

Bölüm 51

TOTAL DİZ ARTROPLASTİSİ SONRASI REHABİLİTASYON

Mehmet Orçun AKKURT
Vedat BİÇİCİ
Bünyamin ARI¹

GİRİŞ

Total diz artroplastisi (TDA) cerrahi teknik ve implant sağ kalımına bağlı olmakla birlikte son dönem diz osteoartrit hastalarında mükemmel bir seçenektir (1,2). Son yıllarda hastaya özel implant tasarımı, bilgisayar destekli navigasyon gibi yeni tekniklerle daha iyi sonuçlar elde edilse de asıl başarı TDA sonrası uygun rehabilitasyon ve yeterli fonksiyonel iyileşme ile sağlanır. Ortopedistler ve fizyoterapistler birçok farklı rehabilitasyon programı uygulasa da hala hangi rehabilitasyon programının daha iyi fonksiyonel sonuçlar elde etmek için kullanılması gerektiğine dair ortak bir görüş sağlanmış değildir (14-15).

TDA sonrası rehabilitasyon eklem hareket açıklığı (EHA), kalça ve diz kaslarının güçlendirilmesine, fonksiyonel bağımsızlığın geliştirilmesi ve gündelik normal aktivitelere dönülmesine odaklanmaktadır (16). Rehabilitasyon olmadan fonksiyonel bağımsızlık ve aktivite seviyeleri sağlanamaz. Bu amaçla fizik tedavide, akuaterapi, transkütanöz elektriksel sinir stimülasyonu (TENS), nöromusküler elektrik stimülasyonu (NMES) ve alet yardımlı yumuşak doku terapileri gibi birçok yöntem uygulanmaktadır. Farklı rehabilitasyon programlarında hastaya ve uygulayan uzmana göre değişik yöntemler tercih edilebilir (14,19). Ancak tüm bu yöntemlere ulaşma kolaylığına rağmen doğru yöntemi belirlemek sıklıkla zordur. Daha da önemlisi TDA rehabilitasyonu için sürekli olarak aynı şekilde uygulanan kılavuzlar yoktur. Sadece birkaç derleme bu konuyu ele almaya çalışmaktadır.

¹ Op.Dr, Yenimahalle Eğitim ve Araştırma Hastanesi, doctorbunyaminari@hotmail.com

5. Ekstansör mekanizmanın komplikasyonları
6. Protezde gevşeme
7. Eklem instabilitesi
8. Refleks sempatik distrofi
9. Heterotopik ossifikasyon j.

C- Diğer nedenler: Pigmente villonoduler sinovit, Metallozis, gut artriti

SONUÇ

Sonuç olarak, TDA'dan sonra güç ve EHA'nın geri kazanımı, modalitelerin bir kombinasyonu ile sağlanabilir. Ek komorbidite potansiyeli olduğu göz önüne alındığında, tüm rehabilitasyon biçimleri TDA uygulanan her hasta için geçerli olmayabilir. Eklem güçlendirmenin ve daha aktif bir yaşam tarzına kademeli olarak giriş yapmanın önemi göz ardı edilemez. Rehabilitasyona uygunluk ve bağlılık, hastaların preoperatif aktivite seviyelerini elde etmelerine ve hatta onlardan daha yüksek olmalarına yardımcı olabilir.

KAYNAKLAR

1. Kurtz SM, Ong KL, Schmier J, et al. Future clinical and economic impact of revision total hip and knee arthroplasty. *J Bone Joint Surg Am* 2007;89(Suppl 3):144-151
2. Bade MJ, Kohrt WM, Stevens-Lapsley JE. Outcomes before and after total knee arthroplasty compared to healthy adults. *J Orthop Sports Phys Ther* 2010;40(9):559-567
3. Ardali G. A daily adjustable progressive resistance exercise protocol and functional training to increase kuadriseps muscle strength and functional performance in an elderly homebound patient following a total knee arthroplasty. *Physiother Theory Pract* 2014;30(4):287-297
4. Meier W, Mizner RL, Marcus RL, et al. Total knee arthroplasty: muscle impairments, functional limitations, and recommended rehabilitation approaches. *J Orthop Sports Phys Ther* 2008;38(5):246-256
5. Brander VA, Stulberg SD, Chang RW. Life after total hip arthroplasty. *Bull Rheum Dis* 1993;42(3):1-5
6. Brander V, Stulberg SD. Rehabilitation after hip- and knee-joint replacement. An experience- and evidence-based approach to care. *Am J Phys Med Rehabil* 2006;85(11, Suppl):S98-S118, quiz S119-S123
7. Doç. Dr. Fzt. Filiz Can. Diz Rehabilitasyonu, In: N. Reha Tandoğan, A. Mümtaz Alpaslan (eds), *Diz Cerrahisi, Haberal Eğitim Vakfı, Ankara 1999; s:501-504*
8. Tandoğan R. *Diz cerrahisi. Ankara: Haberal Eğitim Vakfı 1999; S:391 - 450*
9. Demir H. *Diz Artroplasti Rehabilitasyonu. Erciyes Tıp Derg. 2002; 24: 194-201.*
10. Ditmyer MM, Topp R, Pifer M. Prehabilitation in preparation for orthopaedic surgery. *Orthop Nurs.* 2002;21:43-51; 52-4.
11. Swank AM, Kachelman JB, Bibeau W, et al. Prehabilitation before total knee arthroplasty increases strength and function in older adults with severe osteoarthritis. *J Strength Cond Res.* 2011;25: 318-25.
12. Huang SW, Chen PH, Chou YH. Effects of a preoperative simplified home rehabilitation education program on length of stay of total knee arthroplasty patients. *Orthop Traumatol Surg Res.* 2012; 98: 259-64.
13. McDonald S, Hetrick S, Green S. Pre-operative education for hip or knee replacement. *Cochrane Database Syst Rev* 2004: CD003526. 62.
14. Jones S, Alnaib M, Kokkinakis M, et al. Pre-operative patient education reduces length of stay after knee joint arthroplasty. *Ann R Coll Surg Engl.* 2011; 93 :71-5.

15. Bade MJ, Stevens-Lapsley JE. Early high-intensity rehabilitation following total knee arthroplasty improves outcomes. *J Orthop Sports Phys Ther* 2011;41(12):932–941
16. Moffet H, Collet JP, Shapiro SH, et al. Effectiveness of intensive rehabilitation on functional ability and quality of life after first total knee arthroplasty: A single-blind randomized controlled trial. *Arch Phys Med Rehabil* 2004; 85(4):546–556
17. Petterson SC, Mizner RL, Stevens JE, et al. Improved function from progressive strengthening interventions after total knee arthroplasty: a randomized clinical trial with an imbedded prospective cohort. *Arthritis Rheum* 2009;61(2):174–183
18. Pozzi F, Snyder-Mackler L, Zeni J. Physical exercise after knee arthroplasty: a systematic review of controlled trials. *Eur J Phys Rehabil Med* 2013;49(6):877–892
19. Pöyhönen T, Sipilä S, Keskinen KL, et al. Effects of aquatic resistance training on neuromuscular performance in healthy women. *Med Sci Sports Exerc* 2002;34(12): 2103–2109
20. Valtonen A, Pöyhönen T, Sipilä S, et al. Effects of aquatic resistance training on mobility limitation and lower-limb impairments after knee replacement. *Arch Phys Med Rehabil* 2010; 91(6):833–839
21. Harmer AR, Naylor JM, Crosbie J, et al. Land-based versus water-based rehabilitation following total knee replacement: a randomized, single-blind trial. *Arthritis Rheum* 2009;61(2):184–191
22. Piva SR, Gil AB, Almeida GJ, et al. A balance exercise program appears to improve function for patients with total knee arthroplasty: a randomized clinical trial. *Phys Ther* 2010;90(6):880–894
24. Liao CD, Liou TH, Huang YY, et al. Effects of balance training on functional outcome after total knee replacement in patients with knee osteoarthritis: a randomized controlled trial. *Clin Rehabil* 2013;27(8):697–709
25. Romness DW, Rand JA. The role of continuous passive motion following total knee arthroplasty. *Clin Orthop Relat Res* 1988; (226):34–37
26. Pope RO, Corcoran S, McCaul K, et al. Continuous passive motion after primary total knee arthroplasty. Does it offer any benefits? *J Bone Joint Surg Br* 1997;79(6):914–917
27. Levy AS, Marmar E. The role of cold compression dressings in the postoperative treatment of total knee arthroplasty. *Clin Orthop Relat Res* 1993;(297):174–178
28. Su EP, Perna M, Boettner F, et al. A prospective, multi-center, randomized trial to evaluate the efficacy of a cryopneumatic device on total knee arthroplasty recovery. *J Bone Joint Surg Br* 2012;94(11, Suppl A):153–156
29. Bech M, Moorhen J, Cho M, et al. Device or ice: the effect of consistent cooling using a device compared with intermittent cooling using an ice bag after total knee arthroplasty. *Physiother Can* 2015;67(1):48–55
30. Delitto A, Snyder-Mackler L. Two theories of muscle strength augmentation using percutaneous electrical stimulation. *Phys Ther* 1990;70(3):158–164
31. Stevens JE, Mizner RL, Snyder-Mackler L. Neuromuscular electrical stimulation for quadriceps muscle strengthening after bilateral total knee arthroplasty: a case series. *J Orthop Sports Phys Ther* 2004;34(1):21–29
32. Sinacore DR, Delitto A, King DS, et al. Type II fiber activation with electrical stimulation: a preliminary report. *Phys Ther* 1990; 70(7):416–422
34. Trimble MH, Enoka RM. Mechanisms underlying the training effects associated with neuromuscular electrical stimulation. *Phys Ther* 1991;71(4):273–280, discussion 280–282
35. Wolfson L, Judge J, Whipple R, et al. Strength is a major factor in balance, gait, and the occurrence of falls. *J Gerontol A Biol Sci Med Sci* 1995;50(Spec No):64–67
36. Fahrner H, Rentsch HU, Gerber NJ, et al. Knee effusion and reflex inhibition of the quadriceps. A bar to effective retraining. *J Bone Joint Surg Br* 1988;70(4):635–638
37. Stevens-Lapsley JE, Balter JE, Wolfe P, et al. Early neuromuscular electrical stimulation to improve quadriceps muscle strength after total knee arthroplasty: a randomized controlled trial. *Phys Ther* 2012;92(2):210–226
38. Avramidis K, Karachalios T, Popotonasios K, et al. Does electric stimulation of the vastus medialis muscle influence rehabilitation after total knee replacement? *Orthopedics* 2011;34(3):175
39. Levine M, McElroy K, Stakich V, et al. Comparing conventional physical therapy rehabilitation with neuromuscular electrical stimulation after TKA. *Orthopedics* 2013;36(3):e319–e324

40. Rakel BA, Zimmerman MB, Geasland K, et al. Transcutaneous electrical nerve stimulation for the control of pain during rehabilitation after total knee arthroplasty: A randomized, blinded, placebo-controlled trial. *Pain* 2014;155(12):2599–2611
41. DeSantana JM, Walsh DM, Vance C, Rakel BA, Sluka KA. Effectiveness of transcutaneous electrical nerve stimulation for treatment of hyperalgesia and pain. *Curr Rheumatol Rep* 2008;10(6): 492–499
42. DeLoach LJ, Higgins MS, Caplan AB, et al. The visual analog scale in the immediate postoperative period: intrasubject variability and correlation with a numeric scale. *Anesth Analg* 1998;86(1): 102–106
43. Sluka KA, Deacon M, Stibal A, et al. Spinal blockade of opioid receptors prevents the analgesia produced by TENS in arthritic rats. *J Pharmacol Exp Ther* 1999;289(2): 840–846
44. Stabile ML, Mallory TH. The management of postoperative pain in total joint replacement: transcutaneous electrical nerve stimulation is evaluated in total hip and knee patients. *Orthop Rep* 1978;7:121–123
45. Angulo DL, Colwell CW. Use of Postoperative TENS and Continuous Passive Motion Following Total Knee Replacement. *J Orthop Sports Phys Ther* 1990;11(12):599–604
46. Hing WBR, Bremner T. Mulligan's mobilization with movement: A systematic Review. *J Manual Manip Ther* 2009;17:25
47. Sevier TL, Stegink-Jansen CW. Astym treatment vs. eccentric exercise for lateral elbow tendinopathy: a randomized controlled clinical trial. *PeerJ* 2015;3:e967
48. Slaven EJ, Mathers J. Management of chronic ankle pain using joint mobilization and ASTYM® treatment: a case report. *J Manual Manip Ther* 2011;19(2):108–112
49. Davidson CJ, Ganion LR, Gehlsen GM, et al. Rat tendon morphologic and functional changes resulting from soft tissue mobilization. *Med Sci Sports Exerc* 1997; 29(3):313–319
50. Gehlsen GM, Ganion LR, Helfst R. Fibroblast responses to variation in soft tissue mobilization pressure. *Med Sci Sports Exerc* 1999; 31(4):531–535
51. Cerny K, Perry J, Walker JM. Adaptations during the stance phase of gait for simulated flexion contractures at the knee. *Orthopedics* 1994;17(6):501–512, discussion 512–513
52. Ritter MA, Lutgring JD, Davis KE, et al. The role of flexion contracture on outcomes in primary total knee arthroplasty. *J Arthroplasty* 2007;22(8): 1092–1096
53. Kim J, Nelson CL, Lotke PA. Stiffness after total knee arthroplasty. Prevalence of the complication and outcomes of revision. *J Bone Joint Surg Am* 2004;86-A(7):1479–1484
54. Maloney WJ. The stiff total knee arthroplasty: evaluation and management. *J Arthroplasty* 2002;17(4, Suppl 1):71–73
55. Barrack RL, Ruh EL, Chen J, et al. Impact of socioeconomic factors on outcome of total knee arthroplasty. *Clin Orthop Relat Res* 2014;472(1):86–97
56. McCormack JR. The management of bilateral high hamstring tendinopathy with ASTYM® treatment and eccentric exercise: a case report. *J Manual Manip Ther* 2012;20(3): 142–146
56. Tyler A, Slaven E. The role of the Astym (R) process in the management of osteoarthritis of the knee: a single-subject research design. *J Stud Phys Ther Res* 2013;6:10
57. Böstman OM. Prevalence of obesity among patients admitted for elective orthopaedic surgery. *Int J Obes Relat Metab Disord* 1994; 18(10):709–713
58. Järvenpää J, Kettunen J, Kröger H, Miettinen H. Obesity may impair the early outcome of total knee arthroplasty. *Scand J Surg* 2010;99(1):45–49
59. Samson AJ, Mercer GE, Campbell DG. Total knee replacement in the morbidly obese: a literature review. *ANZ J Surg* 2010;80(9): 595–599
60. Amin AK, Clayton RA, Patton JT, et al. Total knee replacement in morbidly obese patients. Results of a prospective, matched study. *J Bone Joint Surg Br* 2006;88(10): 1321–1326
61. Hamoui N, Kantor S, Vince K, et al. Long-term outcome of total knee replacement: does obesity matter? *Obes Surg* 2006; 16(1):35–38
62. Odum SM, Springer BD, Dennos AC, et al. National obesity trends in total knee arthroplasty. *J Arthroplasty* 2013;28(8, Suppl)148–151
63. Gillespie GN, Porteous AJ. Obesity and knee arthroplasty. *Knee* 2007;14(2):81–86
64. Healy WL, Iorio R, Lemos MJ. Athletic activity after total knee arthroplasty. *Clin Orthop Relat Res* 2000;(380):65–71

65. Kuster MS. Exercise recommendations after total joint replacement: a review of the current literature and proposal of scientifically based guidelines. *Sports Med* 2002;32(7): 433-445
66. Seyler TM, Mont MA, Ragland PS, et al. Sports activity after total hip and knee arthroplasty : specific recommendations concerning tennis. *Sports Med* 2006;36(7): 571-583
67. Maloney WJ, Galante JO, Anderson M, et al. Fixation, polyethylene wear, and pelvic osteolysis in primary total hip replacement. *Clin Orthop Relat Res* 1999;(369):157-164
68. Harris WH. Wear and periprosthetic osteolysis: the problem. *Clin Orthop Relat Res* 2001;(393):66-70
69. Jones DL, Cauley JA, Kriska AM, et al. Physical activity and risk of revision total knee arthroplasty in individuals with knee osteoarthritis: a matched case-control study. *J Rheumatol* 2004;31(7): 1384-1390
70. Mont MA, Mathur SK, Krackow KA, et al. Cementless total knee arthroplasty in obese patients. A comparison with a matched control group. *J Arthroplasty* 1996;11(2): 153-156
71. Lavernia CJ, Sierra RJ, Hungerford DS, et al. Activity level and wear in total knee arthroplasty: a study of autopsy retrieved specimens. *J Arthroplasty* 2001;16(4):446-453
72. Mintz L, Tsao AK, McCrae CR, et al. The arthroscopic evaluation and characteristics of severe polyethylene wear in total knee arthroplasty. *Clin Orthop Relat Res* 1991;(273): 215-222
73. Swiss Federal Office of Sports. Economic benefits of the healthenhancing effects of physical activity: first estimates for Switzerland: scientific position statement. *Schweizerische Zeitschrift für Sportmedizin und Sporttraumatologie*; 2001
74. Akodu AK, Giwa SO, Akinbo SR, et al. Physiotherapy in the management of total knee arthroplasty: a review. *Nig Q J Hosp Med*. 2011; 21: 99-105.
75. Allred KD, Byers JF, Sole ML. The effect of music on postoperative pain and anxiety. *Pain Manag Nurs*. 2010; 11: 15-25.
76. American Academy of Orthopedic Surgeons: Primary Total Hip and Knee Arthroplasty Projections to 2030 (Appendix C). Available from: http://www.aaos.org.ezproxy.galter.northwestern.edu/wordhtml/pdfs_r/tjr.pdf
77. Bade MJ, Stevens-Lapsley JE. Restoration of physical function in patients following total knee arthroplasty: an update on rehabilitation practices. *Curr Opin Rheumatol*. 2012; 24: 208-14.
78. Bong MR, Di Cesare PE. Stiffness after total knee arthroplasty. *J Am Acad Orthop Surg*. 2004; 12: 164-171.
79. Alparslan M. Tüberküloza bağlı sekellerde protezin yeri, Kemik ve eklem Tüberkülozları. I. Balımanlı Ortopedi Günleri. Sunu: 11-12 Haziran 2004.
80. Erkan S, Yercan HS, Okcu G, et al. Total diz artroplastisi sonrası diz sertliğine neden olan faktörler. *Eklem Hastalıkları ve Cerrahisi* 2011; 22: 16-21.
81. Creamer P, Hochberg MC. The relationship between psychosocial variables and pain reporting in osteoarthritis of the knee. *Arthritis Care Res*. 1998; 11: 60-65.
82. Salmon P, Hall GM, Peerbhoy D, et al. Recovery from hip and knee arthroplasty: Patients' perspective on pain, function, quality of life, and well-being up to 6 months postoperatively. *Arch Phys Med Rehabil*. 2001; 82: 360-366.
83. Fischer HB, Simanski CJ, Sharp C, et al. PROSPECT Working Group. A procedure-specific systematic review and consensus recommendations for postoperative analgesia following total knee arthroplasty. *Anaesthesia*. 2008; 63: 1105-1123.
84. Bozkurt M, Yılmazlar A, Bilgen ÖF. Total diz artroplastisi sonrası intravenöz ve epidural hasta kontrollü analjezi tekniklerinin ameliyat sonrası ağrı ve diz rehabilitasyonu üzerine etkilerinin karşılaştırılması. *Eklem Hastalıkları ve Cerrahisi* 2009; 20: 64-70.
85. H Wang, B Boctor, J Verner - Regional anesthesia and pain medicine, 2002 - Elsevier
86. Antall GF, Kresevic D. The use of guided imagery to manage pain in an elderly orthopaedic population. *Orthop Nurs*. 2004; 23: 335-340.
87. Jordan L, Kligman M, Sculco TP. Total knee arthroplasty in patients with poliomyelitis. *J Arthroplasty*. 2007; 22:543548.
88. Sean E, Fitzsimmons SE, Vazquez EA, et al. How to treat the stiff total knee arthroplasty?: a systematic review. *Clin Orthop Relat Res*. 2010;468:1096-106.