

35.

BÖLÜM

AKROMİOKLAVİKULER EKLEM YARALANMALARI

Emre ÇALIŞAL¹

GİRİŞ

Akromioklavikuler (AK) (1-3) eklem yaralanmaları omuz çevresinin sık gözlenen yaralanmalarından biridir. Omuz kuşağı yaralanmalarının yaklaşık % 12'sini oluştururlar (4). Özellikle ikinci on yılda ve erkeklerde kadınlara oranla 5 kat daha fazla gözlenir (%43.5) (5). Genellikle spor aktivitesi sırasında direkt akromion üzerine kontakt yaralanmalar ile ya da gergin kol üzerine düşme sonucu meydana gelir (6, 7). Yaralanmaya neden olan kuvvet skapulohumeral kompleksi (klavikulanın yükselmesi yerine) bastırarak, akromioklavikuler (AK) ve/veya korakoklaviküler (KK) bağların kopmasına neden olur (5, 8). Literatürde, akromioklavikuler eklem yaralanmasının sonucu olarak hastada aktiviteyi sınırlayan kronik ağrı ve işlev bozukluğunun ortaya çıkabileceğine dair kanıtlar vardır (9). Ayrıca tedavi edilmediğinde uzun dönemde akromioklavikuler eklemden artrit ve klavikula distalinde osteoliz gözlenebilir (10, 11). Bu nedenle AK yaralanmaları yakın takip ve tedavi edilerek hastaların yaralanma öncesi aktivite seviyelerine hızlıca dönüşü sağlanmalıdır.

AK EKLEM ANATOMİSİ VE BİYOMEKANİĞİ

AK eklem, ince bir kıkırdak yüzey ile arasını destekleyen fibrokartilajinöz meniskoid diskten

oluşan diartrodiyal eklemdir. Meniskoid disk, 40 yaş sonrası hızlıca dejenere olarak fonksiyonunu kaybeder (12). Fizyolojik kuvvetler ve kolun ağırlığı AK eklemde vertikal, ön-arka ve aksiyal düzlemde değişimine neden olur. AK eklem stabilitesinden sorumlu statik ve dinamik kuvvetler vardır. Statik kuvvetler; AK bağları (ön, arka, üst ve alt), korakoakromial (KA) bağı ve KK bağları (konoid ve trapezoid) içerir (8). Dinamik kas stabilizatörlerini ise trapezoid ve deltoid (özellikle anterolateral kas grubu) kas grupları oluşturur. Her iki kas lifleri AK bağı güçlendirir. AK eklemde kapsüler bağları öncelikle ön-arka stabilitede rol oynar (13). Kadavra çalışmalarında AK bağların yukarı yönlü migrasyona karşı %20 ila %50 direnç sağlarken ön-arka translasyona %90 oranında katkı sağladığı gösterilmiştir (14). KK bağlar medialde konoid, lateralde trapezoid tarafından oluşturulur. Bu bağlar, klavikula ile ilişkili olarak skapulohumeral kompleksin inferior ve medial translasyonunu kısıtlar(15). Konoid bağ, AK eklemden yaklaşık 4,5 cm uzaklıkta, klavikulanın posteromedial alt yüzeyine tutunur. Bu bağ klavikulayı yukarıya ya da skapulayı aşağıya iten kuvvetler altında gerilir. Trapezod bağ ise, AK eklemden yaklaşık 2,5 cm uzaklıkta, klavikulanın alt yüzeyinin anterolateral proksimal kısmına tutunur ve AK eklemde sıkışması ile skapulohumeral kompleksin medializasyonu altında gerilir (14).

¹ Dr. Öğr. Üyesi, Amasya Üniversitesi Tıp Fakültesi Ortopedi ve Travmatoloji AD calisall@yahoo.com

sıdır. Bu yöntem, kabaca distal klavikula eksizyonu ile KA bağın distal klavikulaya transferini içerir (54). Bu anatomik olmayan greft uygulaması sonrası yüksek oranda redüksiyon kaybı görülmesi üzerine, anatomik greft uygulamalarına geçilmiştir (55). Jones ve ark. ilk olarak klavikulada konoid ve trapezoidin ayak izi olduğu bölgede 2 tünel açmış ve greft korakoidin altından geçirildikten sonra klavikuladaki tünele fikse edilerek anatomik bağ rekonstrüksiyonu gerçekleştirmiştir (56). Bu iki demetli bağ rekonstrüksiyonu vertikal stabiliteyi sağlarken horizontal stabiliteye katkısı sağlamaz. Bu nedenle KK bağ tamirinde greft uzun bırakılarak AK bağ tamirini de içeren 3 demetli anatomik bağ rekonstrüksiyonu önerilir (57). Greft yetmezliği, implanta bağlı komplikasyonlar, klavikula ve/veya korokoid kırıkları bağ rekonstrüksiyon yönteminde gözlenebilen komplikasyonlardır (58).

SONUÇ

Sonuç olarak AK eklem yaralanmalarında erken tanı ve tedavi önemlidir. Genellikle muayene ve standart grafiler tanı için yeterlidir. Hastanın tedavisindeki ana amaç; hastanın yaralanma öncesi aktivite düzeyine erken dönemde dönmesidir. Yaralanma tipine göre hasta konservatif ya da cerrahi olarak tedavi edilir.

KAYNAKÇA

- Weinstein DM, McCann PD, McIlveen SJ, et al. Surgical treatment of complete acromioclavicular dislocations. *The American journal of sports medicine* 1995;23(3):324-31.
- Balser D. Eine neue methode zur operativen behandlung der akromioklavikulären luxation. *Chir Prax* 1976;24:275.
- Salem KH, Schmelz A. Treatment of Tossy III acromioclavicular joint injuries using hook plates and ligament suture. *Journal of orthopaedic trauma* 2009;23(8):565-9.
- Adam FF, Farouk O. Surgical treatment of chronic complete acromioclavicular dislocation. *International orthopaedics* 2004;28(2):119-22.
- Leidel BA, Braunstein V, Kirchoff C, et al. Consistency of long-term outcome of acute Rockwood grade III acromioclavicular joint separations after K-wire transfixation. *Journal of Trauma and Acute Care Surgery* 2009;66(6):1666-71.
- Rios CG, Mazzocca AD. Acromioclavicular joint problems in athletes and new methods of management. *Clin Sports Med* 2008;27(4):763-88.
- Gladstone JN, Wilk KE, Andrews JR. Nonoperative treatment of acromioclavicular joint injuries. *Operative Techniques in Sports Medicine* 1997;5(2):78-87.
- Seven MM, Koca K, Akpancar S, et al. Promising Results of Prolotherapy in an Elderly Male with Bilateral Partial Rotator Cuff Lesions. *Mental health* 2016;48(56):52.
- Lemos MJ, Tolo ET. Complications of the treatment of the acromioclavicular and sternoclavicular joint injuries, including instability. *Clin Sports Med* 2003;22(2):371-85.
- Mikek M. Long-term shoulder function after type I and II acromioclavicular joint disruption. *The American journal of sports medicine* 2008;36(11):2147-50.
- Mouhsine E, Garofalo R, Crevoisier X, et al. Grade I and II acromioclavicular dislocations: results of conservative treatment. *Journal of shoulder and elbow surgery* 2003;12(6):599-602.
- DePalma A. Variational anatomy and degenerative lesions of the shoulder joint. *AAOS Instructional Course Lecture* 1949;6:255-81.
- Fukuda K, Craig E, An K, et al. Biomechanical study of the ligamentous system of the acromioclavicular joint. *The Journal of bone and joint surgery American volume* 1986;68(3):434-40.
- Rios CG, Arciero RA, Mazzocca AD. Anatomy of the clavicle and coracoid process for reconstruction of the coracoclavicular ligaments. *The American journal of sports medicine* 2007;35(5):811-7.
- Mazzocca AD, Spang JT, Rodriguez RR, et al. Biomechanical and radiographic analysis of partial coracoclavicular ligament injuries. *The American journal of sports medicine* 2008;36(7):1397-402.
- Cave E. *Fractures and Other Injuries*, Chicago: The Year Book Medical Publishers. Inc; 1958.
- Gerber C, Rockwood Jr C. Subcoracoid dislocation of the lateral end of the clavicle. A report of three cases. *JBJS* 1987;69(6):924-7.
- Zanca P. *Shoulder Pain: Involvement Of The Acromioclavicular Joint: (Analysis Of 1,000 Cases)*. *American Journal of Roentgenology* 1971;112(3):493-506.
- Pfahler M, Krödel A, Refior H. Surgical treatment of acromioclavicular dislocation. *Archives of orthopaedic and trauma surgery* 1994;113(6):308-11.
- Arrigoni P, Brady PC, Zottarelli L, et al. Associated lesions requiring additional surgical treatment in grade 3 acromioclavicular joint dislocations. *Arthroscopy: The Journal of Arthroscopic & Related Surgery* 2014;30(1):6-10.
- Tossy JD, Mead NC, Sigmund HM. 11 Acromioclavicular Separations: Useful and Practical Classification for Treatment. *Clinical Orthopaedics and Related Research* (1976-2007) 1963;28:111-9.
- Williams G, Nguyen V, Rockwood C. Classification and radiographic analysis of acromioclavicular dislocations. *Appl Radiol* 1989;18(2):29-34.
- Shin S-J, Yun Y-H, Yoo JD. Coracoclavicular ligament reconstruction for acromioclavicular dislocation

- using 2 suture anchors and coracoacromial ligament transfer. *The American journal of sports medicine* 2009;37(2):346-51.
24. Lee S, Bedi A. Shoulder acromioclavicular joint reconstruction options and outcomes. *Current reviews in musculoskeletal medicine* 2016;9(4):368-77.
 25. Rockwood CA. Disorders of the acromioclavicular joint. *The shoulder* 1990:422-5.
 26. Riand N, Sadowski C, Hoffmeyer P. Acute acromioclavicular dislocations. *Acta Orthopaedica Belgica* 1999;65(4):393-403.
 27. Lemos MJ. The evaluation and treatment of the injured acromioclavicular joint in athletes. *The American journal of sports medicine* 1998;26(1):137-44.
 28. Phillips A, Smart C, Groom A. Acromioclavicular dislocation: conservative or surgical therapy. *Clinical Orthopaedics and Related Research* 1998;353:10-7.
 29. Bradley JP, Elkousy H. Decision making: operative versus nonoperative treatment of acromioclavicular joint injuries. *Clin Sports Med* 2003;22(2):277-90.
 30. Ceccarelli E, Bondi R, Alviti F, et al. Treatment of acute grade III acromioclavicular dislocation: a lack of evidence. *Journal of Orthopaedics and Traumatology* 2008;9(2):105-8.
 31. Calvo E, López-Franco M, Arribas IM. Clinical and radiologic outcomes of surgical and conservative treatment of type III acromioclavicular joint injury. *Journal of shoulder and elbow surgery* 2006;15(3):300-5.
 32. Fremerey R, Freitag N, Bosch U, L et al. Complete dislocation of the acromioclavicular joint: operative versus conservative treatment. *Journal of Orthopaedics and Traumatology* 2005;6(4):174-8.
 33. Taft T, Wilson F, Oglesby JW. Dislocation of the acromioclavicular joint. An end-result study. *The Journal of bone and joint surgery American volume* 1987;69(7):1045-51.
 34. Press J, Zuckerman JD, Gallagher M, et al. Treatment of grade III acromioclavicular separations. Operative versus nonoperative management. *Bulletin (Hospital for Joint Diseases (New York, NY))* 1997;56(2):77-83.
 35. Gstettner C, Tauber M, Hitzl W, et al. Rockwood type III acromioclavicular dislocation: surgical versus conservative treatment. *Journal of shoulder and elbow surgery* 2008;17(2):220-5.
 36. Galpin R, Hawkins R, Grainger R. A comparative analysis of operative versus nonoperative treatment of grade III acromioclavicular separations. *Clinical orthopaedics and related research* 1985(193):150-5.
 37. Krul KP, Cook JB, Cage JM, et al. The displacement of the clavicle is a better predictor of surgical intervention in the non-operatively treated acromioclavicular dislocation than the increase in coracoclavicular distance. *Orthopaedic Journal of Sports Medicine* 2015;3(7_suppl2):2325967115S00077.
 38. Dunphy TR, Damodar D, Heckmann ND, et al. Functional outcomes of type V acromioclavicular injuries with nonsurgical treatment. *J Am Acad Orthop Surg* 2016;24(10):728-34.
 39. Cook JB, Shaha JS, Rowles DJ, et al. Clavicular bone tunnel malposition leads to early failures in coracoclavicular ligament reconstructions. *The American Journal of Sports Medicine* 2013;41(1):142-8.
 40. Rolf O, von Weyhern AH, Ewers A, et al. Acromioclavicular dislocation Rockwood III-V: results of early versus delayed surgical treatment. *Archives of orthopaedic and trauma surgery* 2008;128(10):1153-7.
 41. Mignani G, Rotini R, Olmi R, et al. The surgical treatment of Rockwood grade III acromioclavicular dislocations. *La Chirurgia degli organi di movimento* 2002;87(3):153-61.
 42. Dumontier C, Sautet A, Man M, et al. Acromioclavicular dislocations: treatment by coracoacromial ligamentoplasty. *Journal of Shoulder and Elbow Surgery* 1995;4(2):130-4.
 43. Yan H, Yu C. Repair of full-thickness cartilage defects with cells of different origin in a rabbit model. *Arthroscopy: The Journal of Arthroscopic & Related Surgery* 2007;23(2):178-87.
 44. Modi C, Beazley J, Zywił M, et al. Controversies relating to the management of acromioclavicular joint dislocations. *The bone & joint journal* 2013;95(12):1595-602.
 45. Barnes CJ, Higgins LD, Major NM, et al. Magnetic resonance imaging of the coracoclavicular ligaments: its role in defining pathoanatomy at the acromioclavicular joint. *J Surg Orthop Adv* 2004;13(2):69-75.
 46. Wolter D, Eggers C, Koch W. Die operative Behandlung der akromioklavikulären Luxation und der distalen Klavikulafraktur oder-pseudarthrose mit der "AC-Hakenplatte". *Operative Orthopädie und Traumatologie* 1989;1(3):145-52.
 47. Queitsch C, Kienast B, Faschingbauer M, et al. Osteosynthesis of lateral clavicle fractures with Hook plate. *Aktuelle Traumatol* 2005;1(4):203-7.
 48. Canadian OTS. Multicenter Randomized Clinical Trial of Nonoperative Versus Operative Treatment of Acute Acromio-Clavicular Joint Dislocation. *Journal of orthopaedic trauma* 2015;29(11):479.
 49. Yoon JP, Lee YS, Song GS, et al. Morphological analysis of acromion and hook plate for the fixation of acromioclavicular joint dislocation. *Knee Surgery, Sports Traumatology, Arthroscopy* 2017;25(3):980-6.
 50. Martetschläger F, Horan MP, Warth RJ, et al. Complications after anatomic fixation and reconstruction of the coracoclavicular ligaments. *The American Journal of Sports Medicine* 2013;41(12):2896-903.
 51. Schliemann B, Roßlenbroich SB, Schneider KN, et al. Why does minimally invasive coracoclavicular ligament reconstruction using a flip button repair technique fail? An analysis of risk factors and complications. *Knee Surgery, Sports Traumatology, Arthroscopy* 2015;23(5):1419-25.
 52. Ladermann A, Stimec B, Fasel J, et al. Acromioclavicular joint reconstruction: A comparative biomechanical study of three techniques. *Swiss Medical Weekly*. 141. EMH Swiss Medical Publishers Ltd Farnsbürgerstr 8, CH-4132 Muttenz, Switzerland; 2011:12s-S.
 53. Arirachakaran A, Boonard M, Piyapittayanun P, et al. Post-operative outcomes and complications of suspensory loop fixation device versus hook plate in acute uns-

- table acromioclavicular joint dislocation: a systematic review and meta-analysis. *Journal of Orthopaedics and Traumatology* 2017;18(4):293-304.
54. Weaver Jk, Dunn Hk. Treatment of acromioclavicular injuries, especially complete acromioclavicular separation. *JBJS* 1972;54(6):1187-94.
 55. Sood A, Wallwork N, Bain GI. Clinical results of coracoacromial ligament transfer in acromioclavicular dislocations: a review of published literature. *International journal of shoulder surgery* 2008;2(1):13.
 56. Jones HP, Lemos MJ, Schepesis AA. Salvage of failed acromioclavicular joint reconstruction using autogenous semitendinosus tendon from the knee: surgical technique and case report. *The American Journal of Sports Medicine* 2001;29(2):234-7.
 57. Michlitsch MG, Adamson GJ, Pink M, et al. Biomechanical comparison of a modified Weaver-Dunn and a free-tissue graft reconstruction of the acromioclavicular joint complex. *The American journal of sports medicine* 2010;38(6):1196-203.
 58. Warth RJ, Martetschläger F, Gaskill TR, et al. Acromioclavicular joint separations. *Current reviews in musculoskeletal medicine* 2013;6(1):71-8.