



Preservation of aberrant right hepatic artery during pancreaticoduodenectomy

Takamune Yamaguchi^{1,2^}, Nermin Halkic²

¹Department of Hepato-Biliary and Pancreatic Surgery, Dokkyo Medical University, Tochigi, Japan; ²Department of Visceral Surgery, University Hospital of Lausanne, Lausanne, Switzerland

Correspondence to: Nermin Halkic, MD. Department of Visceral Surgery, University Hospital of Lausanne, Rue du Bugnon 46, 1011 Lausanne, Switzerland. Email: Nermin.Halkic@chuv.ch.

Comment on: Pyras C, Lukas C, Janot-Matuschek M, *et al.* Preservation of aberrant right hepatic arteries does not affect safety and oncological radicality of pancreaticoduodenectomy-own results and a systematic review of the literature. *Hepatobiliary Surg Nutr* 2022;11:25-37.

Keywords: Aberrant right hepatic artery (aRHA); pancreaticoduodenectomy (PD); surgical complications

Submitted Mar 21, 2023. Accepted for publication Apr 29, 2023. Published online May 08, 2023.

doi: 10.21037/hbsn-23-146

View this article at: <https://dx.doi.org/10.21037/hbsn-23-146>

The standard surgery for distal common bile duct adenocarcinoma, pancreatic adenocarcinoma, and ampullary adenocarcinoma is pancreaticoduodenectomy (PD). PD is a technically challenging procedure with high mortality (0–3.5%) and morbidity (38–50%) rates (1-5). It is essential to recognize the anatomy preoperatively, especially of the hepatic artery and positions of the tumors, to avoid adverse events (6,7). The aberrant right hepatic artery (aRHA) originating from the superior mesenteric artery (SMA) is the most frequent and considerable hepatic artery variation (8-10).

As we reported previously, another type of aRHA originates from the gastroduodenal artery (GDA) (11). This aberrant is vital since the GDA is necessary to ligate during PD, and division of the GDA means loss of right hepatic artery (RHA) flow.

Although the short-term outcomes of the division of the RHA in PD remain unclear, the loss of RHA flow might result in critical adverse events. Bile duct ischemia and/or liver failure could cause the leakage of bile-enteric anastomosis. There is a report of 2 cases of bile-enteric anastomosis leakage secondary to bile duct ischemia after ligation of the RHA, which finally required liver transplantation (12). Fernández *et al.* also reported 2 cases that developed liver failure post-ligation of the RHA and

required liver transplantation (13).

Shukla *et al.* concluded with a systematic review that every attempt should be made to preserve aberrant RHA unless their resection is oncologically indicated (14).

The study “*Preservation of aberrant right hepatic arteries does not affect safety and oncological radicality of pancreaticoduodenectomy-own results and a systematic review of the literature*” provides valuable insights into the impact of preserving aRHAs during PD (15).

The study’s findings suggest that preserving aRHAs does not compromise the safety and oncological radicality of PD. This is an important finding as it provides evidence for surgeons. Preserving aRHAs during PD might improve the patients’ outcomes by reducing the risk of surgical complications.

In conclusion, surgeons should consider preserving aRHAs during PD. To prevent hepatic artery injury during PD in patients with aRHAs, the surgeons might prepare intensively. The preoperative recognition of the anatomy using computed tomography (CT) and/or magnetic resonance imaging (MRI) images and intraoperative liver Doppler ultrasonography might be helpful.

Furthermore, for complicated cases, the scheme using preoperative CT images could help recognize the anatomy around the essential vessels (*Figure 1*). Future studies should

[^] ORCID: 0000-0001-8727-4079.

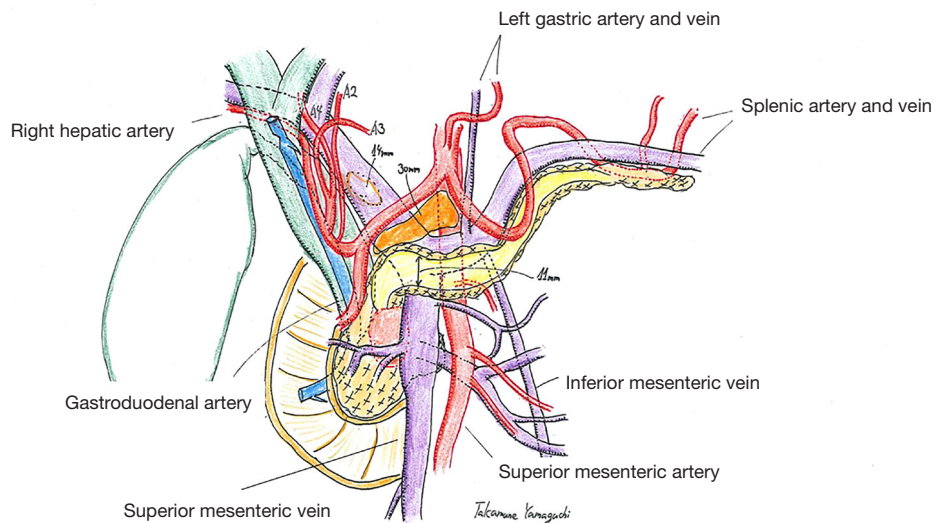


Figure 1 The scheme using preoperative CT images could help recognize the anatomy around the essential vessels. CT, computed tomography.

evaluate the impact of aRHA preservation on long-term oncological outcomes to provide further evidence for this practice.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Hepatobiliary Surgery and Nutrition*. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <https://hbsn.amegrouppublishing.com/article/view/10.21037/hbsn-23-146/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-

commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Bassi C, Falconi M, Salvia R, et al. Management of complications after pancreaticoduodenectomy in a high volume centre: results on 150 consecutive patients. *Dig Surg* 2001;18:453-7; discussion 458.
2. Yeo CJ, Cameron JL, Lillemoe KD, et al. Does prophylactic octreotide decrease the rates of pancreatic fistula and other complications after pancreaticoduodenectomy? Results of a prospective randomized placebo-controlled trial. *Ann Surg* 2000;232:419-29.
3. de Castro SM, Busch OR, van Gulik TM, et al. Incidence and management of pancreatic leakage after pancreatoduodenectomy. *Br J Surg* 2005;92:1117-23.
4. Yeo CJ, Cameron JL, Sohn TA, et al. Six hundred fifty consecutive pancreaticoduodenectomies in the 1990s: pathology, complications, and outcomes. *Ann Surg* 1997;226:248-57; discussion 257-60.
5. van Heek NT, Kuhlmann KF, Scholten RJ, et al. Hospital volume and mortality after pancreatic resection: a systematic review and an evaluation

- of intervention in the Netherlands. *Ann Surg* 2005;242:781-8, discussion 788-90.
6. Yang SH, Yin YH, Jang JY, et al. Assessment of hepatic arterial anatomy in keeping with preservation of the vasculature while performing pancreaticoduodenectomy: an opinion. *World J Surg* 2007;31:2384-91.
 7. Gaujoux S, Sauvanet A, Vullierme MP, et al. Ischemic complications after pancreaticoduodenectomy: incidence, prevention, and management. *Ann Surg* 2009;249:111-7.
 8. Stauffer JA, Bridges MD, Turan N, et al. Aberrant right hepatic arterial anatomy and pancreaticoduodenectomy: recognition, prevalence and management. *HPB (Oxford)* 2009;11:161-5.
 9. Lee JM, Lee YJ, Kim CW, et al. Clinical implications of an aberrant right hepatic artery in patients undergoing pancreaticoduodenectomy. *World J Surg* 2009;33:1727-32.
 10. Eshuis WJ, Olde Loohuis KM, Busch OR, et al. Influence of aberrant right hepatic artery on perioperative course and longterm survival after pancreaticoduodenectomy. *HPB (Oxford)* 2011;13:161-7.
 11. Yamaguchi T, Hasegawa K, Sauvain MO, et al. An aberrant right hepatic artery arising from the gastroduodenal artery: a pitfall encountered during pancreaticoduodenectomy. *Surg Today* 2021;51:1577-82.
 12. Traverso LW, Freeny PC. Pancreaticoduodenectomy. The importance of preserving hepatic blood flow to prevent biliary fistula. *Am Surg* 1989;55:421-6.
 13. Fernández JA, Robles R, Marín C, et al. Laparoscopic iatrogeny of the hepatic hilum as an indication for liver transplantation. *Liver Transpl* 2004;10:147-52.
 14. Shukla PJ, Barreto SG, Kulkarni A, et al. Vascular anomalies encountered during pancreaticoduodenectomy: do they influence outcomes? *Ann Surg Oncol* 2010;17:186-93.
 15. Pyras C, Lukas C, Janot-Matuschek M, et al. Preservation of aberrant right hepatic arteries does not affect safety and oncological radicality of pancreaticoduodenectomy-own results and a systematic review of the literature. *Hepatobiliary Surg Nutr* 2022;11:25-37.

Cite this article as: Yamaguchi T, Halkic N. Preservation of aberrant right hepatic artery during pancreaticoduodenectomy. *HepatoBiliary Surg Nutr* 2023;12(3):465-467. doi: 10.21037/hbsn-23-146