OUTCOMES OF ROBOTIC, LAPAROSCOPIC AND OPEN ABDOMINAL HYSTERECTOMY FOR BENING CONDITIONS IN OBESE PATIENTS

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Introduction (1)

- Hysterectomy is the most common nonpregnancy-related surgical procedure performed in the USA

- Approximately **80000** hysterectomies are performed each year in the UK, and over **600.000** in the USA

- **Rates;** Laparotomy : 64%, Vaginal hysterectomy: 22%, and Laparoscopic hysterectomy: 14%

Farquhar CM, et al. Obstet Gynecol 2002;99:229-234.
Candiani M, et al. Curr Opin Obstet Gynecol 2010;22:304-308.
Jacoby VL, et al. Obstet & Gynecol 2009;114:1041-1048.

Introduction (2)

- MIS techniques for performing hysterectomy has many advantages over laparotomy such as **reduced patient morbidity, shorten hospital stays, better cosmesis and quicker resumption of regular activity**

- FDA approved the da Vinci® Surgical System (Intuitive Surgical, Inc., Sunnyvale, CA) for use in gynecologic procedures **(2005)**

- A robotic system is designed to address many of the limitations of conventional laparoscopy (may provide MIS in more complex cases such as obese, etc.)

Claerhout F, et al. Best Pract Res Clin Obstet Gynaecol 2005;19:357-375.
Rebeles SA, et al. J Robotic Surg 2009;3:141-147.
Reynolds RK, et al. Am J Surg 2006;191:555-560.

Introduction (3)

- Overweight and obesity are described as abnormal or excessive fat accumulation that presents a risk to health

- **BMI ≥30 kg/m^2** is considered obese by the World Health Organization (WHO)

World Health Organization (WHO) webpage, http://www.who.int/topics/obesity/en/
Kopelman PG. Obesity as a medical problem. Nature 2000;404:635-43.

Introduction (4)

- Today **more than 30%** of adults are obese and this ratio will be estimated **40% by 2025**

- Obesity can **affect perioperative outcomes** of patients undergoing various surgical procedures like hysterectomy

Kopelman PG. Nature 2000;404:635-43.
Johnson A, et al. J Hosp Infect 2006;64:30-5.
Pitkin RM. Surg Gynecol Obstet 1976;142:532-6.

Introduction (5)

- Limited prospective data about the perioperative outcomes following TAH, TLH and particularly RAH on the obese patients

AIM;

- **To evaluate the peri and intraoperative outcomes of hysterectomy for benign conditions by MIS in obese women**

- **To focuse on the surgical and clinical outcomes of RAH in comparison with TLH and TAH in obese women**

Materials and methods (1)

- Prospective matched case-control study (between January 2009 and December 2011)

- A total of **75 consecutive** patients with a BMI ≥30 kg/m^2 who underwent either **RAH (RAH group, n=51)** or **TLH (TLH group, n=24)** performed or supervised by the same surgeon (GSK) were enrolled to this study

Materials and methods (2)

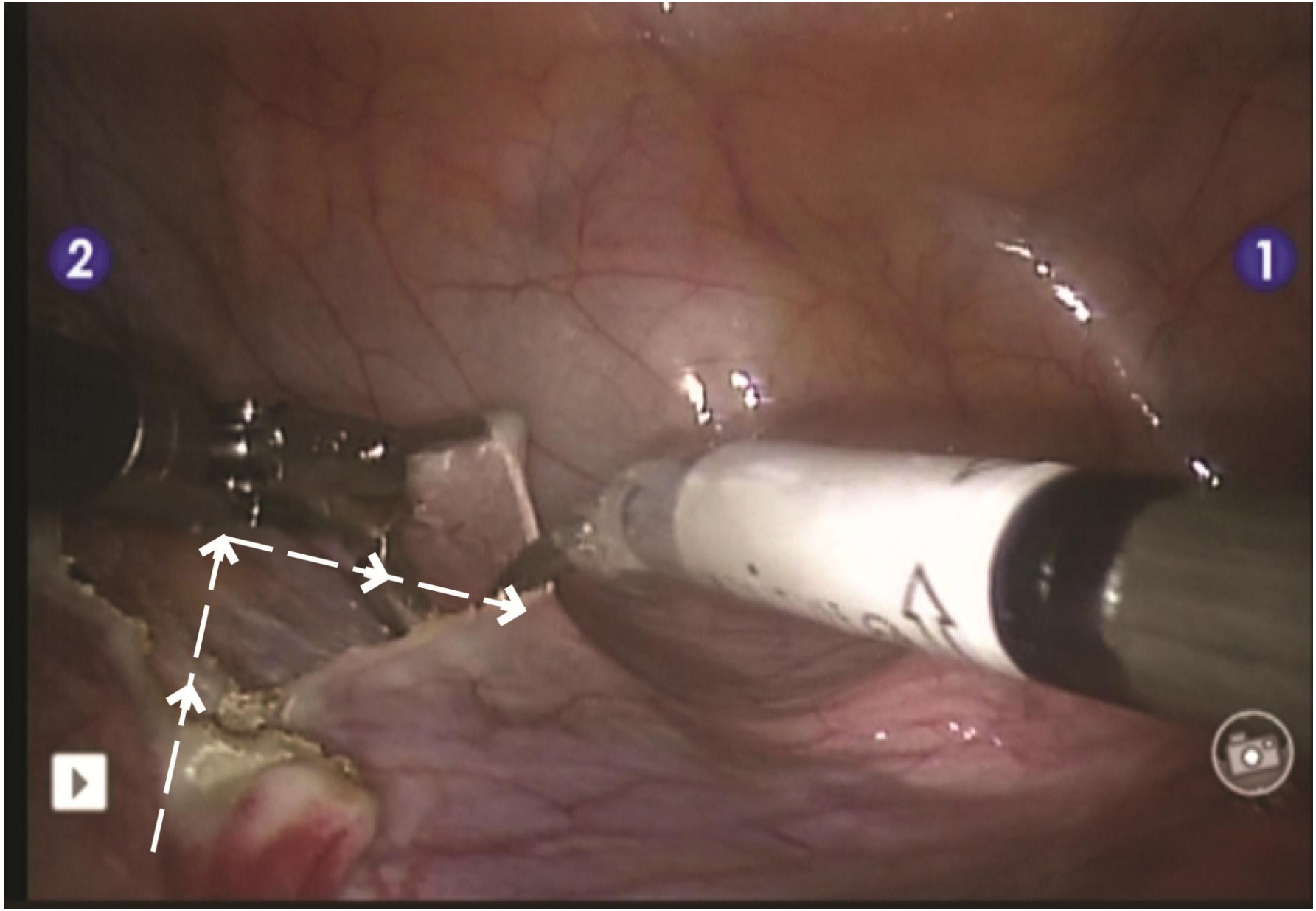
- BMI ≥30 kg/m^2 patients underwent TAH within the same period **(TAH group, n=133)** from computerized hospital records → **Control Group**

- Patients' characteristics; age, gravidity, parity, race, smoking habits, history of prior pelvic or abdominal surgery, intercurrent diseases and indications for hysterectomy were recorded

Materials and methods (3)

- All operations took place under general anaesthesia with a Foley catheter in the bladder

- MIS cases were placed in the dorsal lithotomy position with Allen stirrups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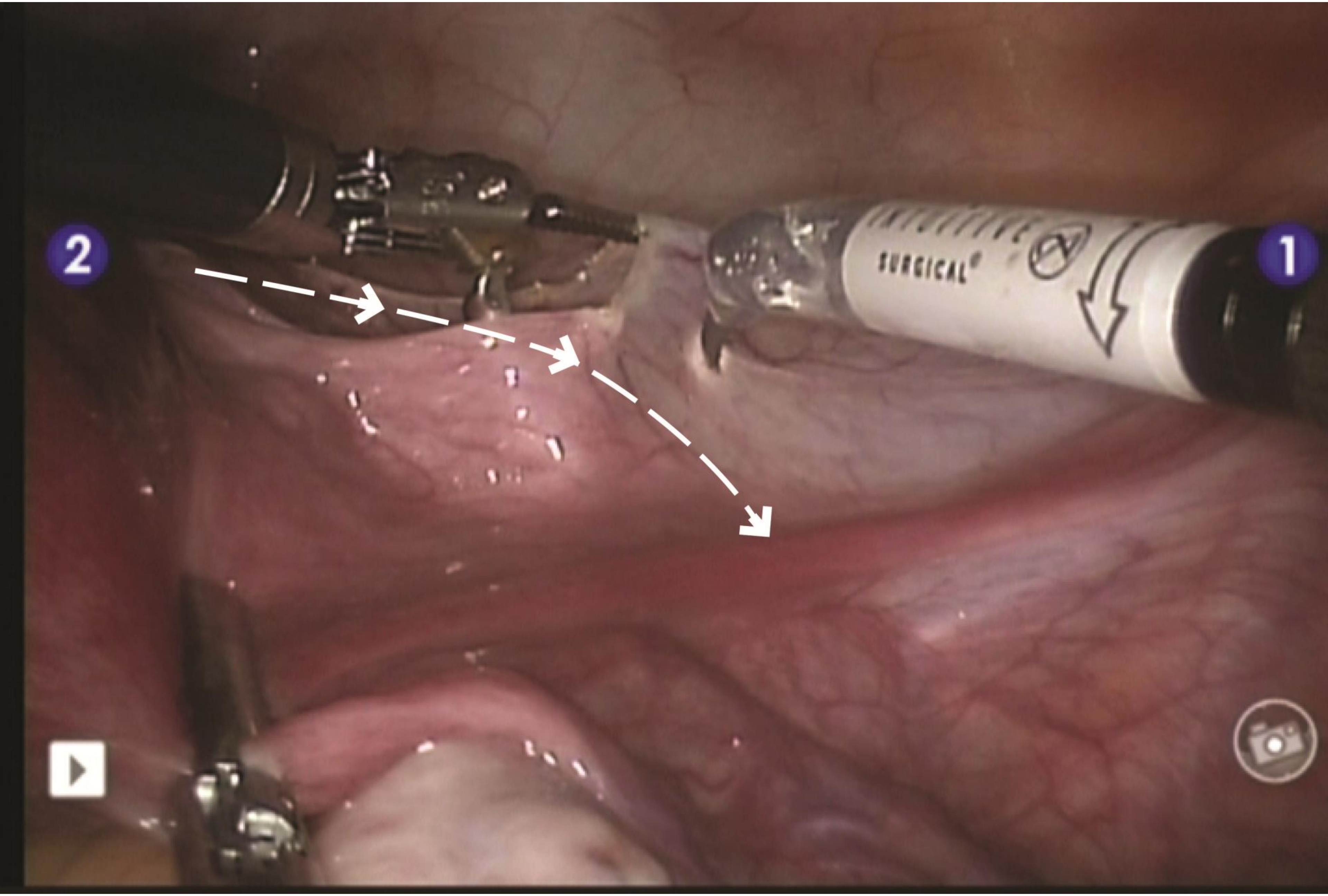
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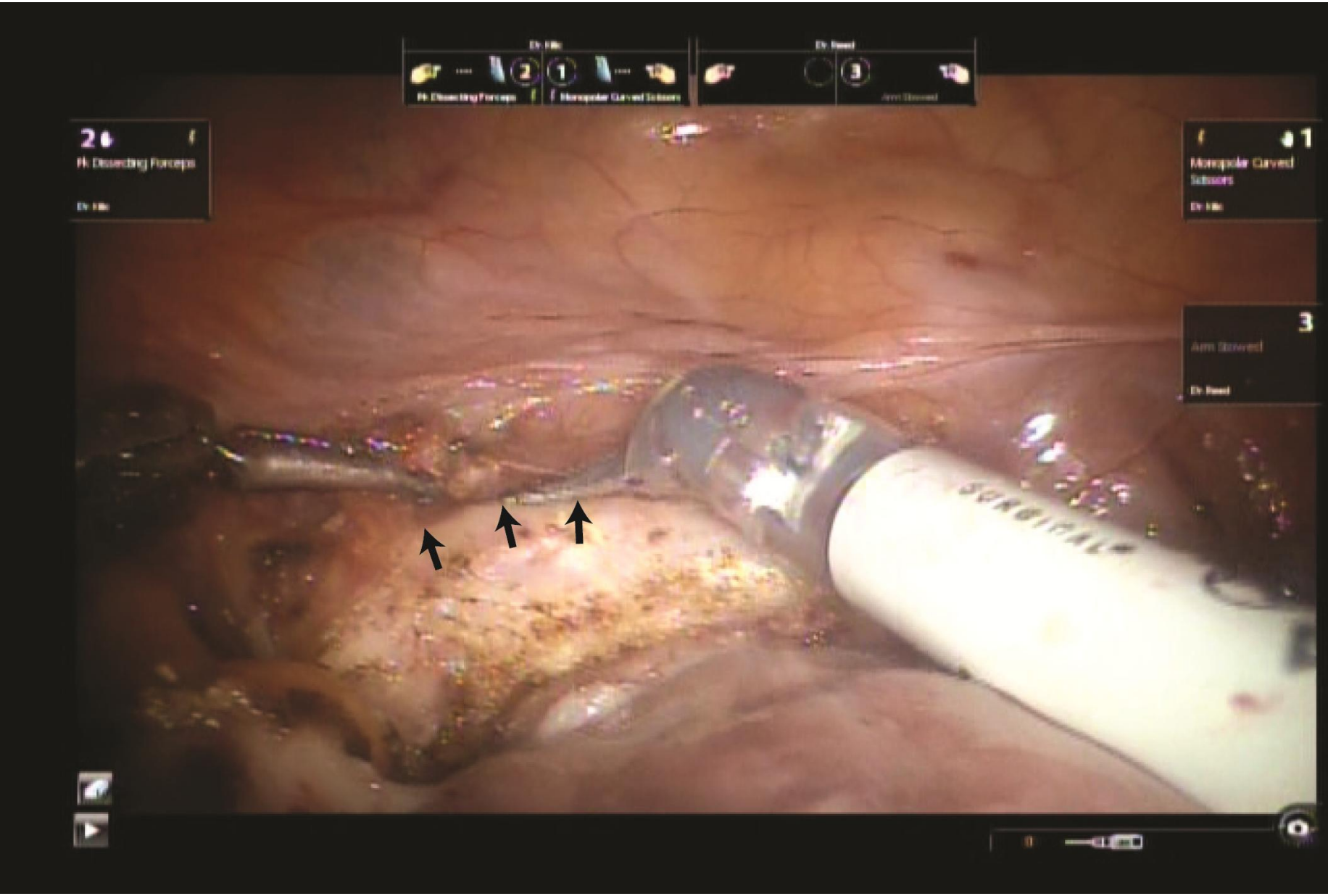
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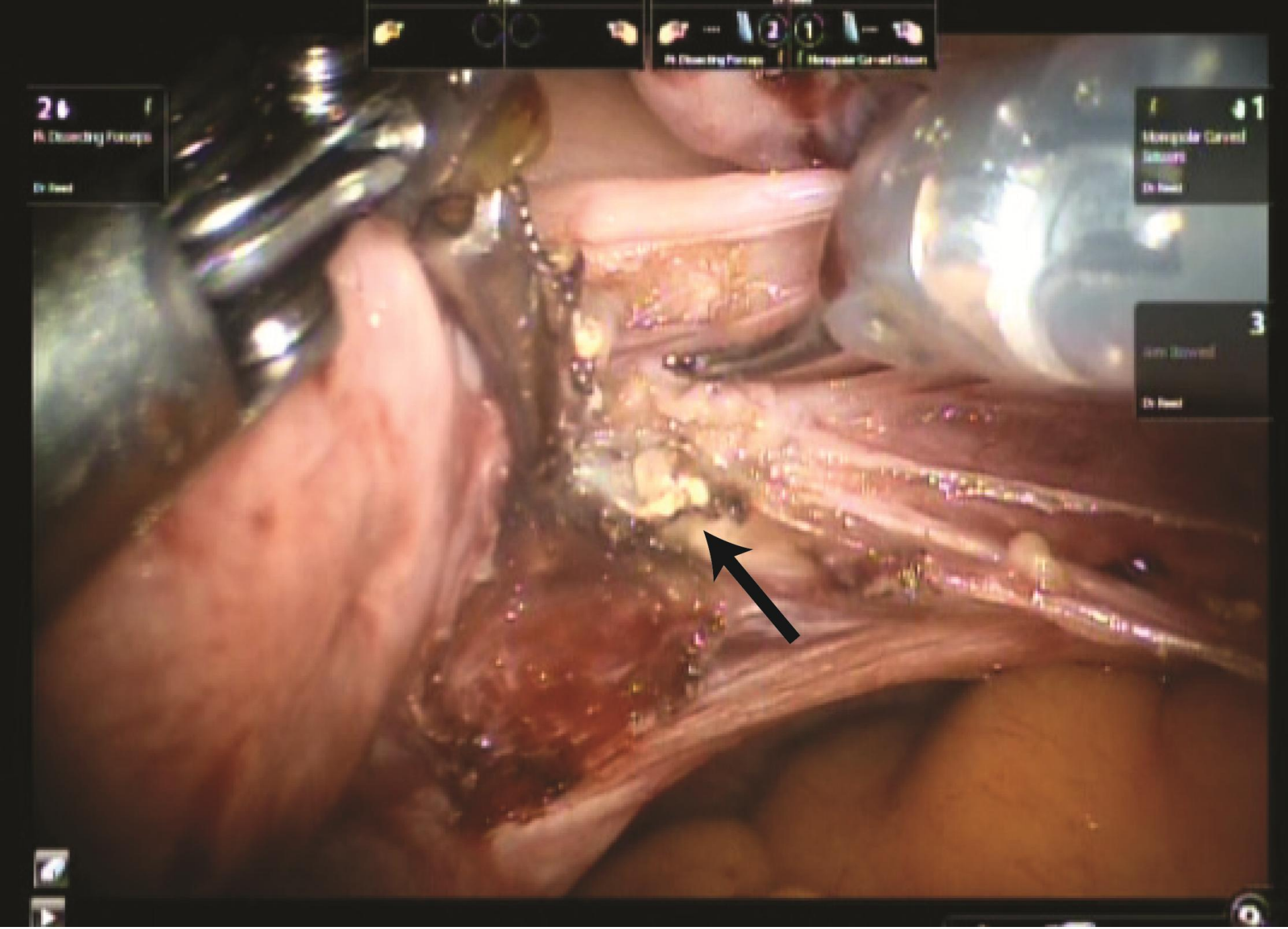

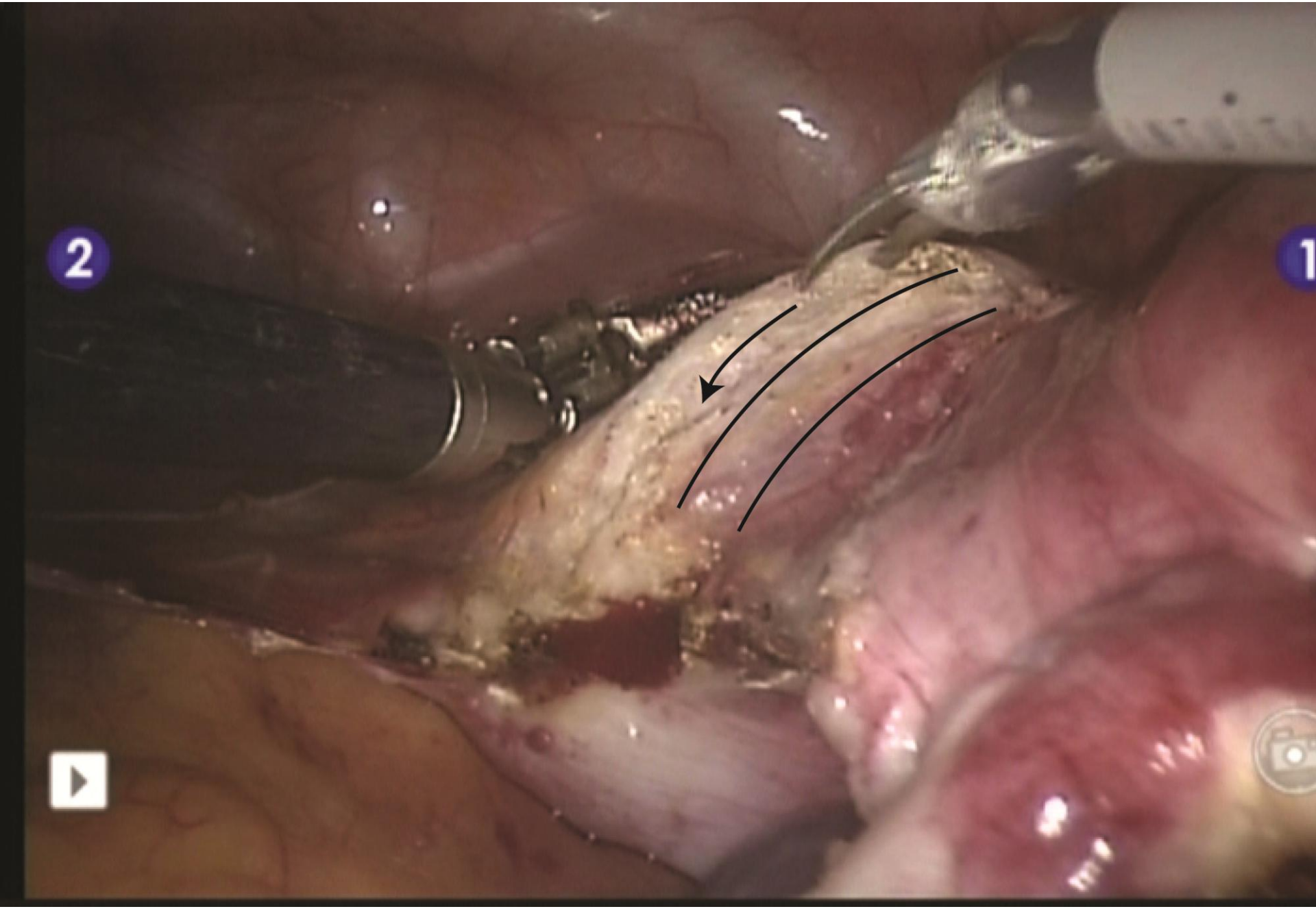
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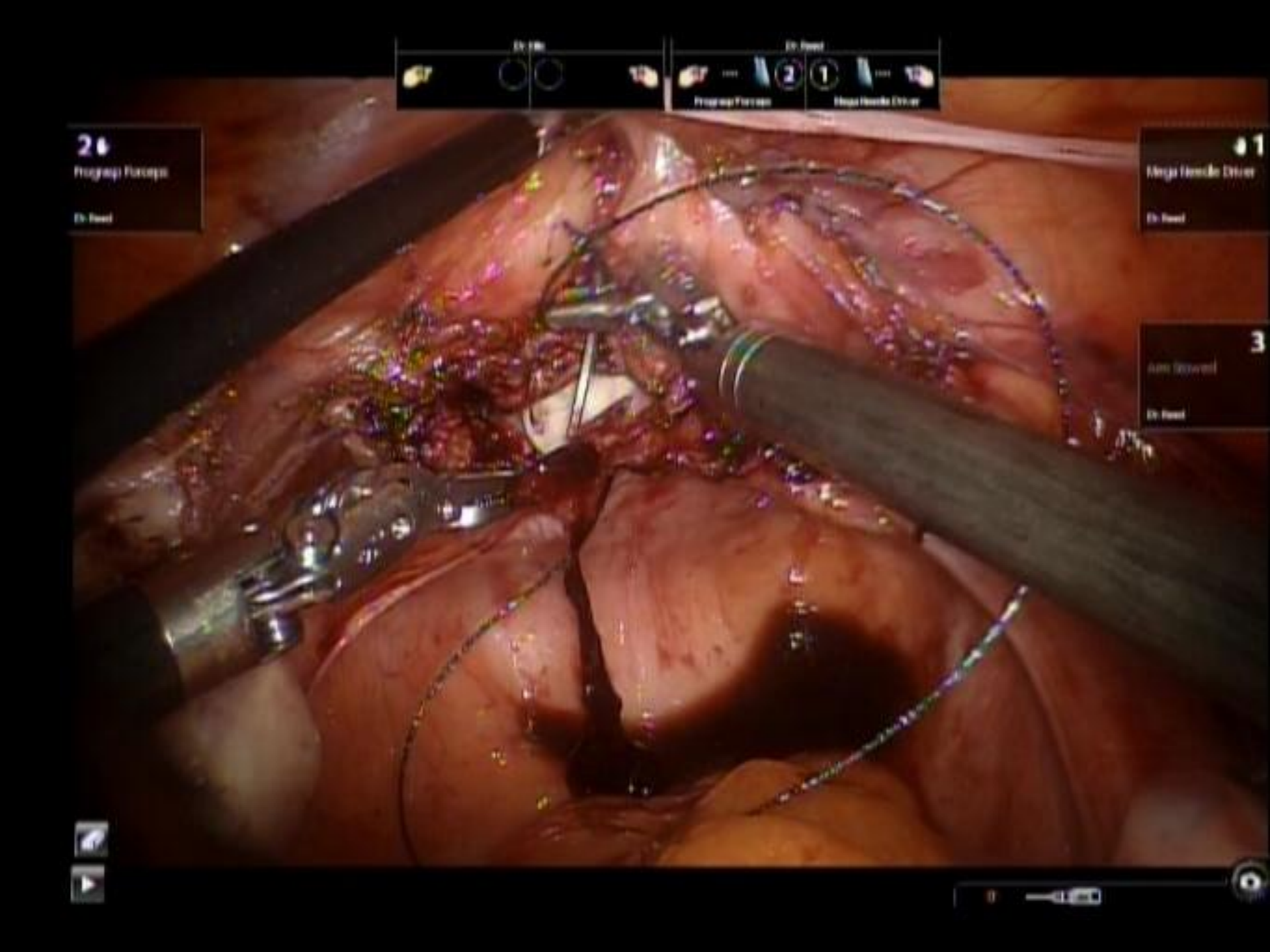


Materials and methods (4)

Intra and Perioperative characteristics;

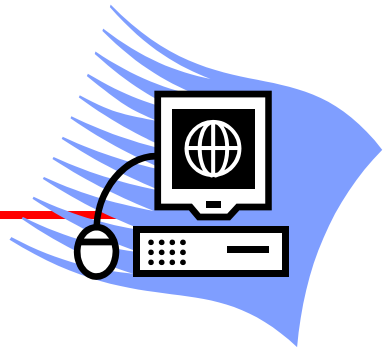
- Concomitant procedures with hysterectomy
- Procedure time
- Intraoperative complications
- EBL
- Transfusion requirements
- Conversion to TAH
- Usage of morcellation
- Length of hospital stay
- Postoperative complications (≤ 6 weeks and > 6 weeks)
- Re-admission to the hospital
- Requirement of re-operation
- Uterine weight
- Final pathological results

Materials and methods (5)

- All women were re-examined at 2 and 6 weeks after surgery

- The patients' characteristics, intra and perioperative outcomes were compared between each groups (MIS vs Open and each group separately)

Materials and methods (6)



Statistical Analysis

- Data were analyzed using Statistical Analysis Software (SAS), v. 9.2 (SAS Institute, Cary, NC, USA)

- Bivariate analyses, Chi-square and Fisher's exact tests, and ANOVA were used

- $p<0.05$ was consiedred statistically significant

Results (1)

	MIS (n=75)		TAH (n=133)	*p* values
	RAH (n=51)	TLH (n=24)		
Age (years)	46.94 ±10.34	44.17 ±8.65	44.54 ±8.35	0.2294
Gravidity (n)	2.33 ±1.41	2.92 ±1.47	2.99 ±2.04	0.0938
Parity (n)	1.94 ±1.22	1.92 ±1.10	2.41 ±1.79	0.1257
BMI (kg/m^2)	37.50 ±7.56	35.70 ±5.92	36.12 ±4.63	0.2668
Previous abdominopelvic surg (n)	0.49 ±0.92	1.08 ±0.88	1.17 ±1.34	0.0009*
Race [n (%)]				
White (n=69)	22 (43.1)	9 (37.5)	38 (28.6)	0.3580
African American (n=103)	20 (39.2)	12 (50.0)	71 (53.4)	
Hispanic/Amer. Indian (n=36)	9 (17.7)	3 (12.5)	24 (18.1)	

Results (2)

	MIS (n=75)			
	RAH (n=51)	TLH (n=24)	TAH (n=133)	*p* values
Smoking habits [n (%)]				
No (n=159)	**42 (82.4)**	**18 (75.0)**	**99 (74.4)**	**0.5516**
Yes (n=49)	**9 (17.7)**	**6 (25.0)**	**34 (25.6)**	
Intercurrent disease [n (%)]				
No	**20 (39.2)**	**7 (29.2)**	**42 (31.6)**	**0.6758**
Yes	**31 (60.8)**	**17 (70.8)**	**91(68.4)**	

Results (3)

	MIS (n=75)			
	RAH (n=51)	TLH (n=24)	TAH (n=133)	*p* values
Indications [n (%)]				
Adnexal mass	4 (7.8)	2 (8.3)	22 (16.54	0.5545
Pelvic pain	5 (9.80)	1 (4.2)	6 (4.5)	
Abnormal uterine bleeding	35 (68.6)	18 (75.0)	90 (67.7)	
Cervical dysplasia	3 (5.9)	3 (12.5)	9 (6.8)	
Uterovaginal Prolapsus	3 (5.9)	0	3 (2.3)	
Others	1 (2.0)	0	3 (2.3)	
Final Pathologic Results [n (%)]				
Leimyomata	24 (47.1)	14 (58.3)	84 (63.2)	0.0850
Adenomyosis	13 (25.5)	2 (8.3)	14 (10.5)	
Benign adnexal mass	4 (7.8)	2 (8.3)	18 (13.5)	
Malignancy in paraffin bloc	2 (3.9)	0	5 (3.8)	
Cervical dysplasia	1 (2.0)	2 (8.3)	4 (3.0)	
Others	7 (13.7)	4 (16.7)	8 (6.02)	
Uterine weight (gr)	237.04 ±182.64	195.75 ±154.67	547.77 ±796.29	0.0004*

Results (4)

	MIS (n=75)		TAH (n=133)	*p* values
	RAH (n=51)	TLH (n=24)		
Procedure time (min.)	**276.96 ±79.32**	**214.46 ±68.65**	**184.83 ±65.50**	**<0.0001***
EBL (ml)	**144.80 ±148.32**	**221.88 ±254.89**	**367.86 ±318.06**	**<0.0001***
Oophorectomy [n (%)]				
No (n=92)	**28 (54.9)**	**14 (58.3)**	**50 (37.6)**	**0.1106**
Bilateral (n=102)	**19 (37.3)**	**9 (37.5)**	**74 (55.6)**	
Unilateral (n=14I)	**4 (7.8)**	**1 (4.2)**	**9 (6.8)**	
Additional proc.[n (%)]				
No (n=157)	**39 (76.5)**	**19 (79.2)**	**99 (74.4)**	**0.9134**
Yes (n=51)	**12 (23.5)**	**5 (20.8)**	**34 (25.6)**	

Results (5)

	MIS (n=75)		TAH (n=133)	*p* values
	RAH (n=51)	TLH (n=24)		
Morcellation [n (%)]				
No (n=194)	40 (78.4)	21 (87.5)	n/a	0.5272
Yes (n=14)	11 (21.6)	3 (12.5)		
Intraop. comp. [n (%)]				
No (n=199)	49 (96.1)	22 (81.7)	128 (96.2)	0.590
Yes (n=9)	2 (3.9)	2 (8.3)	5 (3.8)	
Conversion [n (%)]				
No (n=48)	48 (n=94.1)	22 (91.7)	n/a	0.6525
Yes (n=5)	3 (n=5.9)	2 (8.3)		

Results (6)

	MIS (n=75)		TAH (n=133)	*p* values
	RAH (n=51)	TLH (n=24)		
Periop. blood trans. [n (%)]				
No (n=190)	51 (100)	23 (95.8)	116 (87.2)	0.0069*
Yes (n=18)	0	1 (4.2)	17 (12.8)	
Length of hosp. stay (day)	1.43 ±0.73	2.04 ±1.33	3.56 ±2.81	<0.0001*
Postop ≤ 6 w comp [n (%)]				
No (n=192)	48 (94.1)	24 (100)	120 (90.2)	0.2766
Yes (n=16)	3 (5.9)	0	13 (9.8)	
Postop > 6 w comp [n (%)]				
No (n=195)	49 (96.1)	24 (100)	122 (91.7)	0.3558
Yes (n=13)	2 (3.9)	0	11 (8.3)	

Results (7)

	MIS (n=75)		TAH (n=133)	*p* values
	RAH (n=51)	TLH (n=24)		
Readmission [n (%)]				
No (n=169)	42 (82.4)	20 (83.3)	107 (80.5)	0.9645
Yes (n=39)	9 (17.7)	4 (16.7)	26 (19.6)	
Reoperation [n (%)]				
No (n=199)	49 (96.1)	24 (100)	126 (94.7)	0.7801
Yes (n=9)	2 (3.9)	0	7 (5.3)	

Discussion (1)

- In literature, MIS hysterectomies are usually recommended for obese patients

Osler M, et al. Hum Reprod 2011;26:1512-8.
Chopin N, et al. Hum Reprod 2009;24:3057-62.
Camanni M, et al. J Minim Invasive Gynecol. 2010;17:576-82.
ACOG Committee Opinion No.444.. Obstet Gynecol 2009;114:1156-1158.

The studies evaluating RAH in obese patients are limited

Nawfal AK, et al. J Minim Invasive Gynecol 2011;18:328-32.
Geppert B, et al. Acta Obstet Gynecol Scand 2011;90:1210-1217.

Discussion (2)

ABSTRACT **Study Objective:** To estimate the impact of body mass index (BMI) on the surgical outcomes of patients undergoing robotic-assisted total laparoscopic hysterectomy.

Design: Retrospective cohort study.

Setting: Henry Ford Health System academic medical center (Henry Ford and Henry Ford West Bloomfield Hospitals)

Patients: A total of 135 patients who underwent scheduled robotic-assisted total laparoscopic hysterectomy for benign indications, without concomitant urogynecologic procedures between January 2008 and June 2010.

Interventions: Patients underwent robotic-assisted total laparoscopic hysterectomy as the intention to treat. Two cases were converted to laparotomy.

Measurements & Main Results: Electronic medical records of all patients that underwent robotic-assisted total laparoscopic hysterectomy at Henry Ford Health System were reviewed. Data on demographics, BMI (kg/m^2), estimated blood loss, perioperative hemoglobin change, procedure duration, hospital length of stay, specimen weight, pathology, and postoperative complications were obtained. The women's median age was 45 years (range 30–68), 61.5% were black, and BMI ranged from 14.8-56.2 kg/m2; 23.4% of women were normal weight or less (BMI <25, n = 31), 52.7% of women were obese (BMI >30, n = 70) and 36 of these patients (27.1%) were morbidly obese (BMI ≥ 35). BMI did not correlate with procedure

Conclusion: BMI is not associated with blood loss, duration of surgery, length of stay, or complication rates in patients undergoing robotic-assisted total laparoscopic hysterectomy. Robotic assistance may help surgeons overcome adverse outcomes sometimes found in obese patients. Journal of Minimally Invasive Gynecology (2011) 18, 328–332 © 2011 AAGL. All rights

Journal of Minimally Invasive Gynecology (2011) 18, 328-32

Discussion (3)

Robot-assisted laparoscopic hysterectomy in obese and morbidly obese women: surgical technique and comparison with open surgery.

Acta Obstet Gynecol Scand 2011;90:1210-1217.

Geppert B, Lonnerfors C, Persson J.

Discussion (3)

- Prospective study
- RAH [n=50 (early: 25, late:25)] vs TAH (n=64)
- Late RAH group
- Less bleeding
- Fewer complication
- Longer operating time

Conclusion: RAH in a consolidated phase in obese women is associated with shorter hospital stay, less bleeding and ferwer complications compared to laparotomy.

Discussion (4)

Arch Gynecol Obstet. 2014 Feb 15. [Epub ahead of print]

Implementation of robot-assisted gynecologic surgery for patients with low and high BMI in a German gynecological cancer center

Kannisto P, Harter P, Heitz F, Traut A, du Bois A, Kurzeder C.

Discussion (5)

CONCLUSION:

Robotic procedure was feasible and could be implemented for treating the first setting of mixed indications for gynecologic surgery. Robotic surgery may offer particular advantages in obese patients with no conversions and no wound complications.

Kannisto P, et al. Arch Obstet Gynecol 2014

Discussion (6)

SCIENTIFIC PAPER

Robotic Hysterectomy Strategies in the Morbidly Obese Patient

Oscar D. Almeida Jr, MD

- Prospective study
- 12 mormid obese patient (median BMI, 44.4 kg/m2; BMI range, 40.1–58.6 kg/m2)
- One converison
- Discharged within 23 hours (11 patients)
- Operating time→109.6 min (range, 99–145 minutes).

JSLS (2013)17:418–422

Discussion (7)

- Although robotic assisted total laparoscopic hysterectomy appears to be a safe, minimally invasive alternative for morbidly obese patients requiring a hysterectomy, **large multicenter prospective studies would be useful to standardize surgical techniques in this patient population.**

JSLS (2013)17:418–422

Conclusion

In spite of a longer procedure time, minimally invasive hysterectomy is feasible, safe, provides shorter hospital stay and less blood loss in obese patient population. In addition, robotic-assisted hysterectomy may be a better choice because of its superiority to TLH in obese population if vaginal hysterectomy cannot be performed

THANK YOU……..