

Comment on “Does the Artery-first Approach Improve the Rate of R0 Resection in Pancreatoduodenectomy?: A Multicenter, Randomized, Controlled Trial”

To the Editor:

We read with great interest the article by Sabater and colleagues¹ of the September 2019 *Annals of Surgery* issue, titled, “Does the artery-first approach improve the rate of R0 resection in pancreatoduodenectomy?: A multicenter, randomized, controlled trial.” Our interest in reading this remarkable article is our description of the posterior approach back in 2001.² This technique was subsequently popularized under the name “artery-first technique” by Pessaux and colleagues.³ Our initial idea was that technique was useful in cases with portal vein involvement. The superior mesenteric artery first dissection allowed the resection and reconstruction of the portal vein to be the last step of the operation, thus decreasing the time of venous clamping.² Pessaux and colleagues³ described the same technique but for other purposes: early identification of inoperability, adequate lymphadenectomy, and identification of arterial anatomical variations. Since then, several authors adopted this interesting approach as a routine technique and the experience has increased and so have the indications. In 2010, the same authors made a plea for its use to increase the radicality of pancreatoduodenectomy after a description of a more radical artery first procedure described by Weitz and colleagues.^{4,5} In our service, we continue to use this approach in selected patients with portal

vein involvement but also to facilitate the removal of the retroperitoneal peripancreatic tissue. In cases of arterial variation, especially the replaced right hepatic artery, we realize that this approach was easier to be performed and it became a new indication for its use.

As its use evolved, many improvements in results were reported. Vallance and colleagues, in a case-matched study, showed comparable safety of artery first but improved oncological results when compared with standard approach.⁶ Moreover, in a systematic review and meta-analysis, Negroi and colleagues⁷ showed more impressive results, as they found better perioperative outcomes and lower local and metastatic recurrence rate. In the meantime, Pandanaboyana and colleagues⁸ realized that 6 different techniques of artery-first approach have been published and evidence regarding the benefits of this approach in decreasing margin positivity or increasing survival was scarce. They concluded that a randomized controlled trial was needed to ascertain the benefits.

Finally, Sabater and colleagues performed such important trial.¹ The authors conclude that there are no oncological advantages with artery-first approach when compared to a standard approach during pancreatoduodenectomy for malignant periampullary malignant tumors. There is no question about the importance of this approach for better results in pancreatic surgery. However, this conclusion raised an important question: When to use artery-first approach? Routinely or selectively?

In our opinion artery-first approach should be used selectively. It is an excellent technique in cases where the portal vein should be resected and reconstructed. In these circumstances, at the end of the resection phase, the surgical specimen is attached only by the portal vein and an easier and faster anastomosis can be performed, decreasing mesenteric ischemic time. Even

when a large portion of the vein must be resected, this technique allows an end-to-end anastomosis without the use of graft in most cases because the surgical specimen is already removed. On the other hand, artery-first may prolong the operative time and the risk of chylous leak and diarrhea and may not increase the rate of R0 when used routinely. Therefore, routine use of artery-first approach needs to be reevaluated.

Marcel Autran Machado, MD, FACS
Marcel C. Machado, MD, FACS

University of São Paulo, São Paulo, Brazil.
✉dr@drmarcel.com.br,
mmautran2@gmail.com

REFERENCES

1. Sabater L, Cugat E, Serrablo A, et al. Does the artery-first approach improve the rate of R0 resection in pancreatoduodenectomy?: A multicenter, randomized, controlled trial. *Ann Surg*. 2019;270:738–746.
2. Machado MC, Penteado S, Cunha JE, et al. Pancreatic head tumors with portal vein involvement: an alternative surgical approach. *Hepatogastroenterology*. 2001;48:1486–1487.
3. Pessaux P, Varma D, Arnaud JP. Pancreaticoduodenectomy: superior mesenteric artery first approach. *J Gastrointest Surg*. 2006;10:607–611.
4. Pessaux P, Marzano E, Rosso E. A plea for the artery-first dissection during pancreaticoduodenectomy. *J Am Coll Surg*. 2010;211:142–143.
5. Weitz J, Rahbari N, Koch M, et al. The “artery first” approach for resection of pancreatic head cancer. *J Am Coll Surg*. 2010;210:e1–e4.
6. Vallance AE, Young AL, Pandanaboyana S, et al. Posterior superior mesenteric artery first dissection versus classical approach in pancreaticoduodenectomy: outcomes of a case-matched study. *Pancreas*. 2017;46:276–281.
7. Negroi I, Hostiuc S, Runcanu A, et al. Superior mesenteric artery first approach versus standard pancreaticoduodenectomy: a systematic review and meta-analysis. *Hepatobiliary Pancreat Dis Int*. 2017;16:127–138.
8. Pandanaboyana S, Bell R, Windsor J. Artery first approach to pancreatoduodenectomy: current status. *ANZ J Surg*. 2016;86:127–132.