



# Robotic surgery in the obese patient with endometrial cancer

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# Overview

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- ▶ Epidemiology of obesity in Israel
- ▶ Safety of laparoscopic & robotic surgery for endometrial cancer
- ▶ Robotic surgery for obese patients with endometrial cancer
- ▶ Our experience at Sheba MC

# WHO Classification of Obesity

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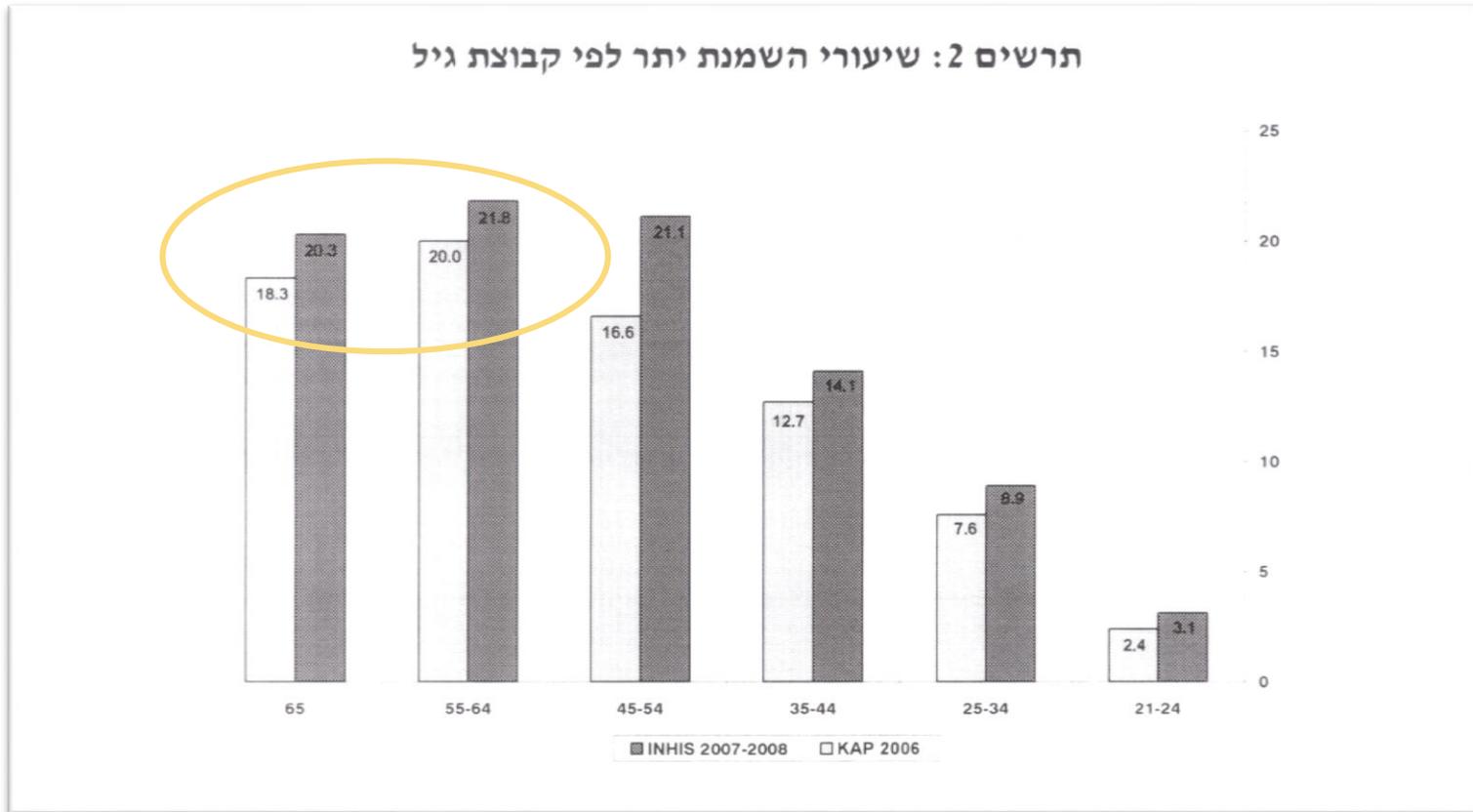
- ▶ Class I (BMI 30-35 kg/m<sup>2</sup>)
- ▶ Class II (BMI 35-40 kg/m<sup>2</sup>)
- ▶ Class III (BMI >40 kg/m<sup>2</sup>)

# Obesity rates in Israel

טבלה 2: שיעורי עודף משקל והשמנת יתר לפי קבוצת אוכלוסייה ומין (%)

השמנת יתר		עודף משקל			
סקר 2003-2004	סקר 2007-2008	סקר 2003-2004	סקר 2007-2008		
14.4	15.5	-	34.2	סה"כ	
13.2	15.1	-	39.7	גברים	
15.5	14.9	-	29.0	נשים	
12.7	14.4	-	39.0	גברים	יהודים
14.6	14.0	-	28.8	נשים	
16.0	18.6	-	42.6	גברים	ערבים
21.3	19.5	-	29.4	נשים	

# Obesity rates by age group



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# MIS Should be standard of care for the surgical management of endometrial cancer

- ▶ LAP2
- ▶ LACE

# LAP2

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- ▶ 2,591 women with clinical stage I & IIA endometrial cancer randomized (2:1) to laparoscopy vs. laparotomy
- ▶ In the laparoscopy group:
  - ▶ Fewer moderate to severe postoperative adverse events (14% vs. 21%)
  - ▶ Hospitalization of more than 2 days was significantly lower (52% vs. 94%)
  - ▶ No significant difference in recurrence rates
    - ▶ 3-year recurrence rate of 11% with laparoscopy and 10% with laparotomy

# Conversion rate in LAP2

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- ▶ Overall 26% (median BMI 28)
  - ▶ 18% of patients with BMI of 25
  - ▶ 27% of patients with BMI of 30 to 35
  - ▶ 57% of patients with BMI greater than 40

# LACE

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- ▶ 760 women with clinical stage I endometrial cancer randomized to laparoscopy vs. laparotomy
- ▶ In the laparoscopy group:
  - ▶ Lower rate of post-op grade 3+ adverse effects (13% vs. 19%)
  - ▶ Shorter length of hospital (2 vs. 5 days)
  - ▶ Less blood loss
    - ▶ The decline of hemoglobin from baseline to POD1 was 2 g/L less in the LH group

# LACE

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- ▶ **Laparoscopy arm:**
  - ▶ Obesity Class I - 77 (20%)
  - ▶ Obesity Class II - 81 (21%)
  - ▶ Obesity Class III - 86 (22%)
  
- ▶ **24 (6%) conversions**
  
- ▶ **The odds of conversion were 1.07 higher with each unit increase in BMI.**

# Robotic-assisted staging for endometrial cancer compared with laparoscopic & laparotomy: a systematic review.

**Table 2. Pooled Estimates for Robotic-Assisted Compared With Laparoscopic or Laparotomy Surgery**

Factors	Robotic Hysterectomy and Laparoscopy			Robotic Hysterectomy and Laparotomy		
	Robotic-Assisted	Laparoscopy	Delta <sup>††</sup> (95% CI); <i>P</i>	Robotic-Assisted	Laparotomy	Delta <sup>††</sup> (95% CI); <i>P</i>
Total patients (n)	424	396		333	606	
Age (y)	61.1	59.8	1.1 (-2.4 to 4.5); .46	60.1	63.4	-3.8 (-6.1 to -1.6); <.01
BMI (kg/m <sup>2</sup> )	33.3	31.2	2.6 (0 to 5.2); .05	33.9	35.5	-2.2 (-5.1 to 0.8); .11
OT (min)	219	209	0 (-40 to 39); .99	207	130	89 (48 to 129); <.005
EBL (mL)	91.6	182	-86 (-121 to -51); .001	101	291	-186 (-264 to -108); <.005
LOS (d)	1.35	1.9	-0.4 (-0.8 to 0.1); .09	1.2	3.9	-2.6 (-3.5 to -1.6); .002
Pelvic nodes (n)	18.5	17.8	0.1 (-2.9 to 3.0); .95	18.0	14.5	3.3 (-1.1 to 7.6); .11
Aortic nodes (n)	10.3	7.8	2.4 (-1.5 to 6.4); .15	9.4	5.7	3.4 (-6.5 to 13.4); .28

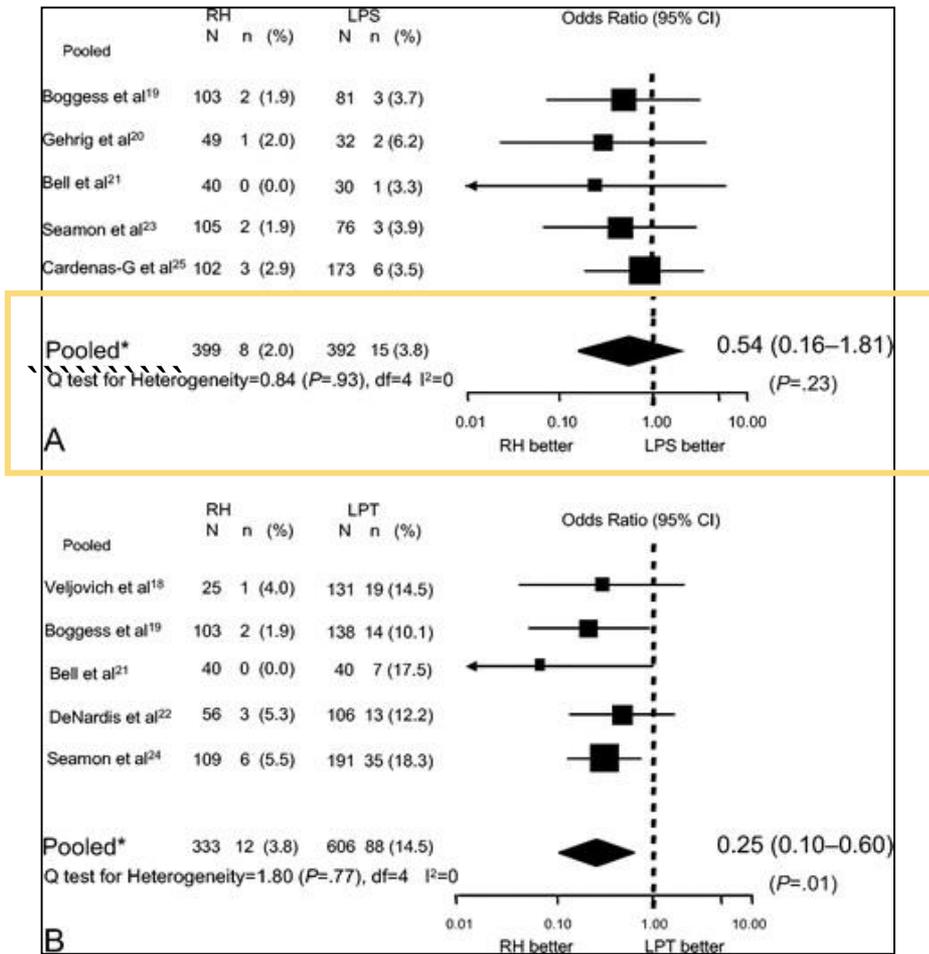
CI, confidence interval; BMI, body mass index; OT, operative time; EBL, estimated blood loss; LOS, hospital length of stay.

\* Mixed-effect model: estimates adjusted for heterogeneity between studies.

† Six studies<sup>16-19,21,23</sup> selected for robotic hysterectomy vs laparoscopic comparison; 820 patients available for this meta-analysis.

‡ Five studies<sup>16,17,19,20,22</sup> selected for robotic hysterectomy vs laparoscopic comparison; 939 patients available for this meta-analysis.

# Robotic staging vs. laparoscopy: Complications rate



Forest plots for complications: ileus, lymphedema, nerve palsy, acute renal failure, lymphocyst, urinary retention.

A. Comparison of robotic hysterectomy (RH) and laparoscopic hysterectomy (LPS).

B. Comparison of robotic hysterectomy and laparotomy (LPT).



# Challenges in the morbidly obese patient

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- ▶ **Operative challenges**
  - ▶ Longer operating room time
  - ▶ Impaired respiration and difficult intubation
  - ▶ Poor exposure of the operative field
  - ▶ Increased blood loss
  
- ▶ **Postoperative complications**
  - ▶ Increased rate of DVT
  - ▶ Wound healing problems
  - ▶ Pulmonary complications

# Comprehensive surgical staging for endometrial cancer in obese patients: comparing robotics and laparotomy.

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- ▶ 109 robotic cases matched to 191 laparotomy cases.
- ▶ Mean BMI 40 (70% BMI >35, class II & III)
- ▶ In the robotic group:
  - ▶ Conversion rate 15%
  - ▶ Similar high rate of lymphadenectomy (85% vs. 91% receiving adequate lymphadenectomy)
  - ▶ Lower transfusion rate (2% vs. 9%)
  - ▶ Lower number of nights in the hospital (1 vs. 3)
  - ▶ Lower complications rate (11% vs. 27%)

# Robotic versus laparotomy surgical outcomes of obese women with endometrial carcinoma.

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- ▶ 73 robotic surgeries compared to 104 laparotomies.
- ▶ BMI > 30 (Mean 41)
- ▶ In the robotic group:
  - ▶ 11% converted to laparotomy
  - ▶ Similar rate of lymphadenectomies performed (66% vs. 57%) and LN obtained (8 vs. 7.2)
  - ▶ Lower rate of complications:
    - ▶ Wound complications 4% vs. 20%
    - ▶ Other complications 10% vs. 30%
  - ▶ Less blood loss (96 cc vs. 410 cc)
  - ▶ Lower transfusion rate (1.4% vs. 13.5%)
  - ▶ Shorter length of stay in the hospital (2.7 vs. 5.1 days)

## Surgical outcome of robotic surgery in morbidly obese patient with endometrial cancer compared to laparotomy

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- ▶ 46 robotic patients compared to 41 laparotomies
- ▶ BMI > 35 (mean 41)
- ▶ In the robotic group:
  - ▶ Similar number of pelvic LN retrieved (18 vs. 14 nodes)
  - ▶ Less blood loss (200cc vs. 300cc)
  - ▶ Less post-op complications (17% vs. 44%)
  - ▶ Shorter hospital stay (2 vs. 4 days)

# Robotic surgical staging for obese patients with endometrial cancer

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- ▶ 129 robotic cases compared with 110 laparotomy cases
- ▶
- ▶ BMI > 30 (mean 40)
  
- ▶ The robotic cohort had:
  - ▶ Conversion rate 11%
  
  - ▶ Less blood loss (160 cc vs 290 cc)
  
  - ▶ Shorter hospitalization (1.5 vs 4 days)
  
  - ▶ Fewer abdominal wound complications (14% vs 33%)
    - ▶ More vaginal cuff complications (5% vs 0%)
  
  - ▶ Similar lymphadenectomy rate (pelvic 75%, paraaortic 39% vs. 36%)
    - ▶ Higher number of pelvic LN collected (11 vs. 9 LN)

# What is the optimal MIS procedure for endometrial cancer staging in the obese woman?

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	Obese (BMI 30-40)	Morbidly obese (BMI>40)
Robotic surgery	36	13
Traditional laparoscopy	25	7

Robotic surgery was associated with:

- ▶ Shorter operative time - 189 vs. 215 min.
- ▶ Less blood loss - 50 vs. 150 ml
- ▶ Increased lymph node retrieval - 31 vs. 24 nodes
- ▶ Shorter hospital stay - 1.02 vs. 1.27 days

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- ▶ Gehrig, Gynecol Oncol 2008

# How does robotic surgery help?

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- ▶ The third robotic arm allows the assistant to introduce 2 ports
  - ▶ This means there are 3 retracting instruments
- ▶ The robotic arms play an important role to:
  - ▶ Support some of the lower body weight of the patient
  - ▶ Support the anterior abdominal wall

# Robotic staging in obese patients: **Summarizing the data**

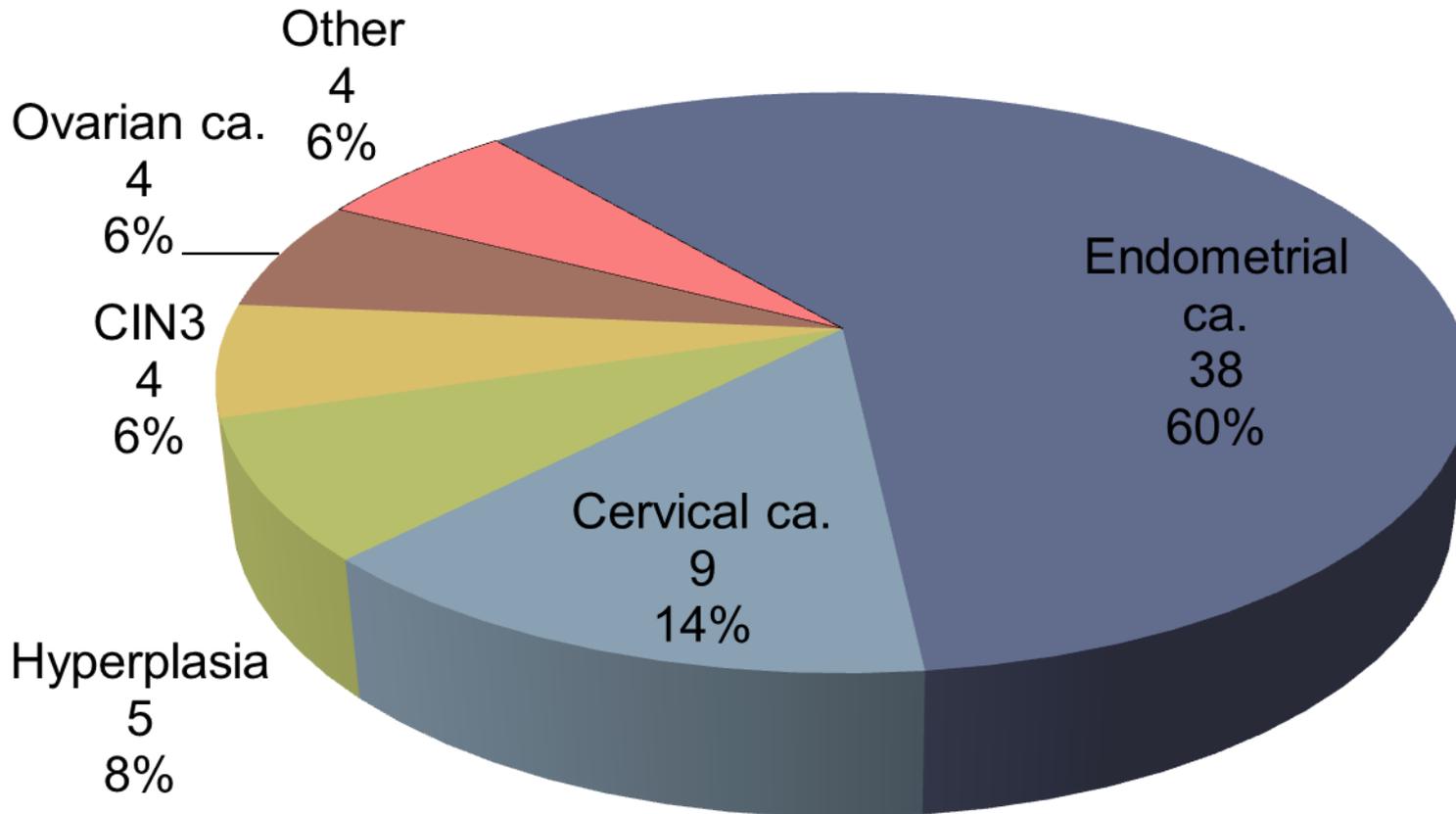
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- ▶ Conversion rate 11-15%
- ▶ Shorter hospital stay
- ▶ Less blood loss
- ▶ Lower post-op complication rate
- ▶ Similar intra-op complication rate
- ▶ Similar quality of lymphadenectomy
- ▶ Longer OR time

# The Sheba Experience

## 64 Robotic Surgeries

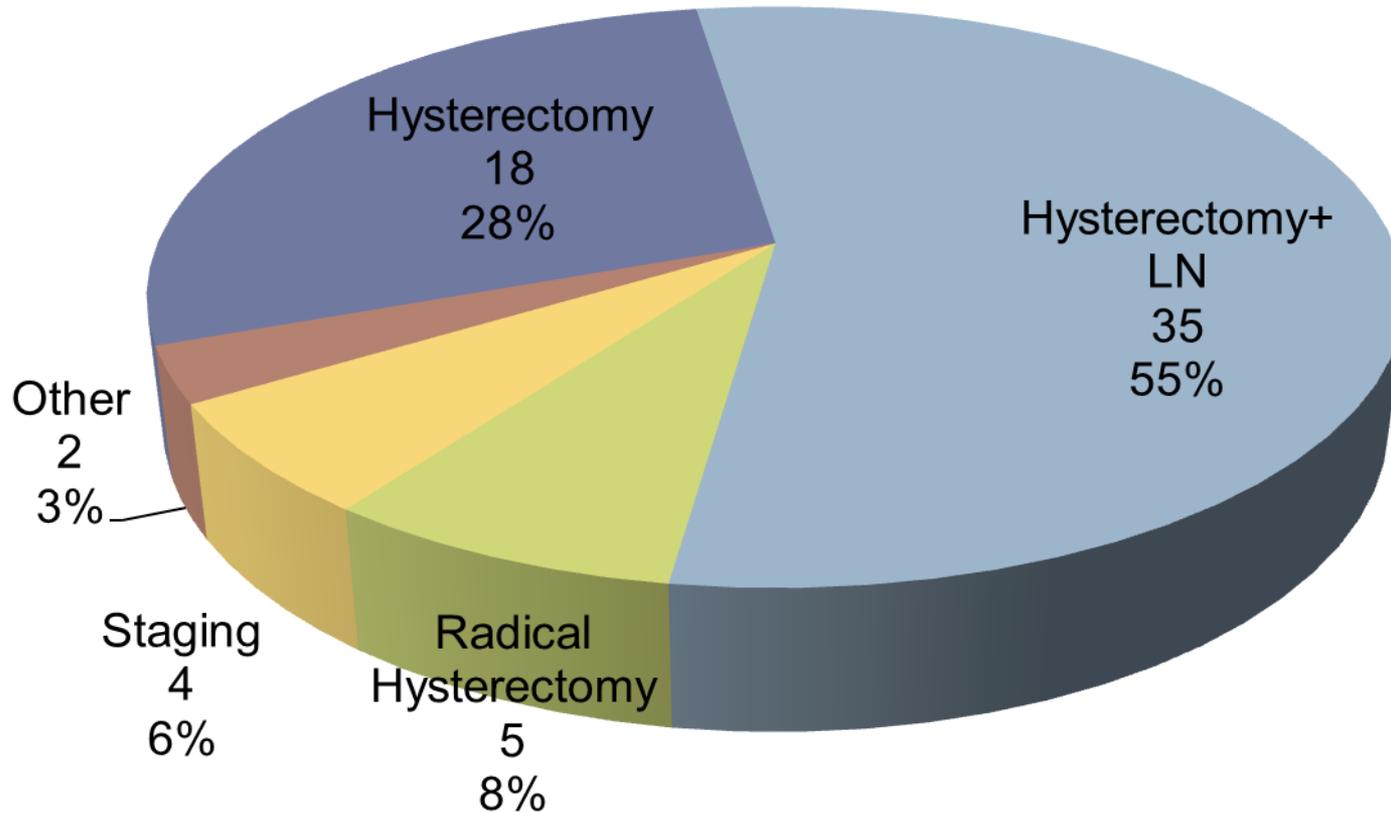
### By diagnosis



# The Sheba Experience

## 64 Robotic Surgeries

### By type of surgery



# The Sheba Experience

## 64 Robotic Surgeries

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- ▶ **39 Lymphadenectomies**

- ▶ **37 Pelvic**

- ▶ **Average - 30.4 LN**

- ▶ **9 Para-aortic**

- ▶ **Average - 7.6 LN**



# The Sheba Experience

## 64 Robotic Surgeries

- ▶ 18 (28%) women with BMI > 30
  - ▶ Class I (BMI 30-35) – 10
  - ▶ Class II (BMI 35-40) – 3
  - ▶ Class III (BMI >40) – 5



# The Sheba Experience

## 64 Robotic Surgeries

	BMI <30 N=46	BMI >30 N=18
Pelvic LN retrieval	29 nodes	32 nodes
Complications		
Cystotomy		
Vaginal cuff dehiscence		
Conversion to laparotomy:		
During surgery	Susp. ext. iliac injury	Cystotomy repair
Pre/Post docking	Extraction of enlarged uterus	Desaturation due to Trendelenburg



# Conclusions

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- ▶ Robotic comprehensive surgical staging in obese women is feasible.
- ▶ It yields acceptable staging results and improved surgical outcomes.
- ▶ Although operating time is longer, hospital time is shorter.
- ▶ Robotic surgery may be an ideal approach for these patients.