



# BÖLÜM 3

## YARA TEDAVİSİNDE KULLANILAN AKTİF KAPAMA YÖNTEMLERİ

Bilgen ARIKAN<sup>1</sup>

Hatice ÖZSOY<sup>2</sup>

### İçindekiler

- Giriş
- Negatif Basınçlı Yara Tedavisi
- Hiperbarik Oksijen Tedavisi
- Topikal Oksijen Tedavisi
- Elektrik Stimülasyonu
- Jet-Lavaj İrrigasyon Sistemi
- Işın Tedavisi
- Ozon Tedavisi
- Lazer Tedavisi
- Kök Hücre Teknolojileri
- Larva Debridmani (Maggot Tedavisi)
- Ultrason Tedavisi
- Sonuç
- Bilgimizi Sinayalım
- Kaynaklar

### Neler Öğreneceğiz

- Yara bakımında kullanılan aktif kapama yöntemleri
- Aktif yara kapama ürünlerinin özelilikleri, avantaj ve dezavantajları
- Aktif yara kapama ürünlerinin endikasyon ve kontrendikasyonları
- Aktif kapama ürünlerinin çalışma mekanizmaları
- Aktif kapama ürünlerinin kullanımına yönelik güncel kanıtlar

<sup>1</sup> Arş. Gör., Uşak Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Cerrahi Hastalıkları Hemşireliği AD., bilgen.kahya@usak.edu.tr, blgnkhy@gmail.com

<sup>2</sup> Öğr. Gör., Burdur Mehmet Akif Ersoy Üniversitesi, Gölcük Saçılık Hizmetleri Meslek Yüksekokulu, İlk ve Acil Yardım Programı, htcozsoy15@gmail.com

**7. Aşağıdaki durumların hangisinde ultrason tedavisinin kullanımı endikedir?**

- a. Malignite varlığı
- b. Akut enfeksiyon varlığı
- c. Diyabetik ayak yaraları
- d. İskemik alanlar
- e. Derin ven trombozu

Cevaplar: 1b-2d-3d-4b-5e-6d-7c

## KAYNAKLAR

1. Dhivya S, Padma VV, Santhini E. Wound dressings—a review. *BioMedicine*, 2015; 5(4),1-5. doi: 10.7603/s40681-015-0022-9
2. Mirasoğlu B. Yara bakım ürünleri. *TOTBİD Dergisi*, 2015;14,456-461. doi: 10.14292/totbid.dergisi.2015.66
3. Yara Bakımı Derneği. *TYBÜKS (Türk Yara Bakım Ürünleri Kodlama Sistemi)*. (03/02/2022 tarihinde <http://yarabakimidernegi.org.tr/sayfa-tybUks-turk-yara-bakim-Urunleri-kodlama-sistemi-65.html> adresinden ulaşılmıştır.
4. Bak JR. Wound Healing, Dressings, and Drains. In: Rothrock JC (ed.) *Alexander's Care of the Patients in Surgery*. 16th ed. Missouri: Elsevier; 2019. p. 802-851.
5. Ather S, Harding KG. Wound Management and Dressings. In: Rajendran S (ed.) *Advanced Textiles for Wound Care*. 2nd ed. United Kingdom: Elsevier; 2019. p. 1-22.
6. Gestring M. *Negative pressure wound therapy*. Available from: [https://e1c9b1a9cc9b-2679354d789c7627a4c889c411cc.vetisonline.com/contents/negative-pressure-wound-therapy?search=negative%20pressure&source=search\\_result&selectedTitle=1~150&usage\\_type=default&display\\_rank=1](https://e1c9b1a9cc9b-2679354d789c7627a4c889c411cc.vetisonline.com/contents/negative-pressure-wound-therapy?search=negative%20pressure&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1)(Accessed 3rd February 2022).
7. Huang C, Leavitt T, Bayer LR, et al. Effect of negative pressure wound therapy on wound healing. *Current Problems in Surgery*, 2014; 51(7), 301-331. doi: 10.1067/j.cpsurg.2014.04.001
8. Gibbs KA, Hamm RL. Negative Pressure Wound Therapy. In: Hamm RL (ed). *Text and Atlas of Wound Diagnosis and Treatment*. United States: Mc GrawHill Education; 2015. p. 401-422.
9. Niezgoda J, Baranoski S, Ayello EA, et al. Wound Treatment Options. In: Baranoski S, Ayello E (eds.). *Wound Care Essentials Practice Principle*. 5th ed. China: Wolters Kluwer; 2020. p. 538-685.
10. Salvo P, Smajda R, Dini V, et al. A D-optimal design to model the performances of dressings and devices for negative pressure wound therapy. *Journal of Tissue Viability*, 2016; 25(2), 83-90.
11. Agarwal P, Kukrele R, Sharma D. Vacuum assisted closure (VAC)/negative pressure wound therapy (NPWT) for difficult wounds: A review. *Journal of clinical orthopaedics and trauma*, 2019;10(5), 845-848.
12. Öğce F. Yara İyileşmesi, Pansumanlar, Drenler. Yavuz van Giersbergen M, Kaymakçı Ş (eds.) *Ameliyathane Hemşireliği* içinde. İzmir: Meta; 2015. p. 547-566.
13. Vachhrajani V, Khakhkhar P. *Science of Wound Healing and Dressing Materials*. Singapore: Springer; 2020.

● Yaraya Çok Yönlü Bakış

14. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Basınç Ülserlerinin/Yaralarının Önlenmesi ve Tedavisi: Hızlı Başvuru Kılavuzu 2019. (Türkçe versiyon). Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA: 2019.
15. Food and Drug Administration-FDA. *Non-powered Suction Apparatus Device Intended for Negative Pressure Wound Therapy (NPWT)-Class II Special Controls Guidance for Industry and FDA Staff*. Available from: <https://www.fda.gov/medical-devices/guidance-documents-medical-devices-and-radiation-emitting-products/non-powered-suction-apparatus-device-intended-negative-pressure-wound-therapy-npwt-class-ii-special#5> (Accessed 3rd February 2022).
16. Sahebally SM, McKevitt K, Stephens I, et al. Negative pressure wound therapy for closed laparotomy incisions in general and colorectal surgery: a systematic review and meta-analysis. *JAMA surgery*, 2018;153(11), e183467-e183467. doi:10.1001/jamasurg.2018.3467
17. Liu Z, Dumville JC, Hinchliffe RJ, et al. Negative pressure wound therapy for treating foot wounds in people with diabetes mellitus. *Cochrane Database of Systematic Reviews*, 2018; (10),1-69. doi: 10.1002/14651858.CD010318.pub3
18. Norman G, Goh EL, Dumville JC, et al. Negative pressure wound therapy for surgical wounds healing by primary closure. *Cochrane Database of Systematic Reviews*, 2020;(6),1-208. DOI: 10.1002/14651858.CD009261.pub6.
19. Tuuli MG, Liu J, Tita AT, et al. Effect of prophylactic negative pressure wound therapy vs standard wound dressing on surgical-site infection in obese women after cesarean delivery: a randomized clinical trial. *JAMA*, 2020;324(12),1180-1189. doi:10.1001/jama.2020.13361
20. Marston WA, Sabolinski ML, Parsons, NB, et al. Comparative effectiveness of a bilayered living cellular construct and a porcine collagen wound dressing in the treatment of venous leg ulcers. *Wound Repair and Regeneration*, 2014;22(3),334-340. doi:10.1111/wrr.12156
21. Aktaş Ş. Kronik Yarada Lokal Faktörler ve Yardımcı Tedaviler. *ANKEM Dergisi*, 2012;26(2),217-222.
22. Vural F, Savci A. Yara Bakımında Yeni Uygulamalar. *Türkiye Klinikleri J Surg Nurs-Special Topics*, 2017; 3(3), 224-232.
23. Zhao D, Luo S, Xu W, et al. Efficacy and safety of hyperbaric oxygen therapy used in patients with diabetic foot: a meta-analysis of randomized clinical trials. *Clinical therapeutics*, 2017;39(10), 2088-2094. doi: 10.1016/j.clinthera.2017.08.014
24. Kranke P, Bennett MH, Martyn-St James M, et al. Hyperbaric oxygen therapy for chronic wounds. *Cochrane Database of Systematic Reviews*, 2015;(6),1-53. doi:10.1002/14651858.CD004123.pub4.
25. Brouwer RJ, Lalieu RC, Hoencamp R, et al. A systematic review and meta-analysis of hyperbaric oxygen therapy for diabetic foot ulcers with arterial insufficiency. *Journal of vascular surgery*, 2020;71(2), 682-692. doi: 10.1016/j.jvs.2019.07.082
26. Sharma R, Sharma SK, Mudgal SK, et al. Efficacy of hyperbaric oxygen therapy for diabetic foot ulcer, a systematic review and meta-analysis of controlled clinical trials. *Scientific reports*, 2021;11(1), 1-12. doi: 10.1038/s41598-021-81886-1
27. Zhang Z, Zhang W, Xu Y, et al. Efficacy of hyperbaric oxygen therapy for diabetic foot ulcers: An updated systematic review and meta-analysis. *Asian Journal of Surgery*, 2022; 45(1), 68-78. doi: 10.1016/j.asjsur.2021.07.047

28. Wang F, Wang Y, Sun T, et al. Hyperbaric oxygen therapy for the treatment of traumatic brain injury: a meta-analysis. *Neurological Sciences*, 2016;37(5),693-701. doi: 10.1007/s10072-015-2460-2
29. Erdoğan B. Yara Bakım Ürünleri. Topalan M, Aktaş Ş (eds.) *Güncel Yöneriyle Kronik Yara* içinde. Ankara: Aygül Ofset; 2010. p. 141-171.
30. Nataraj M, Maiya AG, Karkada G, et al. Application of topical oxygen therapy in healing dynamics of diabetic foot ulcers-a systematic review. *Review of Diabetic Studies*, 2019;15(1), 74-82. doi: 10.1900/RDS.2019.15.74
31. Thanigaimani S, Singh T, Golledge J. Topical oxygen therapy for diabetes-related foot ulcers: A systematic review and meta-analysis. *Diabetic Medicine*, 2021;38(8),1-10. doi: 10.1111/dme.14585
32. Sümen SG. Kronik yara ve topikal oksijen tedavisi. Uncu H (ed.) *Yara*. 1. Baskı. Ankara: Türkiye Klinikleri; 2021. p.192-8.
33. Rajendran SB, Challen K, Wright KL, et al. Electrical stimulation to enhance wound healing. *Journal of Functional Biomaterials*, 2021;12(2),40.
34. Thakral G, LaFontaine J, Najafi B, et al. Electrical stimulation to accelerate wound healing. *Diabetic foot & ankle*, 2013;4(1),1-9. doi: 10.3402dfa.v4i0.22081
35. Ho CH, Bensitel T, Wang X, et al. Pulsatile lavage for the enhancement of pressure ulcer healing: a randomized controlled trial. *Physical Therapy*, 2012;92(1),38-48.
36. Bath MF, Powell J, Ismail I, et al. Use of pulsed lavage reduces the rate of surgical site infection after laparotomy. *Journal of Surgical Research*, 2021;266, 300-305.
37. Aktaş Ş. Yara Bakım Ürünleri. (03/02/2022 tarihinde <https://www.klimik.org.tr/wp-content/uploads/2018/05/YARA-BAKIM-ÜRÜNLERİ-ŞAMİL-AKTAS.pdf> adresinden ulaşılmıştır.)
38. Fitzpatrick E, Holland OJ, Vanderlelie JJ. Ozone therapy for the treatment of chronic wounds: A systematic review. *International wound journal*, 2018;15(4), 633-644. doi: 10.1111/iwj.12907
39. Wainstein J, Feldbrin ZE, Boaz M, et al. Efficacy of ozone–oxygen therapy for the treatment of diabetic foot ulcers. *Diabetes technology & therapeutics*, 2011;13(12), 1255-1260.
40. Zhang J, Guan M, Xie C, et al. Increased growth factorsplay a role in wound healing promoted by noninvasive oxygen-ozone therapyin diabetic patients with foot ulcers. *Oxidative Medicine and Cellular Longevity*, 2014;1-8.
41. Kazemikhoo N, Rahbar MR, Akrami SM. Low-level laser therapy along with intravascular laser in deep pressure ulcer resistant to conventional therapies. *Journal of Skin and Stem Cell*, 2015; 2(4),1-4. doi: 10.17795/jssc30686
42. Taradaj J, Shay B, Dymarek R, et al. Effect of laser therapy on expression of angio-and fibrogenic factors, and cytokine concentrations during the healing process of human pressure ulcers. *International journal of medical sciences*, 2018; 15(11), 1105-1112. doi: 10.7150/ijms.25651
43. Ding DC, Shyu WC, Lin SZ. Mesenchymal stem cells. *Cell transplantation*, 2011;20(1), 5-14. doi: 10.3727/096368910X
44. Mutlu S, Yılmaz E. Yara Yönetiminde Yenilikçi Yaklaşımlar. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, 2019; 8(4), 481-494.
45. Jackson WM, Nesti LJ, Tuan RS. Concise review: clinical translation of wound healing therapies based on mesenchymal stem cells. *Stem cells translational medicine*, 2012;1(1), 44-50. doi: 10.5966/sctm.2011-0024.

● Yaraya Çok Yönlü Bakış

46. Akyolcu N. Yara İyileşmesi ve Hemşirelik. Aksoy G, Kanan N, Akyolcu N (eds.) *Cerrahi Hemşireliği* içinde. Genişletilmiş 2. Baskı. İstanbul: Nobel Tıp. 2017. p. 79-113.
47. Dhillon RS, Schwarz EM, Maloney MD. Platelet-rich plasma therapy-future or trend?. *Arthritis research & therapy*, 2012; 14(4), 1-10. doi: 10.1186/ar3914.
48. Carter MJ, Fylling CP, Parnell L. Use of Platelet Rich Plasma Gel on Wound Healing: A Systematic Review and Meta- Analysis. *Eplasty*, 2022;11, 382-410.
49. Zapata MJ, Carvajal AJM, Sola I, et al. Autologous Platelet Rich Plasma for Treating Chronic Wounds. *Cochrane Database Systematic Review*, 2016; 25(5), 1-58. doi: 10.1002/14651858.CD006899.pub3.
50. Sherman RA. Maggot therapy takes us back to the future of wound care: new and improved maggot therapy for the 21st century. *Journal of diabetes science and technology*, 2009; 3(2), 336-344.
51. Dholaria S, Dalal P, Shah N, et al. Maggots debridement therapy [MDT]. *Gujarat Medical Journal*, 2014;69(1), 32-36.
52. Armstrong D. Basic principles of wound management. Available from: [https://e1c-9b1a9cc9b2679354d789c7627a4c889c411cc.vetisonline.com/contents/basic-principles-of-wound-management?search=maggot%20therapy&source=search\\_result&selected-Title=1~3&usage\\_type=default&display\\_rank=1](https://e1c-9b1a9cc9b2679354d789c7627a4c889c411cc.vetisonline.com/contents/basic-principles-of-wound-management?search=maggot%20therapy&source=search_result&selected-Title=1~3&usage_type=default&display_rank=1) (Accessed 3rd February 2022).
53. Nigam Y, Morgan C. Does maggot therapy promote wound healing? The clinical and cellular evidence. *Journal of the European Academy of Dermatology and Venereology*, 2016; 30(5), 776-782. doi: 10.1111/jdv.13534
54. Elraiayah T, Domecq JP, Prutsky G, et al. A systematic review and meta-analysis of débridement methods for chronic diabetic foot ulcers. *Journal of vascular surgery*, 2016;63(2),37S-45S.
55. Opletalová K, Blaizot X, Mourgeon B, et al. Maggot therapy for wound debridement: a randomized multicenter trial. *Archives of dermatology*, 2012;148(4), 432-438. doi:10.1001/archdermatol.2011.1895
56. Ennis WJ, Lee C, Gellada K, et al. Advanced technologies to improve wound healing: Electrical stimulation, vibration therapy, and ultrasound—what is the evidence?. *Plastic and Reconstructive Surgery*, 2016;138(3S),94S-104S. doi: 10.1097/PRS.0000000000002680