

BÖLÜM 53



Sol Atriyal Apendiks Kapama

Güngör ÜSTÜN¹

GİRİŞ

Atriyal fibrilasyon (AF), embolik inme ve diğer tromboembolik komplikasyonların yaygın bir nedenidir. Sol atriyal apendiks (LAA), AF'de tromboembolizm için primer kaynaktır.

AF'li çoğu hasta için antikoagülasyon önerilir, ancak bazı hastalarda uzun süreli antikoagülasyon için kontrendikasyonlar vardır. Bu bölümde AF'li hastalarda perkütan LAA oklüzyonu ve cerrahi LAA oklüzyonu anlatılmaktadır. AF'li hastalarda antikoagülasyon ayrıca anlatılacaktır.

AF'si olan hastalarda LAA'daki trombüs, tromboemboli için primer kaynaktır. Sol atriyal trombüs bölgesini (transözofageal ekokardiyografi (TEE), kalp cerrahisi veya otopsi ile) inceleyen çalışmalarda, romatizmal kalp hastalığı olmayan AF'li hastalarda sol atriyal trombüsün yüzde 90'ının LAA'da yer aldığı bulunmuştur(1). AF'li hastalarda tromboemboli kaynağı olarak LAA'nın önemi, özellikle antikoagülasyon endikasyonu olan ancak uzun süreli oral antikoagülasyon alamayan hastalarda LAA'nın

ligasyonu, amputasyonu veya kapanması için gerekçe sağlar.

Aşağıdaki koşullardan bir veya daha fazlasına sahip hastalar, uzun süreli antikoagülasyon için bir kontrendikasyona sahip olabilir:

- Artmış kanama riski; Kanama ile ilişkili trombotopeni veya bilinen koagülasyon bozukluğu olması veya gastrointestinal, genitoüriner veya respiratuar bölgeler dahil olmak üzere tekrarlayan kanama olması veya intrakraniyal kanama dahil olmak üzere önceki şiddetli kanama hikayesi olması veya alınan önlemlere rağmen hastanın yüksek düşme riski olması(örneğin yaralanmayla sonuçlanmış düşme hikayesi) veya İkili antiplatelet ve antikoagülan tedavinin kombine kullanımı için güçlü endikasyon olması durumları bu gruba girmektedir.
- Antikoagülan tedaviye yetersiz uyum veya bu tedaviyi reddeden hasta.

AF'li hastalarda perkütan veya cerrahi LAA oklüzyonu veya eksizyonu ile tromboemboliyi azaltma stratejisinde bazı sınırlamalar bulunmaktadır. Bu sınırlamalar ise şu şekildedir:

¹ Uzm. Dr., Başakşehir Çam ve Sakura Şehir Hastanesi Kardiyoloji Kliniği, gustundr@gmail.com

2014 AHA/ACC/Kalp Ritmi Derneği kılavuzunun AF'li hastaların yönetimine yönelik 2019 odaklı güncellemesi, kalp cerrahisi sırasında LAA'nın cerrahi eksizyonunu zayıf bir şekilde önermektedir (46,47). Ayrıca, uzun süreli anti-koagülasyon için kontrendikasyonları olan yüksek inme riski olan AF'li hastalarda perkütan LAA oklüzyonunun düşünülebileceğini belirtmektedir.

KAYNAKLAR

1. Blackshear JL, Odell JA. Appendage obliteration to reduce stroke in cardiac surgical patients with atrial fibrillation. *Ann Thorac Surg* 1996; 61:755.
2. García-Fernández MA, Pérez-David E, Quiles J, et al. Role of left atrial appendage obliteration in stroke reduction in patients with mitral valve prosthesis: a transesophageal echocardiographic study. *J Am Coll Cardiol* 2003; 42:1253.
3. Katz ES, Tsiamtsiouris T, Applebaum RM, et al. Surgical left atrial appendage ligation is frequently incomplete: a transesophageal echocardiographic study. *J Am Coll Cardiol* 2000; 36:468.
4. Kanderian AS, Gillinov AM, Pettersson GB, et al. Success of surgical left atrial appendage closure: assessment by transesophageal echocardiography. *J Am Coll Cardiol* 2008; 52:924.
5. Darden D, Duong T, Du C, et al. Sex Differences in Procedural Outcomes Among Patients Undergoing Left Atrial Appendage Occlusion: Insights From the NCDR LAAO Registry. *JAMA Cardiol* 2021; 6:1275.
6. Pasupula DK, Munir MB, Bhat AG, et al. Outcomes and predictors of readmission after implantation of a percutaneous left atrial appendage occlusion device in the United States: A propensity score-matched analysis from The National Readmission Database. *J Cardiovasc Electrophysiol* 2021; 32:2961.
7. Yao X, Gersh BJ, Holmes DR Jr, et al. Association of Surgical Left Atrial Appendage Occlusion With Subsequent Stroke and Mortality Among Patients Undergoing Cardiac Surgery. *JAMA* 2018; 319:2116.
8. Friedman DJ, Piccini JP, Wang T, et al. Association Between Left Atrial Appendage Occlusion and Readmission for Thromboembolism Among Patients With Atrial Fibrillation Undergoing Concomitant Cardiac Surgery. *JAMA* 2018; 319:365.
9. Melduni RM, Schaff HV, Lee HC, et al. Impact of Left Atrial Appendage Closure During Cardiac Surgery on the Occurrence of Early Postoperative Atrial Fibrillation, Stroke, and Mortality: A Propensity Score-Matched Analysis of 10633 Patients. *Circulation* 2017; 135:366.
10. Whitlock RP, Belley-Cote EP, Paparella D, et al. Left Atrial Appendage Occlusion during Cardiac Surgery to Prevent Stroke. *N Engl J Med* 2021; 384:2081.
11. Ohtsuka T, Ninomiya M, Nonaka T, et al. Thoracoscopic stand-alone left atrial appendectomy for thromboembolism prevention in nonvalvular atrial fibrillation. *J Am Coll Cardiol* 2013; 62:103.
12. Ostermayer SH, Reisman M, Kramer PH, et al. Percutaneous left atrial appendage transcatheter occlusion (PLAATO system) to prevent stroke in high-risk patients with non-rheumatic atrial fibrillation: results from the international multi-center feasibility trials. *J Am Coll Cardiol* 2005; 46:9.
13. Turagam MK, Osmanic P, Neuzil P, et al. Left Atrial Appendage Closure Versus Oral Anticoagulants in Atrial Fibrillation: A Meta-Analysis of Randomized Trials. *J Am Coll Cardiol* 2020; 76:2795.
14. Holmes DR, Reddy VY, Turi ZG, et al. Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial. *Lancet* 2009; 374:534.
15. Reddy VY, Doshi SK, Sievert H, et al. Percutaneous left atrial appendage closure for stroke prophylaxis in patients with atrial fibrillation: 2.3-Year Follow-up of the PROTECT AF (Watchman Left Atrial Appendage System for Embolic Protection in Patients with Atrial Fibrillation) Trial. *Circulation* 2013; 127:720.
16. Reddy VY, Sievert H, Halperin J, et al. Percutaneous left atrial appendage closure vs warfarin for atrial fibrillation: a randomized clinical trial. *JAMA* 2014; 312:1988.
17. Reddy VY, Holmes D, Doshi SK, et al. Safety of percutaneous left atrial appendage closure: results from the Watchman Left Atrial Appendage System for Embolic Protection in Patients with AF (PROTECT AF) clinical trial and the Continued Access Registry. *Circulation* 2011; 123:417.
18. Viles-Gonzalez JF, Kar S, Douglas P, et al. The clinical impact of incomplete left atrial appendage closure with the Watchman Device in patients with atrial fibrillation: a PROTECT AF (Percutaneous Closure of the Left Atrial Appendage Versus Warfarin Therapy for Prevention of Stroke in Patients With Atrial Fibrillation) substudy. *J Am Coll Cardiol* 2012; 59:923.
19. Alli O, Doshi S, Kar S, et al. Quality of life assessment in the randomized PROTECT AF (Percutaneous Closure of the Left Atrial Appendage Versus Warfarin Therapy for Prevention of Stroke in Patients With Atrial Fibrillation) trial of patients at risk for stroke with nonvalvular atrial fibrillation. *J Am Coll Cardiol* 2013; 61:1790.
20. Holmes DR Jr, Kar S, Price MJ, et al. Prospective randomized evaluation of the Watchman Left Atrial Appendage Closure device in patients with atrial fibrillation versus long-term warfarin therapy: the PREVAIL trial. *J Am Coll Cardiol* 2014; 64:1.
21. http://www.accessdata.fda.gov/cdrh_docs/pdf13/p130013a.pdf.
22. Reddy VY, Doshi SK, Kar S, et al. 5-Year Outcomes After Left Atrial Appendage Closure: From the PREVAIL and PROTECT AF Trials. *J Am Coll Cardiol*

- 2017; 70:2964.
23. Reddy VY, Möbius-Winkler S, Miller MA, et al. Left atrial appendage closure with the Watchman device in patients with a contraindication for oral anticoagulation: the ASAP study (ASA Plavix Feasibility Study With Watchman Left Atrial Appendage Closure Technology). *J Am Coll Cardiol* 2013; 61:2551.
 24. Boersma LV, Schmidt B, Betts TR, et al. Implant success and safety of left atrial appendage closure with the WATCHMAN device: peri-procedural outcomes from the EWOLUTION registry. *Eur Heart J* 2016; 37:2465.
 25. Boersma LV, Ince H, Kische S, et al. Efficacy and safety of left atrial appendage closure with WATCHMAN in patients with or without contraindication to oral anticoagulation: 1-Year follow-up outcome data of the EWOLUTION trial. *Heart Rhythm* 2017; 14:1302.
 26. Kar S, Doshi SK, Sadhu A, et al. Primary Outcome Evaluation of a Next-Generation Left Atrial Appendage Closure Device: Results From the PINNACLE FLX Trial. *Circulation* 2021; 143:1754.
 27. Meier B, Palacios I, Windecker S, et al. Transcatheter left atrial appendage occlusion with Amplatzer devices to obviate anticoagulation in patients with atrial fibrillation. *Catheter Cardiovasc Interv* 2003; 60:417.
 28. Tzikas A, Shakir S, Gafoor S, et al. Left atrial appendage occlusion for stroke prevention in atrial fibrillation: multicentre experience with the AMPLATZER Cardiac Plug. *EuroIntervention* 2016; 11:1170.
 29. Landmesser U, Schmidt B, Nielsen-Kudsk JE, et al. Left atrial appendage occlusion with the AMPLATZER Amulet device: periprocedural and early clinical/echocardiographic data from a global prospective observational study. *EuroIntervention* 2017; 13:867.
 30. Lakkireddy D, Thaler D, Ellis CR, et al. Amplatzer Amulet Left Atrial Appendage Occluder Versus Watchman Device for Stroke Prophylaxis (Amulet IDE): A Randomized, Controlled Trial. *Circulation* 2021; 144:1543.
 31. <https://clinicaltrials.gov/ct2/show/record/NCT04226547> (Erişim tarihi: 7 haziran, 2021).
 32. Bartus K, Bednarek J, Myc J, et al. Feasibility of closed-chest ligation of the left atrial appendage in humans. *Heart Rhythm* 2011; 8:188.
 33. Lee RJ, Bartus K, Yakubov SJ. Catheter-based left atrial appendage (LAA) ligation for the prevention of embolic events arising from the LAA: initial experience in a canine model. *Circ Cardiovasc Interv* 2010; 3:224.
 34. Shetty R, Leitner JP, Zhang M. Percutaneous catheter-based left atrial appendage ligation and management of periprocedural left atrial appendage perforation with the LARIAT suture delivery system. *J Invasive Cardiol* 2012; 24:E289.
 35. Bartus K, Han FT, Bednarek J, et al. Percutaneous left atrial appendage suture ligation using the LARIAT device in patients with atrial fibrillation: initial clinical experience. *J Am Coll Cardiol* 2013; 62:108.
 36. Massumi A, Chelu MG, Nazeri A, et al. Initial experience with a novel percutaneous left atrial appendage exclusion device in patients with atrial fibrillation, increased stroke risk, and contraindications to anticoagulation. *Am J Cardiol* 2013; 111:869.
 37. <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm454660.htm>.
 38. Bartus K, Han FT, Bednarek J, et al. Percutaneous Left Atrial Appendage Suture Ligation Using the LARIAT Device in Patients With Atrial Fibrillation: Initial Clinical Experience. *J Am Coll Cardiol* 2013; 62:108.
 39. Price MJ, Gibson DN, Yakubov SJ, et al. Early safety and efficacy of percutaneous left atrial appendage suture ligation: results from the U.S. transcatheter LAA ligation consortium. *J Am Coll Cardiol* 2014; 64:565.
 40. Miller MA, Gangireddy SR, Doshi SK, et al. Multicenter study on acute and long-term safety and efficacy of percutaneous left atrial appendage closure using an epicardial suture snaring device. *Heart Rhythm* 2014; 11:1853.
 41. Bergmann MW, Ince H, Kische S, et al. Real-world safety and efficacy of WATCHMAN LAA closure at one year in patients on dual antiplatelet therapy: results of the DAPT subgroup from the EWOLUTION all-comers study. *EuroIntervention* 2018; 13:2003.
 42. Saw J, Nielsen-Kudsk JE, Bergmann M, et al. Antithrombotic Therapy and Device-Related Thrombosis Following Endovascular Left Atrial Appendage Closure. *JACC Cardiovasc Interv* 2019; 12:1067.
 43. Aryana A, Singh SK, Singh SM, et al. Association between incomplete surgical ligation of left atrial appendage and stroke and systemic embolization. *Heart Rhythm* 2015; 12:1431.
 44. Kirchhof P, Benussi S, Kotecha D, et al. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur Heart J* 2016; 37:2893.
 45. Glikson M, Wolff R, Hindricks G, et al. EHRA/EAPCI expert consensus statement on catheter-based left atrial appendage occlusion - an update. *EuroIntervention* 2020; 15:1133.
 46. January CT, Wann LS, Alpert JS, et al. 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society. *J Am Coll Cardiol* 2014; 64:e1.
 47. January CT, Wann LS, Calkins H, et al. 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society in Collaboration With the Society of Thoracic Surgeons. *Circulation* 2019; 140:e125.