

11.

Bölüm

TALUS KIRIKLARI

Özenç ALTINÖZ¹

Ramadan ÖZMANEVRA²

GİRİŞ

Talus kırıklarının az görülmesiyle birlikte literatürde sınırlı bilgi bulunması bu kırıkların tedavisinde zorluklarla karşılaşmamıza neden olmaktadır. Bununla birlikte özellikle talus boynunun kanlanması özel oluşu, talus kırıklarını osteonekroz gibi yönetimi zor komplikasyonlara açık hale getirmektedir. Bu bölümde talus kırıklarının tanı ve tedavisinden ana hatlarıyla bahsedilerek, güncel yaklaşımlara değinilecektir.

GENEL BİLGİLER

Talus kalkaneustan sonra ikinci büyük tarsal kemik olmasının yanında, yüzey alanının %70'inin kırıkla kaplı oluşu ve üzerine hiçbir kas veya tendon yapışmaması nedeniyle özel bir kemiktir (1). Talus kemiği ana olarak baş, boyun ve cisim olarak üç parçaya ayrılır. Cisim ise posterior, lateral ve medial olmak üzere 3 çıkıntıdan (proçes) oluşmaktadır (2).

Talus kırıkları tüm ayak bileği kırıklarının %5-7'sini oluşturmakta olup tarsal kemikler içerisinde en sık kırılan ikinci kemiktir (3-5). Periosteal kan desteğini sağlaması nedeniyle talus boynunun çevresi ve cismin posterior kenarı kırıkla kaplı değildir (2). Kan desteğini ise posterior tibial arter, dorsalis pedis ve perforan fibular arterler sağlamaktadır (2). Talus boynunda kanlanmanın retrograd olması nedeniyle kırıkları sonrası, osteonekroz gelişme

1 Uzm.Dr. Özenç ALTINÖZ, Girne Üniversitesi Tıp Fakültesi, Ortopedi ve Travmatoloji AD.
ozencaltinoz@hotmail.com

2 Doç. Dr. Ramadan ÖZMANEVRA, Girne Üniversitesi Tıp Fakültesi, Ortopedi ve Travmatoloji AD.
rozmanevra@gmail.com

KAYNAKLAR

1. Öznür A, Akça MK, Koyuncu B, Turhan E. Talus kırıkları: Değerlendirme ve tedavi. *TOT-BİD Dergisi* 2013;12(2):159-167.
2. Caracchini G, Pietragalla M, De Renzis A, Galluzzo M,
3. Carbone M, Zappia M, Russo A, Greco F, Miele V. Talar fractures: radiological and CT evaluation and classification systems. *Acta Biomed* 2018; Vol 89, Supplement 1: 151-165.
4. Kundel K, Braun W, Scherer A. Late results of central talus injuries. *Unfallchirurg* 1995;98:124-9. [Abstract]
5. Sanders DW. Rockwood and green's fractures in adults. Philadelphia: Lippincott Williams & Wilkins; 2006. Erişkin kırıkları, talus kırıkları. Çeviri Editörü: Şaylı U. Bölüm yazarı: Esemenli T. 6. Baskı. Ankara: Güneş Tıp Kitapevi; 2011. s. 2249-89.
6. Veerappa LA, Gopalkrishna C. Talar neck fracture with talar head dislocation and intact ankle and subtalar joints-a rare case report. *Foot (Edinb)* 2010;20:39-41. doi: 10.1016/j.foot.2009.12.001.
7. Dodd A, Lefaiyre KA. Outcomes of Talar Neck Fractures: A Systematic Review and Meta-analysis. *J Orthop Trauma* 2015;29:210-5.
8. Xue Y, Zhang H, Pei F, et al. Treatment of displaced talar neck fractures using delayed procedures of plate fixation through dual approaches. *Int Orthop*. 2014;38:149-154.
9. Bhandari M, Adili A. Evidence-based Orthopedics. West Sussex, UK: John Wiley & Sons; 2011.
10. Nyska M, Howard CB, Matan Y, et al. Fracture of the posterior body of the talus--the hidden fracture. *Arch Orthop Trauma Surg* 1998;117:114-7.
11. Rammelt S, Biewener A, Grass R, et al. Foot injuries in the polytraumatized patient. *Unfallchirurg* 2005;108:858- 65. [Abstract]
12. Kleiger B. Injuries of the talus and its joints. *Clin Orthop Relat Res* 1976;(121): 243-62.
13. Mulfinger GL, Trueta J. The blood supply of the talus. *J Bone Joint Surg Br* 1970; 52(1):160-7.
14. Miller AN, Prasarn ML, Dyke JP, et al. Quantitative assessment of the vascularity of the talus with gadolinium-enhanced magnetic resonance imaging. *J Bone Joint Surg Am* 2011;93(12):1116-21.
15. Prasarn ML, Miller AN, Dyke JP, et al. Arterial anatomy of the talus: a cadaver and gadolinium-enhanced MRI study. *Foot Ankle Int* 2010;31(11):987-93.
16. Metzger MJ, Levin JS, Clancy JT. Talar neck fractures and rates of avascular necrosis. *J Foot Ankle Surg* 1999;38(2):154-62.
17. Adelaar RS, Madrian JR. Avascular necrosis of the talus. *Orthop Clin North Am* 2004;35(3):383-95.
18. Kwaadu KY. Management of Talar Fractures. *Clin Podiatr Med Surg* 35 (2018) 161-173
19. Vallier HA, Nork SE, Barei DP, et al. Talar neck fractures: results and outcomes. *J Bone Joint Surg Am* 2004;86(8):1616-24.
20. Kuner EH, Lindenmaier HL, Munst P. Talus fractures. In: Schatzker J, Tschern H, editors. Major fractures of the pilon, the talus and the calcaneus. New York: Springer; 1993. p. 72-85.
21. Rammelt S, Zwipp H. Talar neck and body fractures. *Injury* 2009;40:120-35. doi: 10.1016/j.injury.2008.01.021.
22. Murphy GA. Fractures and dislocations of the foot. In: Canale ST, editor. Campbell's operative orthopaedics. 10th ed. St. Louis: Mosby Year-Book; 2003. p. 4231-83.
23. Nork SE, Barei DP. Orthopaedic knowledge update 9. In: Fischgroud JS, editor. AAOS; 2008. p. 499-502.
24. Canale ST, Kelly FB Jr. Fractures of the neck of the talus. Long-term evaluation of seventy-one cases. *J Bone Joint Surg [Am]* 1978;60:143-56.

25. Crim J, Gentili A, Coombs BD, et al. Talus fractures, Radiological Society of North America, e-medicine 2007.
26. Suren EG, Zwipp H. Acute ligamentous injuries of the Chopart and Lisfranc joint line. *Orthopade* 1986;15:479-86. [Abstract]
27. Broden B. Roentgen examination of the subtaloid joint in fractures of the calcaneus. *Acta radiol* 1949;31:85-91.
28. Sneppen O, Christensen SB, Krogsoe O, et al. Frac- ture of the body of the talus. *Acta Orthop Scand* 1977; 48(3): 317-24.
29. Dale JD, Ha AS, Chew FS. Update on talar fracture pat- terns: a large level I trauma center study. *AJR Am J Roent- genol* 2013; 201(5): 1087-92.
30. Mukherjee SK, Young AB. Dome fracture of the talus. A re- port of ten cases. *J Bone Joint Surg Br* 1973; 55(2):319-26.
31. Mandracchia VJ, Buddecke DE Jr., Giesking JL. Osteo- chondral lesions of the talar dome. A comprehensive re- view with retrospective study. *Clin Podiatr Med Surg* 1999; 16(4): 725-42.
32. Cedell CA. Rupture of the posterior talotibial ligament with the avulsion of a bone frag- ment from the talus. *Acta Orthop Scand* 1974; 45(3): 454-61.
33. Paulos LE, Johnson CL, Noyes FR. Posterior compartment fractures of the ankle. A com- monly missed athletic injury. *Am J Sports Med* 1983; 11(6): 439-43.
34. Mc DA. The os trigonum. *J Bone Joint Surg Br* 1955; 37- B(2): 257-65.
35. Summers NJ, Murdoch MM. Fractures of the talus: a com- prehensive review. *Clin Podi- atr Med Surg* 2012; 29(2): 187- 203, vii.
36. De Filippo M, Ingegnoli A, Carloni A, et al. Erdheim-Chester disease: clinical and radio- logical findings. *Radiol Med* 2009; 114(8): 1319- 29.
37. Hawkins LG. Fracture of the Lateral Process of the Talus. *J Bone Joint Surg Am* 1965; 47: 1170-5.
38. Kirkpatrick DP, Hunter RE, Janes PC, et al. The snowboarder's foot and ankle. *Am J Sports Med* 1998; 26(2): 271-7.
39. Boon AJ, Smith J, Zobitz ME, et al. Snowboarder's talus fracture. Mechanism of injury. *Am J Sports Med* 2001; 29(3): 333-8.
40. von Knoch F, Reckord U, von Knoch M, et al. Frac- ture of the lateral process of the talus in snowboarders. *J Bone Joint Surg Br* 2007; 89(6): 772-7.
41. Morrison W, Sanders T. Problem Solving in Musculoskel- etal Imaging 2008.
42. Heckman JD, McLean MR. Fractures of the lateral process of the talus. *Clin Orthop Relat Res* 1985(199): 108-13.
43. Perera A, Baker JF, Lui DF, Stephens MM. The management and outcome of lateral pro- cess fracture of the talus. *Foot Ankle Surg* 2010; 16(1): 15-20.
44. Ebraheim NA, Patil V, Owens C, Kandimalla Y. Clinical outcome of fractures of the talar body. *Int Orthop* 2008; 32(6): 773-7.
45. Shakked RJ, Tejwani NC. Surgical treatment of talus frac- tures. *Orthop Clin North Am* 2013; 44(4): 521-8.
46. Vallier HA, Nork SE, Benirschke SK, Sangeorzan BJ. Sur- gical treatment of talar body fractures. *J Bone Joint Surg Am* 2003; 85-A(9): 1716-24.
47. Hawkins LG. Fractures of the neck of the talus. *J Bone Joint Surg Am* 1970; 52(5): 991- 1002.
48. Inokuchi S, Ogawa K, Usami N. Classification of fractures of the talus: clear differentiati- on between neck and body fractures. *Foot Ankle Int* 1996; 17(12): 748-50.
49. Anderson H, Flack M, Gotch O. The medical and surgical aspects of aviation. The Joint committee of Henry Frowde and Hodder and Stoughton: Oxford Press; 1919.
50. Canale ST, Beaty JH, editors. Campbell's operative orthopaedics. 11th ed. New York: Mosby; 2007.
51. Coughlin M, Saltzman C, Anderson R. Mann's surgery of the foot and ankle. 2014.

52. Coltart WD. Aviator's astragalus. *J Bone Joint Surg Br* 1952; 34-B(4): 545-66.
53. Saltzman C, Marsh JL. Hindfoot Dislocations: When Are They Not Benign? *J Am Acad Orthop Surg* 1997; 5(4): 192-8.
54. Lasanianos NG, Lyras DN, Mouzopoulos G, et al. Early mobilization after uncomplicated medial subtalar dislocation provides successful functional results. *Journal of Orthopaedics and Traumatology* 2011; 12(1): 37-43.
55. Zimmer TJ, Johnson KA. Subtalar dislocations. *Clin Orthop Relat Res.* 1989(238): 190-4.
56. DeLee JC, Curtis R. Subtalar dislocation of the foot. *J Bone Joint Surg Am* 1982; 64(3): 433-7.
57. Christensen SB, Lorentzen JE, Krogsoe O, et al. Subtalar dislocation. *Acta Orthop Scand.* 1977; 48(6): 707-11.
58. Flaherty E, Chew FS. Emergency Imaging of Foot Trauma. *Semin Roentgenol* 2016; 51(3): 268-79.
59. Karampinas PK, Kavroudakis E, Polyzois V, et al. Open talar dislocations without associated fractures. *Foot Ankle Surg* 2014; 20(2): 100-4.
60. Sundararajan SR, Badurudeen AA, Ramakanth R, et al. Management of talar body fractures. *Indian J Ortho* 52(3):258
61. Early JS. Management of fractures of the talus: Body and head regions. *Foot Ankle Clin Am* 2004;9:709-22.
62. Schulze W, Richter J, Russe O, et al. Surgical treatment of talus fractures: a retrospective study of 80 cases followed for 1-15 years. *Acta Orthop Scand* 2002;73:344-51.
63. Comfort TH, Behrens F, Gaither DW, et al. Long-term results of displaced talar neck fractures. *Clin Orthop Relat Res* 1985;199:81-7.
64. Lindvall E, Haidukewych G, DiPasquale T, et al. Open reduction and stable fixation of isolated, displaced talar neck and body fractures. *J Bone Joint Surg [Am]* 2004;86:2229-34.
65. Thomas RH, Daniels TR. Primary fusion as salvage following talar neck fracture: a case report. *Foot Ankle Int* 2003;24:368-71.
66. Ziran BH, Abidi NA, Scheel MJ. Medial malleolar osteotomy for exposure of complex talar body fractures. *J Orthop Trauma* 2001;15:513-8.
67. Barg A, Suter T, Nickisch F, et al. Osteotomies of the talar neck for posttraumatic malalignment. *Foot Ankle Clin* 2016;21(1):77-93.
68. Daniels TR, Smith JW, Ross TI. Varus malalignment of the talar neck. Its effect on the position of the foot and on subtalar motion. *J Bone Joint Surg Am* 1996; 78(10):1559-67.
69. Sangeorzan BJ, Wagner UA, Harrington RM, et al. Contact characteristics of the subtalar joint: the effect of talar neck misalignment. *J Orthop Res* 1992;10(4): 544-51.
70. Jorgensen NB, Lutz M. Arthroscopic treatment of talar body fractures. *Arthrosc Tech* 2014;3:e271-4.
71. Abrahams TG, Gallup L, Avery FL. Nondisplaced shearing-type talar body fractures. *Ann Emerg Med* 1994;23:891-3.
72. Sanders DW, Busam M, Hattwick E, et al. Functional outcomes following displaced talar neck fractures. *J Orthop Trauma* 2004;18:265-70.
73. Elgafy H, Ebraheim NA, Tile M, et al. Fractures of the talus: Experience of two level 1 trauma centers. *Foot Ankle Int* 2000;21:1023-9.