

LETTER

Posterior Approach Pancreaticoduodenectomy: Does It Really Improve Long-Term Survival in Pancreatic Head Cancer?

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We enjoyed reading the report by Kurosaki *et al.* on their experience with the left posterior approach to the superior mesenteric artery in a pancreaticoduodenectomy for pancreatic head cancer [1]. Since the retroportal lamina (containing lymphatic structures, small vessels and nerves) should be completely resected during a pancreaticoduodenectomy for pancreatic head cancer, dissection along the superior mesenteric artery is one of the critical steps during a pancreaticoduodenectomy. The posterior approach in a pancreaticoduodenectomy was first described by Pessaux *et al.* and implies a first dissection of the superior mesenteric artery [2]. Starting with the Pessaux technique, we have published our preliminary results with a posterior approach pancreaticoduodenectomy [3]. The technique presumes early identification of the superior mesenteric artery at its origin from the aorta with a downward dissection on the right side of the artery. Early identification of tumor infiltration of the superior mesenteric artery avoids a medial “margin-positive” resection, with no survival benefit as compared to unresected patients [4]. Indeed, in R1 resections, the area most involved with the tumor is the medial margin (i.e. the margin with the superior mesenteric artery) [5]. Recently, Weitz *et al.* described the “artery first” approach pancreaticoduodenectomy for pancreatic head cancer [6] where the superior mesenteric artery is approached at the mesentery root and pancreatic dissection is carried out toward the origin of the artery from the aorta. No matter which of the above techniques is used (posterior

approach or artery first), dissection on the left side of the superior mesenteric artery is not recommended in order to preserve the nerves on the left side of the artery and to avoid postoperative intractable diarrhea [3, 4, 6]. Thus, the pancreaticoduodenectomy technique proposed by Kurosaki *et al.* is the first which completely removes the tissue on the left side of the superior mesenteric artery [1]. En bloc dissection of the superior mesenteric pedicle is facilitated when using the left posterior approach of the superior mesenteric artery, and the surgical margin status to the superior mesenteric artery can be predicted before the pancreaticoduodenectomy [1]. However, how to use this data for surgical decision making is not shown.

The presumed advantages of the posterior or the artery first approaches are early assessment of resectability, sparing an aberrant right hepatic artery originating from the superior mesenteric artery, and facilitation of portomesenteric venous resection. To the best of our knowledge, up to now, there are only two studies comparing the posterior approach to a standard pancreaticoduodenectomy [1, 7]. Our study was a case-matched one and did not show significant differences between the two groups in terms of R1 resection rate, postoperative complications and overall survival after a pancreaticoduodenectomy for pancreatic head cancer. However, the study had important limitations (small number of patients with pancreatic head cancer, no standard work-up for pathology). The advantages of a posterior approach pancreaticoduodenectomy were reduced operative time and intraoperative blood loss [7].

The study of Kurosaki *et al.* did not demonstrate the differences between a left posterior approach pancreaticoduodenectomy and a standard pancreaticoduodenectomy in terms of operative time, postoperative complications (except for delayed gastric emptying which was significantly higher in the standard pancreaticoduodenectomy group) and blood loss. Interestingly, postoperative diarrhea was not significantly higher in the left posterior approach

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pancreaticoduodenectomy group, as would be expected (65% vs. 48%) [1].

However, for the first time, the study of Kurosaki *et al.* shows a significant improvement in long-term survival after a posterior approach pancreaticoduodenectomy for pancreatic head cancer. Thus, overall survival was significantly better in the left posterior approach group as compared to a standard pancreaticoduodenectomy (52.8% vs. 17.1% at 3-year). Furthermore, surgical technique (left posterior approach pancreaticoduodenectomy) was found to have a statistically significant influence on the prognosis in univariate analysis although it was not significant in multivariate analysis. The overall local recurrence rate was significantly lower in the left posterior approach pancreaticoduodenectomy group (10% vs. 37.1% in the standard pancreaticoduodenectomy) [1]. The data regarding the low local recurrence rate and improved survival after a left posterior approach pancreaticoduodenectomy are surprising since there were no differences regarding the pathological features (tumor size, differentiation grade, and microlymphatic, microvenous or perineural invasion, extrapancreatic plexus invasion and lymph node status) or type of adjuvant chemotherapy (as compared to a standard pancreaticoduodenectomy) [1]. It is well known that the cause of loco-regional recurrence after a curative intent pancreaticoduodenectomy for pancreatic head cancer is related to extrapancreatic cancer extension (lymph node metastases, microinvasion into lymphatic channels, small vessels and soft tissues, perineural invasion), these structures all being located in the retroportal lamina, recently renamed the meso-pancreas [8]. There were no significant differences between the two groups regarding the percentages of R1 resections and invasion of the medial margin [1]. Tumor recurrence is primarily due to incomplete excision at the site of resection, especially in regard to the medial margin [9].

Curative resection (i.e. R0 pancreaticoduodenectomy) is widely recognized as a strong independent prognostic factor after pancreaticoduodenectomy for pancreatic head cancer [10]. A recent study showed that prognosis after an R1 transection margin pancreaticoduodenectomy (including medial margin) is significantly worse than after R1 mobilization margins (i.e., anterior and posterior pancreatic surface) [11]. Moreover, median survival after an R1 mobilization

margin pancreaticoduodenectomy is not significantly different from an R0 pancreaticoduodenectomy [11].

We would be interested in knowing how the authors explain the reduced rate of local recurrence and improved survival after a left posterior pancreaticoduodenectomy for pancreatic head cancer since, when using this approach, the R1 resection rate and invasion of the medial margin were not decreased.

Conflict of interest The authors have no potential conflicts of interest

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