

Bölüm 6

VENÖZ YETMEZLİK VE ENDOVASKÜLER TEDAVİ YAKLAŞIMLARI

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GİRİŞ

Alt ekstremite venöz sistemi başlıca derin ve yüzeyel venöz sistem olarak iki ana yapıdan oluşur. Alt ekstremiteye gelen kanın büyük kısmı ekstremiteyi kas kasılması sayesinde derin venöz sistem aracılığı ile terk eder. Buna sistemik çalışma şekline kalf pompası adı verilir. Derin venöz sistem pek çok yolla superfisiyal sisteme bağlıdır. Bu şekilde herhangi bir yolakta engelle karşılaşan kanın kalbe dönüşü için pek çok alternatif yol sağlanmış olur.(1,2)

Venöz valfler venöz dolaşımındaki en önemli unsurlardır. Bir venöz valfin görevi reflüyü engellemektir. Valfler bikuspid yapıdadır. Alt ekstremite venöz akımı ayak ekstansör yüzü hariç yüzeyel venlerden derin venleredir. Fakat ayak ekstansör yüzde akım derin venlerden yüzeyel venlere doğrudur. Valfler derin, distal ve alt ekstremitedeki venlerde yüzeyel, proksimal ve üst ekstremite venlerine göre daha fazladır.(3) Kapakçıklar genellikle common femoral vende 1 adet, superfisiyal femoral vende ortalama 4 bulunurken, popliteal vende genelde 1adet, büyük safen vende 9-26 adet arası ve küçük safen vende 4-13 adet arası bulunur. Derin femoral vende ise genellikle yoktur.(3)

ALT EKSTREMİTE VENÖZ SİSTEM ANATOMİSİ

1. Yüzeyel venöz sistem
 - a. Büyük safen ven
 - b. Küçük safen ven
2. Derin venöz sistem
3. Perforan venöz sistem

Büyük safen ven (Vena Safena Magna): Genellikle müsküler fasyanın üstünde, hiperekoik görünümdeki safenoz fasyanın altındaki bu iki katman arasında seyreden. Ultrasonda (USG) transvers kesitte etrafında fasya ile birlikte safen ven,

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SONUÇ

Endovasküler tedaviler tüm tıbbi müdahale alanlarında giderek daha çok yaygınlaşmaktadır. Daha küçük insizyonlarla daha az travmatik, daha kozmetik ve daha başarılı sonuçlar amaçlanmaktadır. Bu çerçevede EVLA, RFA ve NBCA alt ekstremite yüzeyel venöz yetmezliği tedavisinde etkili bir yöntem olarak kullanılmaktadır. Konvansiyonel cerrahiye karşı EVLA, RFA ve NBCA yöntemleri başarılarını kanıtlamışlardır.

KAYNAKÇA

1. Barcroft H, Dornhorst A. The blood flow through the human calf during rhythmic exercise. *J Physiol (Lond)* 1949;109:402-11.
2. Bjordal R. Simultaneous pressure and flowrecordings in varicose veins of the lower extremities. *Acta Chir Scand* 1970;136:309-17.
3. Mitchel P, Robert A., and John Bergan, San Diego, California, and Baltimore, Maryland Journal of the American Academy of Dermatology Volume 31, Number 3, Part 1
4. Somjen G M. Anatomy of the superficial venous system. *Dermatol Surg.* 1995;21:35-45.
5. Moneta G L, Nehler M R. In: Gloviczki P, Yao JST, editor. *Handbook of Venous Disorders: Guidelines of the American Venous Forum*. 1st ed. London: Chapman and Hall Medical; 1996. The lower extremity venous system: anatomy and physiology of normal venous function and chronic venous insufficiency. pp. 3-26.
6. Browse N, Burnand K, Thomas M. *Diseases of the Veins: Pathology, Diagnosis, and Treatment*. London: Edward Arnold; 1988.
7. Caggiati A, Bergan JJ, Gloviczki P, Eklof B, Allegra C, Partsch H, et al. Nomenclature of the veins of the lower limb: extensions, refinements, and clinical application. *J Vasc Surg.* 2005;41:719-724.
8. Caggiati A, Bergan JJ, Gloviczki P, Jantet G, Wendell-Smith C P, Partsch H. Nomenclature of the veins of the lower limbs: an international interdisciplinary consensus statement. *J Vasc Surg.* 2002;36:416-422.
9. Evans CJ, Fowkes FG, Ruckley CV, Lee AJ. Prevalence of varicose veins and chronic venous insufficiency in men and women in the general population: Edinburgh Vein Study. *J Epidemiol Comm Health* 1999; 53:149-53.
10. Wittens C, Davies AH, Baekgaard N, Broholm R, Cavezzi A, Chastanet S, et al. Editor's Choice - Management of Chronic Venous Disease: Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS). *Eur J Vasc Endovasc Surg* 2015;49:678-737.
11. Brand FN, Dannenberg AL, Abbott RD, et al. The epidemiology of varicose veins: the Framingham Study. *Am J Prev Med* 1988; 4: 96-101.
12. Periferik arter ve ven hastalıkları ulusal tedavi klavuzu 2016
13. Labropoulos N, Giannoukas AD, Delis K, Mansour MA, Kang SS, Nicolaides AN, et al. Where does venous reflux start? *J Vasc Surg* 1997;26:736-42.
14. Callam M J. Epidemiology of varicose veins. *Br J Surg.* 1994;81:167-173.
15. Raffetto J.D., and Mannello F: Pathophysiology of chronic venous disease. *Int Angiol* 2014; 33: pp.212-221 View In Article
16. Goldman M P, Wiess R A, Bergan J J. *Varicose Veins and Telangiectasias: Diagnosis and Treatment*. 2nd ed. St. Louis: Quality Medical Publishing; 1999. pp. 12-37.
17. Koçarslan A, Koçarslan S. What is the role of prolidase in pathogenesis of primary varicose veins? *Turkish Journal Of Thoracic And Cardiovascular Surgery*,2017;25/1,68-73
18. Krysa J, Jones GT, van Rij AM. Evidence for a genetic role in varicose veins and chronic venous insufficiency. *Phlebology* 2012;27:329-35.

19. Sansilvestri-Morel P, Rupin A, Jaisson S, et al. Synthesis of collagen is dysregulated in cultured fibroblasts derived from skin of subjects with varicose veins as it is in venous smooth muscle cells. *Circulation.* 2002;106:479–483.
20. Schmid-Schonbein G W, Takase S, Bergan J J. New advances in the understanding of the pathophysiology of chronic venous insufficiency. *Angiology.* 2001;52(suppl 1):S27–S34.
21. Revision of the CEAP classification for chronic venous disorders: Consensus statement Bo Eklof, MD,^a Robert B. Rutherford, MD,^b John J. Bergan, MD,^c Patrick H. Carpentier, MD,^d Peter Gloviczki, MD,^e Robert L. Kistner, MD,^f Mark H. Meissner, MD,^g Gregory L. Moneta, MD,^h Kenneth Myers, MD,ⁱ Frank T. Padberg, MD,^j Michel Perrin, MD,^k C. Vaughan Ruckley, MD,^l Philip Coleridge Smith, MD,^m and Thomas W. Wakefield, MD,ⁿ for the American Venous Forum International Ad Hoc Committee for Revision of the CEAP Classification, Helsingborg, Sweden
22. Laurikka J O, Sisto T, Tarkka M R, Auvinen O, Hakama M. Risk indicators for varicose veins in forty- to sixty-year-olds in the Tampere varicose vein study. *World J Surg.* 2002;26:648–651.
23. Stansby G. Women, pregnancy, and varicose veins. *Lancet.* 2000;355:1117–1118.
24. Ciardullo A V, Panico S, Bellati C, et al. High endogenous estradiol is associated with increased venous distensibility and clinical evidence of varicose veins in menopausal women. *J Vasc Surg.* 2000;32:544–549.
25. Cornu-Thenard A, Boivin P, Baud J M, de Vincenzi I, Carpentier P H. Importance of the familial factor in varicose disease. *J Dermatol Surg Oncol.* 1994;20:318–326.
26. Zöller B, Ji J, Sundquist J, Sundquist K. Family history and risk of hospital treatment for varicose veins in Sweden. *Br J Surg* 2012;99:948–53.
27. Rabe E. Vein Bonn Study. *Phlebologie;* 2006. p. 179-86.
28. Iannuzzi A, Panico S, Ciardullo A V, et al. Varicose veins of the lower limbs and venous capacitance in postmenopausal women: relationship with obesity. *J Vasc Surg.* 2002;36:965–968.
29. Hobson J. Venous insufficiency at work. *Angiology.* 1997;48:577–582.
30. H. Ebner, et al., Linee guida flebo-linfologiche SIF-SICVE 2016 della Società Italiana di Flebologia e della Società Italiana di Chirurgia Vascolare ed Endovascolare, *Minerva Cardioangiologica*. 64 (2016) 1–80.
31. Labenz J and Böorsch G. Bleeding gastric and duodenal varicose veins: endoscopic embolisation using tissue adhesives. *Dtsch Med Wochenschr* 1992; 117: 1274–1277.
32. Rabe E, Guex JJ, Puskas A, Scuderi A, Fernandez Quesada F. Epidemiology of chronic venous disorders in geographically diverse populations: results from the Vein Consult Program. *Int Angiol* 2012;31:105–15.
33. Nicolaides A, Kakkos S, Eklof B, Perrin M, Nelzen O, Neglen P, et al. Management of chronic venous disorders of the lower limbs - guidelines according to scientific evidence. *Int Angiol* 2014;33:87–208.
34. Martinez-Zapata MJ, Vernooij RW, Uriona Tuma SM, Stein AT, Moreno RM, Vargas E, et al. Phlebotonics for venous insufficiency. *Cochrane Database Syst Rev* 2016;4:003229.
35. Earnshaw JJ. Stripping the long saphenous vein reduces the rate of reoperation for recurrent varicose veins: five-year results of a randomized trial. *J Vasc Surg* 1999; 29: 589–592.
36. Park S, Yim S, Cha D, Kim S, Lee S. Endovenous laser treatment of the small saphenous vein with a 980-nm diode laser: early results. *Dermatol Surg* 2008;34:1–8
37. Proebstle TM, Gul D, Kargl A, Knop J. Endovenous laser treatment of the lesser saphenous vein with a 940-nm diode laser; early results. *Dermatol Surg* 2003; 29: 357–61.
38. Uchino I. Endovenous laser closure of the perforating vein of the leg. *Phlebology* 2007;22:80–2
39. Beale RJ, Mavor AID, Gough MJ. Heat dissipation during endovenous laser treatment of varicose veins—is there any risk of nerve injury? *Phlebology* 2006; 21: 32–35.
40. Desmyttere J, Grard C, Mordon S: A 2 years follow-up study of endovenous 980 nm laser treatment of the great saphenous vein: role of the blood content in the GSV. *Medical Laser Application* 2005, 20: 283-289.

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41. Mozes G, Carmichael S W, Gloviczki P. In: Gloviczki P, Yao JST, editor. *Handbook of Venous Disorders: Guidelines of the American Venous Forum*. 2nd ed. London: Arnold; 2001. Development and anatomy of the venous system. pp. 11–24.
42. Ogilvy CS, Stieg PE, Awad I, Brown RD Jr, Kondziolka D, Rosenwasser R, et al. AHA Scientific Statement: Recommendations for the management of intracranial arteriovenous malformations: a statement for healthcare professionals from a special writing group of the Stroke Council, American Stroke Association. *Stroke* 2001;32:1458–71.
43. Levrier O, Mekkaoui C, Rolland PH, Murphy K, Cabrol P, Moulin G, et al. Efficacy and low vascular toxicity of embolization with radical versus anionic polymerization of n-butyl-2-cyanoacrylate (NBCA). An experimental study in the swine. *J Neuroradiol* 2003;30:95–102.
44. Brothers MF, Kaufmann JC, Fox AJ, et al. N-butyl 2-cyanoacrylate substitute for IBCA in interventional neuroradiology: histopathologic and polymerization time studies. *Am J Neuroradiol* 1989; 10: 777–786.
45. Almeida JI, Javier JJ, Mackay EG, Bautista C, Cher DJ, Proebstle TM. Two-year follow-up of first human use of cyanoacrylate adhesive for treatment of saphenous vein incompetence. *Phlebology* 2015;30:397–404.
46. Proebstle TM, Alm J, Dimitri S, Rasmussen L, Whiteley M, Lawson J, et al. The European multicenter cohort study on cyanoacrylate embolization of refluxing great saphenous veins. *J Vasc Surg Venous Lymphat Disord* 2015;3:2–7.
47. Morrison N, Gibson K, McEnroe S, Goldman M, King T, Weiss R, et al. Randomized trial comparing cyanoacrylate embolization and radiofrequency ablation for incompetent great saphenous veins (VeClose). *J Vasc Surg* 2015;61:985–94.
48. Management of Chronic Venous Disease Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS) Writing Committee a C. Wittens, A.H. Davies, N. Bækgaard, R. Broholm, A. Cavezzi, S. Chastanet, M. de Wolf, C. Eggen, A. Giannoukas, M. Gohel, S. Kakkos, J. Lawson, T. Noppeneij, S. Onida, P. Pittaluga, S. Thomis, I. Toonder, M. Vuylsteke, ESVS Guidelines Committee b P. Kohl, G.J. de Borst, N. Chakfé, S. Debus, R. Hinchliffe, I. Koncar, J. Lindholt, M.V. de Ceniga, F. Vermassen, F. Verzini, Document Reviewers c M.G. De Maeseneer, L. Blomgren, O. Hartung, E. Kalodiki, E. Korten, M. Lugli, R. Naylor, P. Nicolini, A. Rosales
49. Siribumrungwong B, Noorit P, Wilasrusmee C, Attia J, Thakkinstian A. 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* 2012;44:214e23.
50. Rasmussen LH, Bjoern L, Lawaetz M, Blemlings A, Lawaetz B, Eklof B. Randomized trial comparing endovenous laser ablation of the great saphenous vein with high ligation and stripping in patients with varicose veins: short-term results. *J Vasc Surg* 2007;46:308e15.
51. Dwerryhouse S, Davies B, Harradine K, et al. Stripping the long saphenous vein reduces the rate of reoperation for recurrent varicose veins: five-year results of a randomized trial. *J Vasc Surg*. 1999; 29: 589–592.
52. Kalteis M, Berger I, Messie-Werndl S, Pistrich R, Schimetta W, Polz W, et al. High ligation combined with stripping and endovenous laser ablation of the great saphenous vein: early results of a randomized controlled study. *J Vasc Surg* 2008;47: 822e9.
53. Rautio T, Ohinnoma A, Perala J, et al. Endovenous obliteration versus conventional stripping operation in the treatment of primary varicose veins: a randomized controlled trial with comparison of costs. *J Vasc Surg* 2002;35:958–965.
54. Lurie F, Creton D, Eklof B, et al. Prospective randomized study of endovenous radiofrequency obliteration (Closure) versus ligation and stripping in a selected patient population (EVOLVeS study). *J Vasc Surg* 2003;38:207–214.
55. Samuel N, Carradice D, Wallace T, Mekako A, Hatfield J, Chetter I. Randomized clinical trial of endovenous laser ablation versus conventional surgery for small saphenous varicose veins. *Ann Surg* 2013;257:419e26.
56. Mozes G, Kalra M, Carmo M, Swenson L, Gloviczki P. Extension of saphenous thrombus into the femoral vein: a potential complication of new endovenous ablation techniques. *J Vasc Surg* 2005;41:130e5.

57. Knipp BS, Blackburn SA, Bloom JR, Fellows E, Laforge W, Pfeifer JR, et al. Endovenous laser ablation: venous outcomes and thrombotic complications are independent of the presence of deep venous insufficiency. *J Vasc Surg* 2008;48:1538e45.
58. Nesbitt C, Eifell RK, Coyne P, Badri H, Bhattacharya V, Stansby G. Endovenous ablation (radiofrequency and laser) and foam sclerotherapy versus conventional surgery for great saphenous vein varices. *Cochrane Database Syst Rev* 2011; CD005624
59. Rautio T, Ohinmaa A, Perala J, Ohtonen P, Heikkinen T, Wiik H, et al. Endovenous obliteration versus conventional stripping operation in the treatment of primary varicose veins: a randomized controlled trial with comparison of the costs. *J Vasc Surg* 2002;35:958e65.
60. Rasmussen LH, Lawaetz M, Bjoern L, Vennits B, Blemlings A, Eklof B. Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy and surgical stripping for great saphenous varicose veins. *Br J Surg* 2011;98:1079e87.
61. Nordon IM, Hinchliffe RJ, Brar R, Moxey P, Black SA, Thompson MM, et al. A prospective double-blind randomized controlled trial of radiofrequency versus laser treatment of the great saphenous vein in patients with varicose veins. *Ann Surg* 2011;254:876e81.
62. Randomized trial comparing cyanoacrylate embolization and radiofrequency ablation for incompetent great saphenous veins (VeClose) Presented in part at the European Venous Forum, Paris, June 27, 2014, and the American College of Phlebology, Phoenix, Ariz, November 6-9, 2014. Nick Morrison, MD Email the author MD Nick MorrisonKathleen Gibson, MD Scott McEnroe, MD Mitchel Goldman, Ted King, MD Robert Weiss, MD Daniel Cher, MD Andrew Jones, MD
63. Bozkurt AK, Yilmaz MF. A prospective comparison of a new cyanoacrylate glue and laser ablation for the treatment of venous insufficiency. *Phlebology*. 2016 Mar;31(1 Suppl):106-13. doi: 10.1177/0268355516632652.
64. Bademci MS, Tayfur K, Ocakoglu G, Yazman S, Akyüz M, Yasa H. A new percutaneous technique: N-butyl cyanoacrylate adhesive for the treatment of giant saphenous vein insufficiency. *Vascular*. 2018 Apr;26(2):194-197. doi: 10.1177/1708538117724647.
65. Çalık ES, Arslan Ü, Ayaz F, Tort M, Yıldız Z, Aksu V, Onk OA, Limandal HK, Ekingen E, Dağ Ö, Kaygın MA, Erkut B. N-butyl cyanoacrylate in the treatment of venous insufficiency--the effect of embolisation with ablative polymerisation. *Vasa*. 2016;45(3):241-6. doi: 10.1024/0301-1526/a000531.
66. Tok M, Tüydeş O, Yüksel A, Şenol S, Akarsu S. Early-Term Outcomes for Treatment of Saphenous Vein Insufficiency with N-Butyl Cyanoacrylate: A Novel, Non-Thermal, and Non-Tumescent Percutaneous Embolization Technique. *Heart Surg Forum*. 2016 Jun 20;19(3):E118-22. doi: 10.1532/hsf.1496.
67. Yasim A, Eroglu E, Bozoglan O, Mese B, Acipayam M, Kara H. A new non-tumescent endovenous ablation method for varicose vein treatment: Early results of N-butyl cyanoacrylate (VariClose®). *Phlebology*. 2017 Apr;32(3):194-199. doi: 10.1177/0268355516638577.
68. Eroglu E, Yasim A, Ari M, Ekerbicer H, Kocarslan A, Kabalci M, Acipayam M. Mid-term results in the treatment of varicose veins with N-butyl cyanoacrylate. *Phlebology*. 2017 Dec;32(10):665-669. doi: 10.1177/0268355517718761.
69. Eroglu E, Yasim A. A Randomised Clinical Trial Comparing N-Butyl Cyanoacrylate, Radiofrequency Ablation and Endovenous Laser Ablation for the Treatment of Superficial Venous Incompetence: Two Year Follow up Results. *Eur J Vasc Endovasc Surg*. 2018 Oct;56(4):553-560.
70. Koramaz İ, El Kılıç H, Gökalp F, Bitargil M, Bektaş N, Engin E, Egici MT, Bozkurt AK. Ablation of the great saphenous vein with nontumescent n-butyl cyanoacrylate versus endovenous laser therapy. *J Vasc Surg Venous Lymphat Disord*. 2017 Mar;5(2):210-215.