



Defect Area as a Predictor of Morbidity after Incisional Hernia Repair in Liver Transplant Recipients

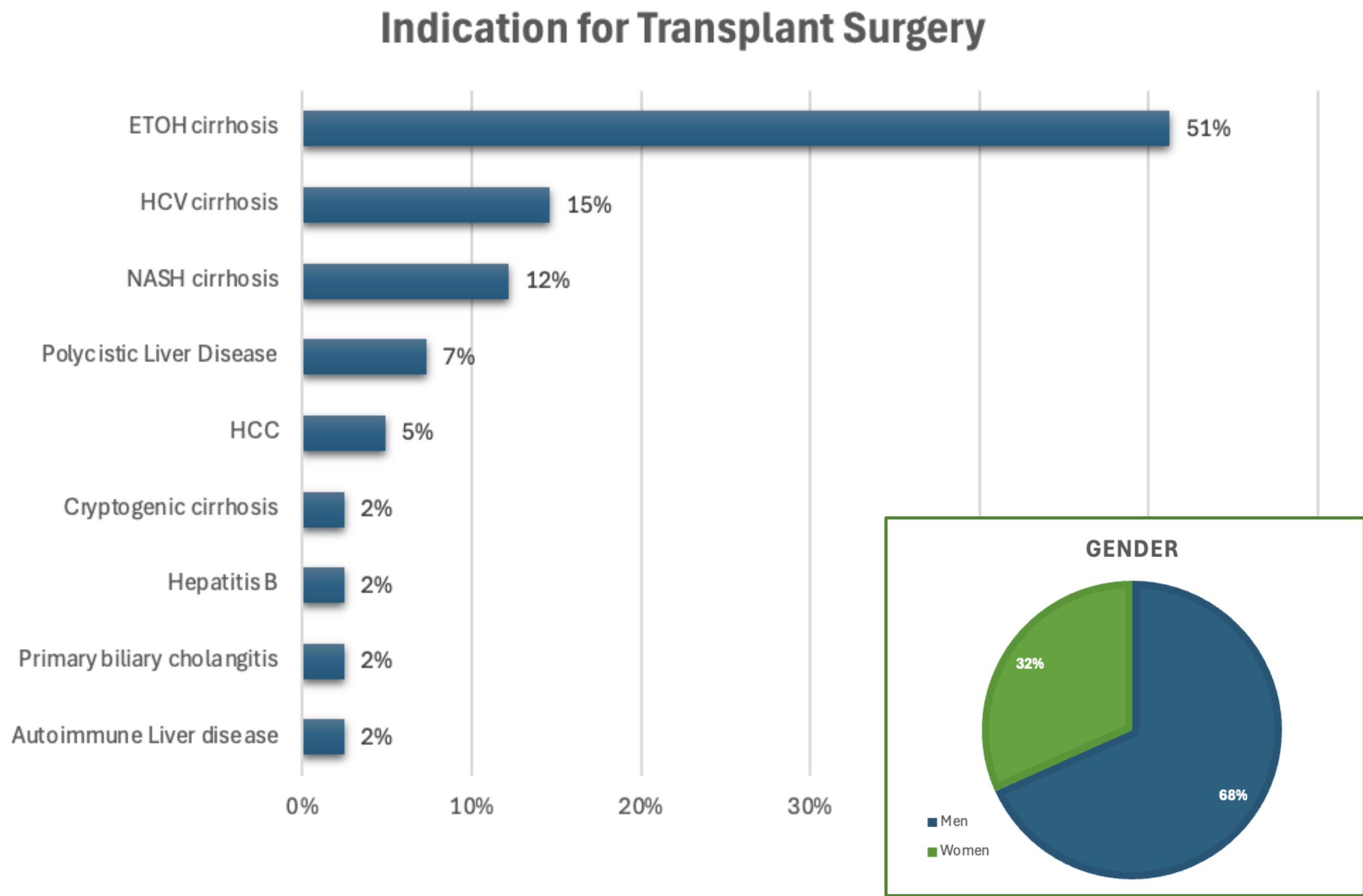
Agustina Altolaguirre, MD; Mauricio Sarmiento Cobos, MD; Amir Bashiri, MD; Samuel Szomstein, MD; Emanuele Lo Menzo, MD, FACS | *Department of General Surgery and the Bariatric and Metabolic Institute, Cleveland Clinic Florida, Weston, FL*

Introduction

- **Incisional hernia** develops in up to 20% of liver transplant recipients.
- Repair in this population is challenging due to prior surgery, chronic immunosuppression, and impaired wound healing.
- Identifying **predictors of early morbidity** is key to optimize outcomes and resource use.
- This study evaluated whether **hernia defect area** predicts early surgical site complications after laparoscopic repair.

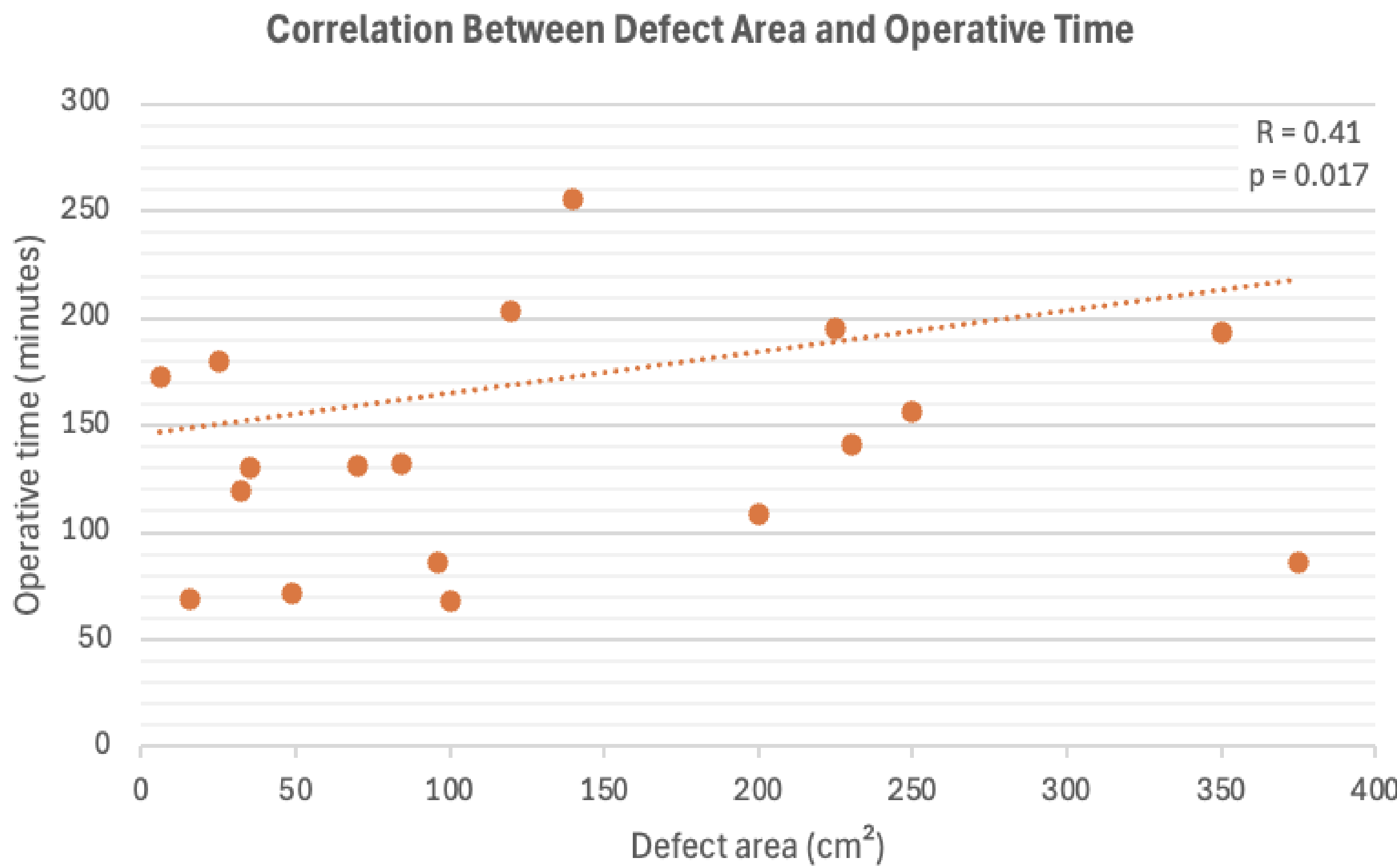
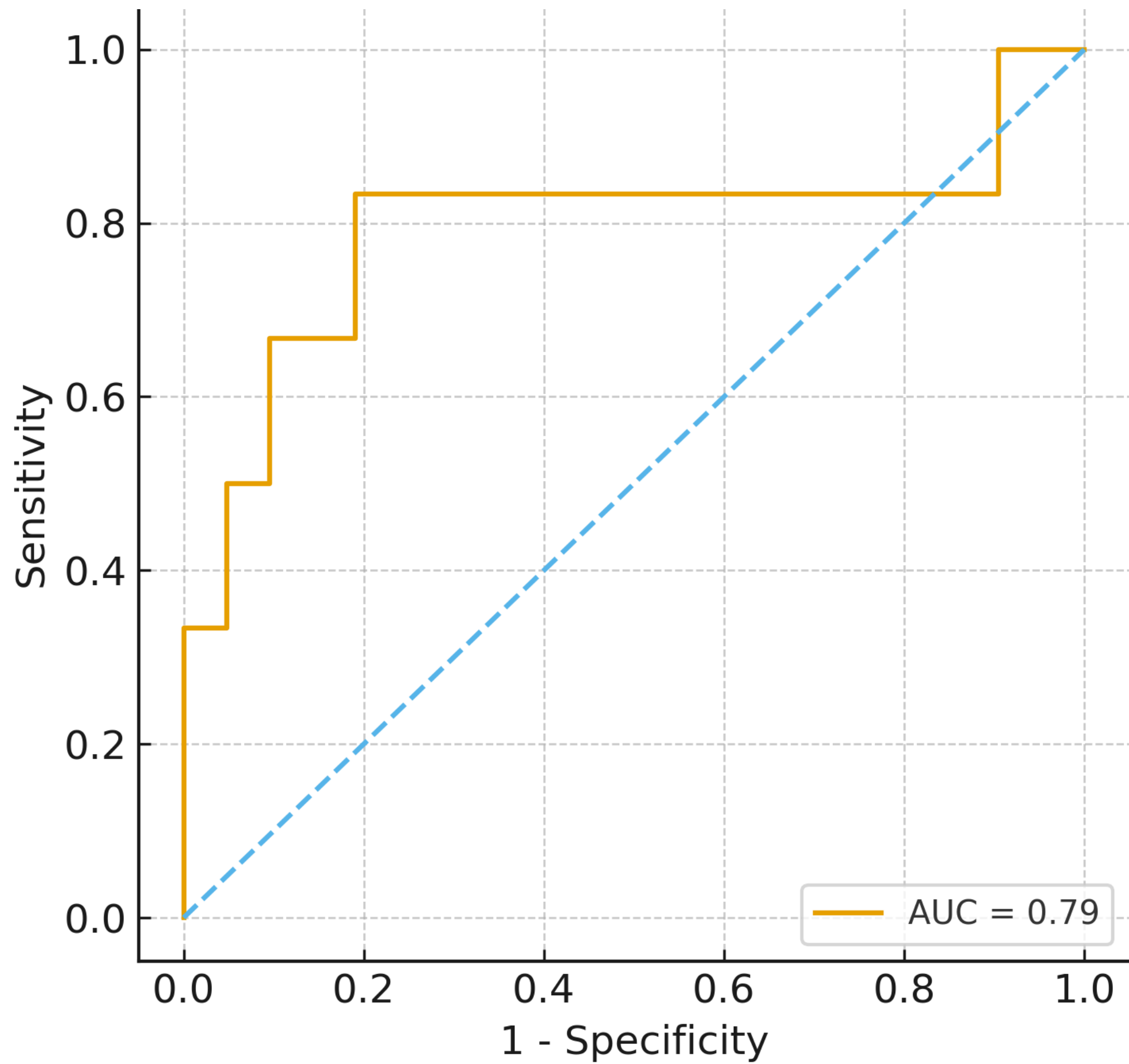
Methods

- **Retrospective cohort study (2016–2025)** at Cleveland Clinic Florida.
- Adult liver transplant recipients undergoing **laparoscopic incisional hernia repair**.
- Predictors: **defect area (cm²)**, operative time, BMI, diabetes, postoperative NLR.
- Primary outcome: **30-day surgical site occurrence (SSO)** – infection, seroma, delayed healing.
- **Statistical analysis:** correlation, t-tests, and multivariable logistic regression.
- Model performance assessed by **AUC** for discrimination.



Variable	OR (95% CI)	p-value
Defect area (cm ²)	1.015 (1.000–1.029)	0.044
BMI	0.96 (0.78–1.18)	0.68
Diabetes	1.74 (0.39–7.95)	0.46
Post-op NLR	1.05 (0.92–1.20)	0.41

*BMI, diabetes, and postoperative NLR were **not significant** predictors.



Results

- Mean time to hernia: **33 months** (range 8–75).
- Mean defect area: **109.5 ± 57.5 cm²**.
- Mean operative time: **171.7 ± 41.6 minutes**.
- **Postoperative SSO rate:** 19.5% (8 patients).
- Patients with SSO had **larger defect areas** (216.4 ± 53.0 cm² vs 104.1 ± 61.4 cm², p = 0.044).
- **Larger defects → longer operative times** (r = 0.41, p = 0.017).
- **No association** between defect size and hernia recurrence (p = 0.404).
- Larger hernias increase **early morbidity**, not long-term recurrence.
- **Defect area independently predicted** 30-day SS morbidity.
- OR 1.015 per cm² (95% CI 1.000–1.029, p = 0.044).
- Model discrimination: **AUC = 0.78** (good predictive performance).

Conclusions

- **Defect area is an independent predictor** of early SS morbidity after laparoscopic repair.
- Larger defects are associated with **longer operative times** and **higher wound complication rates**, but not recurrence.
- **Preoperative defect measurement** is simple, objective, and reproducible. Facilitates **risk stratification, operative planning, and patient counseling**.
- Patients with large defects may benefit from **tailored perioperative protocols**.

Future direction: Prospective validation with a larger cohort to confirm findings and optimize repair strategies for high-risk transplant recipients.

