



Robotic Pancreaticoduodenectomy for a Technically Challenging Pancreatic Head Cancer

Samer AlMasri¹ · Alessandro Paniccia¹ · Amer H. Zureikat^{1,2}

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Abstract

Background Robotic pancreaticoduodenectomy (RPD) is performed for resectable periaampullary lesions with comparable outcomes to the open approach.¹ Surgical therapy for borderline-resectable (BR) pancreatic tumors is technically challenging and poses a significant risk of bleeding and positive margins.² As experience with RPD grows at high-volume centers, case selection can be carefully expanded to include complex vascular resections.³ We demonstrate a RPD performed for BR pancreatic adenocarcinoma with portal vein (PV) involvement and presence of anomalous hepatic arterial anatomy.

Methods A 75-year-old female presented with abdominal pain and obstructive jaundice. She was previously healthy and had a relatively normal body mass index (25.7 kg/m²). Endoscopic ultrasound and computed tomography imaging identified a pancreatic head mass measuring 2.3 cm with evidence of concomitant abutment of the PV (90–180 degree) and abutment of a replaced right hepatic artery (rRHA) originating from the superior mesenteric artery (SMA). Following four cycles of neoadjuvant gemcitabine/nab-paclitaxel, restaging imaging demonstrated partial radiographic response, represented by a lesser degree of PV abutment and resolution of rRHA abutment. RPD was performed with side-bite resection of the PV and preservation of rRHA. The video demonstrates the key steps followed in a robotic pancreaticoduodenectomy performed for a technically challenging pancreatic head cancer and highlights robotic control of bleeding from the PV and SMA obviating the need for conversion. Histopathology revealed a residual moderately differentiated ductal adenocarcinoma with 4-of-40 positive lymph nodes and negative surgical margins. The tumor was staged as ypT1cN2 (AJCC 8th edition). The patient had an uneventful postoperative course and was discharged on hospital day 8.

Conclusion In high-volume centers, the robotic approach can be safely used in selected cases of technically challenging BR pancreatic head cancers.

Keywords Robotic surgery · Pancreatic cancer · Pancreaticoduodenectomy · Borderline-resectable

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11605-021-04937-y>.

Declarations

Ethics Approval Formal Institutional Review Board approval was not required for this multimedia article.

Informed Consent Statement Patient consent was waived based on de-identified information.

Conflict of Interest The authors declare no competing interests.

References

1. Rosemurgy A, Ross S, Bordeau T, Craig D, Spence J, Alvioli J, Sucandy I. Robotic pancreaticoduodenectomy is the future: here and now. *J Am Coll Surg* 2019; 228(4):613-624.
2. Boone BA, Zenati M, Hogg ME, Steve J, Moser AJ, Bartlett DL, Zeh HJ, Zureikat AH. Assessment of Quality Outcomes for Robotic Pancreaticoduodenectomy. *JAMA Surg* 2015;150(5):416.
3. Shyr BU, Chen SC, Shyr YM, Wang SE. Surgical, survival, and oncological outcomes after vascular resection in robotic and open pancreaticoduodenectomy. *Surg Endosc* 2020;34(1):377-383.

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✉ Amer H. Zureikat
zureikatah@upmc.edu

¹ Department of Surgery, University of Pittsburgh, Pittsburgh, PA, USA

² Division of Gastrointestinal Surgical Oncology, UPMC Pancreatic Cancer Center, University of Pittsburgh Medical Center, 5150 Center Ave., Suite 421, Pittsburgh, PA 15232, USA