

# ○ OUTPATIENT ROBOTIC HYSTERECTOMY: CLINICAL OUTCOMES AND FINANCIAL ANALYSIS OF INITIAL EXPERIENCE

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## BACKGROUND

- Robotic surgery is associated with several advantages but also high costs.
- This study evaluates clinical outcomes and financial feasibility of outpatient robotic hysterectomy.



## METHODS

- Retrospective cohort study (Class II-2) of patients who underwent robotic hysterectomy for benign conditions by the same surgeon (M.A.B.) at the University of Texas Medical Branch, Galveston, TX, USA, during November 90 2010–February 2013.



## METHODS

- The study only included cases considered appropriate for outpatient management. Clinical outcomes and costs for patients discharged the same day (outpatients) were compared to those electively admitted (hospitalized).



Charts reviewed and cases that were considered appropriate and counseled about outpatient robotic hysterectomy were identified

(n=31)

Opted for outpatient management

(n=16)

Opted for hospitalization

(n=15)

Outpatient

(n=14)

Hospitalized

(n=2)

Figure 1. Study cases

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## **Box 1. Pre-operative eligibility criteria for outpatient management**

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1. No complex medical problems: clearance by anaesthesiologist
  2. No cancer diagnosis
  3. Social support at home and availability of transportation
  4. Living within radius of 25 miles (30 min) from hospital
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### *Preparation before programme introduction*

- a. Team building: gynaecological robotic surgeon, anaesthesiologist, hospital administrator and office, day surgery and OR staff
- b. Preparing institution-individualized protocol
- c. Communicating protocol with team members
- d. Preparing patient educational material



## *Protocol*

- a. Before surgery (in office):
  - i. Eligibility criteria for outpatient management: see Box 1.
  - ii. Patient counselling and education
- b. Operative considerations:
  - i. Fourth robotic arm not used
  - ii. Assistant port only placed if needed during procedure
  - iii. Close attention to trocar centre point to minimize fascial stretch and tearing.
  - iv. Local anaesthesia (0.25% Marcaine) infiltrated at end of procedure at trocar sites
  - v. Foley catheter removed before leaving OR
  - vi. Analgesics at end of case (unless contra-indicated):
    - Fentanyl 50 µg i.v.
    - Ketorolac 30 mg i.m.

## Day surgery unit considerations:

- i. Analgesia:
  - Hydrocodone 10 mg orally
- ii. Nausea/vomiting:
  - Metoclopramide 10 mg i.v.
- iii. Diet: advance regular diet once nausea resolves
- iv. Ambulation: ambulate with assistance once patient is able
- v. Vital signs every 15 min
- vi. Discharge criteria:
  - Fully conscious, ambulating, tolerating oral diet, voiding, pain score < 3 (on scale 0–10)
  - Patient to be evaluated and cleared by lead surgeon

## Discharge:

- i. Pain control: oral hydrocodone and ibuprofen unless contraindicated
- ii. Warnings: call immediately on fever, chills, worsening pain or nausea, vaginal bleeding, dizziness, shortness of breath or other complaints
- iii. Phone numbers: one primary phone number and one additional for patient to call
- iv. Office nurse to call patient on first postoperative day
- v. Follow-up visit in 1 week



## RESULTS

- Twenty-nine cases (14 outpatient and 15 hospitalized) were analyzed. Demographic, pre-, peri- and postoperative characteristics and payer types were not different among the groups ( $p > 0.05$ ).



## Outpatient robotic hysterectomy

**Table 1. Demographic and pre-operative characteristics**

Characteristics	Outpatient (n = 14)	Hospitalized (n = 15)	p
<b>Demographics</b>			
Age (years)	43.14 (± 7.93)	49.6 (± 12.2)	0.102
Race			0.073
Caucasian	4	9	
African-American	3	5	
Hispanic	6	1	
Asian	1	0	
<b>Obstetric history</b>			
Gravidity	3.07 (± 1.9)	3.2 (± 1.47)	0.841
Parity	2.07 (± 1.14)	2.53 (± 1.25)	0.283
BMI	33.81 (± 8.2)	28.83 (± 5.76)	0.072
<b>Prior surgeries</b>			
Patients with surgeries	10 (71.42%)	9 (60%)	
Surgeries per patient	1.5 (± 1.29)	1.07 (± 1.22)	0.361
Commonest			
Prior Caesarean delivery	11 (78.57%)	5 (33.33%)	
<b>Medical problems</b>			
Patients with medical problems	11 (78.57%)	13 (86.67%)	
Medical problems per patient	1.36 (± 1.15)	1.27 (± 0.8)	0.809
Commonest			
Hypertension	9 (64.29%)	4 (26.67%)	
Hypothyroidism	4 (28.57%)	4 (26.67%)	
<b>Pre-operative diagnosis<sup>§</sup></b>			
Uterine fibroids	5	8	
Menorrhagia	12	11	
Adenomyosis	4	0	
Endometriosis	2	0	
Pre-operative haemoglobin	11.34 (± 2.07)	12.73 (± 1.61)	0.056
Pre-operative transfusion	3 (21.42%)	1 (6.67%)	
Current tobacco users	1 (7.14%)	3 (20%)	

Data expressed in mean (± SD) or number (percentage) unless otherwise specified.

\*Statistically significant.

<sup>§</sup>Some patients have more than one diagnosis.

Table 2. Peri- and postoperative characteristics

Characteristics	Outpatient (n = 14)	Hospitalized (n = 15)	p
Intra-operative characteristics			
Concurrent procedures	6 (42.86%)	10 (66.67%)	
EBL (ml)	33.57 ( $\pm$ 19.89)	43 ( $\pm$ 13.01)	0.162
Operation time (min)	217.43 ( $\pm$ 55.9)	293.8 ( $\pm$ 63.43)	0.002
Complications/transfusions	0	0	
Conversion to open	0	0	
Inpatient characteristics			
Length of stay (days)	0	1.13 ( $\pm$ 0.35)	
Complications/transfusion	0	0	
Pathological report			
Uterine weight (g)	158.23 ( $\pm$ 72.1)	184.21 ( $\pm$ 156.11)	0.581
Commonest pathological findings			
Fibroid	12 (85.71%)	9 (60%)	
Adenomyosis	4 (28.57%)	4 (26.67%)	
Post-operative characteristics			
ER visit with readmission	1	0	
Other complications	0	0	

Data expressed in mean ( $\pm$  SD) or number (percentage) unless otherwise specified.

\*Statistically significant.

Table 3. Financial analysis

Characteristics	Outpatient (n = 14)	Hospitalized (n = 15)	p
Physician finances			
Billing	2386.38 (± 352.81)	3185 (± 1039.67)	0.0251*
Reimbursement	1239.76 (± 237.91)	1389.91 (± 448.16)	0.3197
Hospital finances			
Reimbursement	7364.23 (± 3861.21)	7774.42 (± 3219.03)	0.775
Total costs	9153.38 (± 2646.76)	14121.58 (± 2016.64)	< 0.001*
Fixed costs	4475.08 (± 948.73)	7306.67 (± 1234.04)	< 0.001*
Variable costs	4678.31 (± 2050.2)	6814.92 (± 1056.43)	0.0038*
Contribution margin	2685.92 (± 3797.65)	959.5 (± 3552.64)	0.252
Net profit/loss	-1789.15 (± 4070.78)	-6347.17 (± 4041.85)	0.01*
Payer type			
Private insurance	13 (92.86%)	13 (86.67%)	1.0
Governmental	1 (7.14%)	2 (13.33%)	

Data expressed in mean (± SD) or number (percentage) unless otherwise specified.

All values are in 2013 \$US.

\*Statistically significant.

## RESULTS

- Outpatient hysterectomy was associated with \$4968 hospital savings ( $p < 0.001$ ), \$410 payer savings ( $p = 0.775$ ) and \$4558 improvement in net profit/loss 100 ( $p = 0.01$ ).



## CONCLUSIONS

- In conclusion, this study demonstrates that outpatient robotic hysterectomy appears to be safe and financially feasible.
- This is a pilot study and should be interpreted as such.
- Therefore, larger multi-institutional studies are encouraged to further evaluate outcomes of outpatient robotic hysterectomy.

