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Laparoscopic pancreaticoduodenectomy for periampullary cancer: Improving outcomes with arterial first approach

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BACKGROUND

Evidence showed early control of relevant arteries can minimise bleeding during dissection phase which may prolonge operating time and affect the quality of lymphadenectomy in laparoscopic pancreaticoduodenectomy (LPD).

METHODS

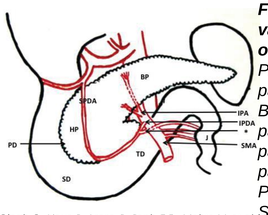
We compared the outcomes of 65 patients with traditional LPD from February 2017 to January 2022 (group A) and 15 consecutive patients in the next 12 months with arterial first approach LPD (group B) due to periampullary cancer.

RESULTS

The mean operating time was not a significant difference between group A with group B (512 ± 98 minutes vs 510 ± 61 minutes, p = 0.94). The mean estimated blood loss was lower in group B but not significantly different, 267 ± 102 ml vs 250 ± 61 ml (p = 0.53). On the contrary, the number of lymph nodes harvested was significantly higher in group B (15.8 ± 6.2 vs 21.1 ± 11.1, p = 0.017). The was no pancreatic fistula and major complication (Clavien – Dindo ≥ III) in group B, meanwhile that of group A were 12.3% and 13.8%, respectively. However, it was not significantly different with p = 0.34.

Parameter	Group A (n=65)	Group B (n=15)	p
Age	58.9±8.9	51±15.1	0.009
Gender	Male: 49.2% Female:50.8%	Male: 60% Female: 40%	
ASA I II III	 13 (20%) 37 (56.9%) 15 (23.1%)	 0 3 (20%) 12(80%)	
Location Ampulla of Vater Head of pancreas Common bile duct Duodenum	 38 (58.5%) 15 (23.1%) 9 (13.8%) 3 (4.6%)	 6 (40%) 5 (33.3%) 3 (20%) 1 (6.7%)	
Operation time (min)	512 ± 98	510 ± 61	0.940
Blood loss (ml)	267 ± 102	250 ± 61	0.538
Number of lymphnodes harvested	15.8 ± 6.2	21.1 ± 11.1	0.017
Pancreatic fistula (%)	12.3	0	0.341
Major complication (Clavien-Dindo ≥ III) (%)	13.8	0	0.196

Table: Outcomes of laparoscopic pancreaticoduodenectomy before and after implementing arterial first approach



Singh S, Kaur J, Arora J, Jeph RB, Mehta V, et al (2016) Unusual Pancreatico-Mesenteric Vasculature: A Clinical Insight. Arch Anat Physiol 1(1): 001-003. DOI: http://dx.doi.org/10.17352/aap.000001

Figure 1: Image showing variation in pancreatic branches of the superior mesenteric artery. *PDA: Superior pancreaticoduodenal artery; BP: Body of pancreas; HP: Head of the pancreas; IPA: Accessory inferior pancreatic artery; IPDA: Inferior pancreaticoduodenal artery; PD: Pancreaticoduodenal groove; SD: Second part of duodenum; SMA: Superior mesenteric artery; TD: Third part of duodenum; * : Anomolus jejunal branch of IPDA*

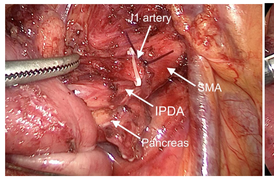


Figure 2

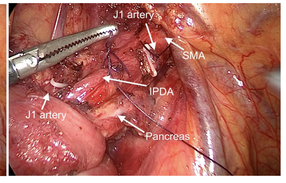


Figure 3

Figure 2,3 : Early vascular control.
J1: First Jejunal artery;
IPDA: Inferior pancreaticoduodenal artery;
SMA: Superior mesenteric artery

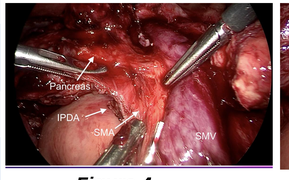


Figure 4

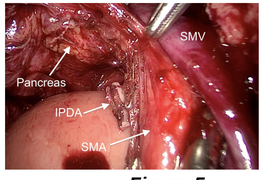


Figure 5

Figure 4,5 : Separation from SMA.
J1: First Jejunal artery
IPDA: Inferior pancreaticoduodenal artery dissected
SMA: Superior mesenteric artery

CONCLUSION

The arterial first approach may have benefits in terms of decreasing intraoperative blood loss, increasing the number of lymph nodes harvested, and decreasing the rate of pancreatic fistula and major complications.