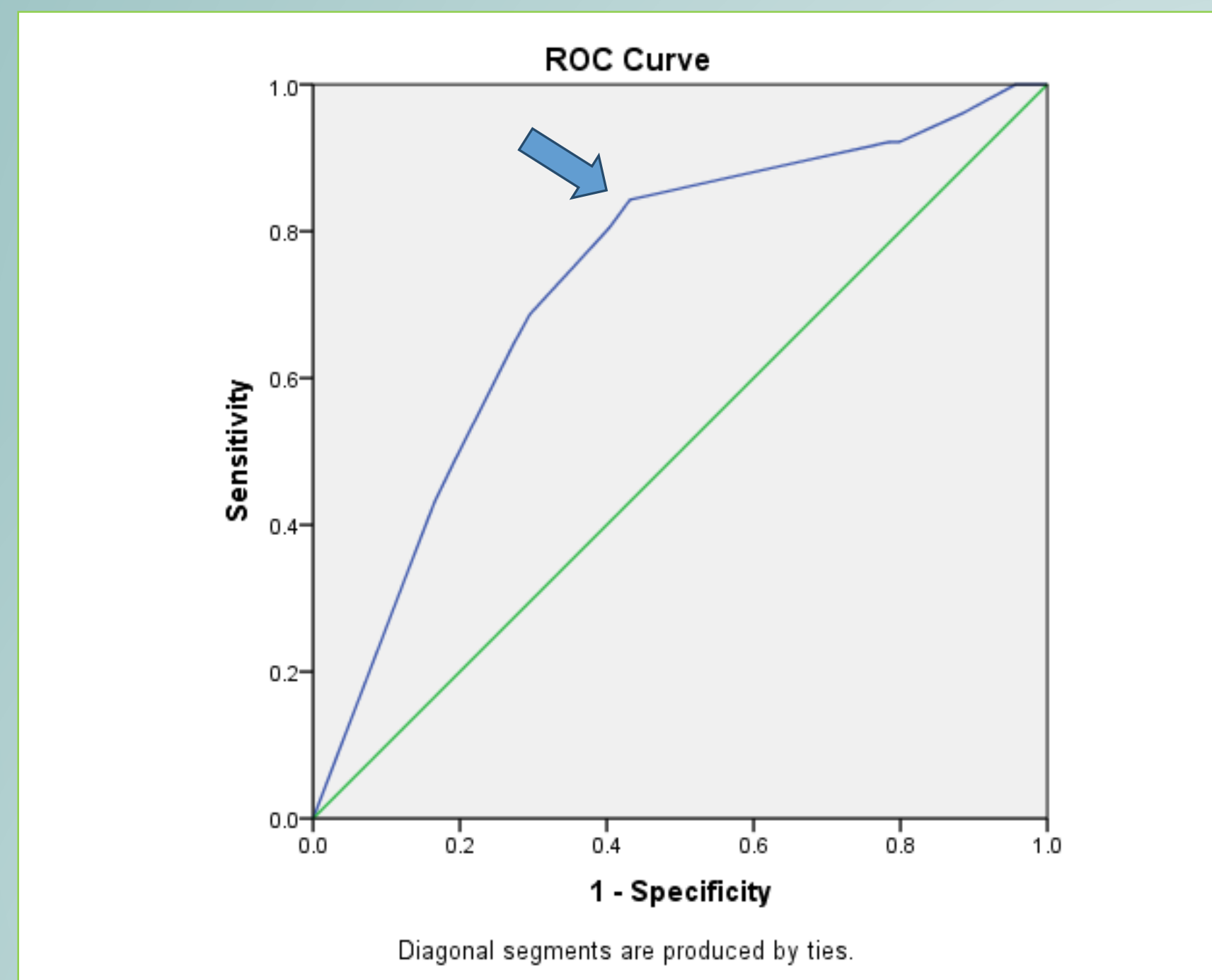# Predicting Whether Concomitant Anterior and/or Posterior Repairs Will Need to be Performed at Time of Uterosacral Ligament Suspension

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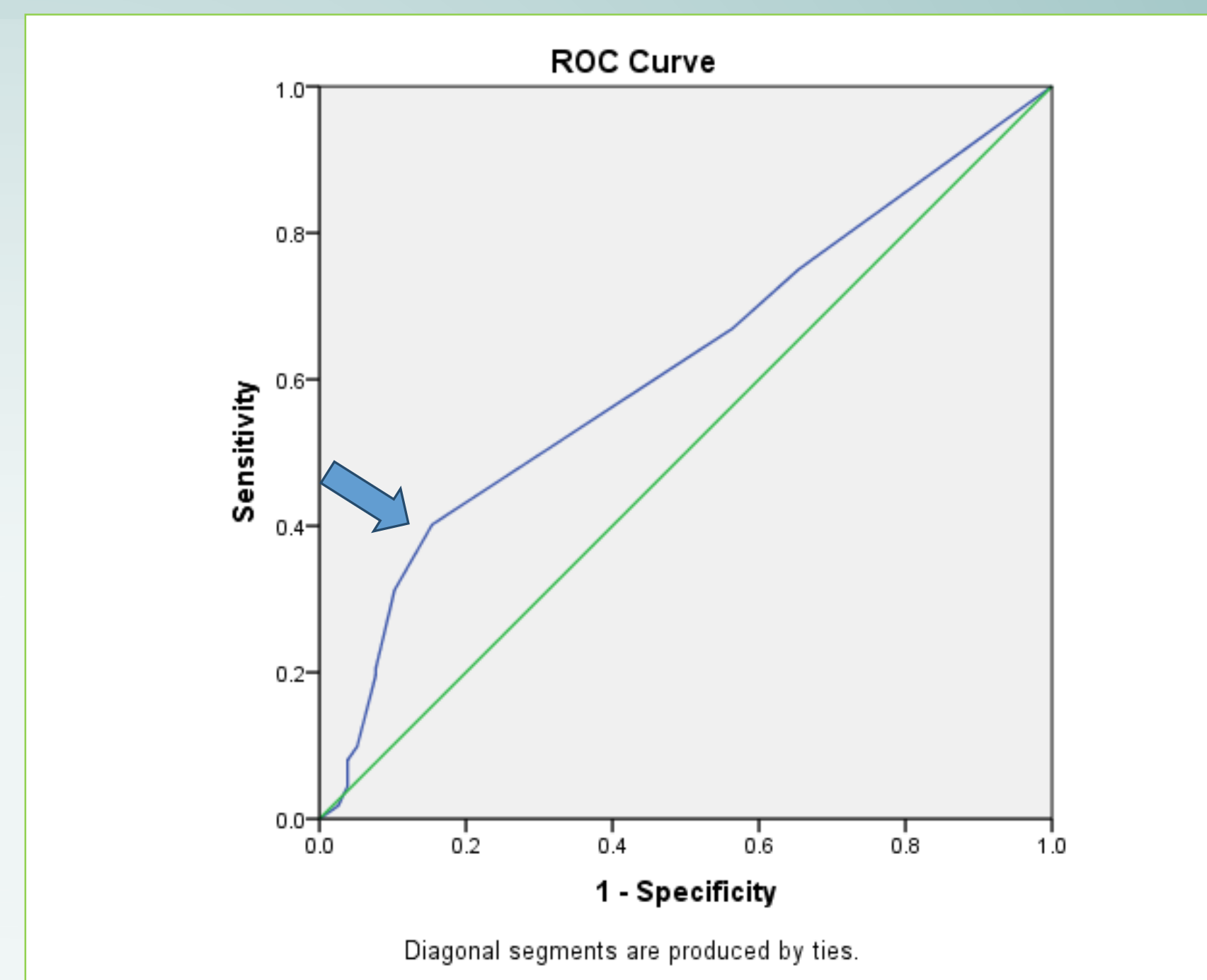
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Introduction:
- For 11% of women, pelvic organ prolapse will lead to surgery[1]
- Bilateral uterosacral ligament suspension is an option for treatment of apical prolapse
- Anterior compartment defect (cystocele) or posterior compartment defect (rectocele) may or may not be repaired during uterosacral ligament suspension
  - Surgeons typically base their decision on resultant anatomy after USLS or routine

Objectives:
- To determine what factors lead to a concomitant anterior and/or posterior repair being performed at time of uterosacral ligament suspension (USLS)
- To identify preoperative predictive factors to help surgeons determine if A/P repair will be needed with USLS

Methods:
- This was a retrospective study using data from vaginal, laparoscopic, and robotic USLS performed from 1/2011 to 6/2015
- Patient demographics, surgical data, and perioperative complications were compared among those who did and did not undergo an anterior and/or posterior repair
- Odd Ratios (OR) and 95% confidence intervals (CI) of predictive factors were identified using a multivariable logistic regression model
- Linear regression was used to compare the impact of anterior/posterior repair on OR time
- POP-Q value cut-points were determined with an ROC curve analysis to identify when surgeons typically performed anterior and/or posterior repair

References:
1. Outcomes of transvaginal uterosacral ligament suspension: systematic review and meta-analysis. Margulies RU et al. Am J Obstet Gynecol. (2010)
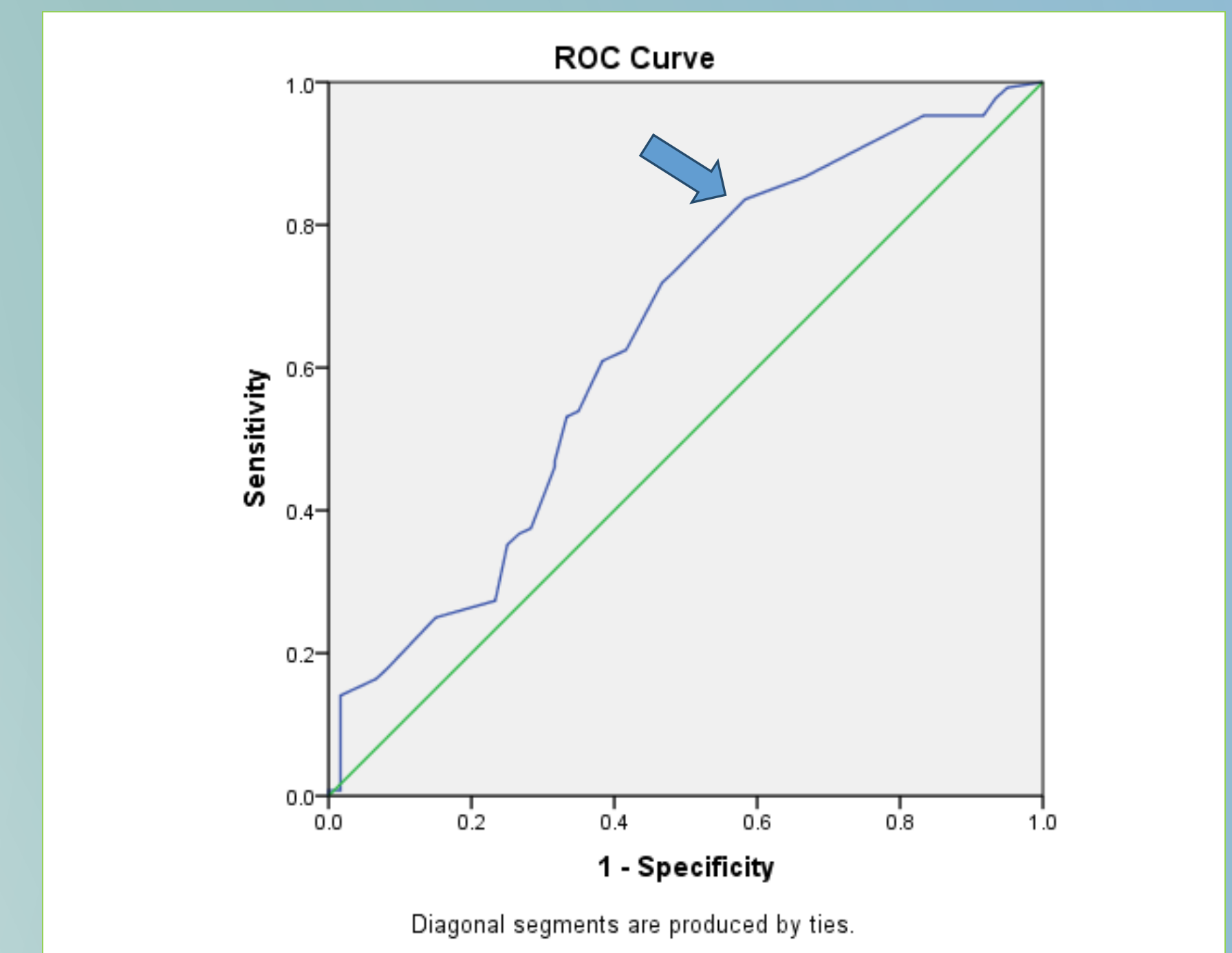
Figure 1: ROC Curve demonstrates surgeons perform anterior repair when pre-op Aa≥+0.25

Figure 2: ROC Curve demonstrates surgeons perform posterior repair when pre-op Ap≥-1.75

Figure 3: ROC Curve demonstrates surgeons perform anterior and/or posterior repair when pre-op C≥-4.25

Table 1: Multivariable Logistic Regression for Additional Surgery Being Performed

Model Outcome	Variable	Adjusted Odds Ratio	95% Confidence Interval
Anterior Repair Only	Age (per year)	1.09	1.04-1.15
	Preoperative POP-Q Point Aa (per cm)	1.47	1.13-1.92
	Obese (BMI>30 kg/m^2)	2.83	1.20-6.68
	Vaginal Route	3.05	0.995-9.33
Posterior Repair Only	Preoperative POP-Q Point Ap (per cm)	1.60	1.19-2.16
	Preoperative Stress Urinary Incontinence	2.97	1.45-6.06
Anterior and/or Posterior Repair	Preoperative POP-Q Point C (per cm)	1.15	1.04-1.27

Table 2: Multivariable Linear Regression Model for Predictors of Operative Time

Predictor Variable	ß (minutes)	p-value
Constant Term	77.1	n/a
Conversion to Laparotomy from Vaginal or Laparoscopic Approach	69.4	0.006
Concomitant Hysterectomy	42.2	<0.001
Laparoscopic Approach (Compared to Vaginal)	21.0	0.004
Concomitant Midurethral Sling	19.6	0.030
Body Mass Index (kg/m^2) (per every 1 unit increase)	2.3	<0.001
Any Prior Abdominopelvic Surgery	12.6	0.060

Results:
- 191 women underwent USLS
  - 57 (29.8%) vaginally, 134 laparoscopically (±robotic assistance)
- 7 surgeons performed a median 25 cases
- Mean 61.2±11.7 years old with BMI 28.3±5.5 kg/m^2
- Mostly Caucasian (97.4%) with stage III prolapse (58.1%)
- Operative time was 178.4±49.2 minutes
- Concomitant procedures: Hysterectomy (90.1%), Salpingo-oophorectomy (28.3%), and Midurethral sling (17.3%)
- Anterior Repair was performed in 27.2%, Posterior Repair in 58.6%, and one or both in 68.6%
- **Table 1** shows predictors of additional procedures being performed
- **Table 2** shows predictors of OR time
  - Adding anterior and/or posterior repair either alone or in combination to the model did NOT significantly impact OR time
- **Figures 1-3** show best POP-Q cut-point values to predict where additional procedures were performed
  - Anterior Repair: Aa ≥ + 0.25 cm
  - Posterior Repair: Ap ≥ - 1.75 cm
  - Anterior and/or Posterior Repair: C ≥ -4.25 cm

Conclusion:
- Preoperative factors predict the likelihood of performing additional anterior, posterior, or combined repairs during USLS
- Unfortunately, most predictors were intuitive POP-Q values
- POP-Q cut-points describe where surgeons are most likely to perform additional repairs and may aid in preoperative counseling
- OR time was not significantly impacted by the addition of anterior and/or posterior repairs with USLS