

Chirurgische Therapie der primären Varikosis – Offene und endovenöse Therapieoptionen

Autoren:

Priv.-Doz. Dr. med. Claus-Georg Schmedt
Klinik für Gefäßchirurgie (Chirurgie IV)
Zertifiziertes Gefäßzentrum (DGG, DRG)
Diakonie-Klinikum Schwäbisch Hall
Diakoniestr. 10
74523 Schwäbisch Hall
claus-georg.schmedt@dasdiak.de

Zitation:

Schmedt C.-G. Chirurgische Therapie der primären Varikosis – Offene und endovenöse Therapieoptionen. *Passion Chirurgie*. 2017 September, 7(09): Artikel 03_02.

Literatur

- [1] Alm J (2014). Ausschaltung der Stammvarikose mit Kleberindikation - Technik und erste Ergebnisse Gefäßschirurgie 19:629-636.
- [2] Babcock W (1907). A new operation for extirpation of varicose veins of the leg NY Med J 86:153e6.
- [3] Boné C (1999) Tratamiento endoluminal de las varices con laser de diodo. Estudio preliminary. Rev Patol Vasc 5:35-46
- [4] Bootn R, Lane T, Dharmarajah B, Lim C, Najem M, Renton S, Sritharan K, Davies A (2016). Intra-procedural pain score in a randomised controlled trial comparing mechanochemical ablation to radiofrequency ablation: The Multicentre Venefit™ versus ClariVein® for varicose veins trial. Phlebology 2016 31:61-65.
- [5] Brittenden J, Cotton SC, Elders A, Ramsay CR, Norrie J, Burr J, Campbell B, Bachoo P, Chetter I, Gough M, Earnshaw J, Lees T, Scott J, Baker SA, Francis J, Tassie E, Scotland G, Wileman S, Campbell MK (2014). A randomized trial comparing treatments for varicose veins. N Engl J Med 371:1218-1227.
- [6] Chan YC, Law Y, Cheung GC, Cheng SW (2017). Predictors of recanalization for incompetent Great Saphenous Veins treated with Cyanoacrylate Glue. J Vasc Interv Radiol 28:665-671.
- [7] De Maeseneer MG, Philipsen TE, Vandebroeck CP, Lauwers PR, Hendriks JM, De Hert SG, Van Schil PE (2007). Closure of the cribriform fascia: an efficient anatomical barrier against postoperative neovascularisation at the saphenofemoral junction? A prospective study. Eur J Vasc Endovasc Surg 34:361-366.

- [8] Dwerryhouse S, Davies B, Harradine K, Earnshaw JJ (1999). Stripping the long saphenous vein reduces the rate of reoperation for recurrent varicose veins: five-year results of a randomized trial. *J Vasc Surg* 29:589-92.
- [9] Eklöf B, Rutherford RB, Bergan JJ, Carpentier PH, Gloviczki P, Kistner RL, Meissner MH, Moneta GL, Myers K, Padberg FT, Perrin M, Ruckley CV, Smith PC, Wakefield TW; American Venous Forum International Ad Hoc Committee for Revision of the CEAP Classification (2004). Revision of the CEAP classification for chronic venous disorders: consensus statement. *J Vasc Surg* 40:1248-1252.
- [10] Elias S (2014). Emerging Endovenous Therapies. *Endovascular Today*.
- [11] Farber A, Belenkaya A, Malikova M, Brenner O, Brandeis Z, Migdal M, Orron D, Kim D (2014). The evaluation of a novel technique to treat saphenous vein incompetence: preclinical animal study to examine safety and efficacy of a new vein occlusion device. *Phlebology* 29:16-24.
- [12] Franeschi C (1988). Théorie et pratique de la Cure Conservatrice et Hémodynamique de l'Insuffisance Veineuse en Ambulatoire. Précy-sous-thil, France: Edition de l'Armancon; 1988
- [13] Frings N, Nelle A, Tran P, Fischer R, Krug W (2004). Reduction of neoreflux after correctly performed ligation of the saphenofemoral junction. A randomized trial. *Eur J Vasc Endovasc Surg* 28:246-252.
- [14] Hager ES, Ozvath KJ, Dillavou ED (2017). Evidence summary of combined saphenous ablation and treatment of varicosities versus staged phlebectomy. *J Vasc Surg Venous Lymphat Disord* 5:134-137.
- [15] Gloviczki P, Comerota AJ, Dalsing MC, Eklof BG, Gillespie DL, Gloviczki ML, Lohr JM, McLafferty RB, Meissner MH, Murad MH, Padberg FT, Pappas PJ, Passman MA, Raffetto JD, Vasquez MA, Wakefield TW; Society for Vascular Surgery; American Venous Forum (2011). The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. *J Vasc Surg* 53(5 Suppl):2S-48S.
- [16] Gohel MS, Barwell JR, Taylor M, Chant T, Foy C, Earnshaw JJ, Heather BP, Mitchell DC, Whyman MR, Poskitt KR (2007). Long term results of compression therapy alone versus compression plus surgery in chronic venous ulceration (ESCHAR): randomised controlled trial. *BMJ* 335:83.
- [17] Hach W (2013) Stammvarikose der V. saphena magna In: Venenchirurgie – Operative, interventionelle und konservative Aspekte Hrsg. Hach W, Mumme A, Hach-Wunderle V 3. Auflage, Schattauer 2013
- [18] Harlander-Locke M, Jimenez JC, Lawrence PF, Derubertis BG, Rigberg DA, Gelabert HA, Farley SM (2013) Management of endovenous heat-induced thrombus using classification system and treatment algorithm following segmental thermal ablation of the small saphenous vein. *J Vasc Surg* 58:427-432.

- [19] Hauer G, Nasralla F, Wisser I, Schneidemann B (1997). Zur Endoskopischen Perforansdissektion und Fasziotomie. Gefäßchirurgie 2:222-226.
- [20] Holme K, Matzen M, Bomberg AJ, Outzen SL, Holme JB (1996). Partial or total stripping of the great saphenous vein. 5-year recurrence frequency and 3-year frequency of neural complications after partial and total stripping of the great saphenous vein. Ugeskr Laeger 158:405-408.
- [21] Huang TW, Chen SL, Bai CH, Wu CH, Tam KW (2013). The optimal duration of compression therapy following varicose vein surgery: a meta-analysis of randomized controlled trials. Eur J Vasc Endovasc Surg 45:397-402.
- [22] Korepta LM, Watson JJ, Mansour MA, Chambers CM, Cuff RF, Slaikeu JD, Wong PY (2017). Outcomes of a single-center experience with classification and treatment of endothermal heat-induced thrombosis after endovenous ablation. J Vasc Surg Venous Lymphat Disord 5:332-338.
- [23] Labropoulos N, Giannoukas AD, Delis K, Mansour MA, Kang SS, Nicolaides AN, Lumley J, Baker WH (1997). Where does venous reflux start? J Vasc Surg 26:736-742.
- [24] Lawrence PF, Chandra A, Wu M, Rigberg D, Brian DeRubertis, Gelabert H, Jiminez JC, Carter V (2010). Classification of proximal endovenous closure levels and treatment algorithm. J Vasc Surg 52:388-393.
- [25] Lawaetz M, Serup J, Lawaetz B, Bjoern L, Blemings A, Eklof B, Rasmussen L (2017). Comparison of endovenous ablation techniques, foam sclerotherapy and surgical stripping for great saphenous varicose veins. Extended 5-year follow-up of a RCT. Int Angiol 36:281-288.
- [26] Marston WA, Vasquez MA, Lurie F, Wakefield TW, Rabe E, Shortell CK, Lohr JM, Passman MA, McLafferty RB; American Venous Forum Outcomes Working Group (2013). Multicenter assessment of the repeatability and reproducibility of the revised Venous Clinical Severity Score (rVCSS). J Vasc Surg Venous Lymphat Disord 1:219-224.
- [27] Morrison N, Gibson K, Vasquez M, Weiss R, Cher D, Madsen M, Jones A (2017) VeClose trial 12-month outcomes of cyanoacrylate closure versus radiofrequency ablation for incompetent great saphenous veins. J Vasc Surg Venous Lymphat Disord. 5:321-330.
- [28] Mühlberger D, Burkert B; Mumme A, Hummel T (2014). Die extraluminale Valvuloplastie Phlebologie 43: 210–212.
- [29] Muller R (1966). Traitement des varices par la phlebectomie ambulatoire. Phlébologie 19:277-279.

- [30] Mumme A, Stückler M, Hummel T (2014). Die extraluminale Valvuloplastie der Vena saphena magna - Reparative Therapie der Stammvarikose Gefässchirurgie 19:637-642.
- [31] Nesbitt C, Bedenis R, Bhattacharya V, Stansby G (2014). Endovenous ablation (radiofrequency and laser) and foam sclerotherapy versus open surgery for great saphenous vein varices. Cochrane Database Syst Rev. 2014 Jul 30;7:
- [32] Newman JE, Meecham L, Walker RJ, Nyamekye IK (2014). Optimising treatment parameters for Radiofrequency Induced Thermal Therapy (RFITT): A comparison of the manufacturer's treatment guidance with a locally developed treatment protocol. Eur J Vasc Endovasc Surg 47:664-669.
- [33] Noppeney T, Klüss HG, Breu FX, Ehresmann U, Gerlach HE, Hermanns HJ, Nüllen H, Pannier F, Salzmann G, Schimmelpfennig L, Schmedt CG, Steckmeier B, Stenger D (2010). Leitlinie zur Diagnostik und Therapie der Krampfadererkrankung. Deutsche Gesellschaft für Phlebologie, Deutsche Gesellschaft für Gefäßchirurgie, Berufsverband der Phlebologen e.V. und Arbeitsgemeinschaft der niedergelassenen Gefäßchirurgen Deutschlands e.V. Gefässchirurgie 15: 523-541.
- [34] Nüllen H, Noppeney T (2010) Kompressionstherapie in: Varikosie – Diagnostik, Therapie, Begutachtung, Hrsg. Noppeney T, Nüllen H. Springer 2010.
- [35] Ouvry P, Allaert FA, Desnos P, Hamel-Desnos C (2008). Efficacy of polidocanol foam versus liquid in sclerotherapy of the great saphenous vein: a multicentre randomised controlled trial with a 2-year follow-up. Eur J Vasc Endovasc Surg 36:366-370.
- [36] Papapostolou G, Altenkämper H, Berhheim C, Broermann M, Dresler C, Frings N, Hartmann M, Heisterkamp T, Jünger M, Steffen HP, Stenger D, Temboulatov M, Mumme A, Flessenkämper I (2013). Die LaVaCro-Studie: Lanzeitergebnisse der Varizenoperation mit Crossektomie und Stripping der V. saphena magna. Phlebologie 42:253-260.
- [37] Paravastu SC, Horne M, Dodd PD (2016). Endovenous ablation therapy (laser or radiofrequency) or foam Sclerotherapy versus conventional surgical repair for short saphenous varicose veins. Cochrane Database Syst Rev. 2016 Nov 29;11:CD010878.
- [38] Parés JO, Juan J, Tellez R, Mata A, Moreno C, Quer FX, Suarez D, Codony I, Roca J (2010). Varicose vein surgery: stripping versus the CHIVA method: a randomized controlled trial. Ann Surg 251:624-631.
- [39] Proebstle TM, Alm BJ, Göckeritz O, Wenzel C, Noppeney T, Lebard C, Sessa C, Creton D, Pichot O (2015). Five-year results from the prospective European multicentre cohort study on radiofrequency segmental thermal ablation for incompetent great saphenous veins. Br J Surg 102:212-218.

- [40] Rabe E, Pannier F; for the Guideline Group (2014). Indications, contraindications and performance: European Guidelines for Sclerotherapy in Chronic Venous Disorders. *Phlebology* 29(1 suppl):26-33.
- [41] Ramasastry SS, Dick GO, Futrell JW (1987). Anatomy of the saphenous nerve: relevance to saphenous vein stripping. *Am Surg* 53:274-277.
- [42] Rasmussen LH, Lawaetz M, Bjoern L, Vennits B, Blemings A, Eklof B (2011) Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy and surgical stripping for great saphenous varicose veins. *Br J Surg* 98:1079-1087.
- [43] Rasmussen LH, Lawaetz M, Bjoern L, Blemings A, Eklof B (2013) Randomized trial comparing endovenous laser ablation and stripping of the great saphenous vein with clinical and duplex outcome after 5 years. *J Vasc Surg* 58:421-426.
- [44] Rodriguez-Acevedo O, Elstner KE, Martinic K, Zea A, Diaz J, Martins RT, Arduini F, Hodgkinson A, Ibrahim N (2016). Hydrodisplacement of sural nerve for safety and efficacy of endovenous thermal ablation for small saphenous vein incompetence. *Phlebology* 2016 Sep 29. pii: 0268355516671233. [Epub ahead of print]
- [45] Rutherford RB, Padberg FT Jr, Comerota AJ, Kistner RL, Meissner MH, Moneta GL (2000). Venous severity scoring: An adjunct to venous outcome assessment. *J Vasc Surg* 31:1307-1312.
- [46] Rutgers PH, Kitslaar PJ (1994). Randomized trial of stripping versus high ligation combined with sclerotherapy in the treatment of the incompetent greater saphenous vein. *Am J Surg* 168:311-315.
- [47] Scheltinga MR, Wijburg ER, Keulers BJ, de Kroon KE (2007). Conventional versus invaginated stripping of the great saphenous vein: a randomized, double-blind, controlled clinical trial. *World J Surg* 31:2236-2242.
- [48] Schmedt CG, Dikic S, Esipova, Demhasaj , Küspert T, Sroka R (2014). Endovenöse Lasertherapie der Varikose – Evidenz und Perspektiven. *Gefäßchirurgie* 19:622-628.
- [49] Siribumrungwong B, Noorit P, Wilasrusmee C, Attia J, Thakkinstian A (2012). A systematic review and meta-analysis of randomised controlled trials comparing endovenous ablation and surgical intervention in patients with varicose vein. *Eur J Vasc Endovasc Surg* 44:214-223.
- [50] Spiliopoulos S, Theodosiadou V, Sotiriadi A, Karnabatidis D (2014). Endovenous ablation of incompetent truncal veins and their perforators with a new radiofrequency system. Mid-term outcomes. *Vascular*. 2014 Dec 12. pii: 1708538114564462. [Epub ahead of print]

- [51] Sroka R, Pongratz T, Siegrist K, Burgmeier C, Barth H.-D., Schmedt C.-G. (2013) Endovenous Laser Application. Strategies to improve endoluminal energy application. *Phlebology* 42:121-129.
- [52] Sufian S, Arnez A, Labropoulos N, Lakhanpal S (2017). Endothermal venous ablation of the saphenous vein on patients who are on anticoagulation therapy. *Int Angiol* 36:268-274.
- [53] Vasquez MA, Rabe E, McLafferty RB, Shortell CK, Marston WA, Gillespie D, Meissner MH, Rutherford RB; American Venous Forum Ad Hoc Outcomes Working Group (2010). Revision of the venous clinical severity score: venous outcomes consensus statement: special communication of the American Venous Forum Ad Hoc Outcomes Working Group. *J Vasc Surg* 52:1387-1396.
- [54] Venermo M, Saarinen J, Eskelinen E, Vähäaho S, Saarinen E, Railo M, Urarto I, Salenius J, Albäck A, Finnish Venous Study Collaborators (2016). Randomized clinical trial comparing surgery, endovenous laser ablation and ultrasound-guided foam sclerotherapy for the treatment of great saphenous varicose veins. *Br J Surg* 103:1438-1444.
- [55] van Eekeren RR, Boersma D, de Vries JP, Zeebregts CJ, Reijnen MM (2015). Update of endovenous treatment modalities for insufficient saphenous veins—a Review of literature. *Semin Vasc Surg* 27:118-136.
- [56] van den Bos RR, Malskat WS, De Maeseneer MG, de Roos KP, Groeneweg DA, Kockaert MA, Neumann HA, Nijsten T (2014). Randomized clinical trial of endovenous laser ablation versus steam ablation (LAST trial) for great saphenous varicose veins. *Br J Surg* 101:1077-1083.
- [57] van der Velden SK Biemans AA, De Maeseneer MG, Kockaert MA, Cuypers PW, Hollestein LM, Neumann HA, Nijsten T, van den Bos RR (2015). Five-year results of a randomized clinical trial of conventional surgery, endovenous laser ablation and ultrasound-guided foam sclerotherapy in patients with great saphenous varicose veins. *Br J Surg* 102:1184-1194.
- [58] Weiss RA, Weiss MA (2002). Controlled radiofrequency endovenous occlusion using a unique radiofrequency catheter under duplex guidance to eliminate saphenous varicose vein reflux: a 2-year follow-up. *Dermatol Surg* 28:38-42.
- [59] Winterborn RJ(1), Foy C, Earnshaw JJ (2004). Causes of varicose vein recurrence: late results of a randomized controlled trial of stripping the long saphenous vein. *J Vasc Surg* 40:634-639.
- [60] Witte ME, Holewijn S, van Eekeren RR, de Vries JP, Zeebregts CJ, Reijnen MM (2017). Midterm Outcome of Mechanochemical Endovenous Ablation for the Treatment of Great Saphenous Vein Insufficiency. *J Endovasc Ther* 24:149-155.
- [61] Wittens C, Davies AH, Baekgaard N, Broholm R, Cavezzi A. et al (2015) Management of Chronic Venous Disease. Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS). *Eur J Vasc Endovasc Surg* 49:678-737.

- [62] MacKenzie RK, Allan PL, Ruckley CV, Bradbury AW (2004) The effect of long saphenous vein stripping on deep venous reflux. Eur J Vasc Endovasc Surg 28:104-107
- [63] Michaels JA, Brazier JE, Campell WB, MacIntyre JB, Palfreyman SJ, Ratcliffe J (2006) Randomized clinical trial comparing surgery with conservative treatment for uncomplicated varicose veins. Br J Surg 93: 175-181