

# Bölüm 39

## ACİL TIP'TA REBOA

Hüseyin Avni DEMİR<sup>1</sup>

### GİRİŞ

Aortik balon oklüzyon; aortoenterik fistül, aortik kanama kontrolü, doğum sonrası veya abdominal/pelvik cerrahi kanama, splenik arter anevrizmasına bağlı hemoperitoneum, gastrointestinal kanama ve vasküler yaralanmaların kontrolü ile rüptüre abdominal aort anevrizma kontrolü için başarıyla kullanılmıştır. Rüptüre abdominal aort anevrizmasının tedavisi için aortik balon oklüzyonu artık bakım standardıdır. Bununla birlikte, travmada aortun resüsitatif endovasküler balon oklüzyonu (REBOA) kullanımı nispeten yenidir. REBOA, travma hastalarında kan basıncını iyileştirerek ve kanama kontrolü sağlayarak hastaları geçici olarak stabilize etmek için erken aort oklüzyonu sağlayan önemli bir yardımcıdır. REBOA, hızlı hemostazı sağlamak için travma cerrahinin cephanesinde olmalıdır (1).

### Tarihçe

Travmatik hemorajik şokun tedavisi için aortun resüsitatif balon oklüzyonu ilk kez 1954'te ABD Ordusu'ndan Yarbay Carl W. Hughes tarafından kritik olarak yaralanan 3 askerde bildirildi. Tüm hastalar majör yaralanmalardan öldü ve daha erken aortik balon oklüzyonu kullanılmasının faydalı olabileceğini önerdi (2). 1986'da ya-

<sup>1</sup> Acil Tıp Uzmanı, SBÜ Şanlıurfa Mehmet Akif İnan Eğitim ve Araştırma Hastanesi, huseyinvnidemir@yahoo.com

**KAYNAKLAR**

1. Napolitano LM. Resuscitative Endovascular Balloon Occlusion of the Aorta: Indications, Outcomes, and Training. *Crit Care Clin* [Internet]. 2017;33(1):55–70. Available from: <http://dx.doi.org/10.1016/j.ccc.2016.08.011>
2. HUGHES CW. Use of an intra-aortic balloon catheter tamponade for controlling intra-abdominal hemorrhage in man. *Surgery*. 1954 Jul;36(1):65–8.
3. Low RB, Longmore W, Rubinstein R, Flores L, Wolvek S. Preliminary report on the use of the Perccluder occluding aortic balloon in human beings. *Ann Emerg Med*. 1986 Dec;15(12):1466–9.
4. Gupta BK, Khaneja SC, Flores L, Eastlick L, Longmore W, Shaftan GW. The role of intra-aortic balloon occlusion in penetrating abdominal trauma. *J Trauma*. 1989 Jun;29(6):861–5.
5. Morrison JJ, Galgon RE, Jansen JO, Cannon JW, Rasmussen TE, Eliason JL. A systematic review of the use of resuscitative endovascular balloon occlusion of the aorta in the management of hemorrhagic shock. *J Trauma Acute Care Surg*. 2016 Feb;80(2):324–34.
6. Martinelli T, Thony F, Decléty P, Sengel C, Broux C, Tonetti J, et al. Intra-aortic balloon occlusion to salvage patients with life-threatening hemorrhagic shocks from pelvic fractures. *J Trauma*. 2010 Apr;68(4):942–8.
7. White JM, Cannon JW, Stannard A, Markov NP, Spencer JR, Rasmussen TE. Endovascular balloon occlusion of the aorta is superior to resuscitative thoracotomy with aortic clamping in a porcine model of hemorrhagic shock. *Surgery*. 2011 Sep;150(3):400–9.
8. Brenner ML, Moore LJ, DuBose JJ, Tyson GH, McNutt MK, Albarado RP, et al. A clinical series of resuscitative endovascular balloon occlusion of the aorta for hemorrhage control and resuscitation. *J Trauma Acute Care Surg*. 2013 Sep;75(3):506–11.
9. Manley JD, Mitchell BJ, DuBose JJ, Rasmussen TE. A Modern Case Series of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) in an Out-of-Hospital, Combat Casualty Care Setting. *J Spec Oper Med a peer Rev J SOF Med Prof*. 2017;17(1):1–8.
10. DuBose JJ, Scalea TM, Brenner M, Skiada D, Inaba K, Cannon J, et al. The AAST prospective Aortic Occlusion for Resuscitation in Trauma and Acute Care Surgery (AORTA) registry: Data on contemporary utilization and outcomes of aortic occlusion and resuscitative balloon occlusion of the aorta (REBOA). *J Trauma Acute Care Surg*. 2016 Sep;81(3):409–19.
11. Brenner M, Inaba K, Aiolfi A, DuBose J, Fabian T, Bee T, et al. Resuscitative Endovascular Balloon Occlusion of the Aorta and Resuscitative Thoracotomy in Select Patients with Hemorrhagic Shock: Early Results from the American Association for the Surgery of Trauma's Aortic Occlusion in Resuscitation for Trauma and Acute Care Surgery Registry. *J Am Coll Surg*. 2018 May;226(5):730–40.
12. Joseph B, Zeeshan M, Sakran J V, Hamidi M, Kulvatunyou N, Khan M, et al. Nationwide Analysis of Resuscitative Endovascular Balloon Occlusion of the Aorta in Civilian Trauma. *JAMA Surg*. 2019 Jun;154(6):500–8.
13. Borger van der Burg BLS, van Dongen TTCE, Morrison JJ, Hedeman Joosten PPA, DuBose JJ, Hörer TM, et al. A systematic review and meta-analysis of the use of resuscitative endovascular balloon occlusion of the aorta in the management of major exsanguination. *Eur J trauma Emerg Surg Off Publ Eur Trauma Soc*. 2018 Aug;44(4):535–50.
14. M Wortmann, Engelhart M, Elias K, Popp E, Zerwes S, Dürr AH. „ Resuscitative endovascular balloon occlusion of the aorta “ ( REBOA ) Aktuelles zu Material , Indikationen und Blutungen im Bereich des Abdomens. *Der Chir*. 2020;91:934–42.
15. Starnes BW, Quiroga E, Hutter C, Tran NT, Hatsukami T, Meissner M, et al. Management of ruptured abdominal aortic aneurysm in the endovascular era. *J Vasc Surg*. 2010 Jan;51(1):8–9.

16. Berland TL, Veith FJ, Cayne NS, Mehta M, Mayer D, Lachat M. Technique of supraceliac balloon control of the aorta during endovascular repair of ruptured abdominal aortic aneurysms. *J Vasc Surg.* 2013 Jan;57(1):272–5.
17. Panici PB, Anceschi M, Borgia ML, Bresadola L, Masselli G, Parasassi T, et al. Intraoperative aorta balloon occlusion: fertility preservation in patients with placenta previa accreta/increta. *J Matern neonatal Med Off J Eur Assoc Perinat Med Fed Asia Ocean Perinat Soc Int Soc Perinat Obstet.* 2012 Dec;25(12):2512–6.
18. Daley J, Morrison JJ, Sather J, Hile L. The role of resuscitative endovascular balloon occlusion of the aorta (REBOA) as an adjunct to ACLS in non-traumatic cardiac arrest. *Am J Emerg Med.* 2017 May;35(5):731–6.
19. Brenner M, Bulger EM, Perina DG, Henry S, Kang CS, Rotondo MF, et al. Joint statement from the American College of Surgeons Committee on Trauma (ACS COT) and the American College of Emergency Physicians (ACEP) regarding the clinical use of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA). *Trauma Surg acute care open.* 2018;3(1):e000154.
20. Ribeiro Junior MAF, Feng CYD, Nguyen ATM, Rodrigues VC, Bechara GEK, de-Moura RR, et al. The complications associated with Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA). *World J Emerg Surg.* 2018;13(1):20.
21. Long B, Hafen L, Koyfman A, Rdms MG. Techniques and Procedures. *J Emerg Med.* 2020;56(6):687–97.
22. Cannon J, Morrison J, Lauer C, Grabo D, Polk T, Blackburne L, et al. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for Hemorrhagic Shock. *Mil Med.* 2018 Sep;183(suppl\_2):55–9.
23. Saugel B, Scheeren TWL, Teboul J-L. Ultrasound-guided central venous catheter placement: a structured review and recommendations for clinical practice. *Crit Care.* 2017 Aug;21(1):225.
24. Parikh PP, Rubio GA, Patel K, Gupta K, Jones K, Rey J, et al. Transverse versus Longitudinal Incisions for Femoral Artery Exposure in Treating Patients with Peripheral Vascular Disease. *Ann Vasc Surg.* 2018 Feb;47:143–8.
25. Moore LJ, Brenner M, Kozar RA, Pasley J, Wade CE, Baraniuk MS, et al. Implementation of resuscitative endovascular balloon occlusion of the aorta as an alternative to resuscitative thoracotomy for noncompressible truncal hemorrhage. *J Trauma Acute Care Surg.* 2015 Oct;79(4):522–3.
26. Stannard A, Morrison JJ, Sharon DJ, Eliason JL, Rasmussen TE. Morphometric analysis of torso arterial anatomy with implications for resuscitative aortic occlusion. *J Trauma Acute Care Surg.* 2013 Aug;75(2 Suppl 2):S169–72.
27. Davidson AJ, Russo RM, Reva VA, Brenner ML, Moore LJ, Ball C, et al. The pitfalls of resuscitative endovascular balloon occlusion of the aorta: Risk factors and mitigation strategies. *J Trauma Acute Care Surg.* 2018 Jan;84(1):192–202.
28. Reva VA, Matsumura Y, Hörer T, Sveklov DA, Denisov A V, Telickiy SY, et al. Resuscitative endovascular balloon occlusion of the aorta: what is the optimum occlusion time in an ovine model of hemorrhagic shock? *Eur J trauma Emerg Surg Off Publ Eur Trauma Soc.* 2018 Aug;44(4):511–8.
29. Gamberini E, Coccolini F, Tamagnini B, Martino C, Albarello V, Benni M, et al. Resuscitative Endovascular Balloon Occlusion of the Aorta in trauma: A systematic review of the literature. *World J Emerg Surg.* 2017;12(1):1–8.
30. Sato R, Kuriyama A, Takaesu R, Miyamae N, Iwanaga W, Tokuda H, et al. Resuscitative endovascular balloon occlusion of the aorta performed by emergency physicians for traumatic hemorrhagic shock: A case series from Japanese emergency rooms. *Crit Care.* 2018;22(1):1–6.