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Incisional hernia

# External validation of Penn Hernia Risk Calculator (PHRC) for incisional hernia prediction in pancreatic surgery

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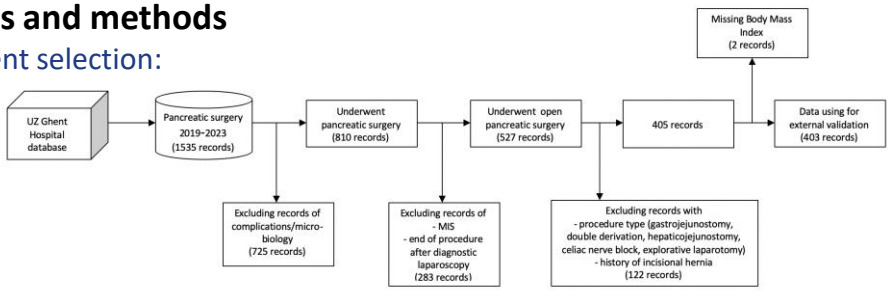
## Background

- Incisional hernia (IH) is **the most frequent long-term complication** following pancreatic surgery
- Primary mesh augmentation is an **effective** preventive strategy for incisional hernia and is well researched in **high-risk patients for several indications**
- **Selecting candidates** for mesh prophylaxis remains the first step in this preventive strategy
- Several **prediction models** have been described in the literature and are internally validated

**This study aims to evaluate whether the Penn Hernia Risk Calculator can accurately predict incisional hernia following pancreatic surgery through transverse laparotomy**

## Patients and methods

### (1) Patient selection:




### (2) Primary outcome:

- Composite risk score of the PHRC, HPB-specific model (20 predictor variables)
- Clinical IH, diagnosed on postoperative examination
- Radiological IH, diagnosed on postoperative abdominal CT, if peformed

### (3) Model performance and revision

- Area Under the ROC-curve (AUC)
- Sensitivity, specificity, PPV and LR+
- Chi-square tests between IH patients and controls

## Results

### (1) Descriptive statistics

- 4.2% IH after transverse laparotomy

| | Clinical | Radiological |
|---|---|---|
| IH (%) | 1.5 | 3.7 |
| Follow-up time in months (IQR) | 1.3 (1.0-2.6) | 19.1 (10.4-33.9) |

- 94.5% transverse incision
- Indication: malignant lesion (76.9%), chronic pancreatitis (8.9%)
- Procedure: PPPD (57.3%), WP (16.6%), DP (15.6%)

### (2) Model performance

| | AUC (95%CI) | LR+ |
|---|---|---|
| General cohort | 0.548 (0.412; 0.684) | 1.195 |
| Age 45-65 years | 0.875 (0.774; 0.976) | 1.739 |
| BMI > 30 kg/m² | 0.674 (0.532; 0.815) | 4.673 |

- Overprediction of risk in both low- and high-risk groups in the general cohort

### (3) Model revision

- Protective: malignant indication for surgery, PPPD, WP
- Risk: BMI > 20 kg/m²

## Conclusions

- Poor predictive value of PHRC in a general cohort of pancreatic surgery patients
- If predicted risk is low, incisional hernia risk is low
- Reasonable life-expectancy should be present before calculating the risk
- PMA may be considered in obese patients (BMI > 30 kg/m²) undergoing pancreatic surgery, based on predicted risk and shared-decision making
- Universal prophylaxis through proper suture technique remains the foundation of incisional hernia prevention in pancreatic surgery