<table>
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<th>Operative procedure</th>
<th>Reference</th>
<th>Summary</th>
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| EVLA with different wavelengths | Kabnick LS, Outcome of different endovenous laser wavelengths for great saphenous vein ablation. *J Vasc Surg.* 2006;43:88-93. | Primary incompetence of GSV in 51 patients  
Group I (N=30 lower limbs): 810-nm diode laser  
versus  
Group II (N=30 lower limbs): 980 nm diode laser, both bare fiber, continuous withdrawal, tumescence anesthesia  
**Results at 4 weeks of follow-up:**  
Both laser wavelengths were effective in treating GSV insufficiency, with no major complications and a paucity of adverse outcomes |
Group I (N=43) HL+ EVLA on one lower limb  
versus  
Group II (N=43) EVLA without HL on the other lower limb  
810-nm diode laser, bare fiber, continuous laser withdrawal  
Anesthesia: general (day case procedure) or local (outpatient procedure)  
**Results at 2 years of follow-up:**  
No difference between groups in terms of groin recurrence and VCSS improvement |
Group I (N=43) HL+EVLA on one lower limb  
versus  
Group II (N=43) EVLA without HL on the other lower limb  
810-nm diode laser, bare fiber, continuous laser withdrawal  
Anesthesia: general (day case procedure) or local (outpatient procedure)  
**Results at 5 years of follow-up:**  
Groin recurrence: 65% in group I, 79% in group II (P=0.36)  
Global recurrence and VCSS : no difference between the 2 groups |
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<td>EVLA with and without nitroglycerin</td>
<td>Hogue RS, Schul MW, Dando CF, Erdman BE. The effect of nitroglycerin ointment on great saphenous vein targeted venous access size diameter with endovenous laser treatment. <em>Phlebology.</em> 2008;23:222-26.</td>
<td>GSV primary incompetence 75 patients treated by EVLA. Group I treadmill ambulation Group II nitroglycerin (NTG) ointment Group III NTG ointment + treadmill ambulation <em>GSV diameter measurement at vein access before and after treatment:</em>  - Group I diameter increase: +2.7% (P=NS)  - Group II diameter increase: +51.7%. (P&lt;0.0001)  - Group III diameter increase +69% (P&lt;0.0001)  <em>Conclusion:</em> pretreatment with topically applied NTG ointment (2%) produced a statistically significant venous dilatation</td>
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<tr>
<td>EVLA 980 nm bare- tip fibre versus EVLA 1470 nm radial fibre</td>
<td>Doganci S, Demirkilic U. Comparison of 980 nm Laser and Bare-tip fibre with1470 nm Laser and radial Fibre in the treatment of great Saphenous vein varicosities: A prospective randomized controlled trial. <em>Eur J Vasc Endovasc Surg.</em> 2010;40:254-9.</td>
<td>GSV primary incompetence in 106 lower limbs Intravenous sedation Group I: EVLA 980 nm bare-tip fibre versus Group II: EVLA 1470 nm radial fibre <em>Results at 1-6 months of follow-up:</em> Less post-operative pain and better VCSS scores in group II compared with group I</td>
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<tr>
<td>EVLA 1470nm warm versus cold tumescence anesthesia</td>
<td>Pannier F, Rabe E, Maurins U. 1470 nm diode laser for endovenous ablation (EVLA) of incompetent saphenous veins – a prospective randomized pilot study comparing warm and cold tumescence anesthesia. <em>Vasa.</em> 2010;39:249-55.</td>
<td>GSV primary incompetence in 85 lower limbs Group I (N=42): warm tumescence anesthesia = 37 C° Group II (N=43): cold tumescence anesthesia = 5 C° <em>Results at 1 month of follow-up:</em>  - No difference between groups in terms of occlusion  - Postoperative pain reduction in group II</td>
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| EVLA 980 nm versus EVLA 1500nm | Dumantepe M, Uyar I. Comparing cold and warm tumescent anesthesia for pain perception during and after the endovenous ablation procedure with 1470nm diode laser. Phlebology. 2015;30:45-51. | - Significant reduction of analgesic intake in group II  
GSV primary incompetence in 101 patients  
Group I (N=51): warm tumescence anesthesia = 24 C°  
Group II (N=50): cold tumescence anesthesia = 8 C°  
**Results at 1 week of follow-up:**  
- No difference between groups in terms of occlusion (100%)  
- Pain intensity on VAS: 3 in group I and 1 in group II  
- Significant reduction of analgesic intake in group II (P<0.05)  
- Significant reduction of side effects in group II (P<0.001) |
| EVLA Bare Fibre versus Tulip Fibre | Vuylsteke M, De Bo H, Dompe G, Di Crisci D, Abbad, CM, Mordon S. Endovenous laser treatment: is there a clinical difference between using a 1500 nm and a 980 nm diode Imsert? A multicenter randomised clinical trial. Intern Angiology. 2011;30:327-34. | - GSV primary incompetence in 180 lower limbs  
- Local tumescent anesthesia  
- Group I: EVLA 980 nm bare-tip fibre versus  
- Group II: EVLA 1500 nm bare-tip fibre  
**Post-operative results:**  
- Less induration in group II (1500 nm) compared with group I (P=0.0002)  
- Less analgesics intake in group II (1500 nm) compared with group I  
- Better HRQoL (CIVIQ) in group II (1500 nm) compared with group I (P=0.018)  
**Results at 6 months of follow-up:**  
- No difference between groups in terms of occlusion |
- Local tumescent anesthesia +/- general anesthesia  
- Group I (N=87): EVLA 1470nm diode bare fiber versus  
- Group II (N=87): bare fiber +Tulip fibre  
**Post-operative results:**  
- Less postoperative ecchymosis in group II (Tulip fibre) compared with group I (P<0.001)  
- Less postoperative pain in group II (Tulip fibre) compared with group I (P<0.001).  
- Better HRQoL in group II (Tulip fibre) compared with group I (P=0.0023).  
- But no difference between groups in |
Local tumescent anesthesia
Group I: EVLA 810 nm bare-tip fibre + 2 days of postoperative compression therapy (stockings, 35 mm Hg at ankle)
Group II: EVLA 810 nm bare-tip fibre + 7 days of postoperative compression therapy (stockings, 35 mm Hg at ankle)
**Results at 48 hours to 12 weeks of follow-up:**
- Intensity of symptoms on VAS at week 1: better pain reduction in group II compared with group I
- HRQoL (SF36) at week 1: better improvement
- Vein obliteration: 100 % in both groups
- DVT: no occurrence of DVT in neither group |

Local tumescent anesthesia
Group I (N=38): laser 810-nm bare fiber; laser power 12 W with 1-second laser pulses at 1-second intervals between pulse
Group II (N=38): laser 810-nm bare fiber; laser power 14 W continuous withdrawal 2mm/s.
Concomitant phlebectomy and/or Perforator ligation in both groups.
**Results at 1 week-5 years of follow-up:**
Significant improvement in both groups in VCSS, pain scores, AVQQ scores, HRQoL scores (SF-36 EQ-5D) compared to preoperative status (P>0.05)
**Results at 5 years of follow-up:**
Better long term occlusion in group II compared with group I
Recurrence more common in group I compared with group II (P=0.035) |

Group I (N=70): laser 940-nm versus
Group II (N72): laser 1470-nm
In both groups:
- local tumescent anesthesia
- Tulip-tip fibre and concomitant phlebectomy

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| EVLA 980 nm bare-Tip fiber versus EVLA 1470 nm Radial 2ring | Hirokawa, M, Ogawa T, PhD, Sugawara H, Shokoku S, and Sato S. Comparison of 1470 nm Laser and Radial 2ring Fiber with 980 nm Laser and Bare-Tip Fiber in Endovenous Laser Ablation of Saphenous Varicose Veins: A Multicenter, Prospective, Randomized, Non-Blind Study. *Ann Vasc Dis.* 2015;8:282-289. | Results at 1-52 weeks of follow-up:  
*Pain score at 1 week* (VAS)  
Less pain in group II (*P*=0.0004)  
- Duration of analgesia  
Shorter in group II (*P*=0.037)  
- *Post-operative complications* Same in both groups except for superficial thrombophlebitis that was higher in group II. (*P*=0.05)  
- *HRQoL and VCSS at 12 weeks*  
No difference between the 2 groups  
- *Vein occlusion at 52 weeks*  
No difference between the 2 groups  
113 LL with GSV or SSV incompetence CEAP C2-C4a  
Group I (N=56): laser 980-nm bare type fiber versus  
Group II (N=57): laser 1470-nm Radial 2ring  
In both groups:  
- *local tumescent anesthesia*  
- Postoperative compression  
Results at 1 day-12 weeks of follow-up  
Occlusion rates at 12 weeks were 100% in both groups.  
Rates of pain (0% vs. 25.0%) and bruising (7.0% vs. 57.1%) were significantly lower in Group II (*p*<0.0001).  
VAS of pain was significantly lower on postoperative day 1, day 5 and 2nd week in Group II. |
Group I Lidocaine  
Group II Prilocaine  
Group III Bupivacaine  
**Results: intra operatively and 1 day post operatively pain**  
Less pain with Bupivacaine compared to others for both pain evaluation *P*<0.0001 |

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**Group I** (42 extremities)  
EVLA 1470-nm. Power 10 watt. Continuous mode  
**Group II** (48 extremities)  
EVLA 1920-nm. Power 5 watt. Continuous mode  
**Follow-up at 7-day, 30-day, 3-month, 6-month 1 year:**  
**RESULTS**  
Clinical evaluation VCSS  
US: measurement of occlusion length  
Group II: less ecchymosis P<0.01, induration P <0.01, day analgesic use P =NS  
VCSS no difference between group I and II  
Closure rate lower at 1-year in group II. P=0.05 |
|---|---|---|
| EVLA completed with delayed or concomitant phlebectomy | Carradice D, Mekako AI, Hatfield J, Chetter IC. Randomized clinical trial of concomitant or sequential phlebectomy after endovenous laser therapy for varicose veins. *Br J Surg.* 2009;96:369-375. | 50 patients with primary incompetence of GSV treated by EVLA+ tributary phlebectomy under local anesthesia  
Group I (N=25): delayed phlebectomy versus  
Group II (N=25): concomitant phlebectomy  
**Follow-up at 1 year:**  
- *Procedure duration:* longer in group II (median 65 min) compared with group I (median 45 min); P=0.002  
- *Pain scores and recovery times:* no difference between the 2 groups  
- *HRQoL, severity score (AVVQ, VCSS) at 6 weeks:* lower AVVQ score in group II compared to group I; P<0.001  
- *HRQoL, severity score (AVVQ, VCSS) at 12 weeks:* lower AVVQ and VCSS in group II compared to group I; P=0.015 and P<0.001 respectively.  
- *Requirement for secondary* |
50 patients with primary incompetence of GSV treated by EVLA+ tributary phlebectomy under local anesthesia
Group I (N=25): delayed phlebectomy versus
Group II (N=25): concomitant phlebectomy

**Results at 1 to 5 years of follow-up:**
- HRQoL, severity score (AVVO, VCSS): no difference between the 2 groups
- Secondary procedure at 1 year: rate of redo surgery equivalent between group I=3 and group II=4.
  Secondary procedure at 5 years: group I=19/23, and group II=5/25

**Abbreviations:**
AK= above knee  AVVO= Aberdeen varicose vein questionnaire; AVVSS= Aberdeen varicose vein severity score ;BK= below knee; BK-FS= below knee foam sclerotherapy; DVT=deep venous thrombosis ;EQ-50 Euroqol; EVLA = endovenous laser ablation; GSV =great saphenous vein; HL= High ligation ,HRQoL= health-related quality of life, NTG, nitroglycerin, SF -36= shortform 36 items, US=ultra sound;VAS= Visual analogie Scale; VCSS= venous clinical severity score; W=watt