



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

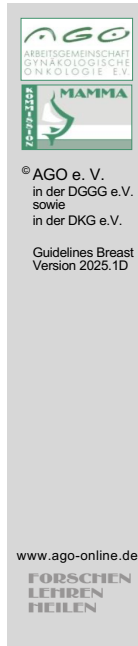
Guidelines Breast  
Version 2025.1D

FORSCHEN  
LEHREN  
HEILEN

# Diagnostik und Therapie früher und fortgeschrittener Mammakarzinome

## Läsionen mit unsicherem biologischen Potenzial (B3)

(ADH, LIN / LCIS, FEA, Papillom, Radiäre Narbe /  
komplexe sklerosierende Läsion)



## Läsionen mit unklarem biologischen Potenzial (B3)

### ■ Versionen 2005-2024:

**Albert / Audretsch / Bauerfeind / Brunnert / Ditsch / Fallenberg / Fersis / Friedrich / Friedrichs / Gerber / Huober / Kolberg-Liedtke / Kreipe / Maass / Nitz / Reimer / Rody / Schmidt / Schreer / Sinn / Thomssen**

### ■ Version 2025:

**Kreipe / Sinn / Solbach**

### Pubmed 2010-2024 queries

#### Lobular neoplasia (168 Results)

(Breast Diseases/CL[mh] OR Breast Diseases/DI[mh] OR Breast Diseases/EP[mh] OR Breast Diseases/GE[mh] OR Breast Diseases/MO[mh] OR Breast Diseases/PA[mh] OR Breast Diseases/RT[mh] OR Breast Diseases/SU[mh] OR Breast Diseases/TH[mh]) AND ("2012/01/01"[dp] : "2023/01/01"[dp]) AND ("lobular neoplasia"[ti] OR "lobular intraepithelial neoplasia"[ti] OR "atypical lobular hyperplasia"[ti] OR "lobular carcinoma in situ"[ti] OR "LIN"[ti] OR "ALH"[ti] OR "LCIS"[ti]) AND ("english"[la] OR "german"[la])

#### Atypical ductal hyperplasia (103 Results)

(Breast Diseases/CL[mh] OR Breast Diseases/DI[mh] OR Breast Diseases/EP[mh] OR Breast Diseases/GE[mh] OR Breast Diseases/MO[mh] OR Breast Diseases/PA[mh] OR Breast Diseases/RT[mh] OR Breast Diseases/SU[mh] OR Breast Diseases/TH[mh]) AND ("2012/01/01"[dp] : "2023/01/01"[dp]) AND ("atypical ductal hyperplasia"[ti] OR "atypical hyperplasia"[ti] OR "ADH"[ti]) AND ("english"[la] OR "german"[la])

#### Flat epithelial atypia (59 Results)

(Breast Diseases/CL[mh] OR Breast Diseases/DI[mh] OR Breast Diseases/EP[mh] OR Breast Diseases/GE[mh] OR Breast Diseases/MO[mh] OR Breast Diseases/PA[mh] OR Breast Diseases/RT[mh] OR Breast Diseases/SU[mh] OR Breast Diseases/TH[mh])

AND ("2012/01/01"[dp] : "2023/01/01"[dp]) AND ("flat epithelial atypia"[ti] OR "columnar cell"[ti] OR "FEA"[ti]) AND ("english"[la] OR "german"[la])

Papilloma (284 Results)

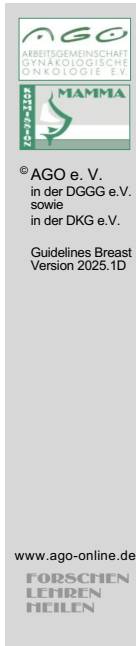
(Breast Diseases/CL[mh] OR Breast Diseases/DI[mh] OR Breast Diseases/EP[mh] OR Breast Diseases/GE[mh] OR Breast Diseases/MO[mh] OR Breast Diseases/PA[mh] OR Breast Diseases/RT[mh] OR Breast Diseases/SU[mh] OR Breast Diseases/TH[mh]) AND ("2012/01/01"[dp] : "2023/01/01"[dp]) AND ("papilloma"[ti] OR "papillary"[ti]) AND ("english"[la] OR "german"[la]) NOT virus[ti]

Radial scar (25 Results)

(Breast Diseases/CL[mh] OR Breast Diseases/DI[mh] OR Breast Diseases/EP[mh] OR Breast Diseases/GE[mh] OR Breast Diseases/MO[mh] OR Breast Diseases/PA[mh] OR Breast Diseases/RT[mh] OR Breast Diseases/SU[mh] OR Breast Diseases/TH[mh]) AND ("2012/01/01"[dp] : "2023/01/01"[dp]) AND ("radial scar"[ti] OR "complex sclerosing lesion"[ti] OR "radial sclerosing lesion"[ti]) AND ("english"[la] OR "german"[la])

#### National and international guidelines

1. AWMF, Deutschen Krebsgesellschaft e.V. und Deutschen Krebshilfe e.V. (Hrsg.). Interdisziplinäre S3-Leitlinie für die Diagnostik, Therapie und Nachsorge des Mammakarzinoms. Langversion 4.0, Aktualisierung 2021 <http://www.leitlinienprogramm-onkologie.de/leitlinien/mammakarzinom/>
2. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology. Version 6.2024
3. National Comprehensive Cancer Network (NCCN). Breast Cancer Screening and Diagnosis. Version 2.2024
4. Elfgén C, Leo C, Kubik-Huch RA et al. Third International Consensus Conference on lesions of uncertain malignant potential in the breast (B3 lesions). *Virchows Arch.* 2023 Jul;483(1):5-20.
5. Scottish Intercollegiate Guidelines Network (SIGN) (2013) SIGN 134 • Treatment of primary breast cancer. <http://www.sign.ac.uk/pdf/SIGN134.pdf>
6. World Health Organization: WHO Classification of Tumours of the Breast. Lokuhetty D, White VA, Watanabe R, Cree IA (Hrsg.) 2019.
7. American Society of Breast Surgeons: Consensus Guideline on Concordance Assessment of Image-Guided Breast Biopsies and Management of Borderline or High-Risk Lesions, 2016 <https://www.breastsurgeons.org/docs/statements/Consensus-Guideline-on-Concordance-Assessment-of-Image-Guided-Breast-Biopsies.pdf?v2>.




# Pathologische Berichterstellung für minimalinvasive Biopsien

## B-Klassifikation\*

- B1 = Normalgewebe oder nicht verwertbares Material**
- B2 = Benigne Läsion**
- B3 = Benigne Läsionen mit unsicherem biologischen Potenzial**
- B4 = Malignitätsverdächtig**
- B5 = Malignom**
  - B5a: In-situ-Karzinom**
  - B5b: Invasives Karzinom**
  - B5c: Nicht zu entscheiden, ob invasiv oder in situ**
  - B5d: Malignom anderer Histogenese oder Metastase**

\* AWMF, Deutschen Krebsgesellschaft e.V. und Deutschen Krebshilfe e.V. (Hrsg.). Interdisziplinäre S3-Leitlinie für die Diagnostik, Therapie und Nachsorge des Mammakarzinoms. Langversion 4.4, Juni 2021

1. The Royal College of Pathologists. Guidelines for non-operative diagnostic procedures and reporting in breast cancer [Internet]. 2021. Available from: <https://www.rcpath.org/profession/publications/cancer-datasets.html>
2. The Royal College of Pathologists. Dataset for histopathological reporting of breast disease in surgical excision specimens of breast cancer. 2024. Available from <https://www.rcpath.org/profession/guidelines/cancer-datasets-and-tissue-pathways.html>
3. Ellis IO, Humphreys S, Michell M et al. UK National Coordinating Committee for Breast Screening Pathology; European Commission Working Group on Breast Screening Pathology. Best Practice No 179. Guidelines for breast needle core biopsy handling and reporting in breast screening assessment. J Clin Pathol. 2004 Sep;57(9):897-902.
4. Wells C (ed.) (2006) Quality assurance guidelines for pathology: Cytological and histological non-operative procedures. In: European guidelines for quality assurance in breast cancer screening and diagnosis. Perry N, Broeders M, de Wolf C, Törnberg S, Holland R, Koch von F, editors. Luxembourg: Office for Official Publications of the European Communities, ISBN 92-79-01258-4 pp. 221-256 Retrieved from <http://www.euref.org/european-guidelines>
5. Wells, C. A. (2014). S2 Pathology Update pp. 73 - 120. European guidelines for quality assurance in breast cancer screening and diagnosis, 4th edition, Supplements, Retrieved from <http://www.euref.org/european-guidelines>, last update 1. Nov. 2022
6. World Health Organization: WHO Classification of Tumours of the Breast. Lokuhetty D, White VA, Watanabe R, Cree IA (Hrsg.) 2019.



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

Guidelines Breast  
Version 2025.1D

www.ago-online.de

FORSCHEN  
LEHREN  
HEILEN

## B3-Lesions

---

1. **Lesions with increased risk of associated DCIS or invasive carcinoma**
  - Atypical ductal hyperplasia (ADH) or atypical epithelial proliferation of ductal type (classification possibly as B4, depending on extent of lesion)
  - Flat epithelial atypia (FEA)
  - Lobular intraepithelial Neoplasie (LIN; LN), divided in atypical lobular hyperplasia (ALH) and lobular carcinoma in situ (LCIS, classical and non-classical Typ)
  - Atypical apocrine adenosis
2. **Potentially heterogeneous lesions with risk of incomplete sampling**
  - Cellular fibroepithelial lesion or phyllodes tumour without evidence of malignancy
  - Intraductal papilloma with / without atypia (possibly also B4, depending on the extent of the lesion)
  - Radial scar or complex sclerosing lesion (unless the radial scar only microscopically, not radiologically detected: B2)
  - Hemangioma
3. **Rare Lesions**
  - Adenomyoepithelioma, nipple adenoma, microglandular adenosis, mucocele-like lesion, nodular fasciitis, desmoid-type fibromatosis, spindle cell lesion of unknown significance

1. The Royal College of Pathologists. Guidelines for non-operative diagnostic procedures and reporting in breast cancer [Internet]. 2021. Available from: <https://www.rcpath.org/profession/publications/cancer-datasets.html>
2. The Royal College of Pathologists. Dataset for histopathological reporting of breast disease in surgical excision specimens of breast cancer. 2024. Available from <https://www.rcpath.org/profession/guidelines/cancer-datasets-and-tissue-pathways.html>
3. Ellis IO, Humphreys S, Michell M et al. UK National Coordinating Committee for Breast Screening Pathology; European Commission Working Group on Breast Screening Pathology. Best Practice No 179. Guidelines for breast needle core biopsy handling and reporting in breast screening assessment. J Clin Pathol. 2004 Sep;57(9):897-902.
4. Wells C (ed.) (2006) Quality assurance guidelines for pathology: Cytological and histological non-operative procedures. In: European guidelines for quality assurance in breast cancer screening and diagnosis. Perry N, Broeders M, de Wolf C, Törnberg S, Holland R, Koch von F, editors. Luxembourg: Office for Official Publications of the European Communities, ISBN 92-79-01258-4 pp. 221-256 Retrieved from <http://www.euref.org/european-guidelines>
5. Wells, C. A. (2014). S2 Pathology Update pp. 73 - 120. European guidelines for quality assurance in breast cancer screening and diagnosis, 4th edition, Supplements, Retrieved from <http://www.euref.org/european-guidelines>, last update 1. Nov. 2022
6. World Health Organization: WHO Classification of Tumours of the Breast. Lokuhetty D, White VA, Watanabe R, Cree IA (Hrsg.) 2019.

## Management nach minimalinvasiver Biopsie

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>■ <b>Interdisziplinäre Konferenz: Korrelation Bildgebung und Pathologie</b> <ul style="list-style-type: none"> <li>■ <b>konkordant:</b> <ul style="list-style-type: none"> <li>■ <b>Vorgehen gemäß histologischem Typ und Ausdehnung des Befundes</b>      <b>3a</b>      <b>C</b>      <b>++</b></li> </ul> </li> <li>■ <b>diskordant</b> <ul style="list-style-type: none"> <li>■ <b>offene PE</b>      <b>3a</b>      <b>C</b>      <b>++</b></li> <li>■ <b>repräsentative Vakuumbiopsie (nach Stanzbiopsie)</b>      <b>4</b>      <b>C</b>      <b>+</b></li> </ul> </li> </ul> </li> </ul>			

1. Atkins KA, Cohen MA, Nicholson B et al.: Atypical lobular hyperplasia and lobular carcinoma in situ at core breast biopsy: use of careful radiologic-pathologic correlation to recommend excision or observation. Radiology. 2013 Nov;269(2):340-7.
2. AWMF, Deutschen Krebsgesellschaft e.V. und Deutschen Krebshilfe e.V. (Hrsg.). Interdisziplinäre S3-Leitlinie für die Diagnostik, Therapie und Nachsorge des Mammakarzinoms. Langversion 4.4 – Juni 2021, [https://register.awmf.org/assets/guidelines/032-045OLI\\_S3\\_Mammakarzinom\\_2021-07.pdf](https://register.awmf.org/assets/guidelines/032-045OLI_S3_Mammakarzinom_2021-07.pdf)
3. Calhoun BC, Collins LC. Recommendations for excision following core needle biopsy of the breast: a contemporary evaluation of the literature. Histopathology. 2016 Jan;68(1):138-51.
4. Hayes BD, O'Doherty A, Quinn CM. Correlation of needle core biopsy with excision histology in screen-detected B3 lesions: the Merrion Breast Screening Unit experience. J Clin Pathol. 2009 Dec 1;62(12):1136–40.
5. Houssami N et al: Borderline breast core needle histology: predictive values for malignancy in lesions of uncertain malignant potential (B3). Br J Cancer 2007; 96:1253-1257
6. Middleton LP, Sneige N, Coyne R et al.: Most lobular carcinoma in situ and atypical lobular hyperplasia diagnosed on core needle biopsy can be managed clinically with radiologic follow-up in a multidisciplinary setting. Cancer Med. 2014 Jun;3(3):492-9
7. Morrow M, Schnitt SJ, Norton L. Current management of lesions associated with an increased risk of breast cancer. Nat Rev Clin Oncol. 2015 Apr;12(4):227-38.
8. Neal L, Sandhu NP, Hieken TJ et al. Diagnosis and management of benign, atypical, and indeterminate breast lesions detected on core

needle biopsy. Mayo Clin Proc. 2014 Apr;89(4):536-47

9. Rageth CJ, O'Flynn EA, Comstock C et al. First International Consensus Conference on lesions of uncertain malignant potential in the breast (B3 lesions). Breast Cancer Res Treat. 2016 Sep;159(2):203-13.
10. Saladin C, Haueisen H, Kampmann G et al. Lesions with unclear malignant potential (B3) after minimally invasive breast biopsy: evaluation of vacuum biopsies performed in Switzerland and recommended further management. Acta Radiol. 2016 Jul;57(7):815–21.
11. Sinn HP, Flechtenmacher C, Aulmann S. Diagnostik benigner duktaler Epithelproliferationen der Mamma in der Stanzbiopsie. Pathologe. 2014 Feb;35(1):18-25.
12. Thomas PS. Diagnosis and Management of High-Risk Breast Lesions. J Natl Compr Canc Netw. 2018 Nov;16(11):1391–6.
13. Elfgren C, Varga Z, Breitling K et al. Long-Term Follow-Up of High-Risk Breast Lesions at Vacuum-Assisted Biopsy without Subsequent Surgical Resection. Breast Care (Basel). 2024 Feb;19(1):62-72

## Strategie nach Diagnose einer ADH in der Biopsie

	Oxford		
	LoE	GR	AGO
<b>ADH in Stanz- / Vakuumbiopsie:</b>			
▪ <b>Offene Exzisionsbiopsie</b>	3a	C	++
▪ <b>Offene Exzisionsbiopsie verzichtbar, wenn sämtliche folgende Voraussetzungen erfüllt sind:</b>	5	C	+/-
a) Kein radiologischer Herdbefund,			
b) Fokale Läsion (≤ 2 TDLU*) in Vakuumbiopsie und			
c) Suspekte Läsion in der Bildgebung komplett entfernt			
<b>ADH im Resektionsrand nach offener Exzision:</b>	3a	C	+
▪ <b>Keine Nachresektion, wenn die Veränderung ein intraduktales oder invasives Karzinom begleitet</b>			

\* TDLU = terminale duktulo-lobuläre Einheit (unit)

1. Sanders, M. E. & Podoll, M. B. Atypical Ductal Hyperplasia-Ductal Carcinoma In Situ Spectrum: Diagnostic Considerations and Treatment Impact in the Era of Deescalation. *Surg Pathol Clin.* 2022 Mar;15(1):95-103.
2. Kilgore LJ, Yi M, Bevers T, Coyne R et al. Risk of Breast Cancer in Selected Women With Atypical Ductal Hyperplasia Who do not Undergo Surgical Excision. *Ann Surg.* 2022 Dec 1;276(6):e932-e936.
3. El Sanharawi I, Bataillon G, Journo G et al. Clinical management of atypical ductal hyperplasia on vacuum-assisted biopsy of microcalcifications: External validation study of a decision tree selecting patients eligible for surveillance. *Eur J Radiol.* 2021 Aug;141:109826.
4. Gagnon N, Martel E, Cadrin-Chênevert A et al. Upgrade Rate of Atypical Ductal Hyperplasia: Ten Years Experience and Predictive Factors. *J Surg Res.* 2021 Oct;266:311-318.
5. Schiaffino S, Cozzi A, Sardanelli F. An update on the management of breast atypical ductal hyperplasia. *Br J Radiol.* 2020 Jun;93(1110):20200117.
6. Lewin AA, Mercado CL. Atypical Ductal Hyperplasia and Lobular Neoplasia: Update and Easing of Guidelines. *AJR Am J Roentgenol.* 2020 Feb;214(2):265-275.
7. Amin AL, Fan F, Winblad OD et al. Ipsilateral and Concurrent Breast Cancer and Atypical Ductal Hyperplasia: Does Atypia Also Need Surgical Excision? *Ann Surg Oncol.* 2020 Nov;27(12):4786-4794.
8. Ragoth CJ, Rubenov R, Bronz C et al. Atypical ductal hyperplasia and the risk of underestimation: tissue sampling method,

multifocality, and associated calcification significantly influence the diagnostic upgrade rate based on subsequent surgical specimens. *Breast Cancer*. 2019 Jul;26(4):452-458.

9. Sutton T, Farinola M, Johnson N et al. Atypical ductal hyperplasia: Clinicopathologic factors are not predictive of upgrade after excisional biopsy. *Am J Surg*. 2019 May;217(5):848-850.
10. Weiss JB, Do WS, Forte DM et al. Is bigger better? Twenty-year institutional experience of atypical ductal hyperplasia discovered by core needle biopsy. *Am J Surg*. 2019 May;217(5):906-909.
11. Farshid, G., Edwards, S., Kollias et al. Active surveillance of women diagnosed with atypical ductal hyperplasia on core needle biopsy may spare many women potentially unnecessary surgery, but at the risk of undertreatment for a minority: 10-year surgical outcomes of 114 consecutive cases from a single center. *Mod Pathol*. 2018 Mar;31(3):395-405.
12. Racz JM, Degnim AC. When Does Atypical Ductal Hyperplasia Require Surgical Excision? *Surg Oncol Clin N Am*. 2018 Jan;27(1):23-32.
13. Elfgren C, Varga Z, Breitling K et al. Long-Term Follow-Up of High-Risk Breast Lesions at Vacuum-Assisted Biopsy without Subsequent Surgical Resection. *Breast Care (Basel)*. 2024 Feb;19(1):62-72



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

Guidelines Breast  
Version 2025.1D

www.ago-online.de

FORSCHEN  
LEHREN  
HEILEN

## Lobular Intraepithelial Neoplasia (LIN, LN)

### Definitions:

- **Atypical lobular hyperplasia = less than 50% atypical lobular cells = B3**
- **Classical lobular carcinoma in situ (classical LCIS) = B3**  
ipsi- and contralaterally increased breast cancer risk:  
7fold after 10 years
- **Non-classical lobular carcinoma in situ (non-classical LCIS): pleomorphic LCIS and florid LCIS (LIN3 according to older terminology)**  
elevated local risk → potentially B5a
- **Subclassification into LIN 1-3 is not sufficiently validated prognostically and has been abandoned**

1. Calhoun BC, Collins LC. Recommendations for excision following core needle biopsy of the breast: a contemporary evaluation of the literature. *Histopathology*. 2016 Jan;68(1):138-51.
2. Pravettoni G, Yoder WR, Riva S et al. Eliminating "ductal carcinoma in situ" and "lobular carcinoma in situ" (DCIS and LCIS) terminology in clinical breast practice: The cognitive psychology point of view. *Breast*. 2016 Feb;25:82-5.
3. Ginter PS, D'Alfonso TM. Current Concepts in Diagnosis, Molecular Features, and Management of Lobular Carcinoma In Situ of the Breast With a Discussion of Morphologic Variants. *Arch Pathol Lab Med*. 2017 Dec;141(12):1668-1678.
4. Wen HY, Brogi E. Lobular Carcinoma In Situ. *Surg Pathol Clin*. 2018 Mar;11(1):123-145.
5. Pinder, S. E., Shaaban, A. M. In situ lobular proliferations of the breast. *Diagnostic Histopathology 2018*: 24 (2), 58–63
6. Singh, K., Sung, C. J. & Quddus, M. R. Descriptive study comparing outcomes of classic and nonclassic lobular carcinoma in situ (florid and pleomorphic) initially diagnosed on core needle biopsy. *Breast J 2020*: **26**, 2350–2356.
7. Calle C, Kuba MG, Brogi E. Non-invasive lobular neoplasia of the breast: Morphologic features, clinical presentation, and management dilemmas. *Breast J*. 2020 Jun;26(6):1148-1155.
8. Schnitt SJ, Brogi E, Chen YY et al. American Registry of Pathology Expert Opinions: The Spectrum of Lobular Carcinoma in Situ: Diagnostic Features and Clinical Implications. *Ann Diagn Pathol*. 2020 Apr;45:151481.
9. Brogi E. The morphologic spectrum of lobular carcinoma in situ (LCIS) observations on clinical significance, management implications and diagnostic pitfalls of classic, florid and pleomorphic LCIS. *Virchows Arch*. 2022 Dec;481(6):823-837.



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

Guidelines Breast  
Version 2025.1D

www.ago-online.de

FORSCHEN  
LEHREN  
HEILEN

## Upgrade Rates\* for B3 Lesions

\* i.e., upgrade to malignant diagnosis when excised

Risk lesion	Upgrade rate to in situ or invasive Ca	References
Atypical lobular hyperplasia (ALH)	5%	[1]
Classical LCIS	4-16%	[1-3]
Non-classical LCIS (pleomorphic LCIS, florid LCIS)	33-44%	[3, 4; 17]
Atypical ductal hyperplasia (ADH)	23-36%	[1, 16]
Flat epithelial atypia (FEA)	0-14%	[5, 6]
Papilloma	12-19%	[7, 16]
- no atypia	6-10%	[7, 8, 10, 11]
- atypia	21-29%	[8, 9]
Radial scar or complex sclerosing lesion	7-11%	[12-16]
- no atypia	5%	[14]
- atypia	25%	[15]

### B3-Lesions.

Stewen K et al.: Benigne und präinvasive Läsion der Brust. Frauenheilkunde up2date 2019; 13: 423-439.

1. Lewin AA, Mercado CL. Atypical Ductal Hyperplasia and Lobular Neoplasia: Update and Easing of Guidelines. AJR Am J Roentgenol. 2020;214(2):265-75.
2. Singh K, Sung CJ, Quddus MR. Descriptive study comparing outcomes of classic and nonclassic lobular carcinoma in situ (florid and pleomorphic) initially diagnosed on core needle biopsy. Breast J. 2020;26(12):2350-6.
3. Shamir ER, Chen YY, Chu T et al. Pleomorphic and Florid Lobular Carcinoma In Situ Variants of the Breast: A Clinicopathologic Study of 85 Cases With and Without Invasive Carcinoma From a Single Academic Center. Am J Surg Pathol. 2019;43(3):399-408.
4. Schnitt SJ, Brogi E, Chen YY et al. American Registry of Pathology Expert Opinions: The Spectrum of Lobular Carcinoma in Situ: Diagnostic Features and Clinical Implications. Ann Diagn Pathol. 2020;45:151481.
5. Wahab RA, Lee SJ, Mulligan ME et al. Upgrade Rate of Pure Flat Epithelial Atypia Diagnosed at Core Needle Biopsy: A Systematic Review and Meta-Analysis. Radiol Imaging Cancer. 2021;3(1):e200116.
6. Calhoun BC, Sobel A, White RL et al. Management of flat epithelial atypia on breast core biopsy may be individualized based on correlation with imaging studies. Mod Pathol. 2015;28(5):670-6.
7. MacColl C, Salehi A, Parpia S et al. Benign breast papillary lesions diagnosed on core biopsy: upgrade rate and risk factors associated

with malignancy on surgical excision. *Virchows Arch.* 2019;475(6):701-7.

8. Khan S, Diaz A, Archer KJ et al. Papillary lesions of the breast: To excise or observe? *Breast J.* 2018;24(3):350-5.
9. Nakhliis F, Ahmadiyah N, Lester S et al. Papilloma on core biopsy: excision vs. observation. *Ann Surg Oncol.* 2015;22(5):1479-82.
10. Brogi, E. & Krystel-Whittemore, M. Papillary neoplasms of the breast including upgrade rates and management of intraductal papilloma without atypia diagnosed at core needle biopsy. *Modern Pathol* 2021: **34**,78–93.
11. Nakhliis, F. et al. The Incidence of Adjacent Synchronous Invasive Carcinoma and/or Ductal Carcinoma In Situ in Patients with Intraductal Papilloma without Atypia on Core Biopsy: Results from a Prospective Multi-Institutional Registry (TBCRC 034). *Ann Surg Oncol* 2021: **28**, 2573–2578.
12. Douglas-Jones AG, Denson JL, Cox AC et al. Radial scar lesions of the breast diagnosed by needle core biopsy: analysis of cases containing occult malignancy. *J Clin Pathol.* 2007;60(3):295-8.
13. Liu RQ, Chen L, Padilla-Thornton A et al. Upstage rate of radial scar/complex sclerosing lesion identified on core needle biopsy. *Am J Surg.* 2021;221(6):1177-81.
14. Farshid G, Buckley E. Meta-analysis of upgrade rates in 3163 radial scars excised after needle core biopsy diagnosis. *Breast Cancer Res Treat.* 2019;174(1):165-77
15. Rakha E, Beca F, D'Andrea M et al. Outcome of radial scar/complex sclerosing lesion associated with epithelial proliferations with atypia diagnosed on breast core biopsy: results from a multicentric UK-based study. *J Clin Pathol.* 2019;72(12):800-4.
16. Chou R et al. Outcomes of atypical (B3) core biopsy lesions diagnosed across BreastScreen NSW, Australia. *Breast.* 2024 Jun;75:103720
17. Harinath L et al. Upgrade Rates of Variant Lobular Carcinoma In Situ Compared to Classic Lobular Carcinoma In Situ Diagnosed in Core Needle Biopsies: A 10-Year Single Institution Retrospective Study. *Mod Pathol.* 2024 Apr;37(4):100462.

## Strategie nach Diagnose einer LIN / eines LCIS

	Oxford		
	LoE	GR	AGO
<b>LIN / LCIS in Stanz- / Vakuumbiopsie</b> <ul style="list-style-type: none"> <li>Keine weitere Abklärung bei isoliertem oder inzidentellem Befund einer LIN (klassisches LCIS) mit Befall von ≤ 3 TDLU (terminale duktulolobuläre Einheit) in Vakuumbiopsie und Konkordanz mit der Bildgebung.</li> <li>Offene Exzisionsbiopsie bei pleomorpher LIN / LCIS, florider LIN / LCIS, LIN / LCIS mit Komedotypnekrosen, oder wenn Befund nach Korrelation mit der Bildgebung diskordant ist.</li> </ul>	2b	C	++
<b>LIN / LCIS am Resektionsrand von BET</b> <ul style="list-style-type: none"> <li>Keine Nachresektion.</li> </ul>	2a	C	++
<b>Ausnahmen</b> <ul style="list-style-type: none"> <li>a) Pleomorphe, floride oder LIN / LCIS mit Nekrosen</li> <li>b) Bildgebende Veränderung wurde nicht entfernt</li> </ul>			

### LIN in core- / vacuum-assisted biopsy (LoE 2b)

- Kunjummen, J., Rodriguez, K., Newell, M. S. et al. Management of Lobular Neoplasia Found on Core Needle Biopsy Performed for Calcifications Using Precise Radiologic-Pathologic Correlation. AJR Am J Roentgenol. 2021 Jun;216(6):1476-1485.
- Lewin AA, Mercado CL. Atypical Ductal Hyperplasia and Lobular Neoplasia: Update and Easing of Guidelines. AJR Am J Roentgenol. 2020 Feb;214(2):265-275.
- Boland PA, Dunne EC, Kovanaitė A et al. Lobular intraepithelial neoplasia: Outcomes and optimal management. Breast J. 2020 Dec;26(12):2383-2390.
- Hoffman DI, Zhang PJ, Tchou J. Breast-conserving surgery for pure non-classic lobular carcinoma in situ: A single institution's experience. Surg Oncol. 2019 Mar;28:190-194.
- Schmidt H, Arditi B, Wooster M et al. Observation versus excision of lobular neoplasia on core needle biopsy of the breast. Breast Cancer Res Treat. 2018 Apr;168(3):649-654.
- Taylor LJ, Steiman J, Schumacher JR et al. Surgical Management of Lobular Carcinoma In Situ: Analysis of the National Cancer Database. Ann Surg Oncol. 2018 Aug;25(8):2229-2234.
- El Khoury M, Sanchez LM, Lalonde L et al. Is the outcome at surgery different when flat epithelial atypia and lobular neoplasia are found in association at biopsy? Br J Radiol. 2017 Apr;90(1072):20160750.
- Racz JM, Carter JM, Degnim AC. Lobular Neoplasia and Atypical Ductal Hyperplasia on Core Biopsy: Current Surgical Management

Recommendations. Ann Surg Oncol. 2017 Oct;24(10):2848-2854.

9. Obeng-Gyasi S, Ong C, Hwang ES. Contemporary management of ductal carcinoma in situ and lobular carcinoma in situ. Chin Clin Oncol. 2016 Jun;5(3):32
10. Sen LQ, Berg WA, Hooley RJ et al. Core Breast Biopsies Showing Lobular Carcinoma In Situ Should Be Excised and Surveillance Is Reasonable for Atypical Lobular Hyperplasia. AJR Am J Roentgenol. 2016 Nov;207(5):1132-1145.
11. Khoury T, Kumar PR, Li Z et al. Lobular neoplasia detected in MRI-guided core biopsy carries a high risk for upgrade: a study of 63 cases from four different institutions. Mod Pathol. 2016 Jan;29(1):25-33.
12. Calhoun BC, Collie AM, Lott-Limbach AA et al. Lobular neoplasia diagnosed on breast Core biopsy: frequency of carcinoma on excision and implications for management. Ann Diagn Pathol. 2016 Dec;25:20-25.
13. Renshaw AA, Gould EW. Long term clinical follow-up of atypical ductal hyperplasia and lobular carcinoma in situ in breast core needle biopsies. Pathology. 2016 Jan;48(1):25-9.
14. Calhoun BC, Collins LC. Recommendations for excision following core needle biopsy of the breast: a contemporary evaluation of the literature. Histopathology. 2016 Jan;68(1):138-51.

LIN accompanying intraductal or invasive carcinoma in patients with BCT (LoE 2a)

1. Ciocca R: Presence of lobular carcinoma in situ does not increase recurrence in patients treated with breast-conserving therapy. Ann Surg Oncol 2008; 15:2263-2271

## Strategie nach Diagnose einer FEA


	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ FEA in Stanz- / Vakuumbiopsie:           <ul style="list-style-type: none"> <li>▪ Offene Exzisionsbiopsie</li> <li>▪ Auf offene Biopsie kann verzichtet werden unter folgenden Voraussetzungen:               <ul style="list-style-type: none"> <li>a. Kleinherdiger Befund (<math>\leq 2</math> TDLU* in Vakuumbiopsie) <u>und</u></li> <li>b. Entfernung oder weitgehend vollständige Entfernung der auffälligen Läsion in der Bildgebung (<math>\geq 90</math> %)</li> </ul> </li> </ul> </li> <li>▪ FEA im Resektionsrand nach Exzisionsbiopsie:           <ul style="list-style-type: none"> <li>▪ Keine Nachresektion, außer bei verbliebenem mammographischem Korrelat</li> </ul> </li> </ul>	2b	B	+
	2b	B	+
	3b	C	++

\* TDLU = terminale duktulolobuläre Einheit

1. Calhoun BC, Sobel A, White RL et al. Management of flat epithelial atypia on breast core biopsy may be individualized based on correlation with imaging studies. *Mod Pathol.* 2015 May;28(5):670-6.
2. Acott AA, Mancino AT. Flat epithelial atypia on core needle biopsy, must we surgically excise? *Am J Surg.* 2016 Dec;212(6):1211-1213.
3. Berry JS, Trappey AF, Vreeland TJ et al. Analysis of Clinical and Pathologic Factors of Pure, Flat Epithelial Atypia on Core Needle Biopsy to Aid in the Decision of Excision or Observation. *J Cancer.* 2016 Jan 1;7(1):1-6.
4. Samples LS, Rendi MH, Frederick PD et al. Surgical implications and variability in the use of the flat epithelial atypia diagnosis on breast biopsy specimens. *Breast.* 2017 Aug;34:34-43.
5. El Khoury M, Sanchez LM, Lalonde L et al. Is the outcome at surgery different when flat epithelial atypia and lobular neoplasia are found in association at biopsy? *Br J Radiol.* 2017 Apr;90(1072):20160750.
6. Chan PMY, Chotai N, Lai ES et al. Majority of flat epithelial atypia diagnosed on biopsy do not require surgical excision. *Breast.* 2018 Feb;37:13-17. Schiaffino, S. *et al.* Flat epithelial atypia: conservative management of patients without residual microcalcifications post-vacuum-assisted breast biopsy. *Br J Radiology* **91**, 20170484 (2018).
7. McCroskey Z, Sneige N, Herman CR et al. Flat epithelial atypia in directional vacuum-assisted biopsy of breast microcalcifications: surgical excision may not be necessary. *Mod Pathol.* 2018 Jul;31(7):1097-1106.
8. Elfgen C, Leo C, Kubik-Huch RA et al. Third International Consensus Conference on lesions of uncertain malignant potential in the

breast (B3 lesions). *Virchows Arch.* 2023 Jul;483(1):5-20.

9. Alencherry E, Goel R, Gore S et al. Clinical, imaging, and intervention factors associated with the upgrade of isolated flat epithelial atypia. *Clin Imaging.* 2019 Mar-Apr;54:21-24.
10. Liu C, Dingee CK, Warburton R et al. Pure flat epithelial atypia identified on core needle biopsy does not require excision. *Eur J Surg Oncol.* 2020 Feb;46(2):235-239.
11. Srour MK, Donovan C, Chung A et al. Flat epithelial atypia on core needle biopsy does not always mandate excisional biopsy. *Breast J.* 2020 Apr;26(4):679-684.
12. Grabenstetter A, Brennan S, Salagean ED et al. Flat Epithelial Atypia in Breast Core Needle Biopsies With Radiologic-Pathologic Concordance: Is Excision Necessary? *Am J Surg Pathol.* 2020 Feb;44(2):182-190.
13. Wahab RA, Lee SJ, Mulligan ME et al. Upgrade Rate of Pure Flat Epithelial Atypia Diagnosed at Core Needle Biopsy: A Systematic Review and Meta-Analysis. *Radiol Imaging Cancer.* 2021 Jan 22;3(1):e200116.
14. Ferre R, Kuzmiak CM. Flat epithelial atypia: What the radiologist needs to know in 2021. *Clin Imaging.* 2021 Jul;75:150-156.



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

Guidelines Breast  
Version 2025.1D

www.ago-online.de

FORSCHEN  
LEHREN  
HEILEN

## Papilloma

---

- **Includes:** Central and peripheral papilloma > 2 mm, atypical intraductal papilloma (B3)
- To be **distinguished from** peripheral micropapilloma arising in the TDLU, size ≤ 2 mm, may be multiple
- To be distinguished from papilloma with DCIS, from intraductal papillary carcinoma, and from encapsulated papillary carcinoma
- **Precursor lesion:**  
May be associated with in-situ or invasive cancer (up to 6% without atypia if concordant imaging, up to 30% with atypia), increased ipsilateral risk for cancer (up to 4.6% and up to 13% in case of atypical papilloma).

1. Ni Y, Tse GM. Papillary lesions of the breast - review and practical issues. Semin Diagn Pathol. 2022 Sep;39(5):344-354.
2. World Health Organization: WHO Classification of Tumours of the Breast. Lokuhetty D, White VA, Watanabe R, Cree IA (Hrsg.) 2019.
3. Rakha EA, Ellis IO. Diagnostic challenges in papillary lesions of the breast. Pathology. 2018;50(1):100-110.
4. Racz JM, Carter JM, Degnim AC. Challenging Atypical Breast Lesions Including Flat Epithelial Atypia, Radial Scar, and Intraductal Papilloma. Ann Surg Oncol. 2017;24(10):2842-2847.
5. Agoumi M, Giambattista J, Hayes MM. Practical Considerations in Breast Papillary Lesions: A Review of the Literature. Arch Pathol Lab Med. 2016;140(8):770-790
6. Saladin C, Haueisen H, Kampmann G, et al. Lesions with unclear malignant potential (B3) after minimally invasive breast biopsy: evaluation of vacuum biopsies performed in Switzerland and recommended further management. Acta Radiol. 2016;57(7):815-821.
7. Ni Y-B, Tse GM. Pathological criteria and practical issues in papillary lesions of the breast - a review. Histopathology. 2016;68(1):22-32.
8. Länger F, Hille-Baetz U, Kreipe H-H. Papilläre Läsionen der Mamma. Der Pathologe. 2014;35(1):36-44.

## Vorgehen nach Diagnose eines Papilloms

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>Solitäres Papillom ohne Atypien in Stanz- / Vakuumbiopsie</b> <ul style="list-style-type: none"> <li>▪ Keine weiteren Maßnahmen, wenn Biopsie ausreichend repräsentativ und keine Diskordanz zur Bildgebung</li> </ul> </li> </ul>	2b	C	+
<ul style="list-style-type: none"> <li>▪ <b>Multiple Papillome (&gt; 2 mm)</b> <ul style="list-style-type: none"> <li>▪ Offene Biopsie</li> </ul> </li> </ul>	3a	C	++
<ul style="list-style-type: none"> <li>▪ <b>Atypisches Papillom in Stanz- / Vakuumbiopsie</b> <ul style="list-style-type: none"> <li>▪ Offene Biopsie</li> </ul> </li> </ul>	3a	C	++
<ul style="list-style-type: none"> <li>▪ <b>Papillom am Rand von Resektaten</b> <ul style="list-style-type: none"> <li>▪ Keine verfügbaren Daten</li> </ul> </li> </ul>			

1. Jee Y, Bakht A, Burner JM, Coldren DL et al. Intraductal Papilloma on Breast Biopsy: Upstaging Rate and Implications for Practice Guidelines. *Am Surg.* 2022 Jul;88(7):1467-1470.
2. Corbin H, Bomeisl P, Amin AL et al. Upgrade rates of intraductal papilloma with and without atypia diagnosed on core needle biopsy and clinicopathologic predictors. *Hum Pathol.* 2022 Oct;128:90-100.
3. Brogi E, Krystel-Whittemore M. Papillary neoplasms of the breast including upgrade rates and management of intraductal papilloma without atypia diagnosed at core needle biopsy. *Mod Pathol.* 2021 Jan;34(Suppl 1):78-93.
4. Nakhli F, Baker GM, Pilewskie M et al. The Incidence of Adjacent Synchronous Invasive Carcinoma and/or Ductal Carcinoma In Situ in Patients with Intraductal Papilloma without Atypia on Core Biopsy: Results from a Prospective Multi-Institutional Registry (TBCRC 034). *Ann Surg Oncol.* 2021 May;28(5):2573-2578.
5. Lin LH, Ozerdem U, Cotzia P et al. Upgrade rate of intraductal papilloma diagnosed on core needle biopsy in a single institution. *Hum Pathol.* 2021 Apr;110:43-49.
6. Li X, Wang H, Sun Z, Fan C et al. A retrospective observational study of intraductal breast papilloma and its coexisting lesions: A real-world experience. *Cancer Med.* 2020 Oct;9(20):7751-7762.
7. Ma Z, Arciero CA, Styblo TM et al. Patients with benign papilloma diagnosed on core biopsies and concordant pathology-radiology findings can be followed: experiences from multi-specialty high-risk breast lesion conferences in an academic center. *Breast Cancer Res Treat.* 2020 Oct;183(3):577-584.

8. Genco IS, Tugertimur B, Manolas PA et al. Upgrade rate of intraductal papilloma without atypia on breast core needle biopsy: A clinical, radiological and pathological correlation study. *Am J Surg.* 2020 Sep;220(3):677-681.
9. MacColl C, Salehi A, Parpia S et al. Benign breast papillary lesions diagnosed on core biopsy: upgrade rate and risk factors associated with malignancy on surgical excision. *Virchows Arch.* 2019 Dec;475(6):701-707.
10. Choi HY, Kim SM, Jang M et al. Benign Breast Papilloma without Atypia: Outcomes of Surgical Excision versus US-guided Directional Vacuum-assisted Removal or US Follow-up. *Radiology.* 2019 Oct;293(1):72-80.
11. Qiu L, Mais DD, Nicolas M et al. Diagnosis of Papillary Breast Lesions on Core Needle Biopsy: Upgrade Rates and Interobserver Variability. *Int J Surg Pathol.* 2019 Oct;27(7):736-743.
12. Chen YA, Mack JA, Karamchandani DM et al. Excision recommended in high-risk patients: Revisiting the diagnosis of papilloma on core biopsy in the context of patient risk. *Breast J.* 2019 Mar;25(2):232-236.
13. Liu C, Sidhu R, Ostry A et al. Risk of malignancy in papillary neoplasms of the breast. *Breast Cancer Res Treat.* 2019 Nov;178(1):87-94.
14. Kiran S, Jeong YJ, Nelson ME et al. Are we overtreating intraductal papillomas? *J Surg Res.* 2018 Nov;231:387-394.

## Radial Sclerosing Lesion

- **Benign pseudoinfiltrative lesion with central fibroelastic core and radial configuration.**
- **Includes:**
  - radial scar (usually  $\leq 1$  cm)
  - complex sclerosing lesion ( $> 1$  cm)
- **Additional risk factor in patients with benign epithelial hyperplasia (proliferating breast disease)**
- **Risk for upgrade in open biopsy after diagnosis of a radial sclerosing lesion, depending on the size of the needle (CNB) or method (VAB) and additional atypia: 1-18%**

## Vorgehen bei radiärer Narbe, komplexer sklerosierender Läsion (CSL)

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>Radiäre Narbe / CSL in Stanz- oder Vakuumbiopsie:</b> <ul style="list-style-type: none"> <li>▪ <b>Offene Biopsie</b> <ul style="list-style-type: none"> <li>▪ ohne Atypien</li> <li>▪ mit Atypien</li> </ul> </li> <li>▪ <b>Verzicht auf offene Biopsie, wenn Läsion klein (<math>\leq 5</math> mm) oder in der Vakuumbiopsie bereits (weitgehend) vollständig enthalten</b></li> </ul> </li> <li>▪ <b>Radiäre Narbe / CSL im Resektionsrand nach offener Exzision:</b> <ul style="list-style-type: none"> <li>▪ Keine Nachresektion</li> </ul> </li> </ul>	3a	C	+
	3a	C	+
	3a	C	++
	4	C	+
	3b	C	++

1. Donaldson AR, Sieck L, Booth CN et al. Radial scars diagnosed on breast core biopsy: Frequency of atypia and carcinoma on excision and implications for management. *Breast*. 2016 Dec;30:201-207.
2. Leong RY, Kohli MK, Zeizafoun N et al. Radial Scar at Percutaneous Breast Biopsy That Does Not Require Surgery. *J Am Coll Surg*. 2016 Nov;223(5):712-716.
3. Li Z, Ranade A, Zhao C. Pathologic findings of follow-up surgical excision for radial scar on breast core needle biopsy. *Hum Pathol*. 2016 Feb;48:76-80.
4. Kalife ET, Lourenco AP, Baird GL, Wang Y. Clinical and Radiologic Follow-up Study for Biopsy Diagnosis of Radial Scar/Radial Sclerosing Lesion without Other Atypia. *Breast J*. 2016 Nov;22(6):637-644.
5. Cohen MA, Newell MS. Radial Scars of the Breast Encountered at Core Biopsy: Review of Histologic, Imaging, and Management Considerations. *AJR Am J Roentgenol*. 2017 Nov;209(5):1168-1177.
6. Ferreira AI, Borges S, Sousa A et al. Radial scar of the breast: Is it possible to avoid surgery? *Eur J Surg Oncol*. 2017 Jul;43(7):1265-1272.
7. Racz JM, Carter JM, Degnim AC. Challenging Atypical Breast Lesions Including Flat Epithelial Atypia, Radial Scar, and Intraductal Papilloma. *Ann Surg Oncol*. 2017 Oct;24(10):2842-2847.
8. Chou WYY, Veis DJ, Aft R. Radial scar on image-guided breast biopsy: is surgical excision necessary? *Breast Cancer Res Treat*. 2018 Jul;170(2):313-320

9. Salemis NS, Katikaridis I, Birpanagos C et al. Complex radial sclerosing lesion of the breast-A great cancer mimicker. *Breast J.* 2018 May;24(3):408-410.
10. Rakha E, Beca F, D'Andrea M et al. Outcome of radial scar/complex sclerosing lesion associated with epithelial proliferations with atypia diagnosed on breast core biopsy: results from a multicentric UK-based study. *J Clin Pathol.* 2019 Dec;72(12):800-804.
11. Eghtedari M, Le-Petross H, Babiera GV et al. Not all patients with a diagnosis of a radial scar require excision. *Breast J.* 2019 Jul;25(4):792-794.
12. Farshid G, Buckley E. Meta-analysis of upgrade rates in 3163 radial scars excised after needle core biopsy diagnosis. *Breast Cancer Res Treat.* 2019 Feb;174(1):165-177.
13. Gašljević G, Hertl K, Gazić B et al. Reducing indications for radial scar surgical excision in Slovenian breast cancer screening program. *Ann Diagn Pathol.* 2020 Apr;45:151438.
14. Woodward SG, Nimitz K, Hookim K et al. Is radial scar on core needle biopsy a risk factor for malignancy? A single-center retrospective review and implications for management. *Breast J.* 2020 Oct;26(10):2011-2014.
15. Liu RQ, Chen L, Padilla-Thornton A et al. Upstage rate of radial scar/complex sclerosing lesion identified on core needle biopsy. *Am J Surg.* 2021 Jun;221(6):1177-1181.
16. Trombadori CML, D'Angelo A, Ferrara F et al. Radial Scar: a management dilemma. *Radiol Med.* 2021 Jun;126(6):774-785.
17. Alsharif S, Aldis A, Subahi A et al. Breast MRI Does Not Help Differentiating Radial Scar With and Without Associated Atypia or Malignancy. *Can Assoc Radiol J.* 2021 Nov;72(4):759-766.
18. Zanon ABB, Maesaka JY, Chequin BB et al. Underestimation Rate in the Percutaneous Diagnosis of Radial Scar/Complex Sclerosing Lesion of the Breast: Systematic Review. *Rev Bras Ginecol Obstet.* 2022 Jan;44(1):67-73.
19. Elfgen C, Varga Z, Breitling K et al. Long-Term Follow-Up of High-Risk Breast Lesions at Vacuum-Assisted Biopsy without Subsequent Surgical Resection. *Breast Care (Basel).* 2024 Feb;19(1):62-72

## Brustkrebs-Früherkennung: Follow-up nach B3-Läsionen für Frauen im Alter zwischen 50 und 75 Jahren

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> <li>▪ <b>FEA, Papillom ohne Atypien, Radiäre Narbe, komplexe sklerosierende Läsion</b> <ul style="list-style-type: none"> <li>▪ Screening-Mammographie</li> </ul> </li> </ul>	5	C	++
<ul style="list-style-type: none"> <li>▪ <b>LIN / LCIS</b> <ul style="list-style-type: none"> <li>▪ Kurative Mammographie (12 Monate)</li> </ul> </li> </ul>	3a	C	++
<ul style="list-style-type: none"> <li>▪ <b>ADH</b> <ul style="list-style-type: none"> <li>▪ Kurative Mammographie (12 Monate)</li> </ul> </li> </ul>	3a	C	++
<b>Frauen mit LIN / LCIS und ADH sind über ihr persönlich erhöhtes Brustkrebsrisiko zu informieren</b>	3a	C	++

1. Whiffen A: Predictors of Breast Cancer Development in Women with Atypical Ductal Hyperplasia and Atypical Lobular Hyperplasia. Ann Surg Oncol. 2010 Sep 28. [Epub ahead of print]
2. Weir R: Risk factors for breast cancer in women:a systematic review of the literature. Christchurch: New Zealand Health Technology Assessment (NZHTA); 2007.
3. Chuba PJ: Bilateral Risk for Subsequent Breast Cancer After Lobular Carcinoma-In-Situ: Analysis of Surveillance, Epidemiology, and End Results Data. Journal of Clinical Oncology 2005; 23(24):5534-5541
4. Degnim A: Stratification of breast cancer risk in women with atypia: A Mayo Cohort Study. JCO 2007; 25(19):2671-2677.
5. Youk J: Sonographically guided 14-gauge core needle biopsy of breast mass: A review of 2.420 cases with long-term follow-up. AJR 2007; 190:202-207
6. O'Connor A: Decision aids for people facing health treatment or screening decisions (Review). The Cochrane Library 2009;(4):1-35
7. NCCN, National Comprehensive Cancer Network: Breast cancer screening and diagnosis Version 1.2022; June 2, 2022. USA, www.nccn.org
8. Rubio IT, Wyld L, Marotti L et al. European guidelines for the diagnosis, treatment and follow-up of breast lesions with uncertain malignant potential (B3 lesions) developed jointly by EUSOMA, EUSOBI, ESP (BWG) and ESSO. Eur J Surg Oncol. 2024 Jan;50(1):107292.
9. <https://www.g-ba.de/themen/methodenbewertung/erwachsene/krebsfrueherkennung/mammographie-screening-ausweitung/>

## Medikamentöse Prävention bei erhöhtem Risiko für ein DCIS oder invasives Karzinom

	Oxford		
	LoE	GR	AGO
▪ Tamoxifen 20 mg/d (5 Jahre) für Frauen $\geq$ 35 Jahre	1a	A	+/-
▪ Low-dose Tamoxifen 5 mg/d* (3 Jahre) unabh. vom Menopausenstatus	1b	B	+/-
▪ Aromataseinhibitor (Exemestan, Anastrozol) für postmenopausale Frauen	1a	A	+/-
▪ Raloxifen für postmenopausale Frauen – Reduktion nur von invasivem Karzinom	1a	A	+/-**

Eine präventive Medikamentenbehandlung sollte nur nach ausführlicher individueller Beratung angeboten werden. Der Netto-Benefit ist stark abhängig vom Risikostatus, Lebensalter und vorbestehenden Risiken für Nebenwirkungen.

\* 5 mg Tabl. nicht verfügbar; alternativ 10 mg alle 2 Tage p.o.

\*\* Risiko definiert wie in der NSABP P1-Studie (1,66 % in 5 Jahren) oder nach #Tyrer-Cuzick-Modell (IBIS-II).

1. Fisher B, Costantino JP, Wickerham DL et al. Tamoxifen for the prevention of breast cancer: current status of the National Surgical Adjuvant Breast and Bowel Project P-1 study. *J Natl Cancer Inst.* 2005 Nov 16;97(22):1652-62.
2. Cuzick J, Forbes JF, Sestak I et al. International Breast Cancer Intervention Study I Investigators. Long-term results of tamoxifen prophylaxis for breast cancer--96-month follow-up of the randomized IBIS-I trial. *J Natl Cancer Inst.* 2007 Feb 21;99(4):272-82.
3. Goss PE, Ingle JN, Alés-Martínez JE et al.: Exemestane for breast-cancer prevention in postmenopausal women. *N Engl J Med.* 2011 Jun 23;364(25):2381-91.
4. Maunsell E, Goss PE, Chlebowski RT et al.: Quality of life in MAP.3 (Mammary Prevention 3): a randomized, placebo-controlled trial evaluating exemestane for prevention of breast cancer. *J Clin Oncol.* 2014 May 10;32(14):1427-36.
5. Cuzick J, Sestak I, Forbes JF et al. Anastrozole for prevention of breast cancer in high-risk postmenopausal women (IBIS-II): an international, double-blind, randomised placebo-controlled trial *Lancet* 2014; 383: 1041–48
6. DeCensi A, Puntoni M, Guerrieri-Gonzaga A et al.: Randomized Placebo Controlled Trial of Low-Dose Tamoxifen to Prevent Local and Contralateral Recurrence in Breast Intraepithelial Neoplasia. *J Clin Oncol.* 2019 Jul 1;37(19):1629-1637.
7. US Preventive Services Task Force; Owens DK, Davidson KW, Krist AH et al. Medication Use to Reduce Risk of Breast Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2019 Sep 3;322(9):857-867.
8. Nelson HD, Fu R, Zakher B et al. Medication Use for the Risk Reduction of Primary Breast Cancer in Women: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA.* 2019 Sep 3;322(9):868-886.

9. Lazzeroni M, Puntoni M, Provinciali N et al.:Estimating the magnitude of clinical benefit of systemic therapy in patients with DCIS or pre-invasive disease of the breast. *Breast*. 2019 Nov;48 Suppl 1:S39-S43.
- 10.Flanagan MR, Zabor EC, Stempel M et al. Chemoprevention Uptake for Breast Cancer Risk Reduction Varies by Risk Factor. *Ann Surg Oncol*. 2019 Jul;26(7):2127-2135.
- 11.Marmor S, Jerome-D'Emilia B, Begun JW et al. Trends in lobular carcinoma in situ management: endocrine therapy use in California and New Jersey. *Cancer Causes Control*. 2019 Feb;30(2):129-136.
- 12.Narod SA. Tamoxifen Chemoprevention--End of the Road? *JAMA Oncol*. 2015 Nov;1(8):1033-4.
- 13.Lewin AA, Mercado CL. Atypical Ductal Hyperplasia and Lobular Neoplasia: Update and Easing of Guidelines. *AJR Am J Roentgenol*. 2020; 214:265-275
- 14.Visvanathan K, Fabian CJ, Bantug E, et al. Use of Endocrine Therapy for Breast Cancer Risk Reduction: ASCO Clinical Practice Guideline Update. *J Clin Oncol* 2019; 37: 3152-3165
- 15.Lazzeroni M, Puntoni M, Guerrieri-Gonzaga A et al. Randomized Placebo Controlled Trial of Low-Dose Tamoxifen to Prevent Recurrence in Breast Noninvasive Neoplasia: A 10-Year Follow-Up of TAM-01 Study. *J Clin Oncol*. 2023 Jun 10;41(17):3116-3121.