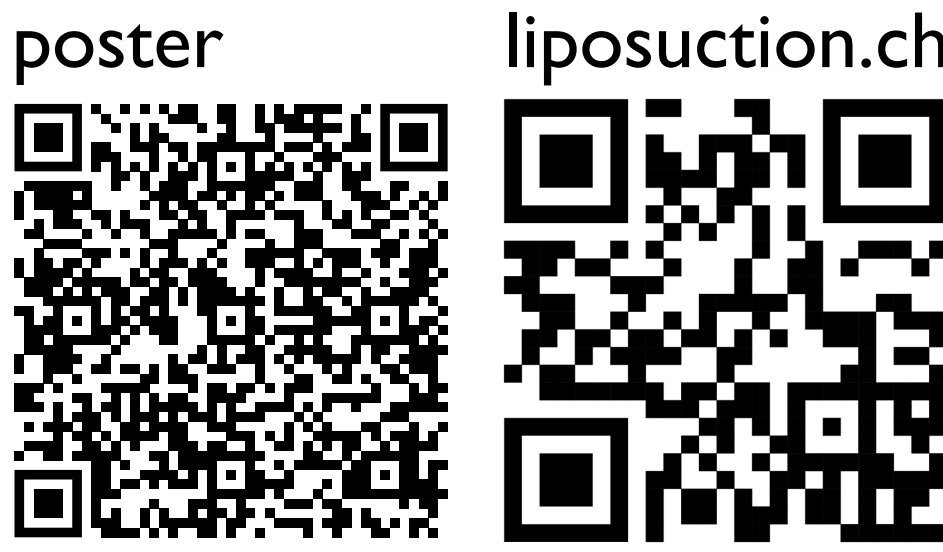


# Water jet-assisted liposuction for treatment of lipedema: experiences and comparison with tumescent liposuction

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## 1. What's it about?

Lipoedema is a fat distribution disorder with a disproportion between trunk and extremities as well as pain, edema and a tendency to hematomas. Causal conservative therapies are not known. Tumescent liposuction has established itself as a safe and lasting treatment of the condition. Water jet-assisted liposuction (WAL) as a gentle methode offers additional advantages in terms of protecting anatomical structures, especially the lymphatic vessels. Impressive results can be achieved trough WAL with respect to a reduction of pain, improvement of the contour and mobility [1].

## 2. Techniques of liposuction

- “Mechanical“ tumescence techniques**
- liposculpture (manual liposuction Fournier)
  - suction-assisted liposution SAL
  - power-assisted liposuction PAL
  - ultrasound-assisted liposuction UAL/VASER
  - laser-assisted liposuction LPL
- Non invasive techniques**
- transcutaneous ultrasound liposuction
  - injection lipolysis
  - kryo lipolysis
- Water jet-assisted liposuction WAL**



Fig. 1 Water spray for washing out the adipo-cytes, tumescence is not required

## 3. Disadvantages of tumescence

- Full tumescence can result in high lidocaine and adrenaline load on the body as well as volume
- There is a potential risk of damage to lymphatic vessels from pressure and volume
- A reduction in analgesia and haemostasis can be expected at the edges and towards the end of the liposuction, since the concentration of the Klein solution decreases
- Full tumescence swells the surface structure, making precise liposuction difficult
- More painfull due to increased pressure
- Onset of effect of anesthesiatakes up to one hour

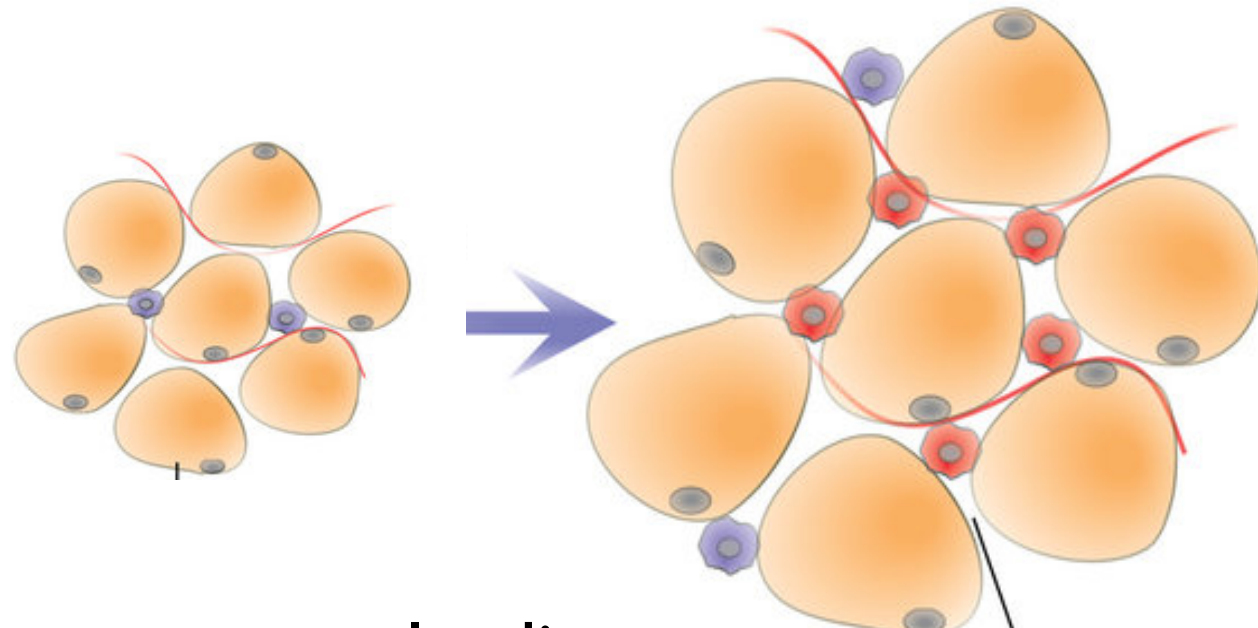


Fig. 2 Full tumescence leading to high pressure in the subcutaneous fat layer

## 4. The effects of the water jet

- The cannula follows the fan-shaped water jet → minimal damage to the tissue
- The fat cells are gently rinsed out selectively and sucked off together with the rinsing fluid → maximum protection of the lymphatic system, blood vessels and nerves
- The rinsing liquid contains local anesthetics and vasoconstrictors, which are continuously and specifically supplied exactly to the work site in the area of the cannula tip → safe local analgesia and hemostasis

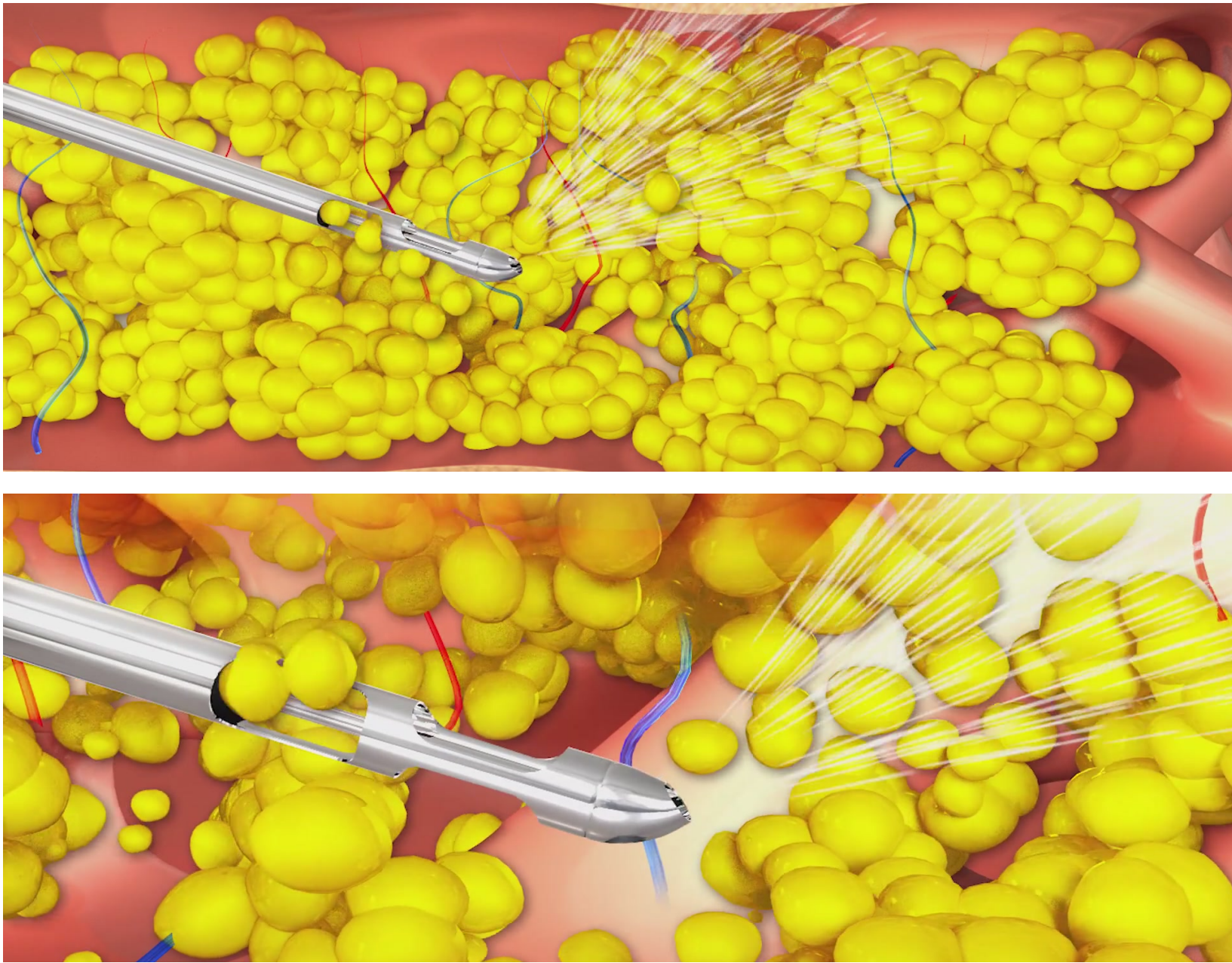


Fig. 3+4 Simultaneous spraying and aspirating to flush out the adipocytes gently

## 5. Comparison tumescence/WAL

	Tumescence-liposuction	Water jet-assisted liposuction
Risk of overdose with drug and volume	Higher → full tumescence requires great volumina	Lower → simultaneous spraying and aspiraiting will need fewer drugs/volume
Risk of traumatisation of lymphatic vessels	Higher → full tumescence can damage cells by presion/osmosis and cannulas without spray may damage lymphatic vessels	Lower → the fatty tissue is not with high pressure floated and the cannula follows the natural way of the water jet
Risk of unevenly contour	Higher → the surface contour is floated, interpretation of the contour is limited	Lower → surface remains intact which allows a precise liposuction
Pain/bleeding	Pronouced → towards the end of the operation the effect of lidocain and adrenalin may wear off	Solution is supplied by fresh solution continuously → constantly sufficient anesthesia and hemostasis
Hematomas/pain post-operative	Increased → fat is removed mechanical by cannulas and aspiration	Moderate → the fat cells are gentle washed out

## 6. WAL: less pain and hematomas

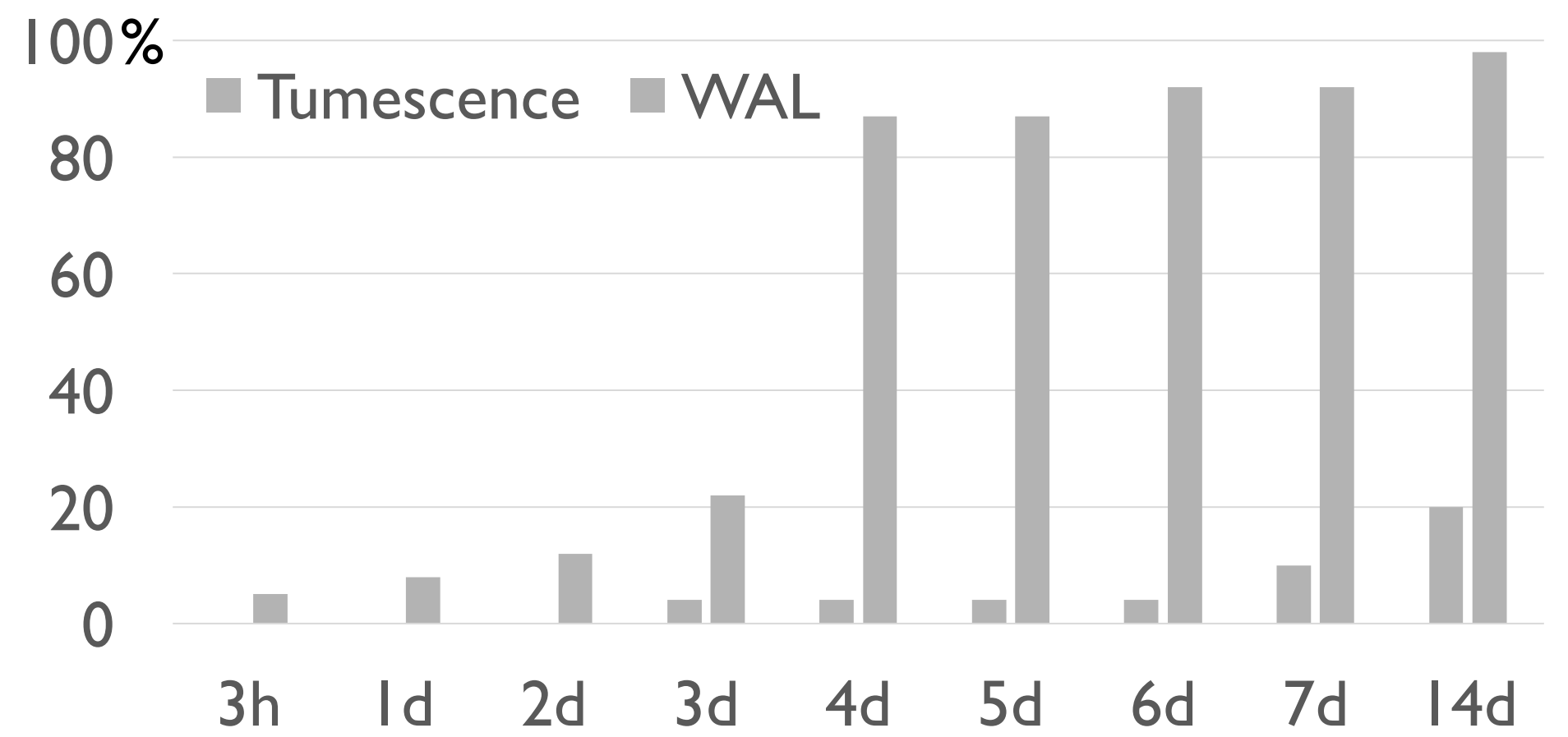


Fig. 5 Percentage of pain-free patients, from 3 hours until 14 days after surgery; comparison between tumescence liposuction and WAL [2]

## 7. Reduction of discomfort p.o.

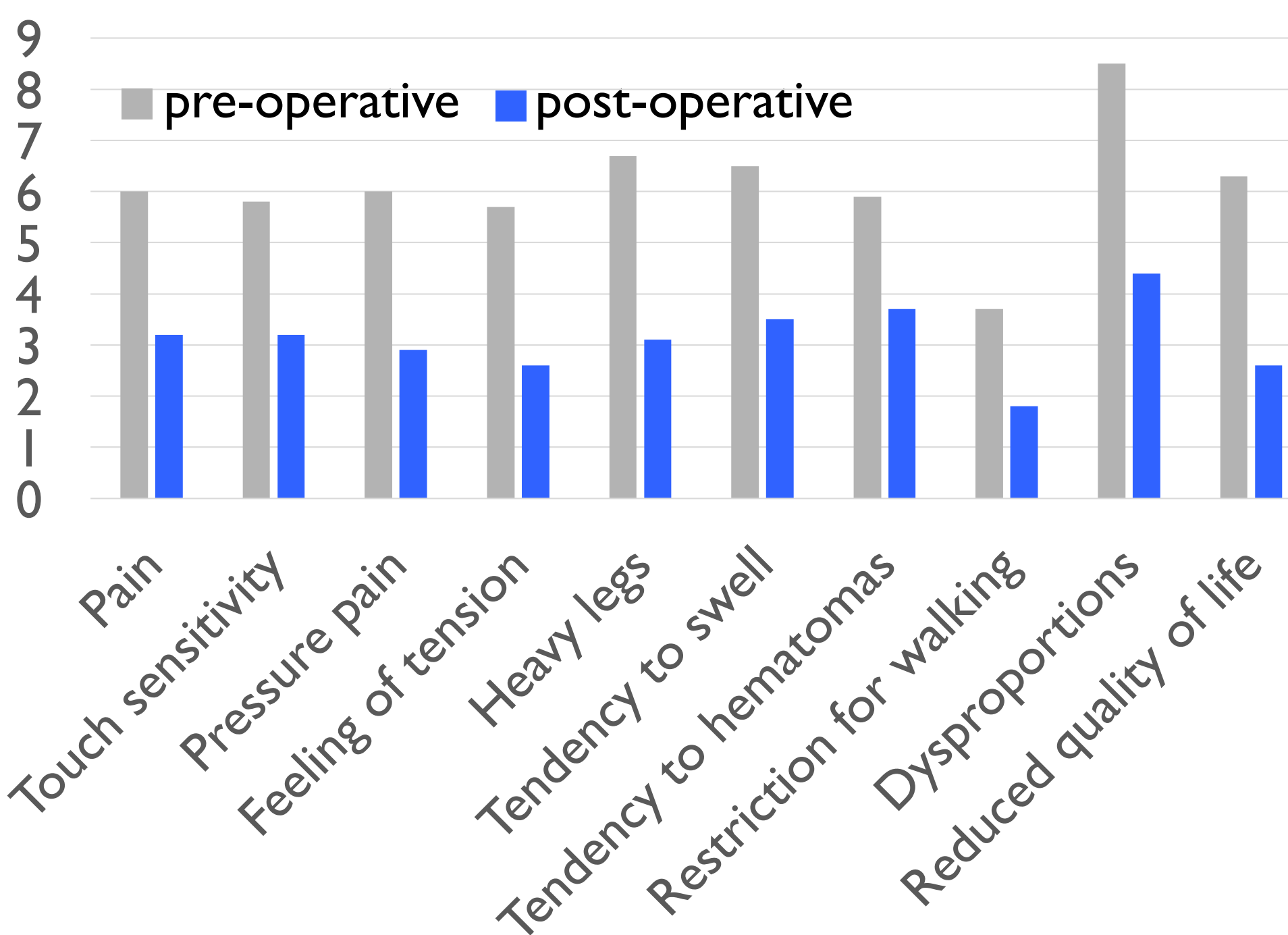


Fig. 6 Intensity of complaints (0-9) before and after WAL. 141 patients, follow up 35.9 months [3]

## 8. Key points of treatment

- Technique: water jet-assisted liposuction
- Anesthesia: preferably local (patient can turn and bring himself to the optimal position for precise liposuction)
- Cannula: longway, not criss cross
- Treatment of all ill regions (legs, arms, hips, buttock)
- For circular liposuction: two sessions
- For the whole leg: two sessions
- Lipedema-liposuction: what is removed counts
- Cosmetic liposuction: what remains counts
- In advance: treatment of the varicous veins
- In advance: weight reduction if BMI > 35-40

## 9. Literature

[1] Witte T et al (2020) Water-jet-assisted liposuction for the treatment of lipedema: Standardized treatment protocol and results of 63 patients. J Plast Reconstr Aesthet Surg; 73(9):1637-1644  
[2] Araco A et al. (2007) Comparison of Power Water-Assisted and Traditional Liposuction: A prospective Randomized Trial of Postoperative Pain. Aesth Plast Surg; 31:259-265  
[3] Münch D (2017) Wasserstrahlassistierte Liposuction zur Therapie des Lipödems. J Aesth Chir;10:71-78