BMI and 30-Day Complications After Robotic Inguinal Hernia Repair: A Multivariate Analysis

Austin Charles BS[1]; Ana Rasador MD[2]; Carlos Balthazar da Silveira MD[2]; Agnes Premkumar MD[1]; Conrad Ballecer MD[2]; Thomas Gillespie MD, FACS[1]; Vikram Deka MD[2]

[1]Creighton University School of Medicine, Phoenix, AZ; [2]Dignity Health Hernia Institute, St. Joseph's Hospital, Phoenix, AZ

Creighton UNIVERSITY School of Medicine

Dignity Health. St. Joseph's Hospital and Medical Center

BACKGROUND

- An inguinal hernia is a protrusion of abdominal tissue through the abdominal wall and into the inguinal canal
- The contents of the herniated tissue often contain bowel or fat
- More than 800,000 surgical repairs of inguinal hernias occur each year[1] – it is a common pathology
- Roughly 90% of inguinal hernia patients are male, with a bimodal age distribution peaking around ages 5 and after 70[1]
- Surgical repair to reduce the herniated tissue is the definitive treatment for an inguinal hernia
- Risks of not undergoing surgery include incarceration or strangulation of herniated tissue
- Complication after elective inguinal hernia surgery arises at a rate of ~10%[1]
- Obesity has previously been shown to have a negative impact on postsurgical complications[2]

RESEARCH QUESTION

How does body mass index (BMI) affect the incidence of postsurgical complication within 30 days of robot-assisted inguinal hernia repair?

CONTACT INFORMATION

Austin Charles

aac25665@creighton.edu

Creighton University School of Medicine

Phoenix, AZ

METHODS

- Retrospective cohort study analyzing 290 patients who underwent robot-assisted inguinal hernia repair at a single institution
- BMI served as the primary independent variable
- Outcome was any complication within 30 days of surgery
  - Complications assessed included wound-related complications (surgical site infection, hematoma, seroma) and other adverse events (urinary retention, severe pain, reoperation)
- Univariate analysis conducted to evaluate the associations between covariates and primary outcome
- Constructed a multivariable logistic regression model including statistically significant covariates identified during univariate analysis (use of anticoagulation (AC) therapy and ASA score)

RESULTS

- 23 patients (7.9%) experienced a postoperative complication within 30 days of surgery

Variable	OR	95% CI	p-value
BMI (continuous)	1.11	1.02 – 1.21	0.0101
Anticoagulants (yes vs no)	6.52	1.30 – 26.80	0.0117
ASA (≥3 vs <2)	3.03	1.20 – 7.35	0.0152
Age	1.03	1.00 – 1.07	0.0491

Table 1. Statistically significant results of univariate analysis comparing covariates to 30-day postoperative complication rate.

Variable	OR	95% CI	p-value
BMI (continuous)	1.10	1.01 – 1.20	0.0214
Anticoagulants (yes vs no)	7.15	1.30 – 32.70	0.0135
ASA (≥3 vs <2)	2.68	1.02 – 6.76	0.0386

Table 2. Results of multivariable analysis comparing BMI, AC therapy, and ASA score to 30-day postoperative complication rate.

RESULTS CONT.

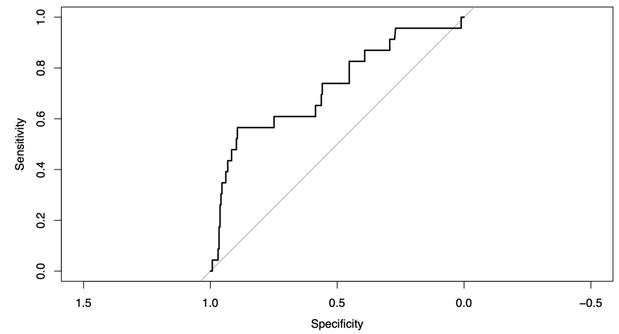

Figure 1. Receiver operating characteristic (ROC) curve for multivariable model achieving an area under the curve (AUC) of 0.723, indicating acceptable discriminatory performance.

DISCUSSION

- **Increased BMI, AC therapy, and ASA score ≥3 all independently display statistically significant increase in 30-day postoperative complication risk**
- Patient-specific risk factors should be considered during perioperative planning
- Selected patients may benefit from preoperative weight loss programs
- Future work should stratify specific BMI categories for postoperative complication risk
- An increased study population would allow for inclusion of more covariates, strengthening the statistical model

REFERENCES

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2. Plassmeier L, Hankir MK, Seyfried F. Impact of Excess Body Weight on Postsurgical Complications. *Visc Med*. 2021;37(4):287-297. doi:10.1159/000517345