

Liposuction for chronic lymphoedema

Interventional procedures guidance

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www.nice.org.uk/guidance/ipg588

Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

This guidance replaces IPG251.

1 Recommendations

- 1.1 Current evidence on the safety and efficacy of liposuction for chronic lymphoedema is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit.
- 1.2 Patient selection should only be done by a multidisciplinary team as part of a lymphoedema service.

2 Indications and current treatments

- 2.1 Lymphoedema is the abnormal accumulation of subcutaneous fat and fluid in body tissue. It leads to chronic swelling that can cause disability, pain and cosmetic issues. Any part of the body can be affected, but the condition is most common in the arms and legs. Lymphoedema can be complicated by recurrent infection (cellulitis), which further damages the lymphatic vessels and aggravates the condition. Primary lymphoedema results from a congenital inadequacy and gradual occlusion of lymphatics. Secondary lymphoedema results from damage to the lymphatic system or removal of lymph nodes by surgery, radiation, infection or injury. In the UK, one of the most common types of chronic lymphoedema is secondary lymphoedema of the arm after breast cancer or its treatment.
- 2.2 Current conservative treatments for lymphoedema include manual lymph drainage (MLD), which stimulates the movement of lymph away from the affected limb, and decongestive lymphatic therapy (DLT). DLT combines MLD massage techniques with compressive bandaging, skin care and decongestive exercises. Once DLT sessions are stopped the patient is fitted with a custom-made compression garment, which is worn every day. These techniques aim to reduce the pain and discomfort associated with lymphoedema. In very severe cases, surgical treatment can be used to reduce the size of the limb or to restore lymphatic flow. Repeated debulking procedures to excise skin and subcutaneous tissue may be needed. Procedures to restore lymphatic flow from the limb include constructing an alternative lymph drainage pathway via lymphovenous anastomosis.

3 The procedure

3.1 Liposuction for chronic lymphoedema is usually done under general anaesthesia, but regional nerve blockade is also possible. A few small incisions are made in the limb. Cannulas, connected to a vacuum pump, are inserted into the incisions and oedematous adipose tissue is removed by vacuum aspiration. Liposuction is done around and all the way along the limb. Immediately after liposuction, a compression bandage is applied to the limb to control any bleeding and to prevent postoperative oedema. Antibiotics are typically prescribed after the operation. The limb is elevated during hospital stay for 3 to 7 days after the procedure. From about 2 weeks after the procedure, a custom-made compression garment is worn. This garment is revised 3 or 4 times during the first year until the oedema volume has been reduced as much as possible and a steady state has been reached.

4 Efficacy

This section describes efficacy outcomes from the published literature that the committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [interventional procedure overview](#).

4.1 In a case series of 146 patients treated by liposuction for primary or secondary lymphoedema, postoperative limb excess volume was statistically significantly reduced to 3% (from 20% at baseline) in the upper limb group ($p < 0.001$) and to 3% (from 21% at baseline) in the lower limb group ($p < 0.01$), at 12-month follow-up. In a systematic review and meta-analysis of 105 patients from 4 studies, excess volume reduction at 12- to 38-month follow-up was 97% (95% confidence interval 86.24 to 107.02; $I^2 = 0\%$) in patients treated by liposuction on the upper limb. In a case series of 60 women treated by liposuction, excess volume was 75 ml (± 35 ml) at 1 month after surgery, -26 ml (± 40 ml) at 3 months, -133 ml (± 40 ml) at 6 months and -213 ml (± 35 ml) at 1 year, from baseline values of 1,365 ml (± 73 ml). In a case series of 15 patients (12 women, 3 men) treated by liposuction, mean volume reduction of the treated limb was 73% (48% to 94%), at the end of the 3-year follow-up. In a case series of 88 patients treated by liposuction, median volume difference between the affected and unaffected limb was 761 ml (-147 ml to 1,554 ml) from baseline measurements of 3,686 ml (2,851 ml to 5,121 ml) in patients with primary

lymphoedema, and -38 ml (-1,151 ml to 1,135 ml) from baseline values of 3,320 ml (2,533 ml to 4,783 ml) in patients with secondary lymphoedema. The same study reported that men with primary lymphoedema had a statistically significantly greater volume reduction than women (median 1,629 ml versus 275 ml, $p < 0.001$). In a case series of 15 patients (14 women, 1 man) with chronic lymphoedema treated by liposuction, average reduction in oedema volume was 1,095 ml (-4,319 ml to 1,058 ml, 8%). In the same case series, average reduction in limb circumference size was 3.0 cm (-6.3 cm to 0.6 cm, 7%) at 1-year follow-up.

- 4.2 In the case series of 15 patients (14 women, 1 man), recurrent lymphoedema was reported in 32% (7/22) of patients' limbs at 1-year follow-up.
- 4.3 In a case series of 80 patients, mean blood loss as a percentage of the total aspirate was smaller in the group in which a tourniquet and adrenaline were used (100 ml, 5%) than in the group treated with a tourniquet and no adrenaline (225 ml, 13%; no p value reported).
- 4.4 In the case series of 146 patients, limbs were immediately softer after the procedure, and redness, hyperkeratosis and papillomatosis were alleviated.
- 4.5 In the case series of 88 patients treated by liposuction, the rate of cellulitis was statistically significantly reduced from 8 (per limb per year) at baseline to 0.2 in the patients with primary lymphoedema and from 6 to 0.3 in the secondary lymphoedema group, at 24-month follow-up. In a case series of 130 patients there was a statistically significant reduction (87%, $p < 0.001$) in the rate of erysipelas from 0.47 bouts/year before liposuction (range 0 to 5, standard deviation [SD] 0.8; 76 patients, 534 episodes over 1,147 person years) to 0.06 bouts/year after liposuction (range 0 to 3, SD 0.3; 16 patients, 60 episodes over 983 person years).
- 4.6 In the case series of 146 patients treated by liposuction, 11% (16/146) of patients were able to completely eliminate the use of compression garment at 1-year follow-up.
- 4.7 In the systematic review and meta-analysis of 105 patients, 3 studies reported improved wellbeing, decreased depression and anxiety at 12- to 38-month follow-up after liposuction. In the case series of 60 women treated by

liposuction, quality of life measured by Short Form 36 (SF-36, 0=worse possible level of functioning to 100=best possible level of functioning) was statistically significantly increased from baseline values for the physical (to 45 ± 1.2 from 43 ± 1.3 , $p=0.03$) and mental component scores (to 52 ± 1.2 from 49 ± 1.3 , $p=0.01$). The same study reported that at 3-month follow-up, the physical functioning, bodily pain, mental health and vitality dimensions were statistically significantly improved from baseline assessment ($p<0.05$); this remained true at 12-month follow-up, and social functioning was also statistically significantly improved from baseline assessment, $p<0.05$.

- 4.8 The specialist adviser listed return of the swollen (lymphoedema) limb to normal size as the key efficacy outcome.

5 Safety

This section describes safety outcomes from the published literature that the committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [interventional procedure overview](#).

- 5.1 Blood transfusion was reported in 6% (2/33) of patients in the group treated with a tourniquet, in 37% (7/19) of patients in the group not treated with a tourniquet or adrenaline and in none of the patients in the group treated with a tourniquet and adrenaline, in a case series of 80 patients treated by liposuction for chronic lymphoedema. Blood transfusion was reported in 13% (2/15) of patients treated by liposuction in a case series of 15 patients (12 women, 3 men).
- 5.2 Localised skin loss and healing by second intention was reported in 13% (2/15) of patients in the case series of 15 patients (12 woman, 3 men) treated by liposuction. Wound infection needing surgical debridement was reported in 1 patient in the same case series. Marginal wound necrosis was reported in 1 patient in another case series of 15 patients (14 women, 1 man) with chronic lymphoedema treated by liposuction.
- 5.3 Cellulitis was reported in 1 patient in the other case series of 15 patients (14 women, 1 man) treated by liposuction.
- 5.4 Hypaesthesia was reported in 1 patient in the case series of 15 patients

(14 women, 1 man) treated by liposuction.

- 5.5 Decubitus ulcer due to compression therapy was reported in 1 patient with primary lymphoedema in a case series of 88 patients treated by liposuction.
- 5.6 In addition to safety outcomes reported in the literature, specialist advisers are asked about anecdotal adverse events (events which they have heard about) and about theoretical adverse events (events which they think might possibly occur, even if they have never done so). For this procedure, specialist advisers listed no anecdotal events. They considered that pain was a theoretical adverse events.

6 Committee comments

- 6.1 Patients having this procedure need to wear compression garments.
- 6.2 The evidence came from both patients with primary lymphoedema and patients with secondary lymphoedema.

7 Further information

- 7.1 Patient commentary was sought but none was received.
- 7.2 For related NICE guidance, see the [NICE website](#).

Information for patients

NICE has produced information on this procedure for patients and carers ([information for the public](#)). It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

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Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).

Accreditation

