

Predictors of achieving a textbook outcome following Robotic Left Pancreatectomy a multi-centre analysis

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Introduction

- Textbook outcomes(TO) is an increasingly used metric to define the quality of surgery delivered -indicator of high-quality pancreatic surgery
- first analysis specifically investigating predictors of TO for RLP
- TO is a composite measure defined by the absence of major morbidity, readmission, prolonged length of stay and perioperative mortality
- Many centres in the UK have adopted a robotic approach to Left sided pancreatectomy(RLP)
- [The Brescia consensus meeting](#) – the learning curve for RLP in the first 21 cases for post operative complications and 16 cases for operative time.
- TO in competency (learning) and proficiency phases have not been previous been explored

Methods

Setting and population

- 7 specialist UK centres (all volumes and experience included)
- Retrospective review 2014-2024
- Variables, definitions and outcomes :
- Left pancreatectomy – resection to the left of SMV
- ISGPS definitions for PPH,DGE,POPF
- Post operative complications – Clavien Dindo classification ($\geq 3a$ –major morbidity)



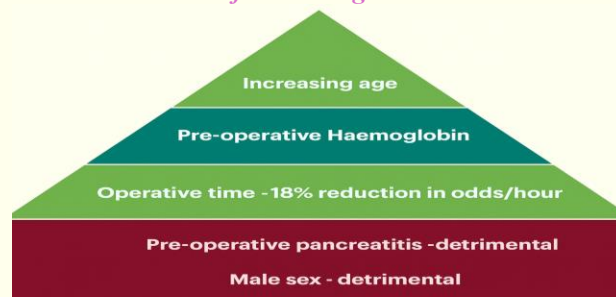
Textbook outcome – hospital stay during index admission <75th percentile ($P < 75$), no CD complications $\geq 3a$, No in hospital mortality, no conversion to open surgery, No readmission within 90days of surgery and no clinically relevant post operative pancreatic fistula(grade B/C)

- [Competency Phase \(learning phase\)](#) – first RLP 21 cases in the centre
- [Proficiency phase](#) – subsequent cases

Competency phase Proficiency phase

The UK Robotic Pancreatic Surgery Study (ROPSS) Group

Predictors of Achieving Text book outcomes



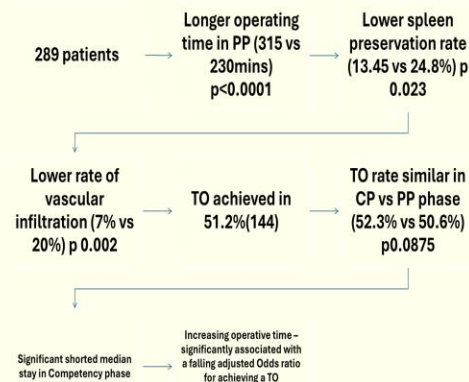
Multivariable logistic regression for TO excluding operating time, but including potential predictors of a longer operation.

Variable	OR (95% CI)	P-value
Age (years)	1.04 (1.01-1.06)	0.001
Sex (male versus female)	0.47 (0.24-0.91)	0.025
BMI (kg/m ²)	0.96 (0.91-1.01)	0.119
Histological diagnosis	-	0.458
Neuroendocrine tumour	(ref)	(ref)
Adenocarcinoma	0.84 (0.36-1.98)	0.694
Intraductal papillary mucinous neoplasm	1.50 (0.72-3.73)	0.381
Other	1.50 (0.72-3.15)	0.278
Vascular infiltration	1.60 (0.51-5.05)	0.426
Preoperative haemoglobin (g/L)	1.03 (1.00-1.05)	0.020
Previous myocardial infarction	0.79 (0.27-2.32)	0.674
Previous cerebrovascular accident	0.62 (0.18-2.14)	0.445
Diabetes mellitus	1.46 (0.75-2.82)	0.265
Previous pancreatitis	0.26 (0.07-0.91)	0.035
Splenic preservation	1.45 (0.66-3.19)	0.358
Multivisceral resection	0.93 (0.37-2.38)	0.886
Conversion to open procedure	0.48 (0.16-1.45)	0.193

Discussion

- With increasing operative time the likelihood of achieving TO falls until it reaches a threshold where operative time no longer has an impact. Most centres were found to cluster around the O/E ratio of 1 – suggesting good outcomes
- Limitations – retrospective analysis, variables could be affected by centre variations and management protocols
- Oncological endpoints, True learning curve requires surgeon level data and CUSUM analysis were not assessed

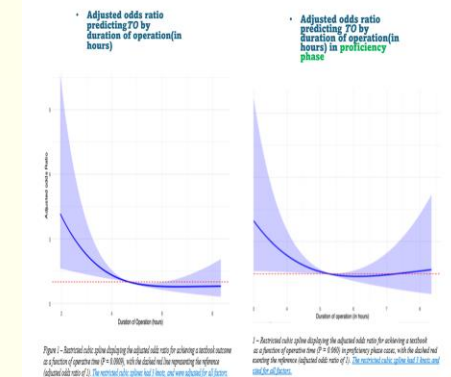
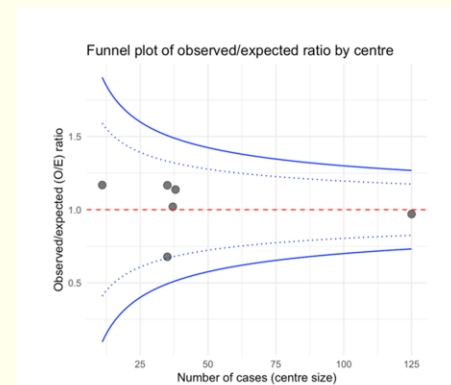
Results



- Spleen preservation 16.7%, multi visceral resections 10.7%,
- Conversion to open 8.2%, 6% CD Grade 3a or more,
- POPF 19.9%, PPH 2.8%, DGE 4.3%

Variation between centres

- Median total case volume for all centres -36(IQR 35-38)
- The unadjusted TO rate 34.3%-81.8% , adjusted using logistic regression – the TO O/E ratio range 0.68 – 1.17 per centre.
- No centres were outliers on funnel plot
- TO was not explicitly dependent on centre volume
- Sub Analysis of Proficiency Phase cases:
 - Age, pre-operative Haemoglobin and pre-operative pancreatitis remained as predictors –sensitivity analysis
 - Relationship between operating time and TO – restricted cubic spline – similar trend but no statistical significance (overall $p = 0.088$ and non-linearity $p = 0.142$)



Conclusions

- Predictors could aid case selection for new centres/ programmes and surgeons
- The predictors support the external valid predictors of outcomes in pancreatic surgery
- Textbook outcomes is a useful method of comparison and analysis of outcomes and standards