

Pancreaticoduodenectomy: Which Metric(s) Supports Application of the Robotic Platform?

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Introduction: Great enthusiasm is accompanying application of the robotic platform to pancreaticoduodenectomy. While there is supportive data, caution must be exercised in supporting its application as data continues to be analyzed. This study was undertaken to evaluate our results with robotic vs. ‘open’ pancreaticoduodenectomy to determine which metrics support robotic application to pancreaticoduodenectomy.

Methods: From 2013 through 2018, we have progressively transitioned from ‘open’ to robotic pancreaticoduodenectomy. We have prospectively followed all patients: 187 after ‘open’ and 200 after robotic pancreaticoduodenectomy. Data are presented as median (mean \pm SD), where appropriate.

Results:

Patients undergoing ‘open’ vs. robotic pancreaticoduodenectomy were similar demographically (Table). There were no significant difference in their underlying malignancy (78% vs. 77%, respectively), exposure to neoadjuvant therapy (9% vs. 6%), ASA class, T grade, T status (Table), N status, AJCC stage, postoperative complication rate (19% vs. 15%), in-hospital mortality (6% vs. 6%), and 30-day readmission rate (16% vs. 18%). EBL was less, operative duration longer, R0 resection rate was higher (85% vs. 73%) and length of stay (LOS) shorter with robotic pancreaticoduodenectomy (Table). Patients after the robotic approach had a time-to-treat with adjuvant chemotherapy of 7 (9 \pm 9.6) weeks vs. 8 (11 \pm 17.9) weeks after the ‘open’ approach (p=0.32). After the robotic approach, 38% discontinued adjuvant treatment due to ‘intolerance’ vs. 56% after the ‘open’ approach (p<0.01). Median survival for patients undergoing robotic PD was 32 months vs. 17 months for patients undergoing ‘open’ PD (p=0.06).

Conclusions:

Patients undergoing robotic vs. ‘open’ pancreaticoduodenectomy had a shorter LOS, less operative blood loss, and prospects for longer survival but, despite many similarities, had longer operations and did not have a lower complication rate, lower in-hospital mortality, lower 30-day readmission rate, or shorter time-to-treat for adjuvant therapy, though they were more likely to complete adjuvant therapy. Though there is great enthusiasm accompanying application of the robotic platform to pancreaticoduodenectomy, objective metrics fully supporting this enthusiasm must be sought.

	‘Open’ Approach (n-187)	Robotic Approach (n-200)	p-value
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Age (years)	69 (68±10.4)	69 (67±11.5)	0.36
Sex (% men)	59%	57%	0.61
BMI (kg/m ²)	26 (26±5.0)	27 (27±4.9)	0.71
Tumor Size (cm)	3.0 (3.2±1.62)	2.8 (2.9±1.33)	0.09
Estimated Blood Loss (ml)	350 (436±339.4)	200 (333.5±590.6)	0.04
Operative Duration (min)	244 (259±80.6)	411 (418±96.5)	<0.01
LOS (days)	8 (11±9.7)	5 (8±8.2)	0.02

QOL data