Comparative Study Between Robotic Laparoscopic Myomectomy and Abdominal Myomectomy

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Study Objective

- To compare short-term surgical outcomes of robotic and abdominal myomectomy and to analyze the factors affecting the short-term outcomes.
- **Design:** Retrospective study of a consecutive case series at Emory Saint Joseph's Hospital, Atlanta, Georgia, USA.

Materials and Methods

- A consecutive series of 125 patients underwent either robotic assisted laparoscopic myomectomy (RALM, n=77) or abdominal myomectomy (AM, n=45) at Emory Saint Joseph's Hospital of Atlanta by the author from 02/01/2007 to 06/30/2009.
- The hospital electronic charts and the office documented electronic medical records (EMR) files provided patient information.
- Complete data was obtained on 122 patients, and 77 cases of RALM and 45 cases of AM were compared (Table 1).

- Patients had pelvic examination and an office transvaginal ultrasound by the author (accredited by AIUM), to identify and confirm the presence, number and size of Leiomyoma.

- The following variables were recorded:

  the surgery type, the patient's age (years) at the time of surgery, BMI (kg/m^2), gravity, parity, number of leimyomata, diameter of the largest tumor size (mm), total operative time (min), total estimated blood loss (ml), and length of hospital stay (days) after surgery.

Introduction

- Leiomyoma is the most common pelvic benign tumor in female patients and the leading surgical indication for hysterectomy. Previous studies have shown that at least 20% of women between the ages of 25 and 64 years may require a hysterectomy for leiomyoma with a peak incidence around the age of 45 years.
- Since 1931, myomectomy has been described as the gold standard for the conservative surgical treatment of symptomatic leiomyomata for desiring future fertility or uterine conservation.

Introduction cont.

- Abdominal myomectomy is usually considered a more involved operation, associated with higher morbidity, blood loss and adhesion formation rates, compared to hysterectomy.
- Today, many cases of leiomyoma are treated with laparoscopic myomectomy which provides a minimally invasive surgery.
- The robotic–assisted laparoscopic myomectomy provides the surgeon with improved optics, a three dimensional view, and increased dexterity and precision.

Results

- No significant differences were found between the two groups regarding age, gravity and parity.
- However, BMI, numbers of leiomyomata and tumor sizes were significantly higher in AM compared to RALM.
- The total operative time was significantly longer in RALM compared to AM.
- The total estimated blood loss and length of hospital stay were significantly lower in RALM compared to AM group.

Results

- **The number of leiomyomata** ranged from 1-6, and the mean was 2.88 ± 1.27 (95% CI 2.53-3.23).
- **The tumor size** ranged from 17.5-88 mm, and the mean was 43.16 ± 17.38 mm (95% CI 38.39-47.93 mm).
- **The length of the hospital stay** ranged from 0.4-2 days, and the mean was 1.04 ± 0.25 days (95% CI 0.97-1.11 days).
- **The age** at the time of surgery ranged from 23-57 years, and the mean was 38.84 ± 6.58 years (95% CI 37.03-40.29 years).
- **The BMI** ranged from 14.2-35.7 kg/m^2, and the mean was 26.51 ± 4.47 kg/m^2 (95% CI 25.28-27.74 kg/m^2).
- **Tumor size** had a significant impact on **surgery time (**p=0.0205)
- **Number of leiomyomata** had a significant impact on **console time** (p=0.0246).

Results

	Abdominal (n=45) [AM]			Robotic (n=77) [RALM]			
	Mean	SD	95% CL	Mean	SD	95%CI	P-value
Age(yrs)	37	5.6	36-39	38	6.6	37-40	0.36
BMI (kg/m²)	31.0	7.2	29-33	28.1	6.0	26.7-29.4	0.02*
Parity	1	1.3	0.6-1.4	1	1.2	0.7-1.3	0.92*
Gravity	2	1.5	1.6-2.5	2.1	2.0	1.7-2.6	0.93
# of Leiomyomata	4.2	3.4	3.2-5.2	3.1	1.4	2.7-3.4	0.01*
Tumor size(mm)	53	26	45-61	43	17.9	39-47	0.01*
TOT (min)	162	50	147-177	205	74	189-222	<0.01*
Blood loss (ml)	176	82	151-201	110	62	96-124	<0.01*
LOS (days)	2.4	1.2	2.0-2.7	1.1	0.4	1.0-1.2	<0.01*

SD= Standard Deviation, LOS= Hospital Length of Stay, TOT= Total Operative Time, *= Significance p-value

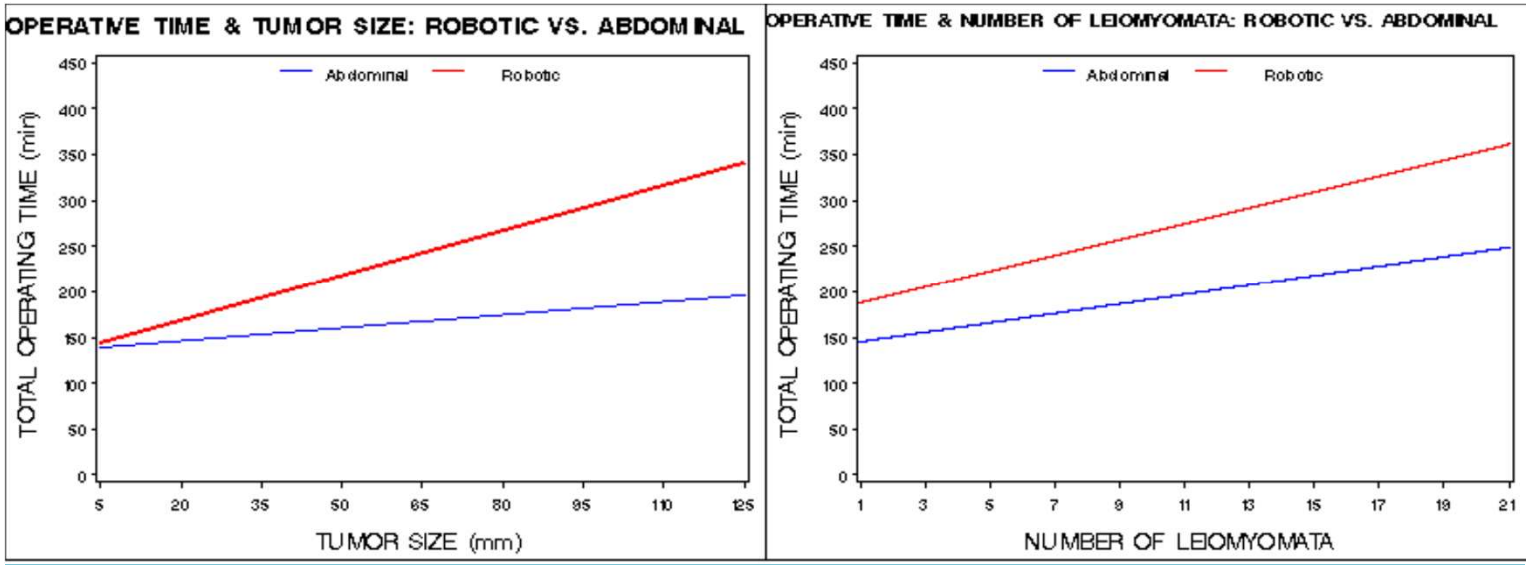


Figure 1: Factors affecting Total Operative Time

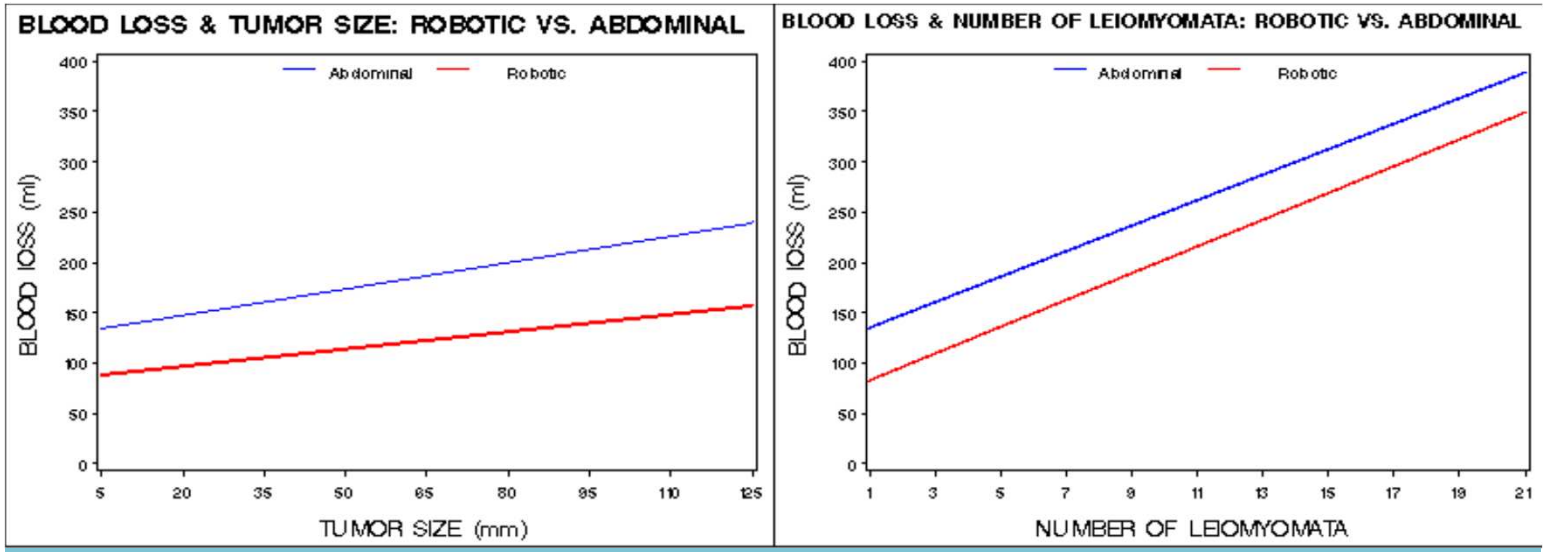
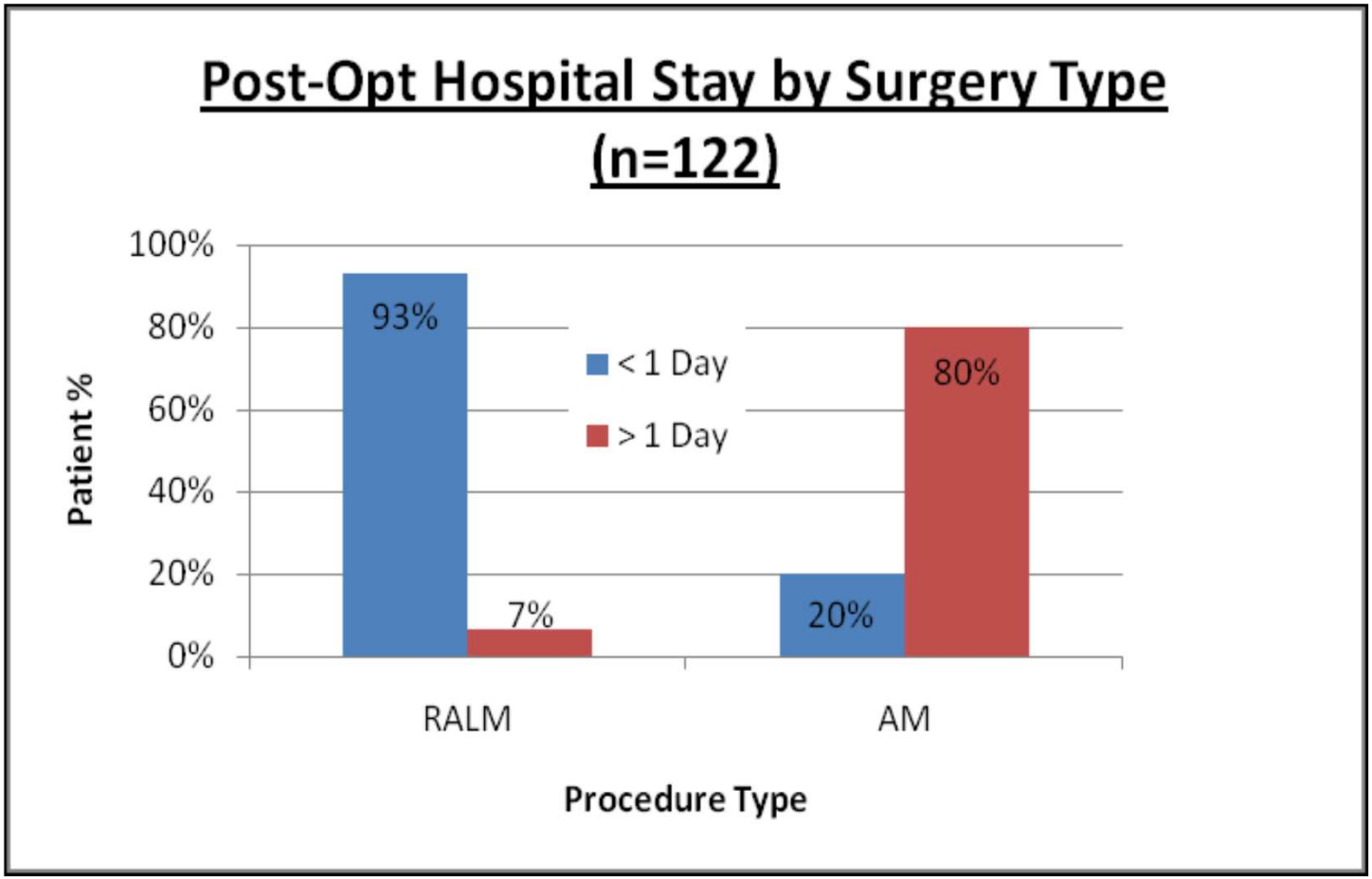


Figure 2: Factors affecting Estimated Blood Loss

Length of Hospital Stay by Surgery Type



Discussion

- The retrospective case series has confirmed that patients with symptomatic leimyomata operated by RALM or AM have dissimilar pre-operative characteristics. In particular, the number of leiomyomata, the tumor size and the BMI were all statistically higher in the AM than in the RALM.
- Although the operative time was longer in the robotic group, it was offset by significantly lower estimated blood loss than the abdominal group and shorter hospital stay than abdominal group.
- The results show that, when adjusted for the number of leiomyomata and the tumor size, the EBL was almost 1.5 times less in RALM compared to AM and the 93.5% of patients receiving RALM have a hospital stay of one day or less compared to 20% in AM.

Conclusion

- This study has shown that a da Vinci® assisted robotic laparoscopic myomectomy procedure provides the patient with a shorter hospital stay, less estimated blood loss and increased total operative time compared to a abdominal myomectomy procedure.
- The shorter hospital stay and decreased estimated blood loss were the integral factors of the analysis which demonstrated the significant benefit of using the da Vinci robotic assisted laparoscopic myomectomy procedure.