Whipple resection: The need for specialization, standardization and centralization

Surgery for pancreatic head adenocarcinoma and other cancers of the peri-ampullary region has evolved over time. Although the natural biology of the disease is aggressive and long-term survival remains dismal, the technical refinements over the last two decades, coupled with improved chemo-radiotherapy that have improved outcomes more than ever before. Widely regarded as the most difficult of abdominal operations, sustained good outcomes of Whipple resection entail a long and steep learning curve, uncompromising attention to standardization and the urgent need to specialize in hepato-pancreato-biliary surgery. The clamor for centralization, especially in regions of low incidence of peri-ampullary and pancreatic head cancer, is expected to grow in the coming years.

The paper by Binziad *et al.* in this issue of SAJC[1] is another attempt to address the issue of perioperative and long-term outcomes after a pancreatoduodenectomy. The novelty of the paper lies in the fact that it originates from a region of low incidence and as a consequence highlights a number of areas known to influence outcomes after pancreatoduodenectomy.

Major factors dictating perioperative outcomes are texture of the pancreatic gland and duct size, and the type of pancreatic and digestive reconstruction. Other factors that play a crucial role are the level of surgical training of the operating surgeon, impact of high volumes (both hospital and surgeon) and concept of standardization of the procedure in dedicated teams. Dedicated teams include not just surgeons, but intensive care specialists, interventional radiologists and therapeutic endoscopists among others.

Tumor location is directly related to biliary and pancreatic duct dilatation. A meta-analysis[2] highlighted that the incidence of post-operative pancreatic fistula (POPF) was the highest in lower common bile duct tumors (non-dilated main pancreatic duct and softer pancreas) and the lowest in the pancreatic head cancers (dilated common bile duct and main pancreatic duct). Soon after, Hamanaka *et al*.[3] demonstrated that harder the pancreas and greater the duct dilatation, lesser was the pancreatic secretion with subsequent low-risk of POPF after pancreatic reconstruction. Modern imaging makes it possible to assess ductal size and assess the likely pancreatic consistency pre-operatively. This often but not always, can provide a pre-operative road-map to the pancreatic surgeon and enable him to predict and differentiate between a "high-risk versus low-risk pancreatic anastomosis."

Pancreatic anastomotic leak remains the Achilles heel of pancreatoduodenectomy and is clearly the single most important factor influencing morbidity and mortality after pancreatoduodenectomy. Innumerable studies have focused on the technique of pancreatic anastomosis (pancreaticojejunostomy and pancreaticogastrostomy). Meta-analysis, as pointed out by the authors, concluded that there is no superiority of one procedure over the other.[4] Thus, it is not the choice of the procedure, but how well it is carried out, that matters. Any duct to mucosa anastomosis performed without tension, with fine sutures (4-0/5-0 PDS), with gentle handling of the pancreas and ensuring good vascularity without distal obstruction, will likely yield excellent results.[5] If a standardized approach is followed, excellent results, even outside of centers of excellence, can be attained.[6]

Gaining experience in performing an extremely challenging and demanding procedure such as pancreatoduodenectomy is dependent on a combination of factors. Surgical volumes (both hospital and surgeon) and the "center effect" play a key role in surgical training and evolution. Birkmeyer *et al*. in 2002[7] provided compelling evidence highlighting superior results in high volume centers across United States. A surgeon performing at least 16 pancreatoduodenectomies per year was likely to have a low mortality rate of 3.8% versus a surgeon performing less than 16 procedures per year with the rate increasing alarmingly. Closely related to this aspect is the issue of negotiating the learning curve. At least 60 resections are necessary to attain a level of proficiency and achieve acceptable results in a procedure where the learning continues throughout the life of a surgeon. Such a number is possible only in tertiary centers of excellence and surgeons aspiring to be dedicated pancreatic surgeons should be aware of this aspect.[8]

Developing trained teams in the developing world, especially in areas where incidence of pancreatic and periampullary cancers is much lower than the Western world and far east, can therefore be a challenging and demanding task. Service configuration with gradually increasing experience can go a long way in improving outcomes even in areas of low incidence.[9] The results of the authors indicate that they need to incorporate concepts of super-specialization, standardization, service reconfiguration, and centralization, following which a marked improvement in their perioperative outcomes can be expected.

Access this article online	
Quick Response Code:	Website: www.sajc.org
	DOI: 10.4103/2278-330X.114143

Shailesh V. Shrikhande

Chief, Gastrointestinal and Hepato-Pancreato-Biliary Service, Department of Surgical Oncology, Convener, Gastrointestinal Disease Management Group, Tata Memorial Centre, Ernest Borges Marg, Parel, Mumbai, Maharashtra, India

Correspondence to: Prof. Shailesh V. Shrikhande

E-mail: shailushrikhande@hotmail.com

References

1. Binziad S, Salem A A S, Amira G, Mourad F, Ibrahim A K, Manim T M A. Impact of reconstruction methods and pathological factors on survival after pancreaticoduodenectomy. South Asian J Cancer 2013; 2:160-8.
2. Bartoli FG, Arnone GB, Ravera G, Bachi V. Pancreatic fistula and relative mortality in malignant disease after pancreaticoduodenectomy. Review and statistical meta-analysis regarding 15 years of literature. Anticancer Res 1991;11:1831-48.
3. Hamanaka Y, Nishihara K, Hamasaki T, Kawabata A, Yamamoto S, Tsurumi M, *et al*. Pancreatic juice output after pancreatoduodenectomy in relation to pancreatic consistency, duct size, and leakage. Surgery 1996;119:281-7.
4. Wente MN, Shrikhande SV, Müller MW, Diener MK, Seiler CM, Friess H, *et al*. Pancreaticojejunostomy versus pancreaticogastrostomy: Systematic review and meta-analysis. Am J Surg 2007;193:171-83.
5. Shrikhande SV, Qureshi SS, Rajneesh N, Shukla PJ. Pancreatic anastomoses after pancreaticoduodenectomy: Do we need further studies? World J Surg 2005;29:1642-9.
6. Shrikhande SV, Barreto G, Shukla PJ. Pancreatic fistula after pancreaticoduodenectomy: The impact of a standardized technique of pancreaticojejunostomy. Langenbecks Arch Surg 2008;393:87-91.
7. Birkmeyer JD, Siewers AE, Finlayson EV, Stukel TA, Lucas FL, Batista I, *et al*. Hospital volume and surgical mortality in the United States. N Engl J Med 2002;346:1128-37.
8. Tseng JF, Pisters PW, Lee JE, Wang H, Gomez HF, Sun CC, *et al*. The learning curve in pancreatic surgery. Surgery 2007;141:694-701.
9. Shrikhande SV, Barreto SG, Somashekar BA, Suradkar K, Shetty GS, Talole S, *et al*. Evolution of pancreatoduodenectomy in a tertiary cancer center in India: Improved results from service reconfiguration. Pancreatology 2013;13:63-71.

How to cite this article: Shrikhande SV. Whipple resection: The need for specialization, standardization and centralization. South Asian J Cancer 2013;2:158-9.
Source of Support: Nil. **Conflict of Interest:** None declared.

News

29th ICON Meeting Jaipur.
The 29th ICON meeting is scheduled from 13th to 15th Sept 2013 at Jaipur.
Contact: Dr Hemant Malhotra
for further details on: drmalhotrahemant@gmail.com