Brustrekonstruktion nach Mammakarzinom

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1. Robert-Koch-Institut. Zentrum für Krebsregisterdaten - Brustkrebs (Mammakarzinom). https://www.krebsdaten.de/Krebs/DE/Content/Krebsarten/Brustkrebs/brustkrebs_node.html
2. Gerber B, Marx M, Untch M, Faridi A (2015) Brustrekonstruktion nach Mammakarzinom. Dtsch Arztebl Int 112: 593–600
3. Cederna PS, Yates WR, Chang P, et al (1995) Postmastectomy reconstruction: comparative analysis of the psychosocial, functional, and cosmetic effects of transverse rectus abdominis musculocutaneous flap versus breast implant reconstruction. Ann Plast Surg 35: 458–468
4. Hu ES, Pusic AL, Waljee JF, et al (2009) Patient-reported aesthetic satisfaction with breast reconstruction during the long-term survivorship period. Plast Reconstr Surg 124: 1–8
5. Ng SK, Hare RM, Kuang RJ, et al (2016) Breast reconstruction post mastectomy: patient satisfaction and decision making. Ann Plast Surg 76: 640–644
6. Coroneos CJ, Selber JC, Offodile AC, et al (2019) US FDA breast implant postapproval studies: long-term outcomes in 99 993 patients. Ann Surg 269: 30–36
7. AWMF (2020) Interdisziplinäre S3-Leitlinie für die Früherkennung, Diagnostik, Therapie und Nachsorge des Mammakarzinoms. AWMF-Registernummer: 032-045OL
8. Blocksma R, Braley S (1965) The silicones in plastic surgery. Plast Reconstr Surg 35: 366–370
9. Rocco N, Rispoli C, Moja L, et al (2016) Different types of implants for reconstructive breast surgery. The Cochrane database of systematic reviews: Cd010895
10. Keech JA Jr, Creech BJ (1997) Anaplastic T-cell lymphoma in proximity to a saline-filled breast implant. Plast reconstr surg 100: 554–555
11. Marra A, Viale G, Pileri SA, et al (2020) Breast implant-associated anaplastic large cell lymphoma: A comprehensive review. Cancer Treat Rev 84: 101963
12. BfArM (2020) Möglicher Zusammenhang zwischen Brustimplantaten und der Entstehung eines anaplastischen großzelligen Lymphoms (ALCL). https://www.bfarm.de/SharedDocs/Risikoinformationen/Medizinprodukte/DE/Brustimplantate_ALCL_FDA.html
13. Eichler C, Schulz C, Vogt N, Warm M (2017) The use of acellular dermal matrices (ADM) in breast reconstruction: a review. Surg Technol Int 31: 53–60
14. Holmström H (1979) The free abdominoplasty flap and its use in breast reconstruction. An experimental study and clinical case report. Scand J Plast Reconstr Surg 13: 423–427
15. Thamm OC, Andree C (2018) Immediate versus delayed breast reconstruction: evolving concepts and evidence base. Clin Plast Surg 45: 119–127
16. Kelley BP, Ahmed R, Kidwell KM, et al (2014) A systematic review of morbidity associated with autologous breast reconstruction before and after exposure to radiotherapy: are current practices ideal? Ann Surg Oncol 21: 1732–1738
17. Nelson JA, Disa JJ (2017) Breast reconstruction and radiation therapy: an update. Plast Reconstr Surg 140: 60s–68s
18. Ludolph I, Horch RE, Harlander M, et al (2015) Is there a rationale for autologous breast reconstruction in older patients? A retrospective single center analysis of quality of life, complications and comorbidities after DIEP or ms-TRAM Flap using the BREAST-Q. Breast J 21: 588–595
19. Cai A, Suckau J, Arkudas A, et al (2019) Autologous breast reconstruction with transverse rectus abdominis musculocutaneous (TRAM) or deep inferior epigastric perforator (DIEP) flaps: an analysis of the 100 most cited articles. Med Sci Monit 25: 3520–3536
20. Andrades P, Fix RJ, Danilla S, et al (2008) Ischemic complications in pedicle, free, and muscle sparing transverse rectus abdominis myocutaneous flaps for breast reconstruction. Ann plast surg 60: 562–567
21. Hendricks DL, Wilkens TH, Witt PD (1994) Blood-flow contributions by the superior and inferior epigastric arterial systems in TRAM flaps, based on laser doppler flowmetry. J Reconstr Microsurg 10: 249–252; discussion 253–244
22. Taylor GI (2003) The angiosomes of the body and their supply to perforator flaps. Clin Plast Surg 30: 331–342
23. Seidenstuecker K, Legler U, Munder B, et al (2016) Myosonographic study of abdominal wall dynamics to assess donor site morbidity after microsurgical breast reconstruction with a DIEP or an ms-2 TRAM flap. J Plast Reconstr Aesthet Surg 69: 598–603
24. Nahabedian MY, Momen B, Galdino G, Manson PN (2002) Breast reconstruction with the free TRAM or DIEP flap: patient selection, choice of flap, and outcome. Plast Reconstr Surg 110: 466–475; discussion 476–467

25. Nahabedian MY, Tsangaris T, Momen B (2005) Breast reconstruction with the DIEP flap or the muscle-sparing (MS-2) free TRAM flap: is there a difference? Plast Reconstr Surg 115: 436–444; discussion 445–436
26. Chen CM, Halvorson EG, Disa JJ, et al (2007) Immediate postoperative complications in DIEP versus free/muscle-sparing TRAM flaps. Plast Reconstr Surg 120: 1477–1482
27. Nelson JA, Guo Y, Sonnad SS, et al (2010) A comparison between DIEP and muscle-sparing free TRAM flaps in breast reconstruction: a single surgeon's recent experience. Plast Reconstr Surg 126: 1428–1435
28. Damen TH, Morritt AN, Zhong T, et al (2013) Improving outcomes in microsurgical breast reconstruction: lessons learnt from 406 consecutive DIEP/TRAM flaps performed by a single surgeon. J Plast Reconstr Aesthet Surg 66: 1032–1038
29. Man LX, Selber JC, Serletti JM (2009) Abdominal wall following free TRAM or DIEP flap reconstruction: a meta-analysis and critical review. Plast Reconstr Surg 124: 752–764
30. Egeberg A, Rasmussen MK, Sørensen JA (2012) Comparing the donor-site morbidity using DIEP, SIEA or MS-TRAM flaps for breast reconstructive surgery: a meta-analysis. J Plast Reconstr Aesthet Surg 65: 1474–1480
31. Eisenhardt, SU, Momeni A, von Fritschen U, et al (2018) Brustrekonstruktion mit freien TRAM oder DIEP Lappen – Was ist zeitgemäßer Standard? Konsensuspapier der Deutschen Arbeitsgemeinschaft für Mikrochirurgie der peripheren Nerven und Gefäße. Handchir Mikrochir Plast Chir 50: 248–255
32. Steiner D, Horch RE, Ludolph I, et al (2020) Interdisciplinary treatment of breast cancer after mastectomy with autologous breast reconstruction using abdominal free flaps in a university teaching hospital – a standardized and safe procedure. Front Oncol 10: 177
33. Vollbach FH, Heitmann, CD, Fansa H (2016) An appraisal of internal mammary artery perforators as recipient vessels in microvascular breast reconstruction – an analysis of 515 consecutive cases. Plast Reconstr Surg Glob open 4: e1144
34. Lhuaire M, Hivelin M, Dramé M, et al (2017) Determining the best recipient vessel site for autologous microsurgical breast reconstruction with DIEP flaps: An anatomical study. J Plast Reconstr Aesthet Surg 70: 781–791
35. Chang EI, Chang EI, Soto-Miranda MA, et al (2013) Comprehensive analysis of donor-site morbidity in abdominally based free flap breast reconstruction. Plast Reconstr Surg 132: 1383–1391
36. Rozen WM, Ashton MW, Kiil BJ, et al (2008) Avoiding denervation of rectus abdominis in DIEP flap harvest II: an intraoperative assessment of the nerves to rectus. Plast Reconstr Surg 122: 1321–1325
37. Wormald JC, Wade RG, Figus A (2014) The increased risk of adverse outcomes in bilateral deep inferior epigastric artery perforator flap breast reconstruction compared to unilateral reconstruction: a systematic review and meta-analysis. J Plast Reconstr Aesthet Surg 67: 143–156
38. Munhoz AM, Pellarin L, Montag E, et al (2011) Superficial inferior epigastric artery (SIEA) free flap using perforator vessels as a recipient site: clinical implications in autologous breast reconstruction. Am J Surg 202: 612–617
39. Schmauss D, Beier JP, Eisenhardt SU, et al (2019) Der sichere Lappen – Präoperatives Gefäß-Mapping und intraoperative Perfusionsmessung zur Reduktion der lappenbedingten Morbidität. Konsensuspapier der Deutschsprachigen Arbeitsgemeinschaft für Mikrochirurgie der peripheren Nerven und Gefäße. Handchir Mikrochir Plast Chir 51: 410–417
40. Mijuskovic B, Tremp M, Heimer MM, et al (2019) Color Doppler ultrasound and computed tomographic angiography for perforator mapping in DIEP flap breast reconstruction revisited: a cohort study. J Plast Reconstr Aesthet Surg 72: 1632–1639
41. Wade RG, Watford J, Wormald JCR, et al (2018) Perforator mapping reduces the operative time of DIEP flap breast reconstruction: A systematic review and meta-analysis of preoperative ultrasound, computed tomography and magnetic resonance angiography. J Plast Reconstr Aesthet Surg 71: 468–477
42. Ludolph I, Arkudas A, Schmitz M, et al (2016) Cracking the perfusion code?: Laser-assisted Indocyanine Green angiography and combined laser Doppler spectrophotometry for intraoperative evaluation of tissue perfusion in autologous breast reconstruction with DIEP or ms-TRAM flaps. J Plast Reconstr Aesthet Surg 69: 1382–1388
43. Fansa H, Schirmer S, Warnecke IC, et al (2008) The transverse myocutaneous gracilis muscle flap: a fast and reliable method for breast reconstruction. Plast Reconstr Surg 122: 1326–1333
44. Schoeller T, Huemer GM, Wechselberger G (2008) The transverse musculocutaneous gracilis flap for breast reconstruction: guidelines for flap and patient selection. Plast Reconstr Surg 122: 29–38
45. Locke MB, Zhong T, Mureau MA, Hofer, SO (2012) Tug ‚O' war: challenges of transverse upper gracilis (TUG) myocutaneous free flap breast reconstruction. J Plast Reconstr Aesthet Surg 65: 1041–1050
46. Vega SJ, Sandeen SN, Bossert RP, et al (2009) Gracilis myocutaneous free flap in autologous breast reconstruction. Plast Reconstr Surg 124: 1400–1409
47. Deutinger M, Kuzbari R, Paternostro-Sluga T, et al (1995) Donor-site morbidity of the gracilis flap. Plast Reconstr Surg 95: 1240–1244
48. Buntic RF, Horton KM, Brooks D, Althubaiti GA (2011) Transverse upper gracilis flap as an alternative to abdominal tissue breast reconstruction: technique and modifications. Plast Reconstr Surg 128: 607e–613e
49. Allen RJ, Haddock NT, Ahn CY, Sadeghi A (2012) Breast reconstruction with the profunda artery perforator flap. Plast Reconstr Surg 129:16e-23e
50. Beier JP, Horch RE, Bach AD (2009) Breast reconstruction after breast-cancer surgery. N Engl J Med 360: 418–419; author reply 420–411
51. Godbout E, Farmer L, Bortoluzzi P, Caouette Laberge L (2013) Donor-site morbidity of the inferior gluteal artery perforator flap for breast reconstruction in teenagers. Can J Plast Surg 21: 19–22
52. Hill HL, Nahai, F, Vasconez LO (1978) The tensor fascia lata myocutaneous free flap. Plast Reconstr Surg 61: 517–522
53. Nahai F, Silverton JS, Hill HL, Vasconez LO (1978) The tensor fascia lata musculocutaneous flap. Ann Plast Surg: 372–379
54. Elliott LF, Beegle PH, Hartrampf, CR Jr (1990) The lateral transverse thigh free flap: an alternative for autogenous-tissue breast reconstruction. Plast Reconstr Surg 85: 169–178; discussion 179–181

55. Kind GM, Foster RD (2011) Breast reconstruction using the lateral femoral circumflex artery perforator flap. J Reconstr Microsurg 27: 427–432
56. Boehm D, Bergmeister K, Gazyakan E, et al (2018) Autologous breast reconstruction using a tensor fascia lata/anterior lateral thigh-freestyle flap after extensive electric burn: a case report. Ann Plast Surg 80: 503–506
57. Tuinder SMH, Beugels, J, Lataster A, et al (2018) The lateral thigh perforator flap for autologous breast reconstruction: a prospective analysis of 138 flaps. Plast Reconstr Surg 141: 257–268
58. Elliott LF, Hartrampf CR Jr (1998) The Rubens flap. The deep circumflex iliac artery flap. Clin Plast Surg 25: 283–291
59. Elzinga K, Buchel E (2018) The deep circumflex iliac artery perforator flap for breast reconstruction: un lambeau perforateur de l'artère iliaque circonflexe profonde pour la reconstruction mammaire. Plast Surg (Oakv) 26: 229–237
60. Momeni A, Kanchwala S (2018) Hybrid prepectoral breast reconstruction: a surgical approach that combines the benefits of autologous and implant-based reconstruction. Plast Reconstr Surg 142: 1109–1115
61. Bach AD, Morgenstern IH, Horch RE (2020) Secondary „hybrid reconstruction" concept with silicone implants after autologous breast reconstruction – is it safe and reasonable? Med Sci Monit 26: e921329
62. Clough KB, Louis-Sylvestre C, Fitoussi A, et al (2002) Donor site sequelae after autologous breast reconstruction with an extended latissimus dorsi flap. Plast Reconstr Surg 109: 1904–1911
63. Chang EI, Masià J, Smith ML (2018) Combining autologous breast reconstruction and vascularized lymph node transfer. Semin Plast Surg S 32: 36–41
64. Dayan JH, Dayan E, Smith ML (2015) Reverse lymphatic mapping: a new technique for maximizing safety in vascularized lymph node transfer. Plast Reconstr Surg 135: 277–285
65. Kengelbach-Weigand A, Tasbihi K, Strissel PL, et al (2019) Plasticity of patient-matched normal mammary epithelial cells is dependent on autologous adipose-derived stem cells. Sci Rep 9: 10722
66. Hamdi M (2013) Oncoplastic and reconstructive surgery of the breast. Breast 22 Suppl 2: S100–105
67. Kim JB, Kim DK, Lee, JW, et al (2018) The usefulness of pedicled perforator flap in partial breast reconstruction after breast conserving surgery in Korean women. Arch Plast Surg 45: 29–36
68. Hivernaud V, Lefourn B, Guicheux J, et al (2015) Autologous fat grafting in the breast: critical points and technique improvements. Aesthet Plast Surg 39: 547–561
69. Jabor MA, Shayani P, Collins DR Jr, et al (2002) Nipple-areola reconstruction: satisfaction and clinical determinants. Plast Reconstr Surg 110: 457–463; discussion 464–455