

DİSTAL PANKREATEKTOMİ

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GİRİŞ

Distal pankreatektomi (DP) terimi pankreas gövde ve kuyruğunu içine alan lezyon ve hastalığa göre splenektomiye de içerebilen bir ameliyat tekniğidir. 1884 yılındaki gövde ve kuyruk rezeksiyonu yapılan ilk vakadan bu yana gövde ve kuyruk lezyonlarının tedavisinde standart cerrahi girişim olarak kabul görmüştür (1). Teknolojideki ilerlemeler sonucunda laparotomiden, laparoskopik günümüzde ise robotik pankreatektomiye ilerleyen devrim niteliğinde değişimler olmuştur (2). Distal pankreatektomide çıkarılması gerekmiyorsa dalağın korunması önemli bir noktadır. Postoperatif pankreatik fistül (POPF) önemli bir sorun olarak halen değerini korumaktadır. POPF insidansı % 10-30 dur (3). Cerrahi teknik, yumuşak veya normal pankreas, pankreas kalınlığı, yaş, obezite ve genişletilmiş lenfadenektomi gibi faktörler hastaları PF gelişimine yatkın hale getirdiği rapor edilmiştir (4).

DİSTAL PANKREATEKTOMİ ENDİKASYONLARI

- » Gövde ve kuyruk lezyonları (benign tümörler, nöroendokrin tümörler, pankreasın kistik lezyonları, psödokistler, pankreas gövde ve kuyruk premalign lezyonları)

- » Maligniteler (primer adenokanserler, malign musinöz tümörler, malign nöroendokrin tümörler ve pankreas kuyruktaki metastatik malign kitler); burada minimal invaziv cerrahi için hasta seçimi önemli, tümör invazyonu laparoskopi ya da robotik cerrahiye izin vermeyebilir, bu konu tartışmalıdır, diğer lezyonlar da olduğu gibi minimal invaziv cerrahi uygulanabilir ya da hasta seçimi önemlidir gibi görüş ayrılıkları mevcuttur. Tümör, etraf dokuya invazyonu ve hastanın değerlendirilmesi sonrası uygulanması gerektiğini biz de savunmaktayız.
- » Kronik pankreatit
- » Pankreas travması ya da hasarı
- » Pankreas gövdesi ve kuyrukta yer alan arteriovenöz malformasyonlar için de distal pankreatektomi endikedir (5).

AMELİYAT HAZIRLIĞI

Preoperatif değerlendirme, ASA skoru ve Anestezi değerlendirmesi, splenektomi planlandı ise ameliyattan 15 gün önce kapsüllü mikroorganizmalara karşı koruyucu aşılardan yapılması, ameliyat öncesi barsak temziliği, ameliyat öncesi profilaktik antibiyotik uygulanması dikkat edilmesi

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patoPankretaobilier Derneği (İHPBA) tarafından Brezilya Sao Paulo da yapılmıştır. Gözlemsel ve vaka karşılaştırmalı çalışma sayısı fazla olmasına rağmen randomize çalışma yokluğu kesin kanıt elde edilmesinin önündeki engeldir. Ancak gözlemler Minimal invazif distal pankreatektomi (MİDP) nin açık cerrahi ile karşılaştırarak avantajlarını (daha hızlı iyileşme, daha az hastanede kalış, daha az kan kaybı) ve benzer klinik sonuçlarını ortaya koymaktadır. İki minimal invaziv teknik karşılaştırıldığında ise yani laparoskopik ve robot yardımcı teknik; görüldü ki kan kaybı ve açık cerrahiye dönüş robot grubunda daha düşüktü, ancak tekrar hastane başvurusu robot grubunda daha fazla, POPF dahil diğer komplikasyonlar ise hem robot hem laparoskopik gruplarında benzerdi.

POSTOPERATİF BAKIM

- » Kan ve idrar şekeri izlenir, bazı hastalarda postoperatif insüline bağımlı diabet gelişebilir, bu preoperatif dönemde hastaya anlatılmalıdır.
- » Postoperatif pankreatit için amilaz, lipaz değerleri ve klinik ve fizik muayene bulguları gözönünde bulundurulmalıdır.
- » Postoperatif trombositoz için trombosit sayımı yapılmalı.
- » Nazogastrik drenaj; özellikle gecikmiş gastrik boşalım gelişen hastalarda.
- » Drenler, drenlerin çalıştığından emin olunup gelen tamamen kesildiğinde çekilmelidir.

SONUÇ

Minimal invaziv cerrahi (Laparoskopik ve robotik cerrahi), bu konuda da açık cerrahiye üstünlük göstermiştir. En blok rezeksiyon için RAMPS, Appleby ve DP-CAR gibi prosedürler geliştirilmiştir. Dalak koruyucu prosedürler prognozu iyileştirebilir. Pankreatik güdük yönetimi üzerinde durulması gereken en önemli noktadır. Çoğu retrospektif bilgilere dayanan bu teknikte daha çok prospektif ve randomize çalışmalara ihtiyaç vardır.

KAYNAKLAR

1. Finney JM. VII. Resection of the Pancreas: Report of a Case. *Ann Surg.* 1910; 51(6):818-29.
2. Bockhorn M, Uzunoglu FG, Adham M, Imrie C, Milicevic M, Sandberg AA, Asbun HJ, Bassi C, Büchler M, Charnley RM, Conlon K, Cruz LF, Dervenis C, Fingerhutt A, Friess H, Gouma DJ, Hartwig W, Lillemoe KD, Montorsi M, Neoptolemos JP, Shrikhande SV, Takaori K, Traverso W, Vashist YK, Vollmer C, Yeo CJ, Izbicki JR. Borderline resectable pancreatic cancer: a consensus statement by the International Study Group of Pancreatic Surgery (ISGPS). *Surgery.* 2014;155:977-88.
3. Lillemoe KD, Kaushal S, Cameron JL, Sohn TA, Pitt HA, Yeo CJ. Distal pancreatectomy: indications and outcomes in 235 patients. *Ann Surg* 1999; **229**: 693-698
4. Goh BK, Tan YM, Chung YF, Cheow PC, Ong HS, Chan WH, Chow PK, Soo KC, Wong WK, Ooi LL. Critical appraisal of 232 consecutive distal pancreatectomies with emphasis on risk factors, outcome, and management of the postoperative pancreatic fistula: a 21-year experience at a single institution. *Arch Surg* 2008; **143**: 956-965 [PMID: 18936374 DOI: 10.1001/archsurg.143.10.956]
5. Egawa S, Okada T, Motoi F, Rikiyama T, Katayose Y, Unno M. Distal pancreatectomy (with video). *J Hepatobiliary Pancreat Sci.* 2012 Mar;19(2):135-40.
6. Bilimoria MM, Cormier JN, Mun Y, Lee JE, Evans DB, Pisters PW. Pancreatic leak after left pancreatectomy is reduced following main pancreatic duct ligation. *Br J Surg* 2003; **90**: 190-196
7. Pendola F, Gadde R, Ripat C, Sharma R, Picado O, Lobo L, Sleeman D, Livingstone AS, Merchant N, Yakoub D. Distal pancreatectomy for benign and low grade malignant tumors: short-term postoperative outcomes of spleen preservation-a systematic review and update meta-analysis. *J Surg Oncol.* 2017;115:137-43.
8. Warshaw AL. Conservation of the spleen with distal pancreatectomy. *Arch Surg* 1988;123:550-3.
9. Tien YW, Liu KL, Hu RH, Wang HP, Chang KJ, Lee PH. Risk of varices bleeding after spleen-preserving distal pancreatectomy with excision of splenic artery and vein. *Ann Surg Oncol.* 2010;17:2193-8.
10. Kimura W, Yano M, Sugawara S, Okazaki S, Sato T, Moriya T, et al. Spleen-preserving distal pancreatectomy with conservation of the splenic artery and vein: techniques and its significance. *J Hepatobiliary Pancreat Sci* 2010;17:813-23.
11. Adam J, Jacquin A, Laurent C, Collet MD, Masson MB, Ndez-Cruz MLE, Sa-Cunha MA. Laparoscopic spleen-preserving distal pancreatectomy: splenic vessel preservation compared with the Warshaw technique. *JAMA Surg.* 2013;148:46-252
12. Strasberg SM, Drebin JA, Linehan D. Radical antegrade modular pancreatosplenectomy. *Surgery.* 2003;133:521-7.
13. Mitchem JB, Hamilton N, Gao F, Hawkins WG, Linehan DC, Strasberg SM. Long-term results of resection of adenocarcinoma of the body and tail of the pancreas using radical antegrade modular pancreatosplenectomy procedure. *J Am Coll Surg.* 2012;214:46-52.

14. Abe T, Ohuchida K, Miyasaka Y, Ohtsuka T, Oda Y, Nakamura M. Comparison of surgical outcomes between radical antegrade modular pancreatosplenectomy (RAMPS) and standard retrograde pancreatosplenectomy (SPRS) for left-sided pancreatic cancer. *World J Surg*. 2016;40:2267–75.
15. Watanabe G, Ito H, Sato T, Ono Y, Mise Y, Inoue Y, Takahashi Y, Saiura A. Left kidney mobilization technique during radical antegrade modular pancreatosplenectomy (RAMPS). *Langenbecks Arch Surg*. 2019;404:247–52.
16. Sivasanker M, Desouza A, Bhandare M, Chaudhari V, Goel M, Shrikhande SV. Radical antegrade modular pancreatosplenectomy for all pancreatic body and tail tumors: rationale and results. *Langenbecks Arch Surg*. 2019;404:183–90.
17. Cannella R, Borhani AA, Zureikat AH, Tublin ME. Appleby Procedure (Distal Pancreatectomy With Celiac Artery Resection) for Locally Advanced Pancreatic Carcinoma: Indications, Outcomes, and Imaging. *AJR Am J Roentgenol*. 2019 Jul;213(1):35–44.
18. Yekebas EF, Bogoevski D, Cataldegirmen G, Kunze C, Marx A, Vashist YK, Schurr PG, Liebl L, Thieltges S, Gawad KA, Schneider C, Izbicki JR. En bloc vascular resection for locally advanced pancreatic malignancies infiltrating major blood vessels: perioperative outcome and long-term survival in 136 patients. *Ann Surg*. 2008;247:300–9.
19. Appleby LH. The coeliac axis in the expansion of the operation for gastric carcinoma. *Cancer-Am Cancer Soc*. 1953;6:704–7.
20. Hirano S, Kondo S, Hara T, Ambo Y, Tanaka E, Shichinohe T, Suzuki O, Hazama K. Distal pancreatectomy with en bloc celiac axis resection for locally advanced pancreatic body cancer. *Ann Surg*. 2007;246:46–51.
21. Okada K, Kawai M, Tani M, Hirono S, Miyazawa M, Shimizu A, Kitahata Y, Yamaue H. Preservation of the left gastric artery on the basis of anatomical Features in patients undergoing distal pancreatectomy with celiac axis en-bloc resection (DP-CAR). *World J Surg*. 2014;38:2980–5.
22. Sugiura T, Okamura Y, Ito T, Yamamoto Y, Uesaka K. Surgical indications of distal pancreatectomy with celiac axis resection for pancreatic body/tail cancer. *World J Surg* 2017; 41:258–266
23. Klompmaker S, Boggi U, Hackert T, et al. Distal pancreatectomy with celiac axis resection (DP-CAR) for pancreatic cancer: how I do it. *J Gastrointest Surg* 2018; 22:1804–1810 .
24. Aosasa S, Nishikawa M, Noro T, Yamamoto J. Total pancreatectomy with celiac axis resection and hepatic artery restoration using splenic artery autograft interposition. *J Gastrointest Surg* 2016; 20:644–647
25. Toguchi M, Tsurusaki M, Numoto I, et al. Utility of Amplatzer vascular plug with preoperative common hepatic artery embolization for distal pancreatectomy with en bloc celiac axis resection. *Cardiovasc Intervent Radiol* 2017; 40:445–449
26. GongH, MaR, GongJ, CaiC, SongZ, XuB. Distal pancreatectomy with en bloc celiac axis resection for locally advanced pancreatic cancer: a systematic review and meta-analysis. *Medicine (Baltimore)* 2016; 95:e3061
27. Greer J, Zureikat AH. Robotic distal pancreatectomy combined with celiac axis resection. *J Vis Surg* 2017; 3:145
28. Bassi C, Marchegiani G, Dervenis C, et al; International Study Group on Pancreatic Surgery (ISGPS). The 2016 update of the International Study Group (ISGPS) definition and grading of postoperative pancreatic fistula: 11 years after. *Surgery* 2017; 161:584–591
29. Kondo S, Katoh H, Hirano S, et al. Ischemic gastropathy after distal pancreatectomy with celiac axis resection. *Surg Today* 2004; 34:337–340
30. GongH, MaR, GongJ, CaiC, SongZ, XuB. Distal pancreatectomy with en bloc celiac axis resection for locally advanced pancreatic cancer: a systematic review and meta-analysis. *Medicine (Baltimore)* 2016; 95:e3061
31. Iacobone M, Citton M, Nitti D. Laparoscopic distal pancreatectomy: up-to-date and literature review. *World J Gastroenterol* 2012;18:5329–37.
32. DiNorcia J, Schrope BA, Lee MK, Reavey PL, Rosen SJ, Lee JA, et al. Laparoscopic distal pancreatectomy offers shorter hospital stays with fewer complications. *J Gastrointest Surg* 2010;14:1804–12.
33. Sui CJ, Li B, Yang JM, Wang SJ, Zhou YM. Laparoscopic versus open distal pancreatectomy: a meta-analysis. *Asian J Surg* 2012;35:1–8.
34. Hayashi H, Ochiai T, Shimada H, Gunji Y. Prospective randomized study of open versus laparoscopy-assisted distal gastrectomy with extraperigastric lymph node dissection for early gastric cancer. *Surg Endosc* 2005;19:1172–6.
35. Kooby DA, Gillespie T, Bentrem D, et al. Left-sided pancreatectomy: a multicenter comparison of laparoscopic and open approaches. *Ann Surg* 2008;248:438–46.
36. Cho CS, Kooby DA, Schmidt CM, et al. Laparoscopic versus open left pancreatectomy: can preoperative factors indicate the safer technique? *Ann Surg* 2011;253:975–80.
37. Abu Hilal M, Takhar AS. Laparoscopic left pancreatectomy: current concepts. *Pancreatol* 2013;13:443–8.
38. Partelli S, Cirocchi R, Randolph J, et al. A systematic review and meta-analysis of spleen-preserving distal pancreatectomy with preservation or ligation of the splenic artery and vein. *Surgeon* 2016;14:109–18.
39. Baldwin KM, Katz SC, Espat NJ, et al. Laparoscopic spleen-preserving distal pancreatectomy in elderly subjects: splenic vessel sacrifice may be associated with a higher rate of splenic infarction. *HPB (Oxford)* 2011;13:621–5.
40. Diener MK, Seiler CM, Rössion I, et al. Efficacy of stapler versus hand-sewn closure after distal pancreatectomy (DISPACT): a randomised, controlled multicentre trial. *Lancet* 2011;377:1514–22.
41. Asbun HJ, Stauffer JA. Laparoscopic approach to distal and subtotal pancreatectomy: a clockwise technique. *Surg Endosc* 2011;25:2643–9.

42. Johnston FM, Cavataio A, Strasberg SM, et al. The effect of mesh reinforcement of a stapled transection line on the rate of pancreatic occlusion failure after distal pancreatectomy: review of a single institution's experience. *HPB (Oxford)* 2009;11:25-31.
43. Oláh A, Issekutz A, Belágyi T, et al. Randomized clinical trial of techniques for closure of the pancreatic remnant following distal pancreatectomy. *Br J Surg* 2009;96:602-7.
44. Braga M, Ridolfi C, Balzano G, et al. Learning curve for laparoscopic distal pancreatectomy in a high-volume hospital. *Updates Surg* 2012;64:179-83.
45. Probst P, Hüttner FJ, Klaiber U, Knebel P, Ulrich A, Büchler MW, Diener MK. Stapler versus scalpel resection followed by hand-sewn closure of the pancreatic remnant for distal pancreatectomy. *Cochrane Database Syst Rev.* 2015;(11):
46. Ecker BL, Mcmillan MT, Allegrini V, Bassi C, Beane JD, Beckman RM, Behrman SW, Dickson EJ, Callery MP, Christein JD, Drebin JA, Hollis RH, House MG, Jamieson NB, Javed AA, Kent TS, Kluger MD, Kowalsky SJ, Maggino L, Malleo G, Valero VR, Velu L, Watkins AA, Wolfgang CL, Zureikat AH, Vollmer CJ. Risk factors and mitigation strategies for pancreatic fistula after distal pancreatectomy: analysis of 2026 resections from the International, Multi- institutional Distal Pancreatectomy Study Group. *Ann Surg.* 2019;269:143-9.
47. Hamilton NA, Porembka MR, Johnston FM, Gao F, Strasberg SM, Linehan DC, Hawkins WG. Mesh reinforcement of pancreatic transection decreases incidence of pancreatic occlusion failure for left pancreatectomy: a single- blinded, randomized controlled trial. *Ann Surg.* 2012;255:1037-42.
48. Hirashita T, Ohta M, Yada K, Tada K, Saga K, Takayama H, Endo Y, Uchida H, Iwashita Y, Inomata M. Effect of pre-firing compression on the prevention of pancreatic fistula in distal pancreatectomy. *Am J Surg.* 2018;216:506-10.
49. Deng Y, He S, Cheng Y, Cheng N, Gong J, Gong J, Zeng Z, Zhao L. Fibrin sealants for the prevention of postoperative pancreatic fistula following pancreatic surgery. *Cochrane Database Syst Rev.* 2020;3:D9621.
50. Hassenpflug M, Hinz U, Strobel O, Volpert J, Knebel P, Diener MK, Doerr- Harim C, Werner J, Hackert T, Büchler MW. Teres ligament patch reduces relevant morbidity after distal pancreatectomy (the DISCOVER Randomized Controlled Trial). *Ann Surg.* 2016;264:723-30.
51. Ratnayake C, Wells C, Hammond J, French JJ, Windsor JA, Pandanaboyana S. Network meta-analysis comparing techniques and outcomes of stump closure after distal pancreatectomy. *Br J Surg.* 2019;106:1580-9.
52. Zhang H, Zhu F, Shen M, Tian R, Shi CJ, Wang X, Jiang JX, Hu J, Wang H, Qin RY. Systematic review and meta-analysis comparing three techniques for pancreatic remnant closure following distal pancreatectomy. *Br J Surg.* 2015;102:4-15.
53. Chen XP, Huang ZY, Lau JW, Zhang BX, Zhang ZW, Chen YF, Zhang WG, Zhu P, Zhang B. Chen's U-suture technique for end-to-end invaginated pancreaticojejunostomy following pancreaticoduodenectomy. *Ann Surg Oncol.* 2014;21:4336-41.