Hand-Assisted Versus Pure Minimally-Invasive Distal Pancreatectomy: Is There a Downside to Lending a Hand?

Phoebe N. Miller MS[1], F Romero-Hernandez MD[2], P Conroy, MD[2], L Calthorpe MPhil[1], M Yilma, MD[2], S Mohamedaly, MD, MPH[2], Y Kelly, MD[2], J Feng, MS, PhD[3], K Hirose, MD[2], K Kirkwood, MD[2], A Maker, MD[2], C Corvera, MD[2], E Nakakura, MD, Ph.D.[2], A Alseidi, MD, Ed.M.[2], Mohamed A. Adam, MD[2]

[1] School of Medicine, University of California, San Francisco [2] Department of Surgery, University of California, San Francisco [3]Department of Epidemiology and Statistics, University of California, San Francisco

UCSF Department of Surgery

Background

- Hand-assisted technique laparoscopic distal pancreatectomy (HALDP) vs. pure laparoscopic distal pancreatectomy (LDP) is suggested to:
  - Improve tactile sensation, tissue dissection
  - Shortened operative duration
- Location of the hand-port or extraction incision and size of the incision differ between HALDP and LDP.
- Unclear whether development of post-operative incisional hernia or operative duration differ between the two techniques.

Objective

- Compare the rates of post-operative incisional hernias and operative duration between HALDP and LDP.

Methods

Study Population

- Inclusion Criteria:
  - Elective HALDP or LDP at a single center
  - 1/2012 - 5/2021
  - ≥ 6 months follow up
- Primary Outcomes:
  - Post-operative incisional hernia
  - Operative duration

Primary Analysis

- Multivariable logistic regression model
  - Association between HALDP and post-operative incisional hernia
- Poisson regression model
  - Association between HALDP and shorter operative duration

Sensitivity Analysis

- Propensity score matching
  - Full cohort matching

Results

Table 1: Demographic & Clinical Characteristics

	HALDP (N = 41)	LDP (N = 54)	P-value
Age (Years, Median, IQR)	67	61	0.021
Female	49%	50%	NS
Race			NS
White	78%	57%	
Asian	10%	9%	
Hispanic/ Latinx	2%	17%	0.02
BMI (Median, IQR)	27	25	NS
ASA			NS
1	2%	2%	
2	46%	61%	
3	51%	37%	
Diabetes			NS
Insulin Dependent	7%	6%	
Non-Insulin Dependent	93%	94%	
Smoking	5%	9%	NS

Table 2: Clinical Outcomes

	HALDP (N = 41)	LDP (N = 54)	P-value
Conversion to Open	17%	11%	NS
Wound Classification			NS
Clean-Contaminated	88%	89%	
Contaminated	2%	7%	
Dirty/Infected	0%	0%	
Gland Texture			NS
Soft	68%	48%	
Hard/Intermediate	12%	26%	
T Stage			NS
T0/T1	19%	26%	
T2	32%	17%	
T3/T4	17%	24%	
N1/N2 Stage	15%	19%	NS
Diagnosis			NS
Adenocarcinoma	39%	35%	
Neuroendocrine Tumor	39%	33%	
Cyst	17%	30%	
Pancreatitis	0%	2%	

Table 3: Adjusted Outcomes of Hernia for Patients Undergoing HALDP and LDP

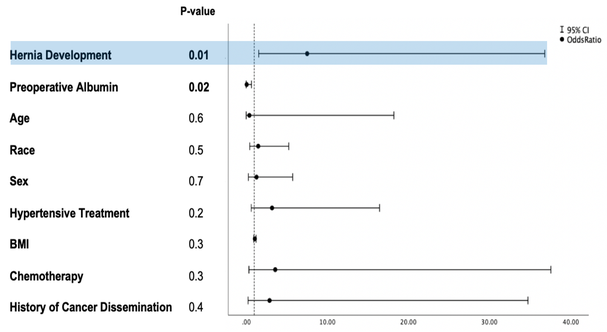


Figure 1: Post-operative Incisional Hernia and Hernia Repair for Patients Undergoing HALDP vs. LDP

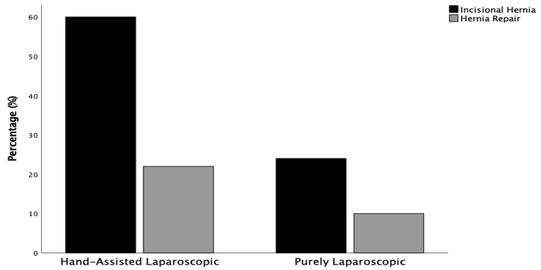


Figure 2: Maximum Hernia Dimension by Operative Approach

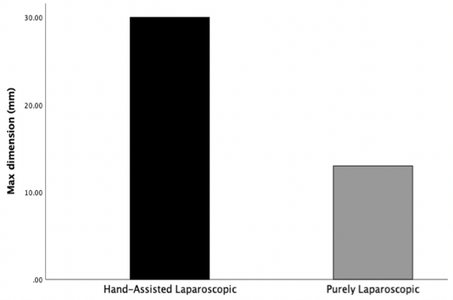
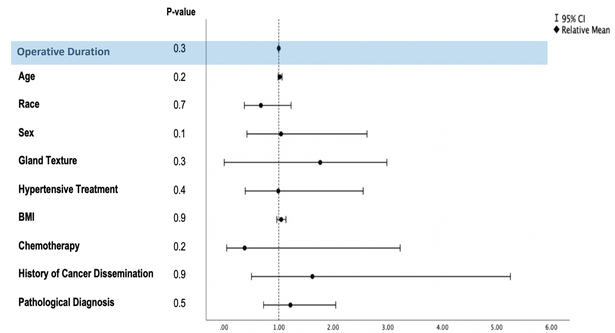


Table 4: Adjusted Outcomes of Operative Duration for Patients Undergoing HALDP and LDP



Limitations

- Retrospective analysis subject to selection bias towards more complex patients with closer follow-up.
- Single center study with relatively limited statistical power.

Conclusions/Implications

- Hand-assisted vs. laparoscopic distal pancreatectomy was independently associated with increased odds of post-operative incisional hernia.
- There was no difference in operative duration between HALDP and LDP.
- These findings were confirmed after propensity score matching.
- Our results bring into question the similarity between HALDP and LDP surgical approaches and the perceived benefit of shorter operative duration.
- As the use of minimally invasive distal pancreatectomies continues to rise, the risk of incisional hernia should be discussed when counseling patients on the planned operative approach.