

# Value of **Da Vinci** Surgery in Benign Gynecology

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# Disclosure – Conflict of Interest Slide

- Speaker's Bureau: Intuitive Surgical



# Landscape Change of Benign Surgery

## Decrease in Number of Hysterectomy yearly



494,000 hysterectomies are performed annually in the United States 2010

518,828 hysterectomies in 2005

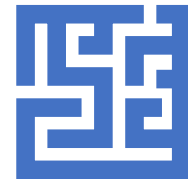
More than 600,000 in 2002



What are we left with ?

# Complex Benign Hysterectomies

WHAT IS IT THAT INCREASES THE  
COMPLEXITY OF A HYSTERECTOMY ?



# What is it that increases the complexity of a hysterectomy?



Obesity



Uterine size



Adhesions

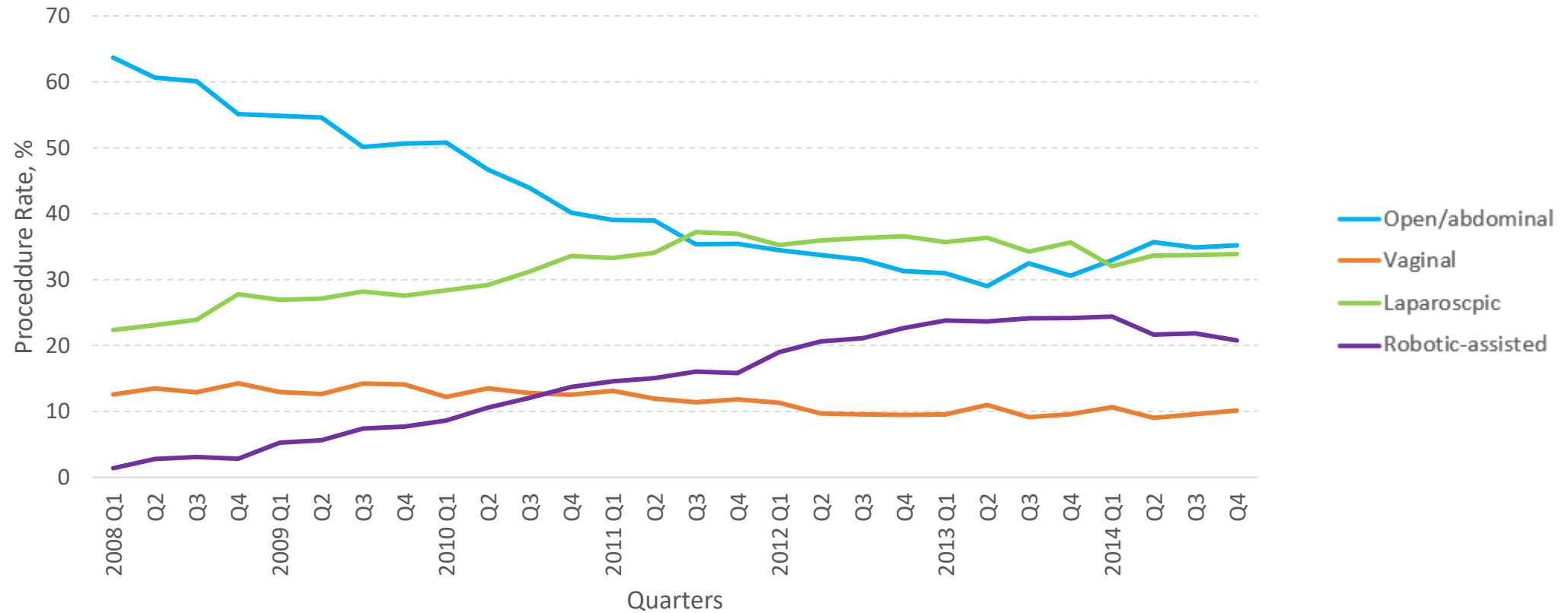


# Obesity

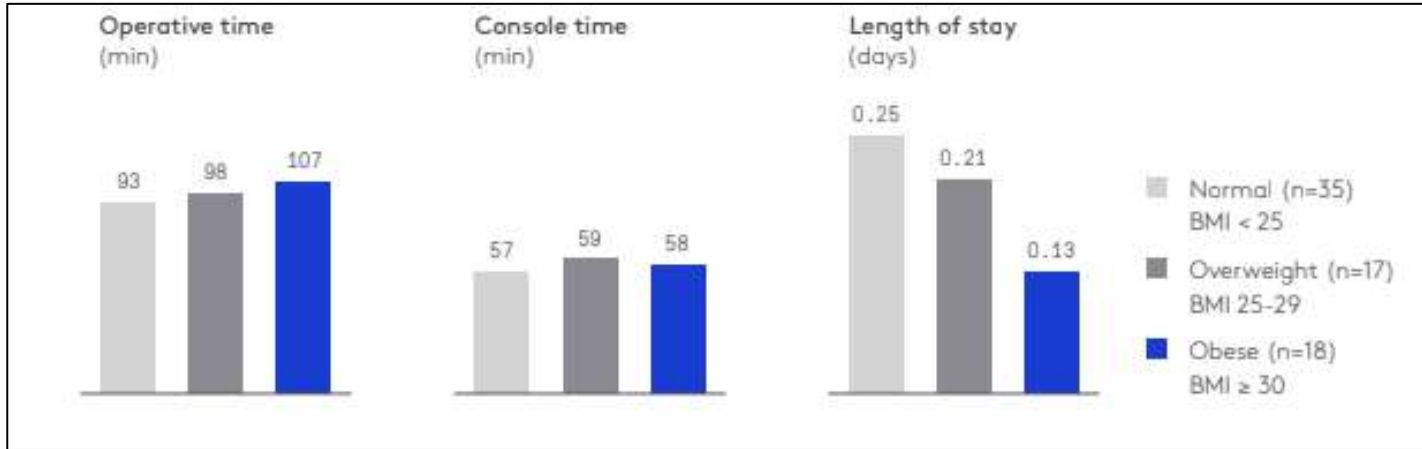


# Complexity: Obesity

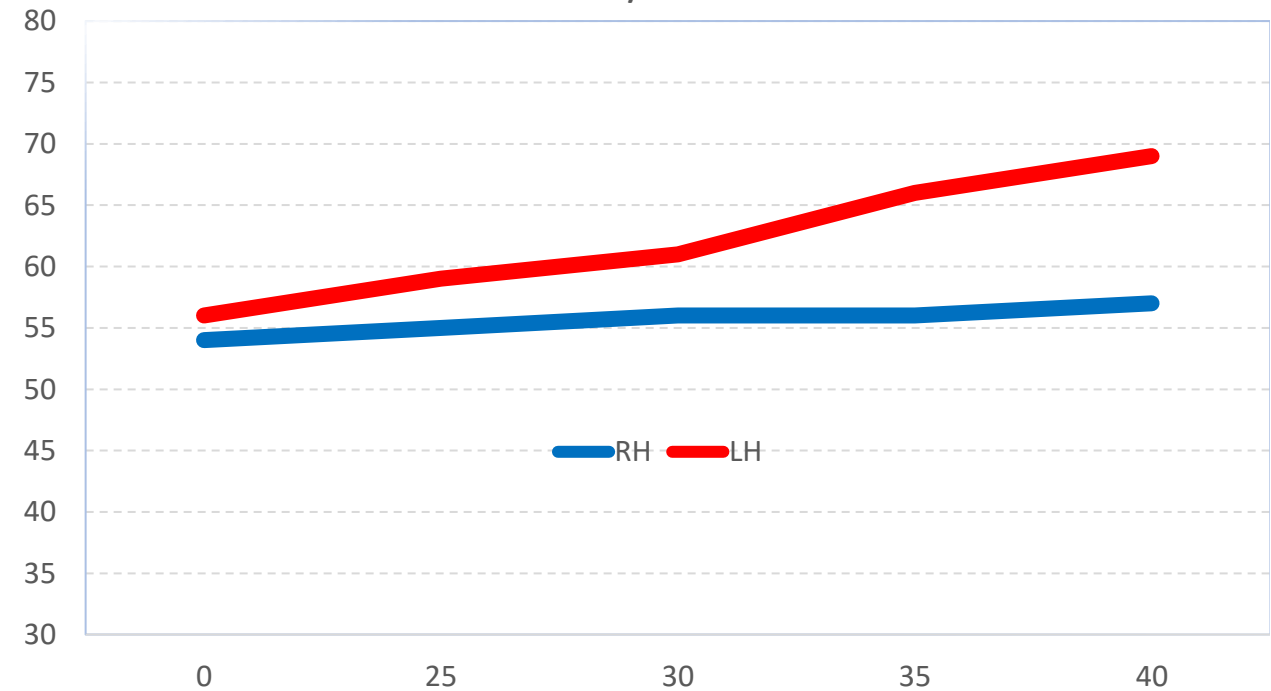
Benign Hysterectomy Rates, **Obesity Visits**,  
by Route of Surgery (Unweighted)

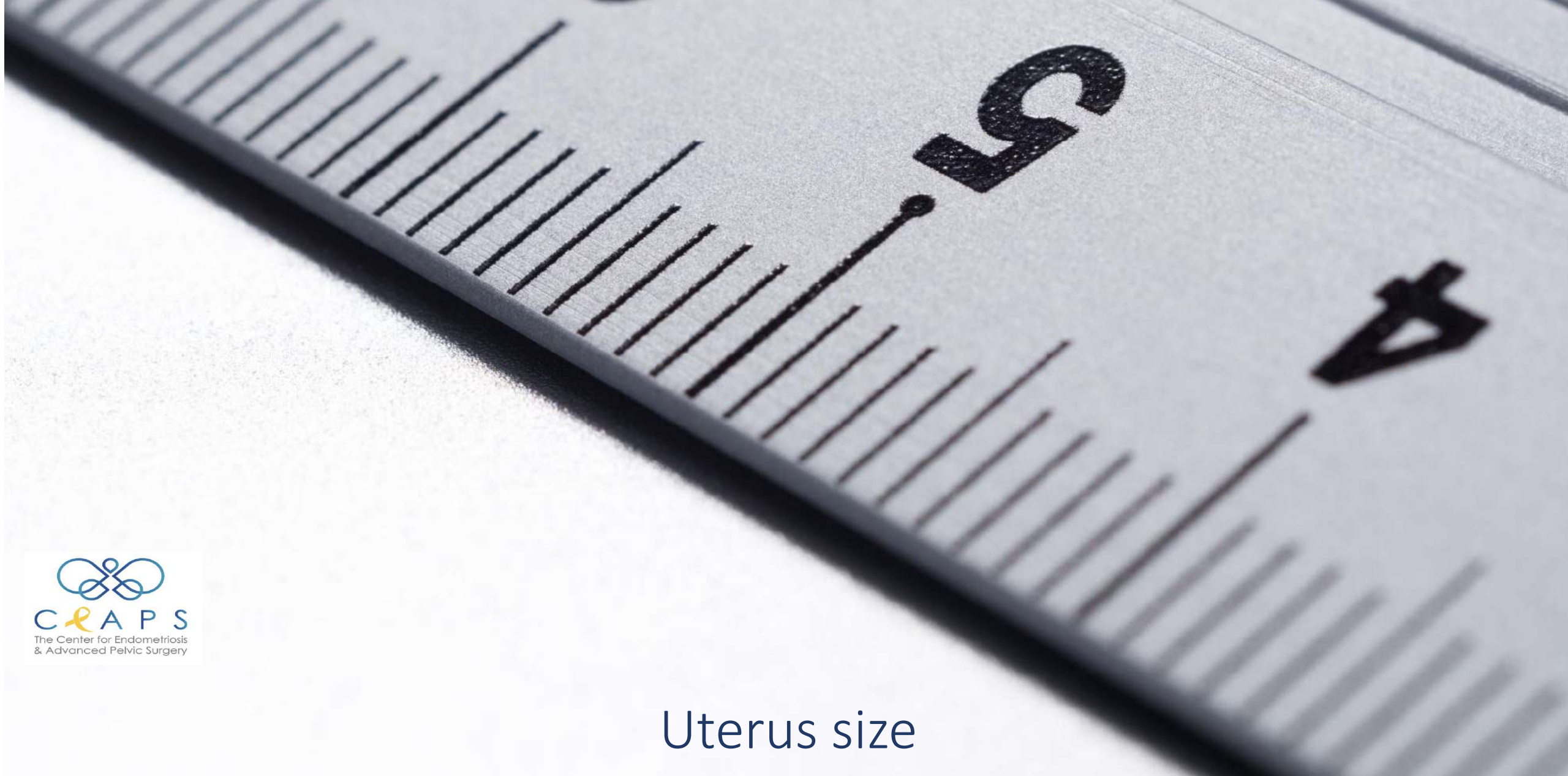


# Complexity: Obesity



BMI /cost

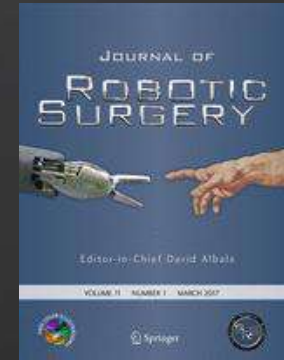




Uterus size

## Comparison of cost and operative outcomes of robotic hysterectomy compared to laparoscopic hysterectomy across different uterine weights

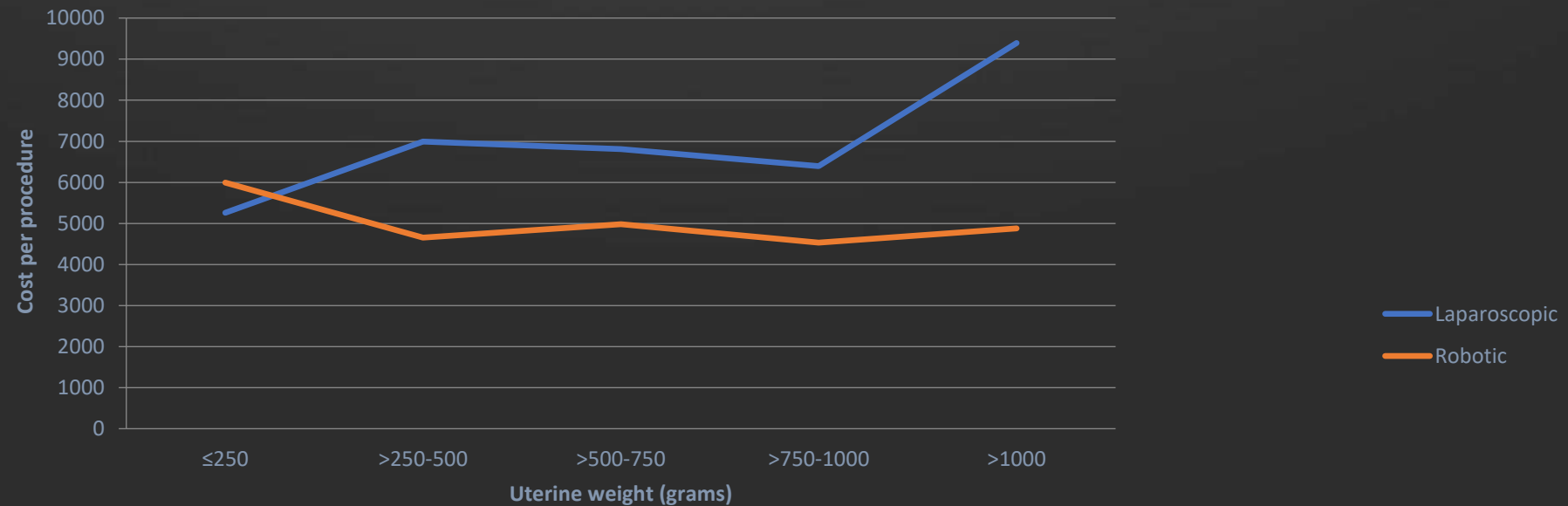
Gaby N. Moawad<sup>1</sup> · Elias D. Abi Khalil<sup>1</sup> · Paul Tyan<sup>1</sup> · Michael K. Shu<sup>2</sup> · David Samuel<sup>2</sup> · Richard Amdur<sup>3</sup> · Stacey A. Scheib<sup>4</sup> · Cherie Q. Marfori<sup>1</sup>



Outcome	Mean	Outcome	OR
	Robot (n=101)	Laparoscopic (n=95)	
EBL (cc) *	50 (50-100)	50 (50-150)	.73
Operative Time (min) †	110 (88-135)	141 (106-184)	<.0001
Cost (\$) ‡	4789 (4187-5456)	5144 (4197-7345)	.0063
LOS (days)			.023
0	84 (83.2%)	65 (68.4%)	
1	14 (13.9%)	19 (20.0%)	
2 or more	3 (3.0%)	11 (11.6%)	

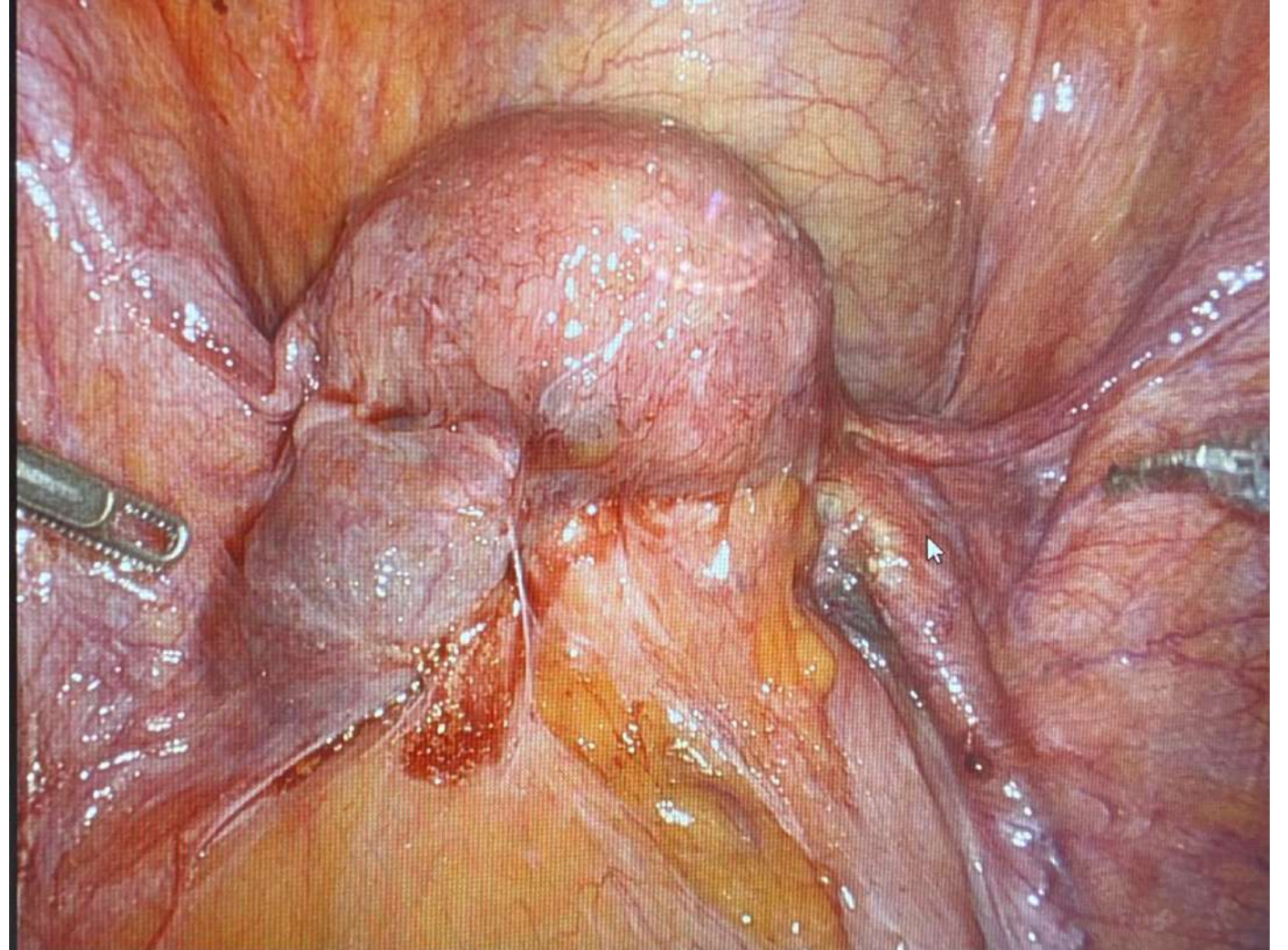
Outcome	Mean	Outcome	OR	Mean difference	p-value
	Robot (n=101)	Laparoscopic (n=95)			
Op Time(min) *	123 (100-145)	170 (146-193)	---	47	<.0001
Cost (\$) †	5444(3848-7039)	6941(5140-8742)	---	1648	.0054
LOS >0(days)	17(16.9%)	30(31.6%)	2.9	---	.0071
1	14 (13.9%)	19 (20.0%)			
2 or more	3 (3.0%)	11 (11.6%)			

# Comparison of cost and operative outcomes of robotic hysterectomy compared to laparoscopic hysterectomy across different uterine weights



Uterine weight (g) *	N		Mean Operative Time (min) †		R <sup>2</sup>	p-value‡	Laparoscopy additional cost (\$)(95% CI)
	Laparo scopy	Robot	Laparosco pic	Robotic			
≤250	43	40	5259 ± 2210	5993 ± 1959	.07	.20	-733 (-1830 – 363)
>250 g	52	61	7313 ± 5944	4672 ± 4084	.13	.006	2641

# Pelvic Adhesions



## GYNECOLOGY

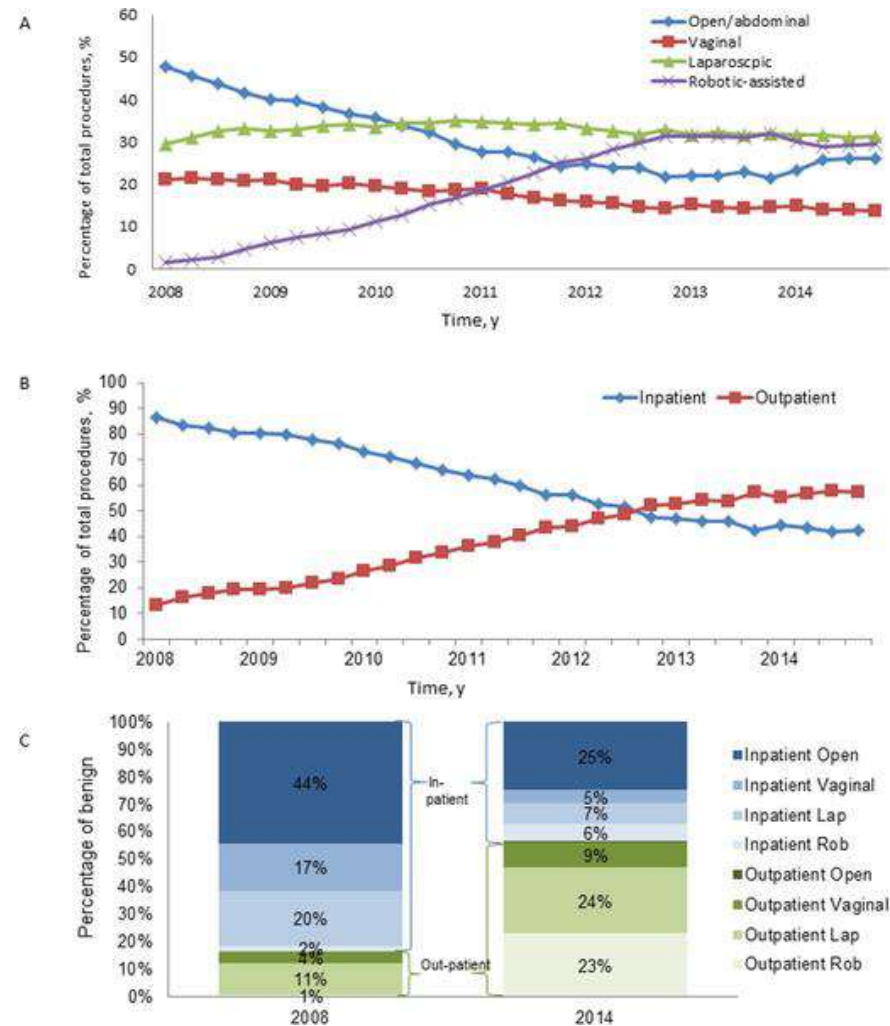
# Effect of remote cesarean delivery on complications during hysterectomy: a cohort study



Susanne Hesselman, MD; Ulf Högberg, PhD; Maria Jonsson, PhD

**CONCLUSION:** Previous cesarean delivery is associated with an increased risk of complications during a subsequent hysterectomy, but the risk is only partly attributable to the presence of adhesions. Previous cesarean delivery and presence of endometriosis were major predisposing factors of organ injury at the time of the hysterectomy, whereas background and perioperative characteristics were of minor importance.

Fig 2. Trends for BH from Q1 2008 through Q4 2014.

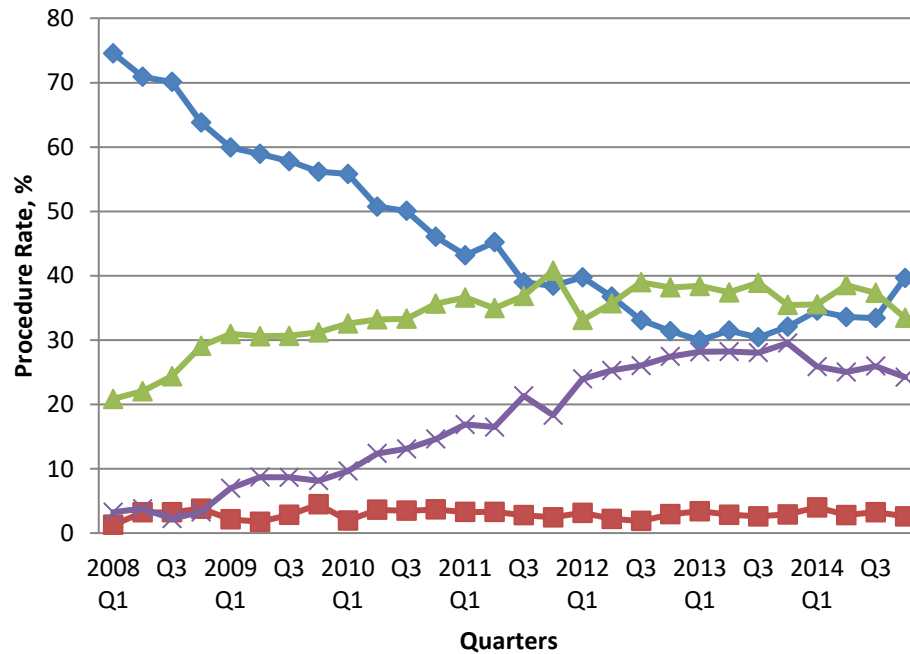


Moawad G, Liu E, Song C, Fu AZ (2017) Movement to outpatient hysterectomy for benign indications in the United States, 2008–2014. PLOS ONE 12(11): e0188812. <https://doi.org/10.1371/journal.pone.0188812>  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0188812>

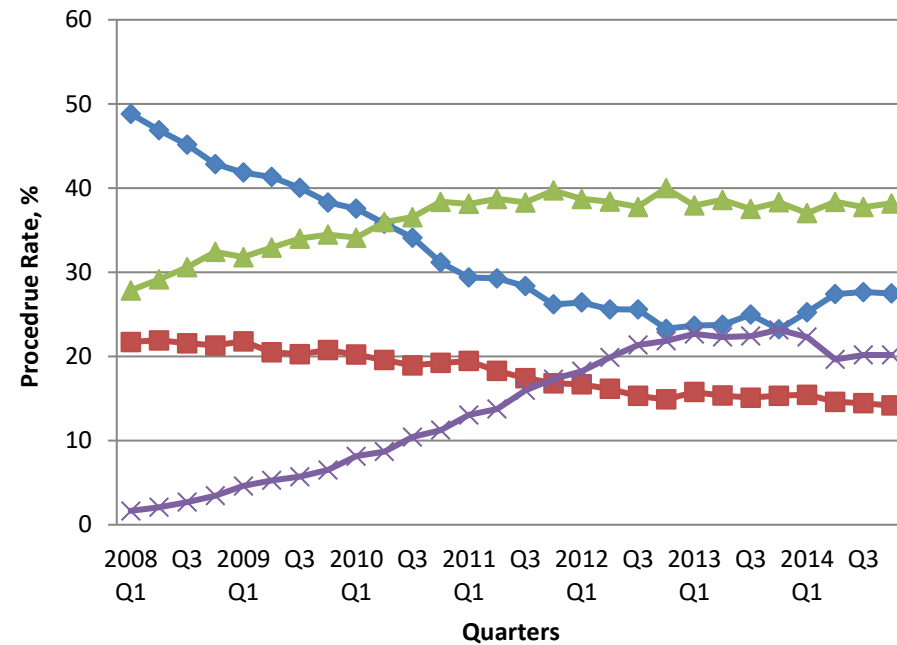


# Overall, stratified by complexities

**Benign Hysterectomy Rates, among Visits with  $\geq$  2 Complexity Score, by Route of Surgery, by Quarter (Unweighted)**



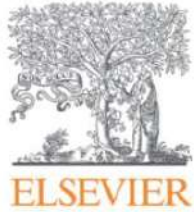
**Benign Hysterectomy Rates, among Visits with  $<$  2 Complexity Score, by Route of Surgery, by Quarter (Unweighted)**



- ◆ Open/abdominal
- Vaginal
- ▲ Laparoscopic
- × Robotic-assisted



# Learning Curve



Journal of Gynecology Obstetrics and Human  
Reproduction

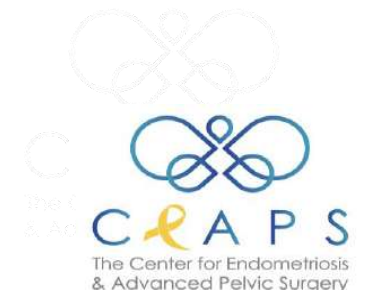
Volume 49, Issue 10, December 2020, 101885



# Comparison of robotic versus conventional laparoscopy for the treatment of colorectal endometriosis: Pilot study of an expert center

Marjolaine Le Gac<sup>a</sup>, Clément Ferrier<sup>a</sup>, Cyril Touboul<sup>a, b, c</sup>, Clémentine Owen<sup>a</sup>, Alexandra Arfi<sup>a</sup>, Anne-Sophie Boudy<sup>a</sup>, Aude Jayot<sup>a</sup>, Sofiane Bendifallah<sup>a, b, c</sup>, Emile Daraï<sup>a, b, c</sup>  

## Learning Curve

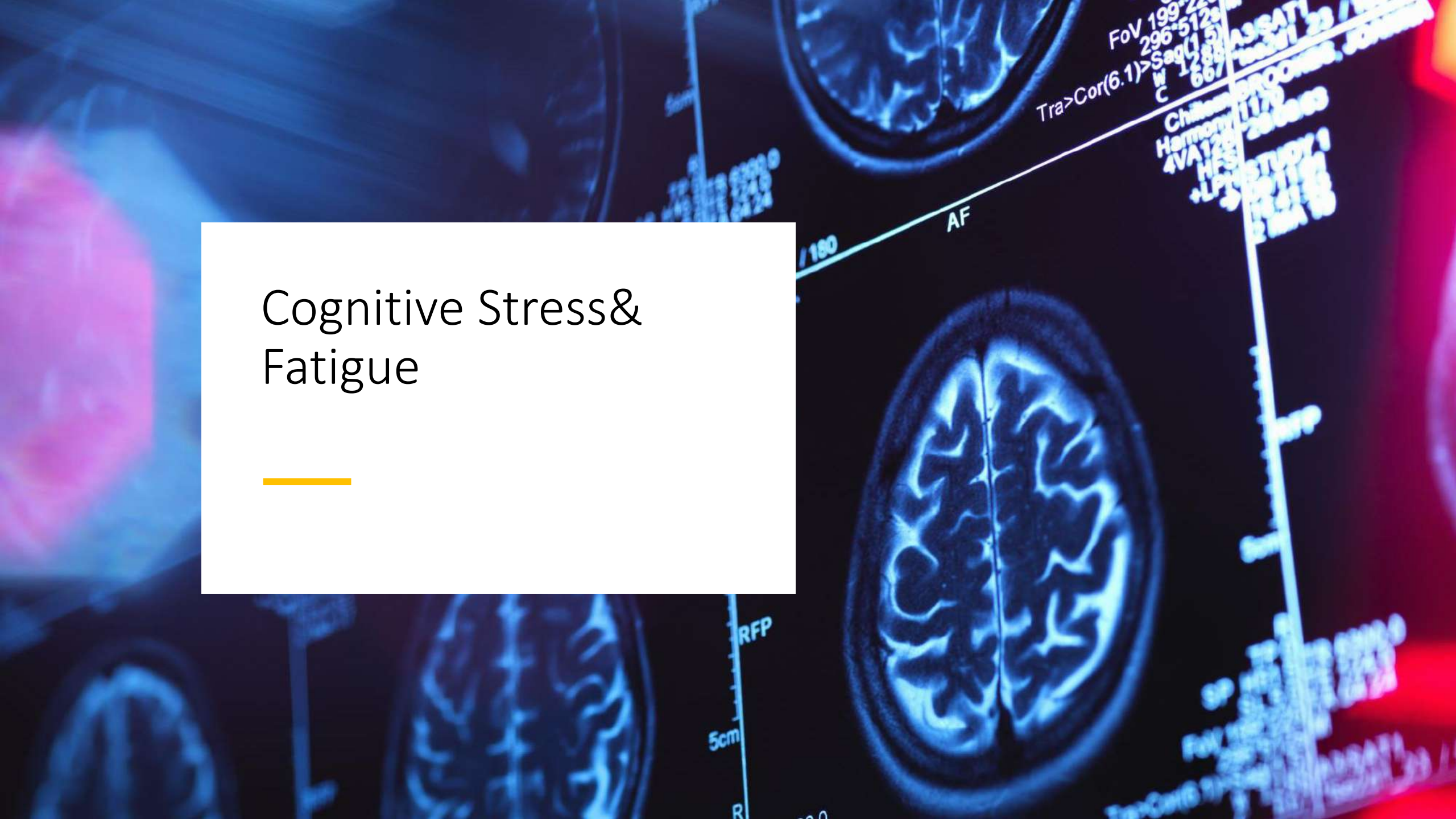


# Residency Training Pathway

Phase 1	Phase 2	Phase 3	Phase 4	Post Training
<i>da Vinci System</i> Online Course	<i>da Vinci System</i> Skills Practicum	Advanced Instrument Online Course	Procedure Performance as Console Surgeon	Training Equivalency Certificate*
Procedure Review	<i>Skills Simulator</i> <sup>TM</sup>	<i>da Vinci System</i> Skills Practicum Suturing topics	Procedure Performance as Bedside Assistant	<i>da Vinci Technology</i> Training Pathway
<i>da Vinci System</i> In-Service	<i>da Vinci Case</i> Observations	<i>Skills Simulator</i> <sup>TM</sup>		Advanced Training Courses
<i>Skills Simulator</i> <sup>TM</sup>		Procedure Performance as Bedside Assistant		Complex Cases

# Cognitive Stress & Fatigue

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# Fatigue



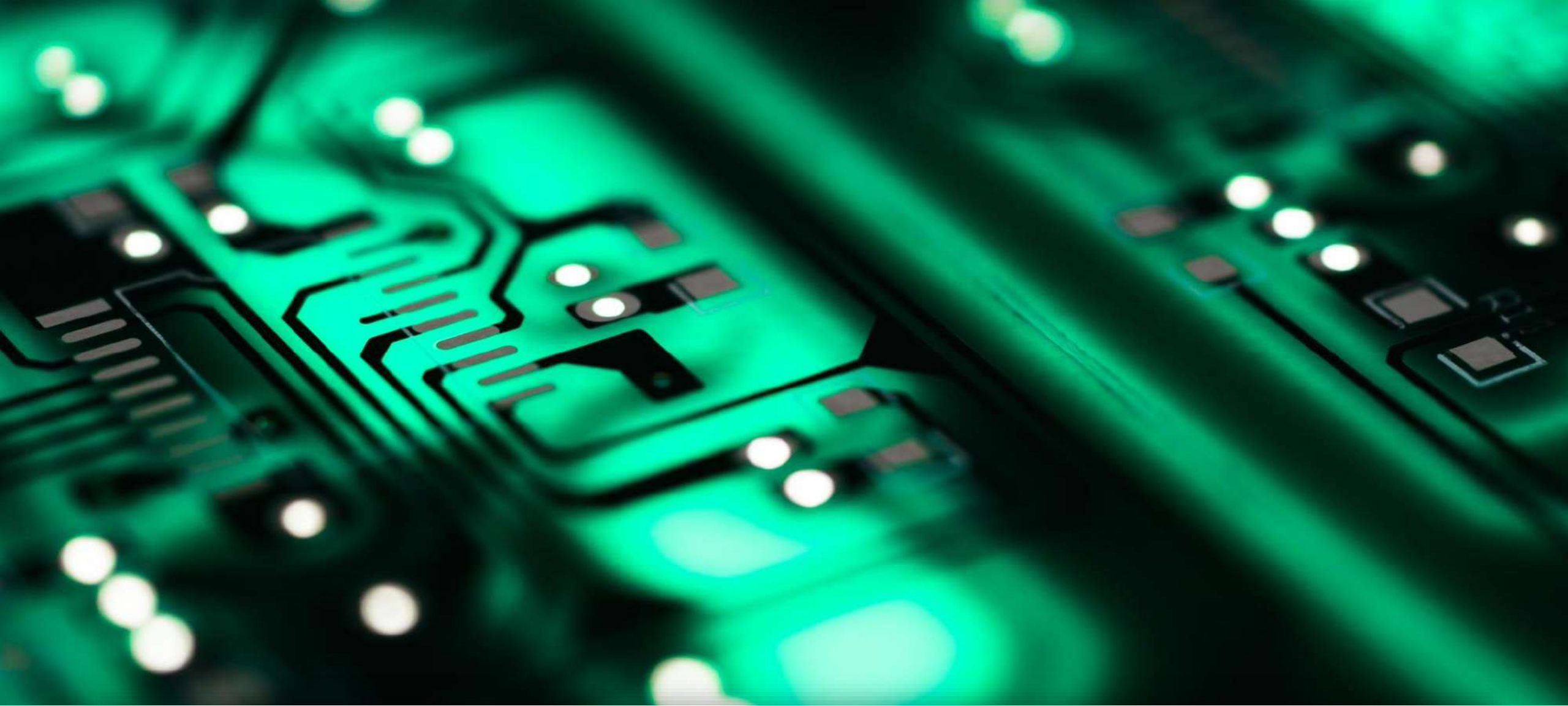
REVIEW ARTICLE

## Should All Minimal Access Surgery Be Robot-Assisted? A Systematic Review into the Musculoskeletal and Cognitive Demands of Laparoscopic and Robot-Assisted Laparoscopic Surgery


Abdul Shugaba<sup>1,2</sup> · Joel E. Lambert<sup>1,2</sup> · Theodoros M. Bampouras<sup>1</sup> · Helen E. Nuttall<sup>3</sup> · Christopher J. Gaffney<sup>1</sup> · Daren A. Subar<sup>2</sup>

**Conclusions** Evidence suggests a reduction in musculoskeletal demands during robotic surgery in muscles excluding the trapezius, and this is associated with most studies reporting a reduced cognitive load. Robotic surgery appears to have less negative cognitive and musculoskeletal impact on surgeons compared to laparoscopic surgery.

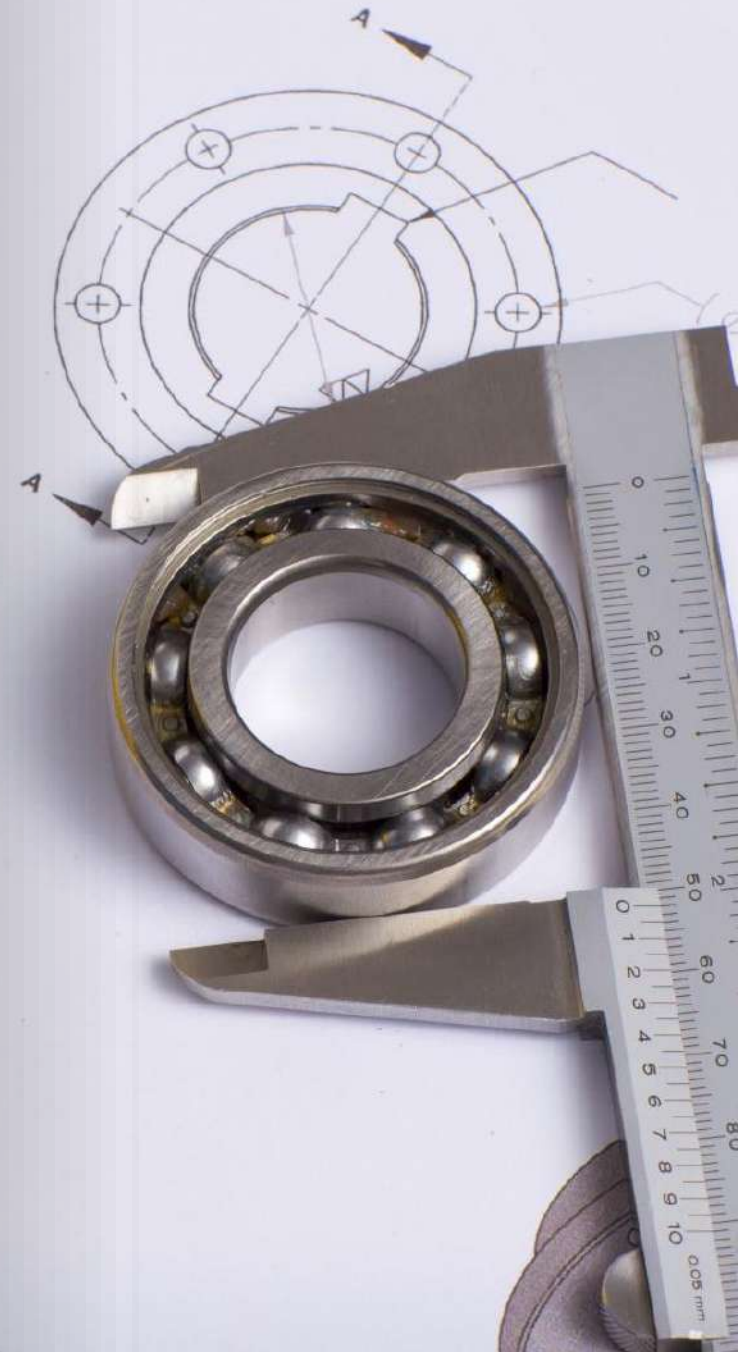




Advanced Technology



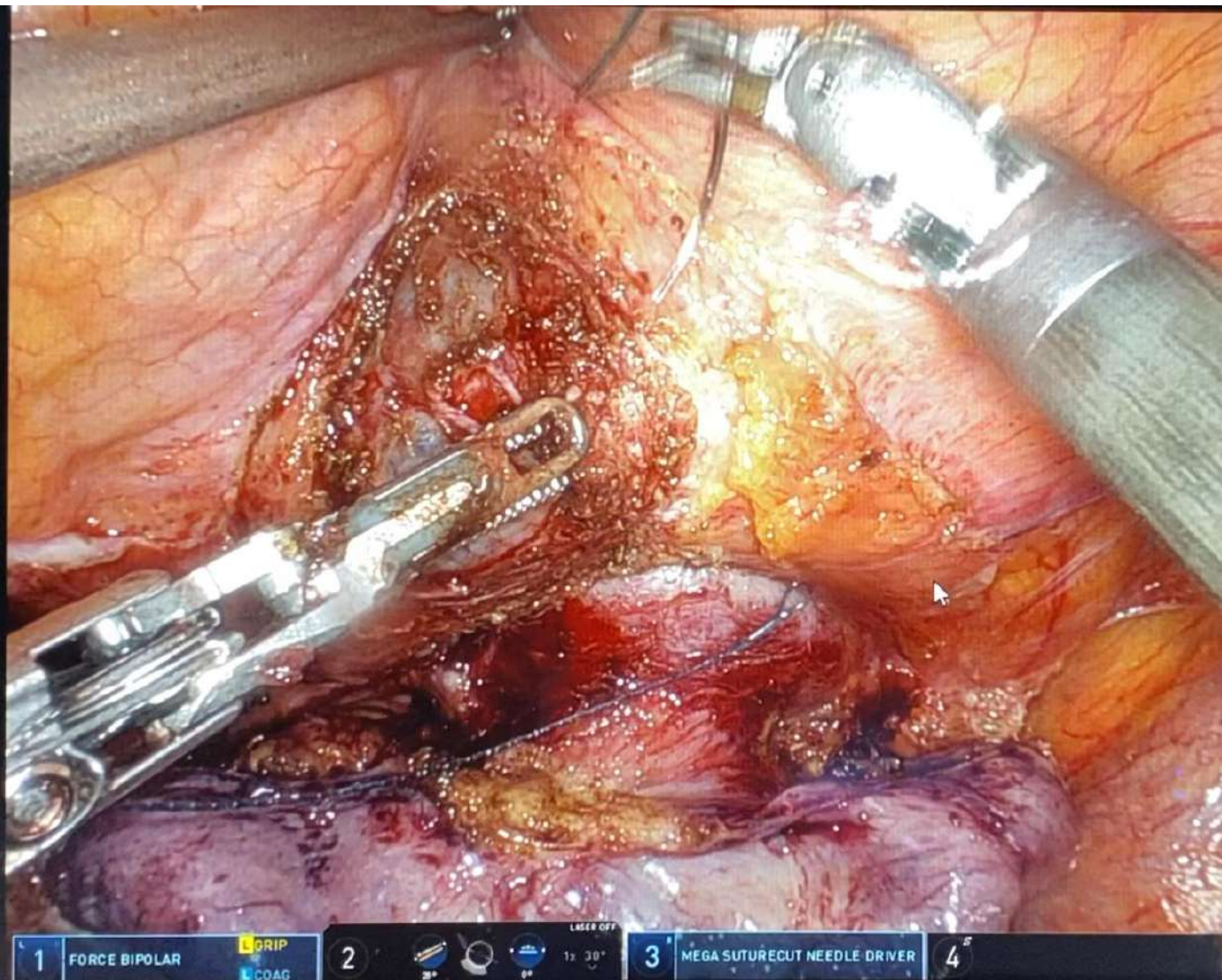
# Precision Surgery : Simplifying Complex Tasks for the surgeon





E

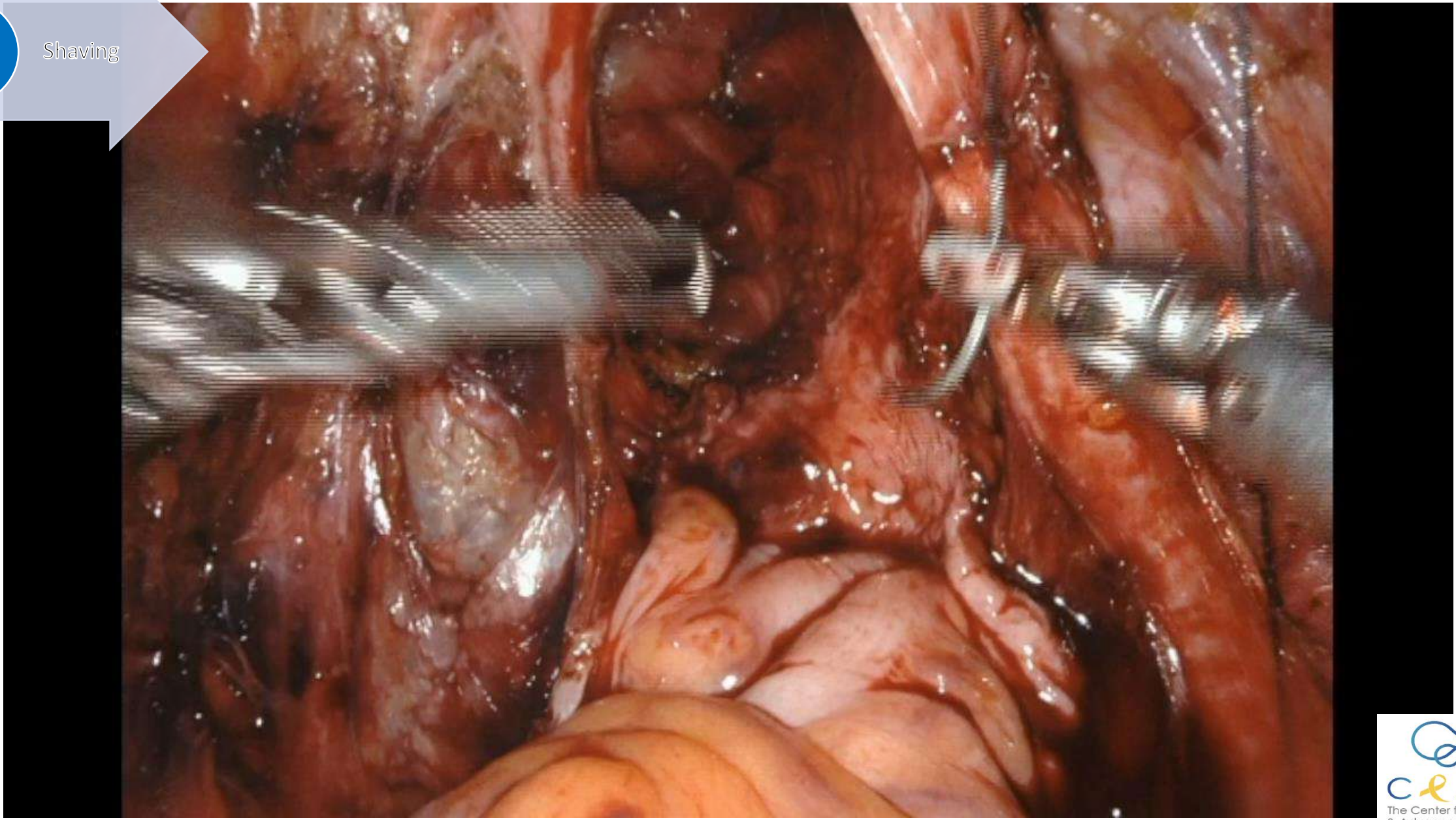
Suture



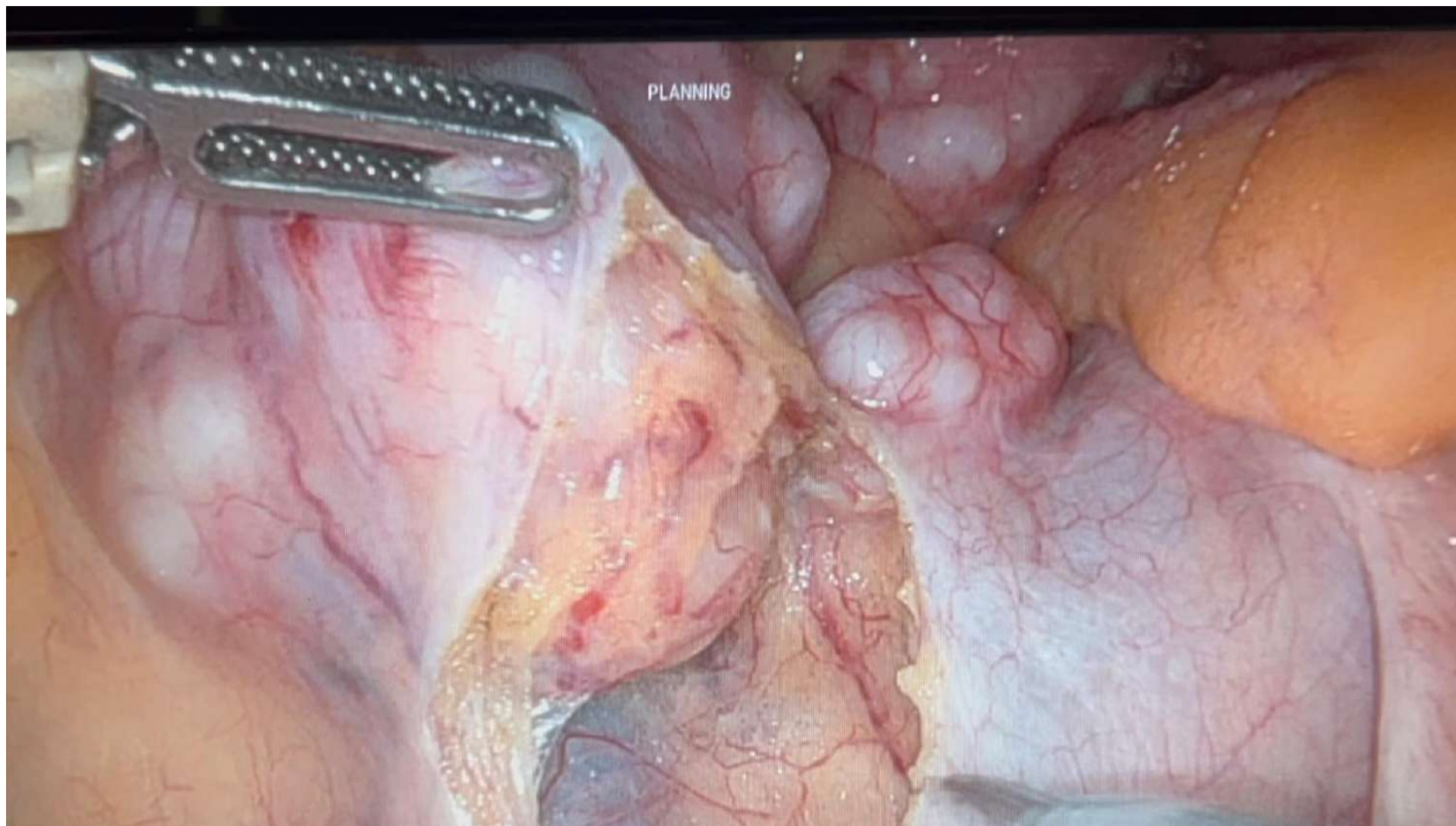
1 FORCE BIPOLAR DRIP COAG 2 LASER OFF 3 MEGA SUTURECUT NEEDLE DRIVER 4

E

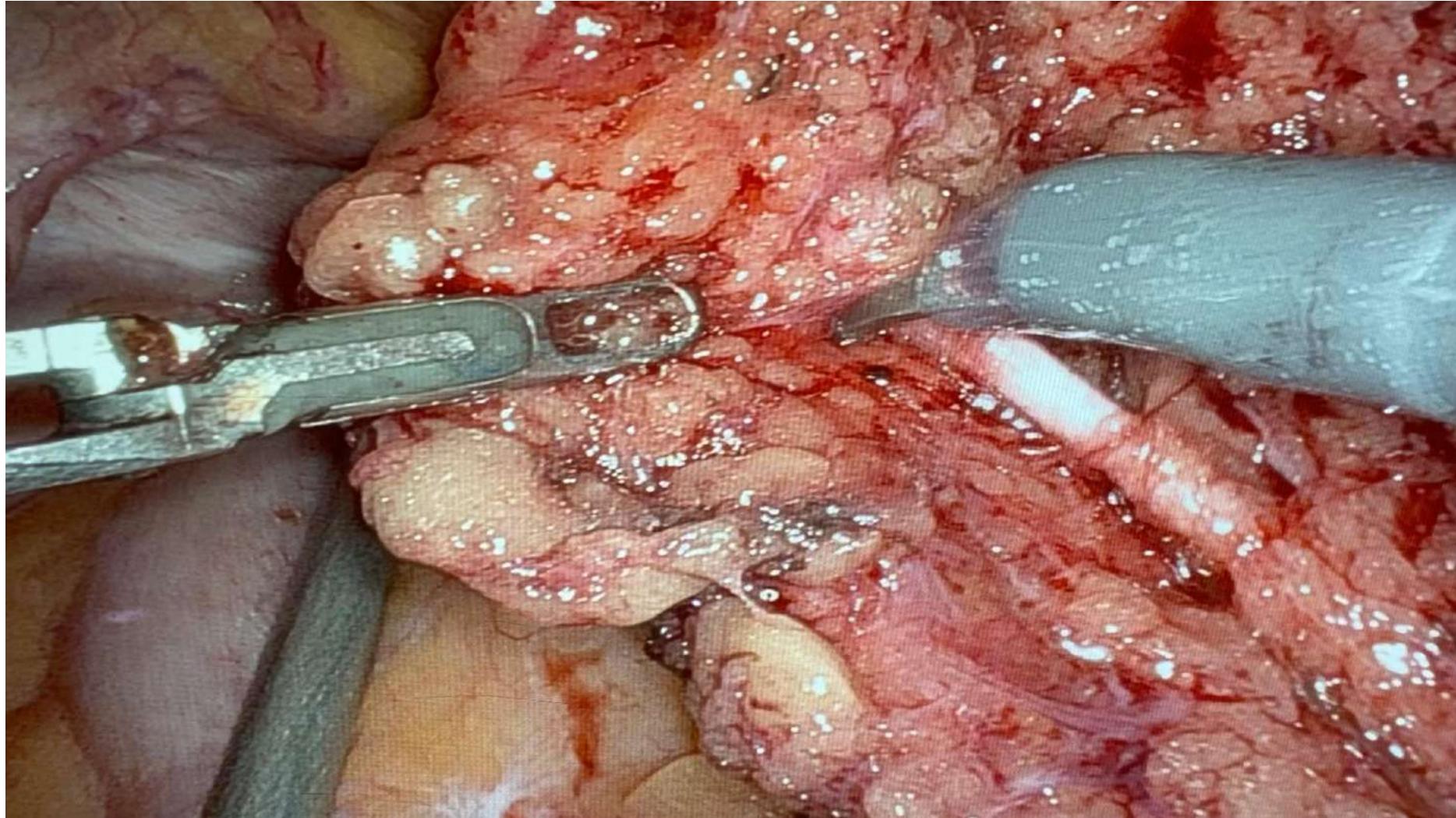
Shaving



# Leiomyomatosis



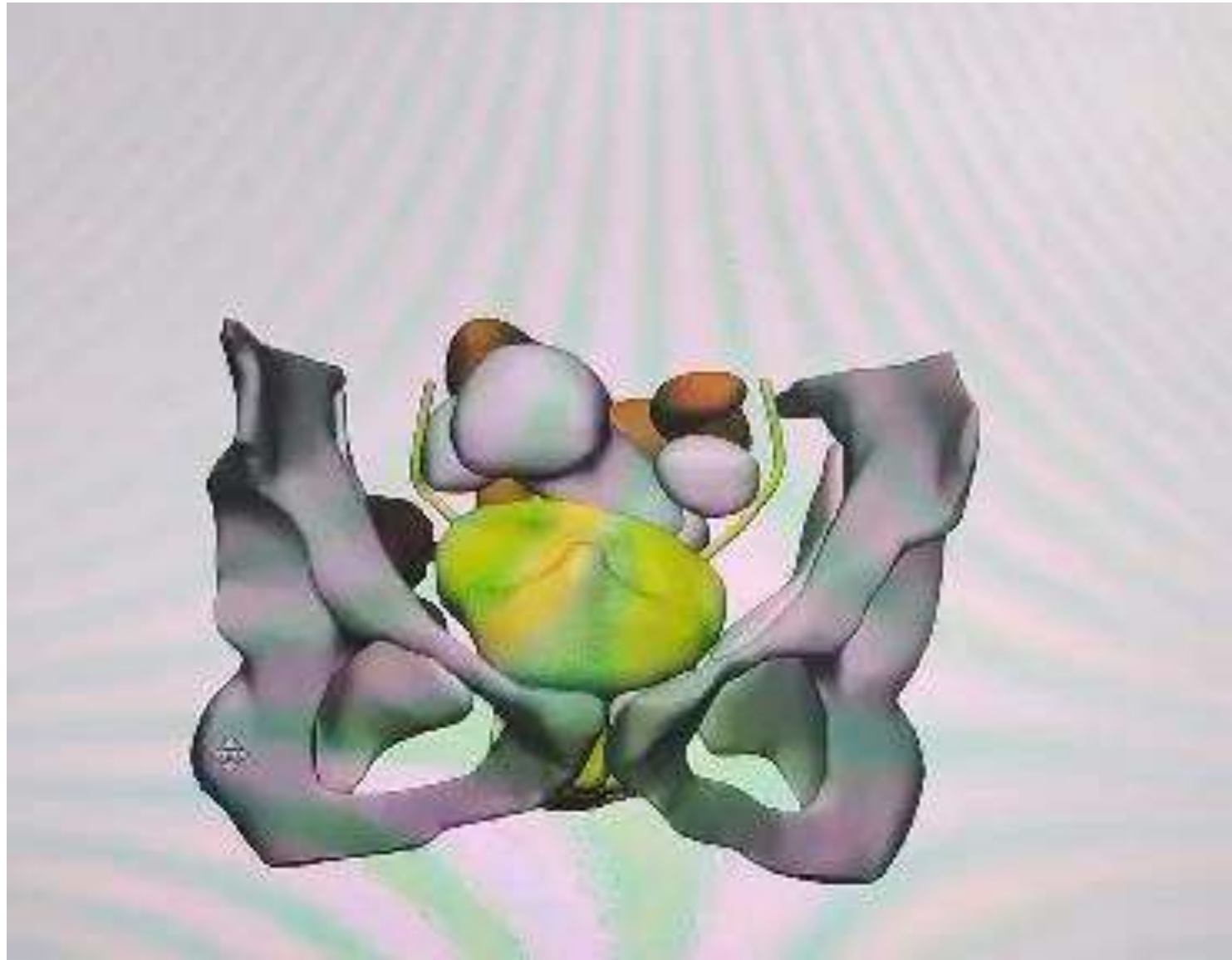
# Neurolysis



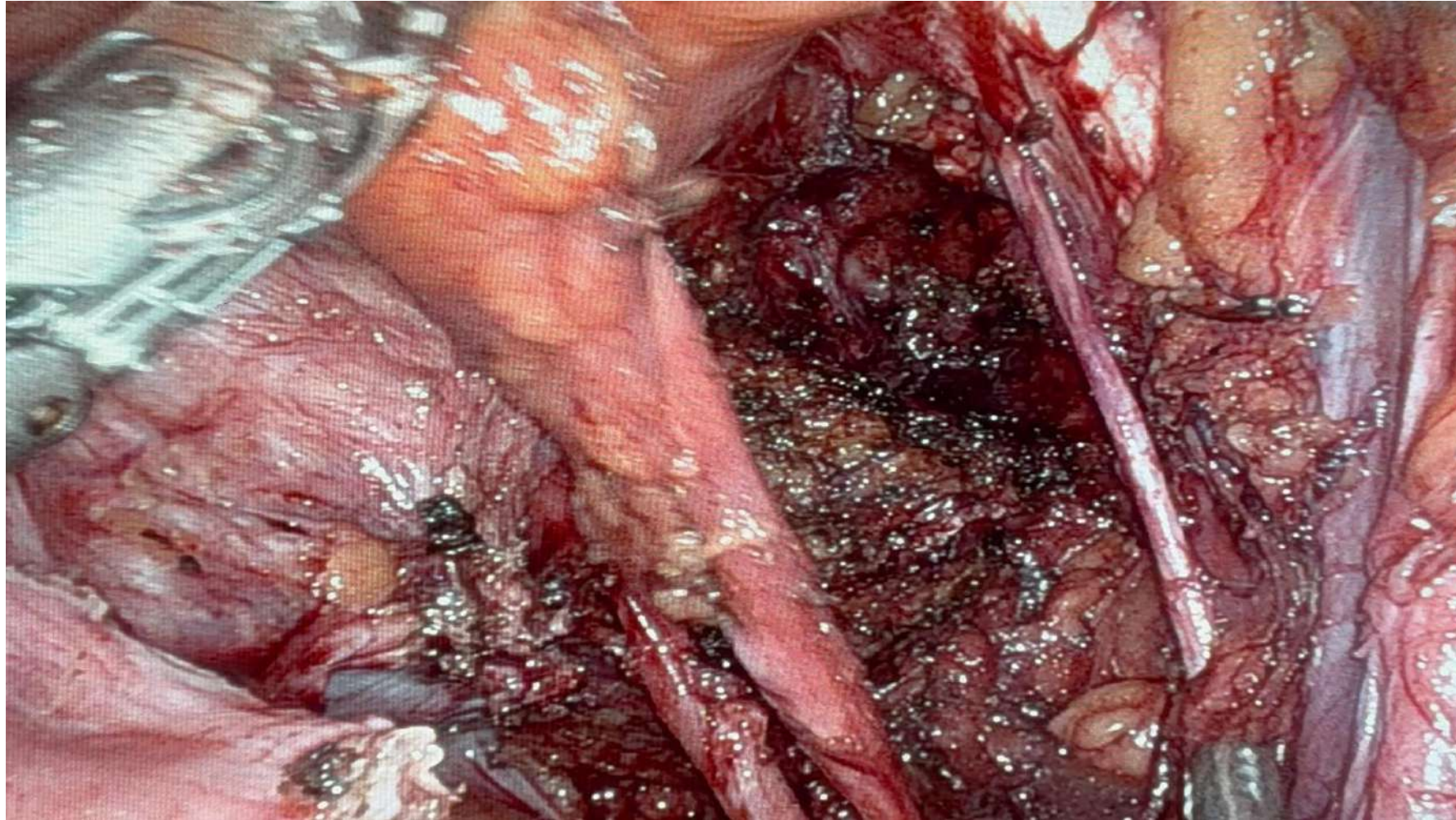
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Complex Narrow spaces: Pelvic side  
wall made easy





# Pelvic Side Wall



# Sciatic Neurolysis



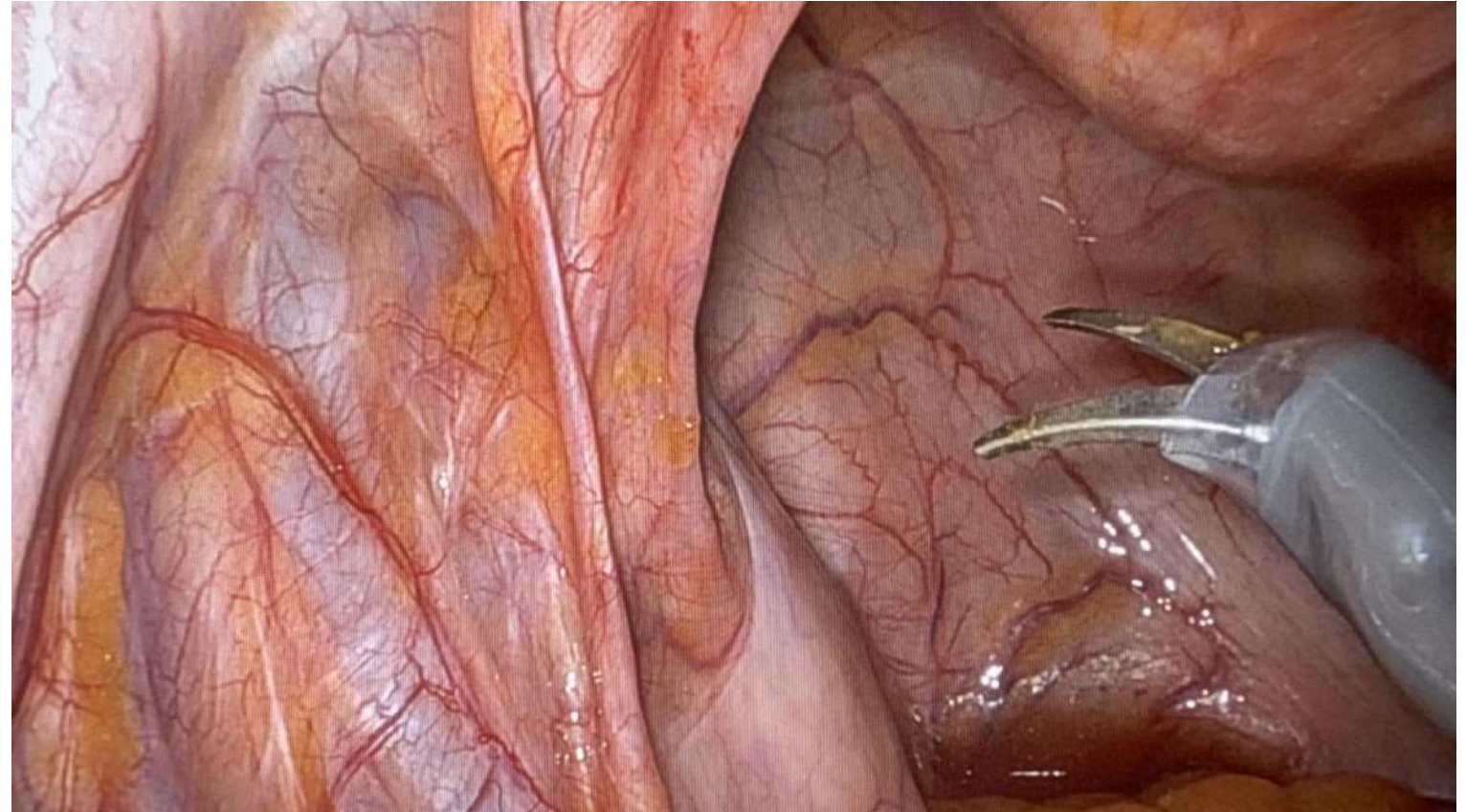


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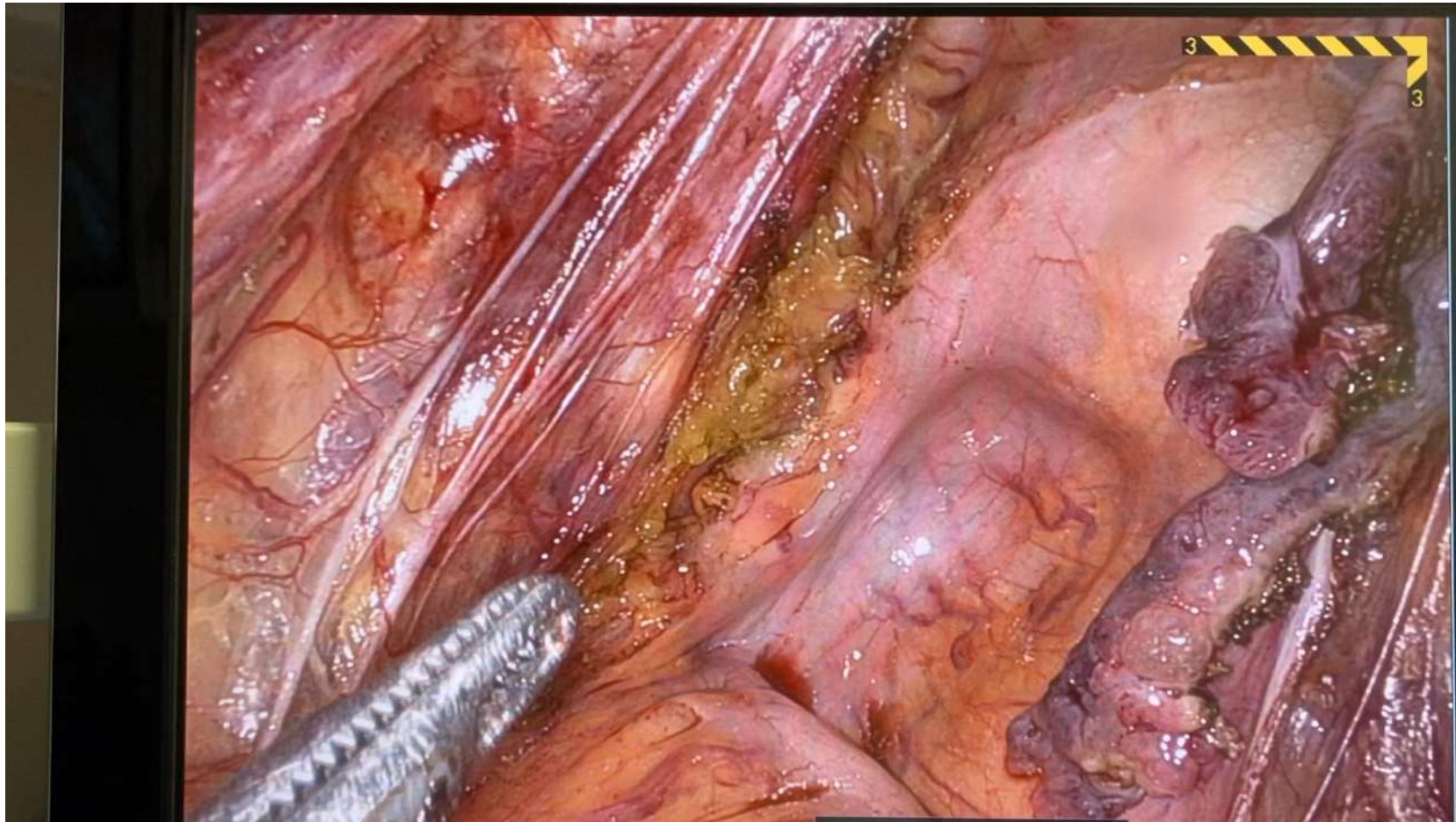
Enhanced Vision



Enhanced  
vision



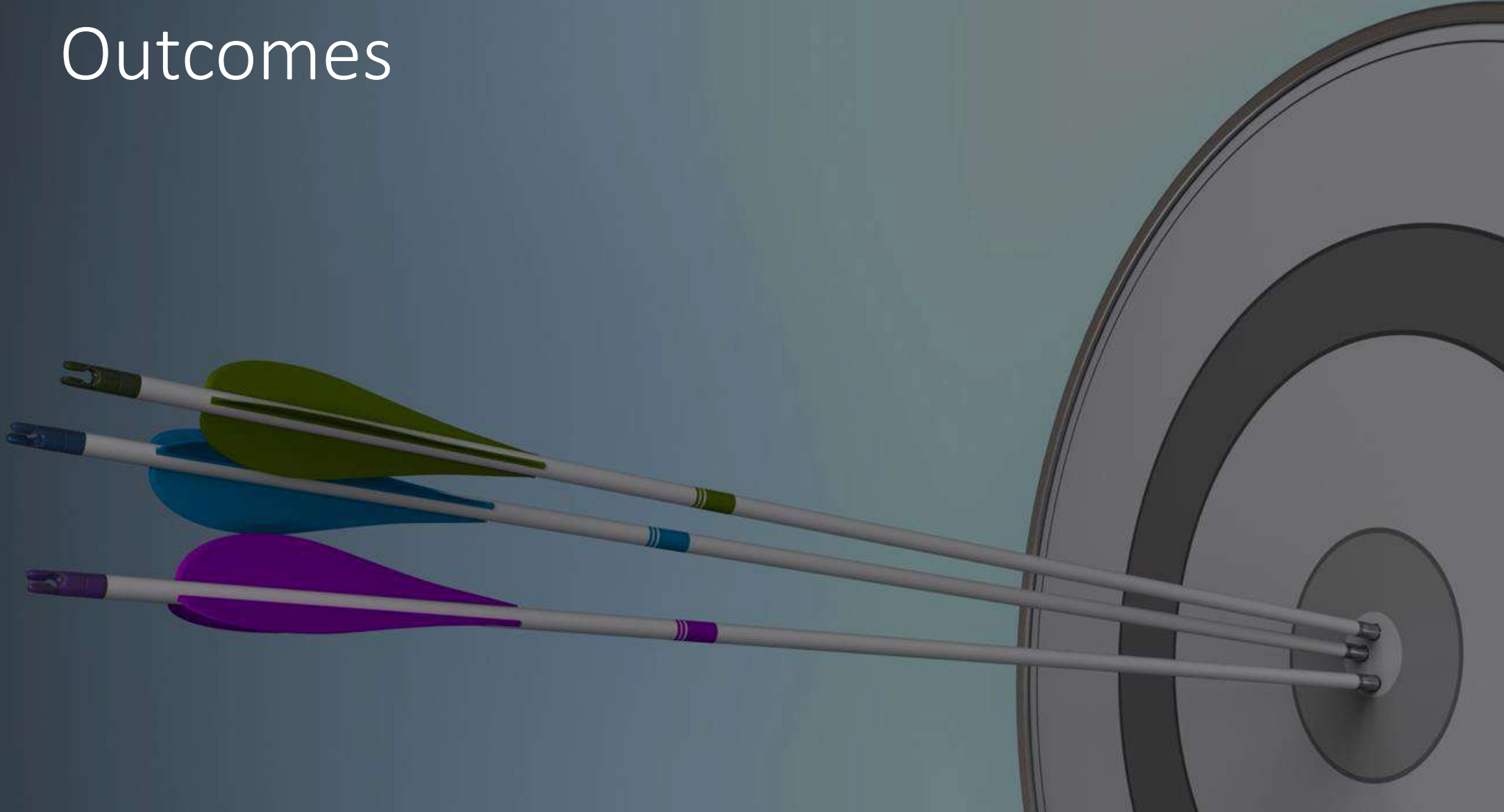
# Inferior Hypogastric Plexus



# Shaving under Intraluminal ICG guidance



# Outcomes





Article

# Improvement of Post-Operative Quality of Life in Patients 2 Years after Minimally Invasive Surgery for Pain and Deep Infiltrating Endometriosis

Sophie Legendri <sup>1,2</sup>, Marie Carbonnel <sup>1,2,\*</sup> , Anis Feki <sup>3</sup> , Gaby Moawad <sup>4</sup> , Gabrielle Aubry <sup>1</sup> ,  
Alexandre Vallée <sup>5</sup> and Jean-Marc Ayoubi <sup>1,2</sup>

The International Journal  
of **Medical Robotics**  
and **Computer Assisted Surgery**



ORIGINAL ARTICLE

## Comparison of robot-assisted and conventional laparoscopy for colorectal surgery for endometriosis: A prospective cohort study

Clément Ferrier, Marjolaine Le Gac, Kamila Kolanska, Anne-Sophie Boudy, Yohan Dabi, Cyril Touboul, Sofiane Bendifallah, Emile Darai 

Thank you

