

## **Preoperative Biliary Drainage in Resectable Pancreatic Cancer**

Shailesh V. Shrikhande & Savio G. Barreto\*

*Department of Gastrointestinal and Hepato-Pancreato-Biliary Surgical Oncology*

*Tata Memorial Hospital*

*Parel – Mumbai, India*

*\*Department of Surgery*

*Modbury Hospital*

*Modbury - South Australia, Australia*

Pancreatoduodenectomy (PD) offers the only option for cure in resectable, non-metastatic pancreatic and periampullary cancer [1]. However, PD is technically challenging and fraught with a significant risk of morbidity and even mortality [2]. Obstructive jaundice is one of the most common symptoms of pancreatic and periampullary cancer [3]. Hyperbilirubinaemia has been recognised as contributory to post operative morbidity in pancreatobiliary surgery [4-6]. Based on this, preoperative biliary drainage was recommended prior to surgery in patients with malignant obstructive jaundice.

Numerous studies [7-11], including a randomised controlled trial [12] have addressed the issue of pre-PD biliary drainage and its effects on intraoperative and postoperative outcomes. However, subsequent reports on the outcomes of PD following preoperative biliary drainage have been conflicting [5, 8-11, 13]. Some studies reporting increased intraoperative blood loss [7], while others reported increased wound infections [9] and even increased mortality [10] in patients who underwent preoperative biliary drainage. In contrast, while some studies noted no adverse effect of preoperative biliary drainage on perioperative outcomes [8, 11], one study actually noted a statistically significant increase in re-operation rates for post-operative complications in non-stented patients reoperation rates [7].

The consistent finding amongst all the studies has been the presence of positive bile cultures in patients undergoing pre-PD biliary drainage. This is not unexpected considering that the relief of biliary obstruction is performed endoscopically with the consequent introduction of duodenal bacteria into the biliary tree.

A recent meta-analysis [14] examining the impact of preoperative biliary drainage on the outcomes of PD, found that although the rate of wound infections were higher in patients who had undergone preoperative biliary drainage, there was no convincing evidence to indicate that biliary drainage prevented or promoted post operative complications or mortality following PD.

The only Randomised Controlled Trial [12] published after the above meta-analysis addressed the issue of routine pre-PD drainage versus direct surgery. This trial failed to demonstrate any difference in outcomes (morbidity and mortality) following surgery between the two groups. 5 patients in the surgery-only group did undergo pre-PD biliary drainage and 6 randomised to drainage and surgery did not undergo drainage. The major criticism of this study has been the 'routine' preoperative drainage arm. While the incidence of serious complications was reported to be higher in the pre-PD drainage group, these complications included complications related to the ERCP. It is well appreciated, as noted above, that biliary drainage increases the risk of biliary bile cultures [15] and this could possibly influence the incidence of post-operative infectious complications [16]. As a result, selective use of biliary drainage is widely practiced [7, 10].

In terms of choice of stent, plastic stents are the preferred stents when preoperative biliary drainage is performed as a temporising measure to surgery in patients with malignant obstructive jaundice. Recent studies have indicated no additional morbidity when comparing plastic versus self-expandable metal biliary stents (SEMS) [17, 18]. The advantages of SEMS include reduced need for repeat endoscopic retrograde cholangio-pancreatography and stent change and hence a reduction in overall costs, as well [19].

In the absence of high levels of evidence to suggest the benefit or lack of it, current recommendations would advise that pre-PD biliary drainage should be performed selectively for patients presenting acutely with cholangitis, obstructive jaundice with secondary renal impairment, or in whom delays in the performance of the PD due to co-morbidities or referral to specialist centres for surgery are anticipated. In these patients, the PD should be performed within 4-6 weeks of stenting under the cover of perioperative antibiotics. If extended delays (>6 weeks) are anticipated between the stenting and PD, short length SEMS should be considered.

## References

1. Guidelines for the management of patients with pancreatic cancer periampullary and ampullary carcinomas. *Gut* 2005; 54 Suppl 5: v1-16.
2. Tseng JF, Pisters PW, Lee JE et al. The learning curve in pancreatic surgery. *Surgery* 2007; 141: 694-701.
3. Barreto S, Shukla P, Shrikhande S. Periampullary Carcinoma. In Shrikhande S, Friess H, Buchler M (eds): *Surgery of Pancreatic Tumors*, Edition New Delhi: BI publications 2007; 206-15.
4. Lai EC, Chu KM, Lo CY et al. Surgery for malignant obstructive jaundice: analysis of mortality. *Surgery* 1992; 112: 891-6.
5. van der Gaag NA, Kloek JJ, de Castro SM et al. Preoperative biliary drainage in patients with obstructive jaundice: history and current status. *J Gastrointest Surg* 2009; 13: 814-20.
6. Morgan RA, Adam AN. Malignant biliary disease: percutaneous interventions. *Tech Vasc Interv Radiol* 2001; 4: 147-52.
7. Coates JM, Beal SH, Russo JE et al. Negligible effect of selective preoperative biliary drainage on perioperative resuscitation, morbidity, and mortality in patients undergoing pancreaticoduodenectomy. *Arch Surg* 2009; 144: 841-7.
8. Jagannath P, Dhir V, Shrikhande S et al. Effect of preoperative biliary stenting on immediate outcome after pancreaticoduodenectomy. *Br J Surg* 2005; 92: 356-61.
9. Pisters PW, Hudec WA, Hess KR et al. Effect of preoperative biliary decompression on pancreaticoduodenectomy-associated morbidity in 300 consecutive patients. *Ann Surg* 2001; 234: 47-55.
10. Povoski SP, Karpeh MS, Jr., Conlon KC et al. Association of preoperative biliary drainage with postoperative outcome following pancreaticoduodenectomy. *Ann Surg* 1999; 230: 131-42.
11. Sewnath ME, Birjmohun RS, Rauws EA et al. The effect of preoperative biliary drainage on postoperative complications after pancreaticoduodenectomy. *J Am Coll Surg* 2001; 192: 726-34.
12. van der Gaag NA, Rauws EA, van Eijck CH et al. Preoperative biliary drainage for cancer of the head of the pancreas. *N Engl J Med* 362: 129-37.
13. van der Gaag NA, Rauws EA, van Eijck CH et al. Preoperative biliary drainage for cancer of the head of the pancreas. *N Engl J Med* 2010; 362: 129-37.
14. Velanovich V, Kheibek T, Khan M. Relationship of postoperative complications from preoperative biliary stents after pancreaticoduodenectomy. A new cohort analysis and meta-analysis of modern studies. *JOP* 2009; 10: 24-9.
15. Garcea G, Chee W, Ong SL, Maddern GJ. Preoperative biliary drainage for distal obstruction: the case against revisited. *Pancreas* 2010; 39: 119-26.
16. Povoski SP, Karpeh MS, Jr., Conlon KC et al. Preoperative biliary drainage: impact on intraoperative bile cultures and infectious morbidity and mortality after pancreaticoduodenectomy. *J Gastrointest Surg* 1999; 3: 496-505.
17. Mullen JT, Lee JH, Gomez HF et al. Pancreaticoduodenectomy after placement of endobiliary metal stents. *J Gastrointest Surg* 2005; 9: 1094-104; discussion 104-5.
18. Wasan SM, Ross WA, Staerckel GA, Lee JH. Use of expandable metallic biliary stents in resectable pancreatic cancer. *Am J Gastroenterol* 2005; 100: 2056-61.
19. Chen VK, Arguedas MR, Baron TH. Expandable metal biliary stents before pancreaticoduodenectomy for pancreatic cancer: a Monte-Carlo decision analysis. *Clin Gastroenterol Hepatol* 2005; 3: 1229-37.