



Expert-consensus on lymphedema surgeries: candidacy, prehabilitation, and postoperative care

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Abstract

For over 2 decades, the mainstay of lymphedema treatment has been complete decongestive therapy, however, surgical options are available when conservative treatment is not successful in reducing lymphedema. Standardized pre-surgical and post-surgical guidelines for candidates are not readily available. As part of the 2023 Lymphedema Summit that was sponsored by the American Cancer Society, and the Lymphology Association of North America, an expert consensus workgroup was formed and developed an expert consensus which affirms the importance of pre-surgical guidelines for candidates with lymphedema. The workgroup recommended that guidelines should be tailored to four major end-user groups: (1) patients, (2) referring physicians, (3) allied health professionals, and (4) surgeons.

Keywords Lymphedema · Surgery · Candidacy · Prehabilitation · Postoperative

Introduction

Over the last 25 years, the mainstay of lymphedema treatment has been complete decongestive therapy, however, surgical options are gaining momentum as an intervention when conservative treatment is not successful in reducing the burden of lymphedema and in tandem during cancer surgical treatment. Patients who pursue surgical interventions for lymphedema often receive care at health centers with comprehensive care programs for both cancer-related and non-cancer-related lymphedema. While there are archetypes of comprehensive care programs (a.k.a. centers of excellence) [1], standardized pre-surgical and post-surgical guidelines for candidates, and interprofessional

algorithms are not readily available across multidisciplinary stakeholders [2]. This expert consensus workgroup affirmed the importance of pre-surgical guidelines for candidates with lymphedema. Lymphedema patients should have the opportunity to make informed decisions about their candidacy for any possible surgical adjuncts to complete decongestive therapies, and the multidisciplinary team of stakeholders should have a standardized guideline to facilitate the pathway toward lymphedema surgical interventions should they be necessary. This would facilitate tracking of patient-centered outcomes for future evidenced-based care pathway development and refinement of how specific surgical techniques can best complement existing options. The workgroup recommended that

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guidelines should be tailored to four major end-user groups: (1) patients, (2) referring physicians, (3) allied health professionals, and (4) surgeons. The assembly reached a consensus on the following recommendations.

Expert consensus

Criteria should be established for proper patient referral to lymphedema surgery

Root cause diagnostics

A precise causative diagnosis should be sought in preparation for surgical planning and referral. The decision for surgical intervention should be based on algorithmic concerns in the distribution of the lymphedema, the degree of lymphatic vessel occlusion, and the extent of dermal backflow with a diagnosis that supports the use of the proposed specific surgical technique being considered.

Evaluative techniques

Recommended baseline measures to determine candidacy may include circumferential measurements, volumetric measurements, bioimpedance spectroscopy, indocyanine green lymphography and/or lymphoscintigraphy [3] Magnetic resonance lymphangiography is recommended to improve the precision of the diagnosis. A baseline measure of quality of life is highly recommended.

A comprehensive, patient-centered, value-based care scheme for lymphedema patients across the continuum of care, from diagnosis through treatment options, and into ongoing long-term management strategies should be established. This scheme should include

Candidacy

Primary care optimization for lymphedema surgery should be sought—including smoking cessation, adequate prehabilitation, glycemic control, body mass index (BMI) optimization, and management of other co-morbidities to mitigate perioperative risks. Furthermore, cancer patients must be free of metastatic disease.

Body weight optimization BMI optimization of ≤ 35 has been recommended prior to lymphedema surgical interventions. Elevated BMI is a significant

risk factor for the manifestation and exacerbation of Breast Cancer-Related Lymphedema (BCRL). Both preoperative BMI and postoperative weight increase have been accounted as significant risk factors for the manifestation and exacerbation of BCRL [4]. A baseline BMI of ≥ 30 kg/m² prior to breast cancer treatment is a risk factor for BCRL [5].

Adequate prehabilitation Best practice preoperative as well as postoperative rehabilitation for any proposed lymphedema surgical techniques should include cardio-pulmonary, renal, digestive, psychological, and functional support to improve outcomes. Although challenging to implement, these interventions will enhance patient-centered perioperative needs, potentially improve postoperative outcomes, and enhance data tracking for patient-centered outcomes research. Complete decongestive therapy through accredited clinicians and pathways should be underway to optimize the patient with an adequate amount of time in months for response adjustment and compliance demonstration prior to surgery. Available literature with regard to recommended conservative interventions and their efficacy prior to lymphedema surgery remains scant [2] and highlights the need for patients to be referred to a comprehensive program of excellence in treating lymphedema. There are inconsistencies and knowledge gaps in the guidance to lymphedema specialists and surgeons for efficacious pre-surgical interventions and the outcomes to obtain. In lieu of these challenges, this assembly has recommended that lymphedematous tissue should be treated with a comprehensive program for decongestive therapy to a plateau status and patient-managed for 3 months prior to surgical intervention; unless a program is pursuing more of an IRB approved, alternative pathway. According to this panel of experts, early reduction of pitting edema is critical and a recommended ≤ 2 mm depth of pitting is an acceptable goal prior to surgery. This will reinforce early referrals to more lymphedema programs of excellence as well as place surgical techniques within comprehensive patient-centered care efforts. Baseline measurements and follow-up measures at prescribed intervals are recommended to evidence the decongestion and successful patient-management strategies.

Smoking cessation Smoking cessation is recommended for best surgical outcomes. A recommendation of 3 months of cessation prior to surgery has been proposed by this expert panel and as an example of the value of more comprehensive prehabilitation milestones to improve perioperative patient safety and quality efforts.

Surgical options

In general, current surgical procedures for lymphedema include grouping into both physiological and reductive procedures. The physiological procedures are lymphovenous bypass anastomoses (LVB/A), vascularized lymph node transplant (VLNT). The reductive procedures are suction-assisted liposuction (SAL), and direct excisional procedures (e.g., Charles procedure). Lymphatic surgical procedures are performed in the short term (immediate) but may be delayed in cases of chronic lymphedema [6]. Risks, benefits, alternatives, expectations and complications of any type of proposed surgical procedure should be addressed in the preoperative planning and consenting process for any surgical procedure.

Expectations and complications

Treatment goals and patient goals should be aligned. Patients should have realistic goals regarding lymphedema surgery. While the desire for a management-free postoperative condition is paramount, the patient should be aware that lymphatic surgery is not considered a complete cure at this time, but rather a treatment addition that may still require self-management interventions [7]. Transparency about postoperative complications and needs for ongoing care should be documented for the patient.

Referral sources

There are different avenues for a referral to a lymphedema surgeon, including but not limited to primary physicians, cancer surgeons, lymphedema therapists, or phone screening. These referral sources may be internal or external. Lymphatic surgeons will ultimately evaluate all patients for short-term or delayed lymphatic surgeries. Ultimately, there should be an established algorithm of referrals and assessments to drill down appropriate candidates and prehabilitation requirements for preventative and treatment-based lymphatic surgeries [6]. Medical comorbidities (e.g., cardiovascular, pulmonary, diabetes, and genitourinary) will need to be assessed and addressed prior to surgical interventions to help mitigate perioperative complications and improve patient safety and quality. Currently, established algorithms and their efficacy are not yet fully evidenced in the literature and deserve funding for high level clinical research.

Insurance coverage

Transparency about the various costs of surgery should be documented for the patient and consultation about individual insurance coverage or lack thereof should be conducted months prior to patient consent to lymphatic surgery to optimize patient comprehension and resolutions.

Research and reporting of standardized outcome measures will be necessary to maintain the relevancy of proposed evidence-based guidelines and to facilitate ongoing advancements in lymphedema

Ongoing efforts of research and standardized data reporting among the lymphedema stakeholders are needed. Consistent minimal documentation of key components including patient-centered outcomes are needed. There is a need for a consensus-based set of standardized outcomes, also known as a core outcome set (COS), which can be an essential component of evidence-based practice [8]. The development and use of a COS can reduce variability in reporting outcomes on lymphedema, especially across multidisciplinary lymphedema stakeholders. Organized efforts for longitudinal data capture should be agreed upon by comprehensive care programs, centers of excellence, and major professional society stakeholders for the purposes of research, program development, interventions, and insurance coverage expectations.

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