surg Oncol. 2021;28(9):5048-5057.

## Lebermetastasen Lokale Therapie

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>Resektion (R0)</b> <ul style="list-style-type: none"> <li>• HR positiv: Chemotherapie-sensibel, langes DFS, keine extrahepatischen Metastasen, ≤ 3 Metastasen</li> <li>• HER2 positiv: Alter &lt; 50 Jahre, Metastase &lt; 5 cm, keine weiteren Metastasen</li> </ul> </li> </ul>	<b>3a</b>	<b>B</b>	<b>+/-</b>
<ul style="list-style-type: none"> <li>▪ Interventionelle regionale Chemotherapie (TACE)*</li> </ul>	<b>3b</b>	<b>C</b>	<b>+/-</b>
<ul style="list-style-type: none"> <li>▪ Interventionelle regionale Radiotherapie (SIRT / TARE)*</li> </ul>	<b>3a</b>	<b>B</b>	<b>+/-</b>
<ul style="list-style-type: none"> <li>▪ Stereotaktische Radiotherapie mittels SRS-VMAT, andere Bestrahlungsverfahren*</li> </ul>	<b>2a</b>	<b>B</b>	<b>+/-</b>
<ul style="list-style-type: none"> <li>▪ Regionale ablative Verfahren Thermoablation (RFA, MWA)                             <ul style="list-style-type: none"> <li>▪ IRE, LITT, and HIFU</li> <li>▪ Kryoablation</li> </ul> </li> </ul>	<b>3b</b>	<b>C</b>	<b>+/-</b>
	<b>5</b>	<b>D</b>	<b>-</b>
	<b>3b</b>	<b>C</b>	<b>-</b>

\* Interdisziplinäre Indikationsstellung

CA = cryoablation  
 HIFU = high-intensity focused ultrasound  
 IRE = irreversible electroporation  
 LITT = laser-induced interstitial thermotherapy  
 MWA = microwave ablation  
 RFA = radiofrequency ablation  
 SIRT = selective internal radiotherapy = TARE  
 SRS = stereotactic radiosurgery with volumetric modulated arc therapy (VMAT)  
 TACE = transarteriel chemoembolization  
 TARE = transarteriel radioembolization

### Statements:

Resection of liver metastasis (R0)

HR positive: chemotherapy sensible, long disease-free interval, absence of extrahepatic disease, ≤ 3 metastases

Her2 positive: age < 50 y., metastasis < 5 cm, no further metastases

### Diagnostics

1. van Dam PJ, van der Stok EP, Teuwen LA et al. International consensus guidelines for scoring the histopathological growth patterns of liver metastasis. *Br J Cancer*. 2017 Nov 7;117(10):1427-1441.

### Overview

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2. Kent CL, McDuff SGR, Salama JK. Oligometastatic breast cancer: where are we now and where are we headed?-a narrative review. *Ann Palliat Med*. 2020 Sep 10;apm-20-1128.
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1. Golse N, Adam R. Liver Metastases From Breast Cancer: What Role for Surgery? Indications and Results. *Clin Breast Cancer*. 2017 Jul;17(4):256-265
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4. Wen J, Ye F, Xie F, Liu D et al. The role of surgical intervention for isolated breast cancer liver metastasis: Results of case-control study with comparison to medical treatment. *Cancer Med*. 2020 Jul;9(13):4656-4666.
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6. Chun YS, Mizuno T, Cloyd JM et al. Hepatic resection for breast cancer liver metastases: Impact of intrinsic subtypes. *Eur J Surg Oncol* 2020; 46: 1588-1595.
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Statement: Regional chemotherapy

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Statement: Regional radiotherapy

1. Chang J, Charalel R, Noda C et al. Liverdominant Breast Cancer Metastasis: A Comparative Outcomes Study of Chemoembolization Versus Radioembolization. *Anticancer Res* 2018; 38: 3063-3068.
2. Trovo M, Furlan C, Polesel J et al. Radical radiation therapy for oligometastatic breast cancer: Results of a prospective phase II trial. *Radiother Oncol.* 2018 Jan;126(1):177-180.
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6. Franzese C, Comito T, Viganò L et al. Liver Metastases-directed Therapy in the Management of Oligometastatic Breast Cancer. *Clin Breast Cancer.* 2020 Dec;20(6):480-486.
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- breast cancer. *Eur J Radiol*. 2021 Mar;136:109539.
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  9. Schatka I, Tschernig M, Rogasch JMM et al. Selective Internal Radiation Therapy in Breast Cancer Liver Metastases: Outcome Assessment Applying a Prognostic Score. *Cancers (Basel)*. 2021 Jul 27;13(15):3777.
  10. Lehrer EJ, Singh R, Wang M et al. Safety and Survival Rates Associated With Ablative Stereotactic Radiotherapy for Patients With Oligometastatic Cancer: A Systematic Review and Meta-analysis. *JAMA Oncol*. 2021 Jan 1;7(1):92-106.
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  12. Liu C, Tadros G, Smith Q, Martinez L, Jeffries J, Yu Z, Yu Q. Selective internal radiation therapy of metastatic breast cancer to the liver: A meta-analysis. *Front Oncol*. 2022 Nov 24;12:887653. doi: 10.3389/fonc.2022.887653. PMID: 36505832; PMCID: PMC9729947.
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#### Statement: Thermoablation

1. Xiao YB, Zhang B, Wi YI. Radiofrequency ablation versus hepatic resection for breast cancer liver metastasis: a systematic review and meta-analysis *J Zhejiang Univ-Sci B (Biomed & Biotechnol)* 2018 19(11):829-843
2. Bale R, Richter M, Dünser M et al. Stereotactic Radiofrequency Ablation for Breast Cancer Liver Metastases. *J Vasc Interv Radiol*. 2017 Dec 19. pii: S1051-0443(17)30911-9
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4. Franzese C, Comito T, Viganò L et al. Liver Metastases-directed Therapy in the Management of Oligometastatic Breast Cancer. *Clin Breast Cancer*. 2020 Dec;20(6):480-486.

## Lungenmetastasen Lokale Therapie

	Oxford		
	LoE	GR	AGO
▪ <b>Vor einer lokalen Therapie histologische Sicherung der Metastasierung, auch zum Ausschluss von Zweittumoren</b>	<b>3a</b>	<b>B</b>	<b>+</b>
▪ <b>Resektion mittels VATS* oder konventionell</b>			
▪ multilokulärer Metastasen	<b>3a</b>	<b>B</b>	<b>-</b>
▪ Solitärer / weniger unilateraler Metastasen	<b>3a</b>	<b>B</b>	<b>+/-</b>
▪ <b>Thermoablation (CT-gesteuert RFA, LITT)</b>	<b>3b</b>	<b>C</b>	<b>+/-</b>
▪ <b>Regionale Radiotherapie</b> (stereotaktische Radiotherapie mittels SRS-VMAT)	<b>2a</b>	<b>B</b>	<b>+/-</b>

\* VATS = video-assistierte Thorakoskopie

### Overview

1. Lin S, Mo H, Li Y et al. Clinicopathological characteristics and survival outcomes in patients with synchronous lung metastases upon initial metastatic breast cancer diagnosis in Han population. BMC Cancer. 2021 Dec 14;21(1):1330.
2. Soh J, Komoike Y, Mitsudomi T. Surgical therapy for pulmonary metastasis of breast cancer. Transl Cancer Res. 2020 Aug;9(8):5044-5052. doi: 10.21037/tcr.2020.03.63. PMID: 35117870; PMCID: PMC8798234.

### Resection of pulmonary metastases by VATS or conventional resection

1. Patrini D, Panagiotopoulos N, Lawrence D et al. Surgical management of lung metastases. Br J Hosp Med (Lond). 2017 Apr 2;78(4):192-198.
2. Meng D, Fu L, Wang L et al. Video-assisted thoracoscopic surgery versus open thoracotomy in pulmonary metastasectomy: a meta-analysis of observational studies. Interact Cardiovasc Thorac Surg. 2016 Feb;22(2):200-6.
3. Endoh M, Shiono S, Yamauchi Y et al. Pulmonary metastasectomy for pulmonary metastasis of breast cancer has a limited prognostic impact: a multi-institutional retrospective analysis. J Thorac Dis. 2020 Nov;12(11):6552-6562.
4. Bilani N, Yaghi M, Main O et al. Metastasectomy versus radiation of secondary sites in stage IV breast cancer: Analysis from a national cancer registry. Breast. 2021 Dec;60:185-191.

Statement: Thermoablation (CT-guided RFA, LITT)

1. Vogl TJ, et al: Microwave ablation therapy: clinical utility in treatment of pulmonary metastases. Radiology. 2011 Nov;261(2):643-51.
2. Ewert R, Opitz C. Pulmonary function testing before ablative methods] Radiologe. 2004 Jul;44(7):708-10. 4.
3. Diederich S, Hosten N: Percutaneous ablation of pulmonary tumours: state-of-the-art 2004 Radiologe. 2004 Jul;44(7):658-62.

Statement: Regional Radiotherapy

1. Ricco A, Davis J, Rate W et al. Lung metastases treated with stereotactic body radiotherapy: the RSSearch® patient Registry's experience. Radiation Oncology (2017) 12: oi: 10.1186/s13014-017-0773-4
2. Lehrer EJ, Singh R, Wang M et al. Safety and Survival Rates Associated With Ablative Stereotactic Radiotherapy for Patients With Oligometastatic Cancer: A Systematic Review and Meta-analysis. JAMA Oncol. 2021 Jan 1;7(1):92-106.
3. Viani GA, Gouveia AG, Alexander V Louie AV et al. Stereotactic body radiotherapy to treat breast cancer oligometastases: A systematic review with meta-analysis. Meta-Analysis Radiother Oncol. 2021 Nov; 164:245-250.

# Maligner Pleuraerguss

## Lokale Therapie

	Oxford		
	LoE	GR	AGO
▪ Wenn die erwartete Lebenszeit kurz ist, sollten weniger invasive Prozeduren in Betracht gezogen werden	4	C	++
▪ VATS und Talkum-Pleurodese*	1b	B	++
▪ Kontinuierliche Pleurainlage	2a	B	++
▪ Medikamentöse Pleurodese*			
▪ Talkumpulver	1a	B	+
▪ Intrathorakale Chemotherapie	2b	C	+/-
▪ Povidon-Jodid (20 ml 10 % Lösung)	1b	B	+
▪ Wiederholte Pleurapunktionen	4	C	+/-

\* Adäquate Schmerztherapie  
VATS = video-assistierte Thorakoskopie

If expected survival is short, less invasive procedures should be considered

1. Zamboni MM, da Silva CT Jr, Baretta R et al. Important prognostic factors for survival in patients with malignant pleural effusion. BMC Pulm Med. 2015 Mar 28;15:29.

### VATS and Talcum-pleurodesis

#### Chemical pleurodesis

#### Talcum powder

#### Bleomycin, Doxycycline, Mitoxantrone

#### Povidone-iodine (20 ml of 10% solution)

#### Serial thoracocentesis

1. Thomas R, Fysh ETH, Smith NA et al. Effect of an Indwelling Pleural Catheter vs Talc Pleurodesis on Hospitalization Days in Patients With Malignant Pleural Effusion: The AMPLE Randomized Clinical Trial. JAMA. 2017 Nov 21;318(19):1903-1912.
2. Bibby AC, Dorn P, Psallidas I, et al. ERS/EACTS statement on the management of malignant pleural effusions. Eur J Cardiothorac Surg. 2019 Jan 1;55(1):116-132.
3. Kapp CM, Lee HJ. Malignant Pleural Effusions. Clin Chest Med. 2021 Dec;42(4):687-696. Review
4. Dipper A, Jones HE, Bhatnagar R, et al. Interventions for the management of malignant pleural effusions: an updated network meta-

analysis. Eur Respir Rev 2021; 30: 210025.

Statement: Continuous pleural drainage

1. Warren WH, Kalimi R, Khodadadian LM et al. Management of malignant pleural effusions using the Pleur(x) catheter. Ann Thorac Surg. 2008 Mar;85(3):1049-55.
2. Hak CC, Sivakumar P, Ahmed L. Safety of indwelling pleural catheter use in patients undergoing chemotherapy: a five-year retrospective evaluation. BMC Pulm Med. 2016 Mar 11;16:41.

Statement: Intrathoracic chemotherapy

1. Karampinis I, Dionysopoulou A, Galata C, Almstedt K, Grilli M, Hasenburger A, Roessner ED. Hyperthermic intrathoracic chemotherapy for the treatment of malignant pleural effusion caused by breast and ovarian cancer: A systematic literature review and pooled analysis. Thorac Cancer. 2022 Apr;13(7):883-888. doi: 10.1111/1759-7714.14361. Epub 2022 Feb 22. PMID: 35194945; PMCID: PMC8977169.

## Maligner Aszites Lokale Therapie

	Oxford		
	LoE	GR	AGO
<b>Aszites:</b>			
▪ <b>Punktion, Drainage bei Symptomen</b>	<b>4</b>	<b>D</b>	<b>++</b>
▪ <b>Kontinuierliche Drainage bei persistierendem Aszites</b>	<b>3b</b>	<b>D</b>	<b>+</b>
▪ <b>Systemische Therapie</b>	<b>3b</b>	<b>D</b>	<b>++</b>
▪ <b>Lokale Chemotherapie</b>	<b>3b</b>	<b>D</b>	<b>-</b>

1. Korpi S, Salminen VV, Piili RP et al. Therapeutic Procedures for Malignant Ascites in a Palliative Care Outpatient Clinic. J Palliat Med. 2018 Jun;21(6):836-841.
2. Lew M, Cantley R, Heider A et al. Diagnosis and categorization of malignant effusions: A 6-year review from a single academic institution. Diagn Cytopathol. 2021 May;49(5):615-621.

## Maligner Perikarderguss Lokale Therapie

	Oxford		
	LoE	GR	AGO
<b>Symptomatischer Perikarderguss</b>			
▪ Drainage, chirurgische Fensterung des Perikards	<b>3b</b>	<b>B</b>	<b>++</b>
▪ Kombination mit optimierter systemischer Therapie	<b>4</b>	<b>C</b>	<b>++</b>
▪ Video-assistierte Thoraxchirurgie (VATS)	<b>4</b>	<b>C</b>	<b>+</b>
▪ <b>Ultraschall geführte Punktion und Instillation von zytotoxischen / zielgerichteten Substanzen</b>			
▪ Bleomycin, Carboplatin, Cisplatin, Mitomycin C, Mitoxantron, Bevacizumab	<b>4</b>	<b>C</b>	<b>+/-</b>

1. Strobbe A, Adriaenssens T, Bennett J et al. Etiology and Long-Term Outcome of Patients Undergoing pericardiocentesis. J Am Heart Assoc. 2017 Dec 23;6(12). pii: e007598.
2. Numico G, Cristofano A, Ocelli M et al. Prolonged Drainage and Intrapericardial Bleomycin Administration for Cardiac Tamponade Secondary to Cancer-Related Pericardial Effusion. Medicine (Baltimore). 2016 Apr;95(15):e3273
3. Lambert A, Salleron J, Kieffer A, Raymond P, Geoffrois L, Gavaille C. Intrapericardial instillation of bleomycin prevents recurrence of malignant pericardial effusions: Series of 46 cases and comprehensive literature review. Bull Cancer. 2020 Jul-Aug;107(7-8):756-762.
4. Kotake M, Imai H, Kaira K, Fujisawa T, Yanagita Y, Minato K. Intrapericardial carboplatin in the management of malignant pericardial effusion in breast cancer: a pilot study. Cancer Chemother Pharmacol. 2019 Sep;84(3):655-660. .
5. Chen D, Song X, Shi F et al. Greater efficacy of intracavitary infusion of bevacizumab compared to traditional local treatments for patients with malignant cavity serous effusion. Oncotarget. 2017 May 23;8(21):35262-35271.
6. Lew M, Cantley R, Heider A et al. Diagnosis and categorization of malignant effusions: A 6-year review from a single academic institution. Diagn Cytopathol. 2021 May;49(5):615-621.

## Verdrängungsmyelopathie / Knochenmarksinfiltration (mit Panzytopenie)

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>Wöchentliche Chemotherapie*:</b> <ul style="list-style-type: none"> <li>▪ Epirubicin, Doxorubicin, Paclitaxel</li> <li>▪ Capecitabin</li> </ul> </li> <li>▪ <b>HER2 pos.:</b> <ul style="list-style-type: none"> <li>▪ anti-HER2 Therapie</li> </ul> </li> <li>▪ <b>Hormonzeptor-positiv:</b> <ul style="list-style-type: none"> <li>▪ endokrin-basierte Therapie</li> </ul> </li> </ul>	4	D	++
	4	D	++
	5	D	++
	3b	C	+

\* Beachte Vorbehandlung

1. Pahouja G, Wesolowski R, et al, Stabilization of bone marrow infiltration by metastatic breast cancer with continuous doxorubicin, Cancer Treat Commun. 2015 ; 3: 28–32.
2. Artac M, Koral L, Toy H et al. Complete response and long-term remission to anti-HER2 combined therapy in a patient with breast cancer presented with bone marrow metastases. J Oncol Pharm Pract. 2014 Apr;20(2):141-5.
3. Pahouja G, Wesolowski R, Reinbolt R et al. Stabilization of bone marrow infiltration by metastatic breast cancer with continuous doxorubicin. Cancer Treat Commun. 2015;3:28-32.
4. Yamaguchi T, Masumoto M, Sakurai U et al. Disseminated Carcinomatosis of the Bone Marrow from Occult Breast Cancer Responding to a Sequence of Endocrine Therapy. Case Rep Oncol. 2020 Feb 24;13(1):193-199.

## Weichteil-/Hautmetastasen

### Lokale Therapie

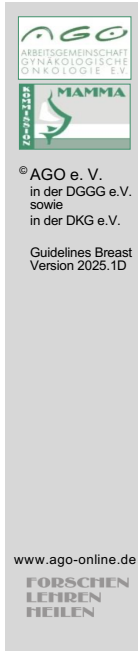
	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>R0-Resektion</b> (bei lokoregionär limitierten Metastasen, z. B. Haut, Muskel, Lymphknoten, nach Ausschluss weiterer Fernmetastasen)</li> </ul>	4	C	+/-
<ul style="list-style-type: none"> <li>▪ <b>Bestrahlung (postoperativ oder primär) bei*:</b> <ul style="list-style-type: none"> <li>▪ Weichteilmetastasen</li> <li>▪ Rückenmarkskompression, Parese</li> <li>▪ Plexusinfiltration</li> <li>▪ <b>Hinzunahme einer regionalen Hyperthermie bei Re-Bestrahlung**</b></li> </ul> </li> </ul>	3b 2b 3b 4	C C C C	+/- ++ ++ +/-
<ul style="list-style-type: none"> <li>▪ <b>Elektrochemotherapie</b></li> </ul>	4	C	+/-

\*Ausnahme: unmittelbare Indikation zur Operation

\*\* In Zentren, die auf der DKG-Website gelistet sind

<https://www.krebsgesellschaft.de/deutsche-krebsgesellschaft-wtrl/deutsche-krebsgesellschaft/ueber-uns/organisation/sektion-bearbeitungsgemeinschaften/iah.html>

1. Kong JH, et al: Patterns of skin and soft tissue metastases from breast cancer according to subtypes: relationship between EGFR overexpression and skin manifestations. *Oncology*. 2011;81(1):55-62. Epub 2011 Sep 16.
2. Berlière M, Duhoux FP, Taburiaux L et al. The place of extensive surgery in locoregional recurrence and limited metastatic disease of breast cancer: preliminary results. *Biomed Res Int*. 2015;2015:782654. doi: 10.1155/2015/782654. Epub 2015 Mar 18.
3. Datta NR et al. Hyperthermia and Radiation Therapy in Locoregional Re-current Breast Cancers: A Systematic Review and Meta-analysis. *Int J Radiat Oncol Biol Phys*. 2016 Apr 1;94(5):1073-87.
4. Schouten D et al. A randomized phase-II study of reirradiation and hyperthermia versus reirradiation and hyperthermia plus chemotherapy for locally recurrent breast cancer in previously irradiated area. *Acta Oncol*. 2022 Apr;61(4):441-448.
5. Notter M et al. Combined wIRA-Hyperthermia and Hypofractionated Re-Irradiation in the Treatment of Locally Recurrent Breast Cancer: Evaluation of Therapeutic Out-come Based on a Novel Size Classification. *Cancers (Basel)*. 2020 Mar 6;12(3):606.



## Oligometastasierung: Kontralaterale Axillametastase

**“Contralateral axillary nodal metastasis (in the absence of contralateral primary) as initial diagnosis of recurrent disease is considered stage 4 metastatic breast cancer. However, after prior local therapy to ipsilateral axilla for early breast cancer, subsequent metachronous contralateral axillary nodal metastasis, either alone or concurrent with an in-breast ipsilateral recurrence, could be considered and treated as a regional metastasis (due to altered lymphatic drainage), and has the potential for long survival or cure with a multidisciplinary approach”**

ABC-7 (2023): LoE: Expert opinion/NA (85%)

1. Magnoni F, Colleoni M, Mattar D et al. Contralateral Axillary Lymph Node Metastases from Breast Carcinoma: Is it Time to Review TNM Cancer Staging? *Ann Surg Oncol.* 2020 Oct;27(11):4488-4499.
2. Díaz-Roldán J, Eguía-Larrea M, Rubio-Sánchez T et al. Systematic review of synchronous contralateral axillary metastases in breast cancer: really M1 disease? *Breast Cancer.* 2021 Oct 15. doi: 10.1007/s12282-021-01293-2. Online ahead of print. Review.
3. Nash AL, Thomas SM, Plichta JK et al. Contralateral Axillary Nodal Metastases: Stage IV Disease or a Manifestation of Progressive Locally Advanced Breast Cancer? *Ann Surg Oncol.* 2021 Oct;28(10):5544-5552.
4. SABCS 2021 Educational Session Local Therapy of the Primary and Beyond in Patients with Advanced Disease
5. ABC-7 consensus: Cardoso F et al., *Breast* 2024 (in preparation)