

19. BÖLÜM

ROBOTİK BARIATRİK CERRAHİ

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GİRİŞ

Obezite vücut kitle indeksinin 30 kg/m^2 ' den daha yüksek olması şeklinde tanımlanır. Obezitenin prevalansı, Dünya Sağlık Örgütü (WHO) verilerine göre 1975 yılından bugüne dünya genelinde üç katına çıkmıştır. 2016 yılı itibarıyla dünya genelinde 650 milyon insanın obez olduğu tahmin edilmektedir (1). Yetişkin nüfustaki obezite oranının %39,8 olarak bildirildiği Amerika Birleşik Devletleri gibi ülkelerde istatistikler kaygı verici düzeylere ulaşmıştır (2). Önlenebilir bir hastalık olan obezitenin obstrüktif uyku apne sendromu, diyabet, hipertansiyon ve kardiyovasküler hastalıkların yanı sıra pek çok kanser türünün gelişme riskini belirgin olarak arttırdığı gösterilmiştir (3).

Morbid obezite ve obezite ile ilişkili hastalıklar nedeniyle her yıl dünya genelinde yaklaşık 4 milyon insan hayatını kaybetmektedir. Bariatrik cerrahinin obezitenin tedavisinde en etkili tedavi yöntemlerinden biri olduğu göz önünde bulundurulduğunda, robotik cerrahi kavramının ortaya çıkışıyla bariatrik cerrahide kullanımının aynı döneme rastlaması tesadüf değildir (4,5,6).

İlk defa 1993 yılında Wittgrove ve arkadaşları tarafından gastrik bypass cerrahisinde kullanılan laparoskopik, neredeyse tüm bariatrik cerrahi işlemler için altın standart yaklaşım haline gelmiştir (7). Açık cerrahiye kıyasla hastaların daha az cerrahi travmaya uğraması, morbiditenin azalması ve postoperatif iyileşme süresinin kısalması laparoskopinin avantajları arasında sayılabilir. Öte yandan, cerrahin görüşünü iki boyutla sınırlaması ve hareket özgürlüğünü kısıtlaması bu yaklaşımın eksik yanları arasında sayılabilir (8, 9).

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kilo verme açısından bu yaklaşımları karşılaştıran randomize kontrollü çalışmalar daha kesin hükümler verilebilmesine yardımcı olacaktır. Rekabetçi bir piyasanın ortaya çıkarılabileceği düşük maliyetli robotik cihazların cerrahinin pek çok alanında olacağı gibi bariatrik cerrahide de daha yaygın kullanım imkanını beraberinde getireceği açıktır.

KAYNAKÇA

1. World Health Organization. Obesity and overweight. 2020. (27/12/2020 tarihinde <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> adresinden ulaşılmıştır).
2. Hales CM, Carroll MD, Fryar CD, et al. Prevalence of obesity among adults and youth: United States, 2015-2016. *NCHS Data Brief* 2017;(288):1-8
3. ASMBS. (2018). The Impact of Obesity on Your Body and Health. (27/12/2020 tarihinde <https://asmbs.org/patients/impact-of-obesity> adresinden ulaşılmıştır).
4. GBD 2015 Obesity Collaborators, Afshin A, Forouzanfar MH, Reitsma MB, Sur P, et al. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *N Engl J Med*. 2017 Jul 6;377(1):13-27. doi: 10.1056/NEJMoa1614362.
5. Mingrone G, Panunzi S, De Gaetano A, et al. Bariatric-metabolic surgery versus conventional medical treatment in obese patients with type 2 diabetes: 5 year follow-up of an open-label, single-centre, randomised controlled trial. *Lancet* 2015;386(9997):964-73.
6. Buchwald H, Avidor Y, Braunwald E, Jensen MD, et al. Bariatric surgery: a systematic review and meta-analysis. *JAMA*. 2004 Oct 13;292(14):1724-37. doi: 10.1001/jama.292.14.1724.
7. Wittgrove AC, Clark GW, Tremblay LJ. Laparoscopic Gastric Bypass, Roux-en-Y: Preliminary Report of Five Cases. *Obes Surg*. 1994 Nov;4(4):353-357. doi: 10.1381/096089294765558331.
8. Agaba EA, Shamseddeen H, Gentles CV, Sasthakonar V, et al. Laparoscopic vs open gastric bypass in the management of morbid obesity: a 7-year retrospective study of 1,364 patients from a single center. *Obes Surg*. 2008;18(11):1359-63.
9. Banka G, Woodard G, Hernandez-Boussard T, Morton JM. Laparoscopic vs open gastric bypass surgery: differences in patient demographics, safety, and outcomes. *Arch Surg*. 2012;147(6):550-6
10. Elias AA, Roque-de-Oliveira M, Campos JM, Sasake WT, et al. Robotic-assisted bariatric surgery: case series analysis and comparison with the laparoscopic approach. *Rev Col Bras Cir*. 2018 Jul 9;45(3):e1806. Portuguese, English. doi: 10.1590/0100-6991e-20181806.
11. Corcione F, Esposito C, Cucurullo D, et al. Advantages and limits of robot-assisted laparoscopic surgery: preliminary experience. *Surg Endosc* 2005; 19(1):117-9.
12. Van Koughnett JA, Jayaraman S, Eagleson R, et al. Are there advantages to robotic-assisted surgery over laparoscopy from the surgeon's perspective? *J Robot Surg* 2009;3(2):79-82.
13. Ho C, Tsakonas E, Tran K, et al. Robot-assisted surgery compared with open surgery and laparoscopic surgery. *CADTH Technol Overv* 2012;2(2):e2203.
14. Sages/Mira Consensus Document on Robotic Surgery (29/12/2020 tarihinde <https://www.sages.org/publications/guidelines/consensus-document-robotic-surgery> adresinden ulaşılmıştır).
15. Ballantyne GH. Robotic surgery, telerobotic surgery, telepresence, and telementoring. Review of early clinical results. *Surg Endosc*. 2002;16(10):1389-402
16. Marescaux J, Leroy J, Rubino F, Smith M, Vix M, Simone M, et al. Transcontinental robot-assisted remote telesurgery: feasibility and potential applications. *Ann Surg*. 2002;235(4):487-92
17. Faust RA. Robotics in surgery: history, current and future applications, vol. 336. New York: Nova Publishers; 2007.

18. Intuitive Surgical – Company history. (02/01/2021 tarihinde www.intuitive.com/en-us/about-us/company adresinden ulaşılmıştır).
19. Himpens J, Leman G, Cadiere GB. Telesurgical laparoscopic cholecystectomy. *Surg Endosc*. 1998;12(8):1091
20. Sung GT, Gill IS. Robotic laparoscopic surgery: a comparison of the da Vinci and Zeus systems. *Urology*. 2001;58(6):893–8
21. Yates DR, Vaessen C, Roupret M. From Leonardo to da Vinci: the history of robot-assisted surgery in urology. *BJU Int*. 2011;108(11):1708–13.
22. NASDAQ_ISRQ_2019.pdf. (02/01/2021 tarihinde <https://www.annualreports.com/Click/21198> adresinden ulaşılmıştır.)
23. Hagen ME, Stein H, Curet MJ. Introduction to the robotic system. In: Kim KC, editor. *Robotics in general surgery* [Internet]. New York: Springer New York; 2014. p. 9–15.
24. Nguyen N, Blackstone R, Ponce J, Rosenthal R. *The ASMBS textbook of bariatric surgery*. New York: Springer; 2015.
25. Romero R, Kosanovic R, Rabaza J, Seetharmaiah R. Robotic sleeve gastrectomy: experience of 134 cases and comparison with systematic review of the laparoscopic approach. *Obes Surg*. 2013;23:1743–52.
26. Schraibman V, Macedo A, Epstein M, Soares M, et al. Comparison of the morbidity, weight loss, and relative costs between robotic and laparoscopic sleeve gastrectomy for the treatment of obesity in Brazil. *Obes Sur*. 2014;24:1420–4.
27. Elli E, Gonzalez-Heredia R, Sarvepalli S, Masrur M. Laparoscopic and robotic sleeve gastrectomy: short and long term results. *Obes Surg*. 2015;25:967–74.
28. Kannan U, Ecker B, Choudhury R, Dempsey D, et al. Laparoscopic hand-assisted versus robotic-assisted laparoscopic sleeve gastrectomy: experience of 103 consecutive cases. *Surg Obes Relat Dis*. 2016;12:94–9.
29. Vilallonga R, Fort J, Caubet E, Gonzalez O, et al. Robotic sleeve gastrectomy versus laparoscopic sleeve gastrectomy: a comparative study with 200 patients. *Obes Surg*. 2013;23:1501–7.
30. Iranmanesh P, Bajwa KS, Felinski MM, Shah SK, et al. Robotic Primary and Revisional Bariatric Surgery. *Surg Clin North Am*. 2020 Apr;100(2):417–430. doi: 10.1016/j.suc.2019.12.011.
31. Economopoulos KP, Theocharidis V, McKenzie TJ, et al. Robotic vs laparoscopic Roux-en-Y gastric bypass: a systematic review and meta-analysis. *Obes Sure*. 2015;25(11):2180–9
32. Celio AC, Kasten KR, Schwörer A, et al. Perioperative safety of Laparoscopic versus robotic gastric bypass: a propensity matched analysis of early experience. *Surg Obes Relat Dis*. 2017;13(11):1847–52.
33. Edelson PK, Dumon KR, Sonnad SS, et al. Robotic vs. conventional laparoscopic gastric banding: a comparison of 407 cases. *Surg Endosc* 2011;25(5):1402–8.
34. Koh CY, Inaba CS, Sujatha-Bhaskar S, et al. Laparoscopic adjustable gastric band explantation and implantation at academic centers. *J Am Coll Surg* 2017; 225(4):532–7
35. Antanavicius G, Rezvani M, Sucandy I. One-stage robotically assisted laparoscopic biliopancreatic diversion with duodenal switch: analysis of 179 patients. *Surg Obes Relat Dis* 2015;11(2):367–71.
36. Sudan R, Podolsky E. Totally robot-assisted biliary pancreatic diversion with duodenal switch: single dock technique and technical outcomes. *Surg Endosc* 2015;29(1):55–60.
37. Lo Menzo ES, Szomstein S, Rosenthal RJ. Reoperative bariatric surgery. In: Nguyen NT, BRP, Morton JM, et al. *The ASMBS textbook of bariatric surgery*, vol. 1. New York: Springer; 2015. p. 269–82
38. Abdelgawad M, De Angelis F, Iossa A, et al. Management of complications and outcomes after revisional bariatric surgery: 3-year experience at a bariatric center of excellence. *Obes Surg* 2016;26(9):2144–9.
39. Shimizu H, Annaberdyev S, Motamarry I, et al. Revisional bariatric surgery for unsuccessful weight loss and complications. *Obes Surg* 2013;23(11):1766–73.

40. "Brethauer SA, Kothari S, Sudan R, et al. Systematic review on reoperative bariatric surgery: American Society for metabolic and bariatric surgery revision task force. *Surg Obes Relat Dis* 2014;10(5):952–72.
41. Gray KD, Moore MD, Elmously A, et al. Perioperative outcomes of laparoscopic and robotic revisional bariatric surgery in a complex patient population. *Obes Surg* 2018;28(7):1852–9.
42. Snyder B, Wilson T, Woodruff V, et al. Robotically assisted revision of bariatric surgeries is safe and effective to achieve further weight loss. *World J Surg* 2013; 37(11):2569–73.
43. Buchs NC, Pugin F, Azagury DE, et al. Robotic revisional bariatric surgery: a comparative study with laparoscopic and open surgery. *Int J Med Robot* 2014; 10(2):213–7.
44. Swift EJ (1903) Studies in the psychology and physiology of learning. *Am J Psychol* 14:201–251. doi:10.2307/1412713
45. Iranmanesh P, Morel P, Wagner OJ, et al. Set-up and docking of the da Vinci surgical system: prospective analysis of initial experience. *Int J Med Robot* 2010; 6(1):57–60.
46. Rogula T, Acquafresca PA, Bazan M. Training and credentialing in robotic surgery. In: *Essentials of robotic surgery*. Cham: Springer International Publishing; 2015
47. Buchs NC, Pugin F, Bucher P, et al. Learning curve for robot-assisted Roux-en-Y gastric bypass. *Surg Endosc* 2012;26(4):1116–21.
48. Vilallonga R, Fort JM, Gonzalez O, et al. The initial learning curve for robot assisted sleeve gastrectomy: a surgeon's experience while introducing the robotic technology in a bariatric surgery department. *Minim Invasive Surg* 2012; 2012:347131
49. Pokala B, Samuel S, Yanala U, Armijo P et al. Elective robotic-assisted bariatric surgery: Is it worth the money? A national database analysis. *Am J Surg*. 2020 Dec;220(6):1445-1450. doi: 10.1016/j.amjsurg.2020.08.040. Epub 2020 Aug 31. PMID: 32917364.
50. King K, Galvez A, Stoltzfus J, Claros L et al. Cost Analysis of Robotic Roux-en-Y Gastric Bypass in a Single Academic Center: How Expensive Is Expensive? *Obes Surg*. 2020 Dec;30(12):4860-4866. doi: 10.1007/s11695-020-04881-x. Epub 2020 Jul 27.