

# EVIDENCE BASED STATEMENT

DOMAIN **10**, Statement **5**

TOPIC: “**Lymphedema surgical indications and technical options**”

## SEARCH TERMS & SOURCES

(lymphedema[MeSH Terms]) AND (treatment[MeSH Terms])

## INCLUSION CRITERIA

- Lower limb only
- Reviews
- Publication < 10 years, only ENG

## SEARCH RESULT BEFORE - AFTER SELECTION

219 (before) - 29 (after selection)

## AGREEMENT BETWEEN THE 2 REVIEWERS before DOMAIN WORKING GROUP DISCUSSION & FINALIZATION

(N. of papers triggering disagreement in inclusion/No of papers from the initial search)

2/219

## PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Hanson SE, Chang EI, Schaverien MV, et al. Controversies in Surgical Management of Lymphedema. *Plast Reconstr Surg Glob Open*. 2020 Mar 27;8(3):e2671.
2. Schaverien MV, Coroneos CJ. Surgical Treatment of Lymphedema. *Plast Reconstr Surg*. 2019 Sep;144(3):738-758.

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## Domain 10; Statement 5

### IDENTIFIED REFERENCES

- 1: Fallahian F, Tadisina KK, Xu KY. Efficacy of Microsurgical Treatment of Primary Lymphedema: A Systematic Review. *Ann Plast Surg.* 2022 Feb 1;88(2):195-199
- 2: Rockson SG. Advances in Lymphedema. *Circ Res.* 2021 Jun 11;128(12):2003-2016.
- 3: Spörlein A, Will PA, Kilian K, et al. Lymphatic Tissue Engineering: A Further Step for Successful Lymphedema Treatment. *J Reconstr Microsurg.* 2021 Jul;37(6):465-474.
- 4: Grünherz L, Hulla H, Uyulmaz S, et al. Patient-reported outcomes following lymph reconstructive surgery in lower limb lymphedema: A systematic review of literature. *J Vasc Surg Venous Lymphat Disord.* 2021 May;9(3):811-819.e2.
- 5: Ramachandran S, Chew KY, Tan BK, Kuo YR. Current operative management and therapeutic algorithm of lymphedema in the lower extremities. *Asian J Surg.* 2021 Jan;44(1):46-53.
- 6: Tang JB, Landín L, Cavadas PC, et al. Unique Techniques or Approaches in Microvascular and Microlymphatic Surgery. *Clin Plast Surg.* 2020 Oct;47(4):649-661.
- 7: Nacchiero E, Maruccia M, Elia R, Robusto F, et al. Lymphovenous anastomosis for the treatment of lymphedema: A systematic review of the literature and meta-analysis. *Lymphology.* 2020;53(4):172-194. PMID: 33721924.
- 8: Rosian K, Stanak M. Efficacy and safety assessment of lymphovenous anastomosis in patients with primary and secondary lymphoedema: A systematic review of prospective evidence. *Microsurgery.* 2019 Nov;39(8):763-772.
- 9: Schaverien MV, Coroneos CJ. Surgical Treatment of Lymphedema. *Plast Reconstr Surg.* 2019 Sep;144(3):738-758.
- 10: Gould DJ, Mehrara BJ, Neligan P, et al. Lymph node transplantation for the treatment of lymphedema. *J Surg Oncol.* 2018 Oct;118(5):736-742.
- 11: Johnson AR, Singhal D. Immediate lymphatic reconstruction. *J Surg Oncol.* 2018 Oct;118(5):750-757.
- 12: Garza RM, Chang DW. Lymphovenous bypass for the treatment of lymphedema. *J Surg Oncol.* 2018 Oct;118(5):743-749.
- 13: Scaglioni MF, Fontein DBY, Arvanitakis M, Giovanoli P. Systematic review of lymphovenous anastomosis (LVA) for the treatment of lymphedema. *Microsurgery.* 2017 Nov;37(8):947-953.
- 15: Lee JH, Chang DW. Surgical Treatment of Primary Lymphedema. *Lymphat Res Biol.* 2017 Sep;15(3):220-226.
- 15: Dayan JH, Ly CL, Kataru RP, Mehrara BJ. Lymphedema: Pathogenesis and Novel Therapies. *Annu Rev Med.* 2018 Jan 29;69:263-276..
- 16: Carl HM, Walia G, Bello R, et al. Systematic Review of the Surgical Treatment of Extremity Lymphedema. *J Reconstr Microsurg.* 2017 Jul;33(6):412-425.
- 17: Chang DW, Masia J, Garza R 3rd, et al. Lymphedema: Surgical and Medical Therapy. *Plast Reconstr Surg.* 2016 Sep;138(3 Suppl):209S-218S.
- 18: Yüksel A, Gürbüz O, Velioğlu Y, et al. Management of lymphoedema. *Vasa.* 2016;45(4):283-91.
- 19: Ozturk CN, Ozturk C, Glasgow M, et al. Free vascularized lymph node transfer for treatment of lymphedema: A systematic evidence based review. *J Plast Reconstr Aesthet Surg.* 2016 Sep;69(9):1234-47.
- 20: Tourani SS, Taylor GI, Ashton MW. Long-Term Patency of Lymphovenous Anastomoses: A Systematic Review. *Plast Reconstr Surg.* 2016 Aug;138(2):492-498.
- 21: Allen RJ Jr, Cheng MH. Lymphedema surgery: Patient selection and an overview of surgical techniques. *J Surg Oncol.* 2016 Jun;113(8):923-31.
- 22: Baumeister RG, Mayo W, Notohamiprodjo M, et al. Microsurgical Lymphatic Vessel Transplantation. *J Reconstr Microsurg.* 2016 Jan;32(1):34-41.
- 23: Brorson H. Liposuction in Lymphedema Treatment. *J Reconstr Microsurg.* 2016 Jan;32(1):56-65.
- 24: Finnane A, Janda M, Hayes SC. Review of the evidence of lymphedema treatment effect. *Am J Phys Med Rehabil.* 2015 Jun;94(6):483-98.
- 25: Granzow JW, Soderberg JM, Kaji AH, Dauphine C. Review of current surgical treatments for lymphedema. *Ann Surg Oncol.* 2014 Apr;21(4):1195-201.

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### TEXT FOR INCLUSION IN THE DOCUMENT

(300 words, not counting the references)

**DOMAIN 10, Statement 5, TOPIC: "Lymphedema surgical options"**

Modern lymphatic management offers valuable surgical options for lymphedema, including lymphaticovenular anastomosis and vascularized lymph node transfer (VLNT). While LVA is aimed to re-directed the lymphatic drainage into the venous system, VLNT replaces the damaged or excised lymph nodes, favoring lymph absorption and lymphoangiogenesis.

A significant improvement in QOL has been demonstrated following both LVA and VLNT, regardless of lymphedema etiology, stage, or time since diagnosis.

Further research is needed to include both objective measurements in the comparison of the two techniques.

**[Grünherz L, Hulla H, Uyulmaz S, et al. Patient-reported outcomes following lymph reconstructive surgery in lower limb lymphedema: A systematic review of literature. J Vasc Surg Venous Lymphat Disord. 2021 May;9(3):811-819.e2]**

**[Rockson SG. Advances in Lymphedema. Circ Res. 2021 Jun 11;128(12):2003-2016]**

Differently from VLNT, LVA is usually reserved to less severe lymphedema stages, therefore making a proper randomized comparative analysis currently not feasible because of the patient selection bias.

Another major issue in the comparison is the LVA patency in the medium-long term. Indeed, more than 50% of LVA at 12 months have been reported to be occluded: a finding suggesting the importance of referring the patient only to highly specialized centers.

Both VLNT and LVA present also technical matters of debate. While the VLNT optimal recipient site location is still debated, the number of needed LVA remains an object of discussion.

**\*[Hanson SE, Chang EI, Schaverien MV, et al. Controversies in Surgical Management of Lymphedema. Plast Reconstr Surg Glob Open. 2020 Mar 27;8(3):e267]**

Apart the procedures aimed to restore a lymphatic drainage, lymphedema can lead to an indication also to reductive surgical techniques such as direct excision, suction assisted protein lipectomy (SAPL) or radical reduction with perforator preservation (RRPP).

Reductive procedures are indicated in the most advanced stages of the disease.

As per the LVA and VLNT, only highly specialized centers should perform reductive surgery as this demonstrated to lead to potentially satisfactory results, but not without a significant risk of complications such as infection, lymphatic fistulas, wound breakdown, hyperkeratosis, ulceration, and the aggravation of the same lymphedema.

**[Ramachandran S, Chew KY, Tan BK, Kuo YR. Current operative management and therapeutic algorithm of lymphedema in the lower extremities. Asian J Surg. 2021 Jan;44(1):46-53].**

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### STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 10, Statement 5

**“Lymphedema surgical treatment must be performed only in highly experienced centers and once the conservative approach have demonstrated to be insufficient”**

### 4 SELECTED REFERENCES

1. Grünherz L, Hulla H, Uyulmaz S, et al. Patient-reported outcomes following lymph reconstructive surgery in lower limb lymphedema: A systematic review of literature. J Vasc Surg Venous Lymphat Disord. 2021 May;9(3):811-819.e2
2. Rockson SG. Advances in Lymphedema. Circ Res. 2021 Jun 11;128(12):2003-2016
3. \*Hanson SE, Chang EI, Schaverien MV, et al. Controversies in Surgical Management of Lymphedema. Plast Reconstr Surg Glob Open. 2020 Mar 27;8(3):e267
4. Ramachandran S, Chew KY, Tan BK, Kuo YR. Current operative management and therapeutic algorithm of lymphedema in the lower extremities. Asian J Surg. 2021 Jan;44(1):46-53

### identified LITERATURE BIAS

Lack of properly designed randomized comparative trials on the different surgical techniques

### SUGGESTED NEXT LINES OF RESEARCH

Properly conducted randomized investigations on proper indication and timing to lymphatic surgery