UT Southwestern
Medical Center

Outpatient Hysterectomy: Really?

A Surgeon's Perspective

Society for Ambulatory Anesthesia Annual Meeting
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Disclosures

I have no disclosures to report

Objectives

- Describe national trends of inpatient and outpatient hysterectomy
- Discuss the safety of outpatient hysterectomy and predictors of readmission
- Identify key components that contribute to a successful outpatient hysterectomy program

Hysterectomy fast facts

- **One of the most common surgical procedures performed in women:**
  - 1 in 9 women will undergo hysterectomy in their lifetime

- **Majority of hysterectomies are performed for benign indications:**
  - Uterine leiomyomata
  - Abnormal uterine bleeding
  - Endometriosis
  - Pelvic organ prolapse

- **Route of hysterectomy:**
  - Laparotomy
  - Vaginal
  - Laparoscopy (including robotic)

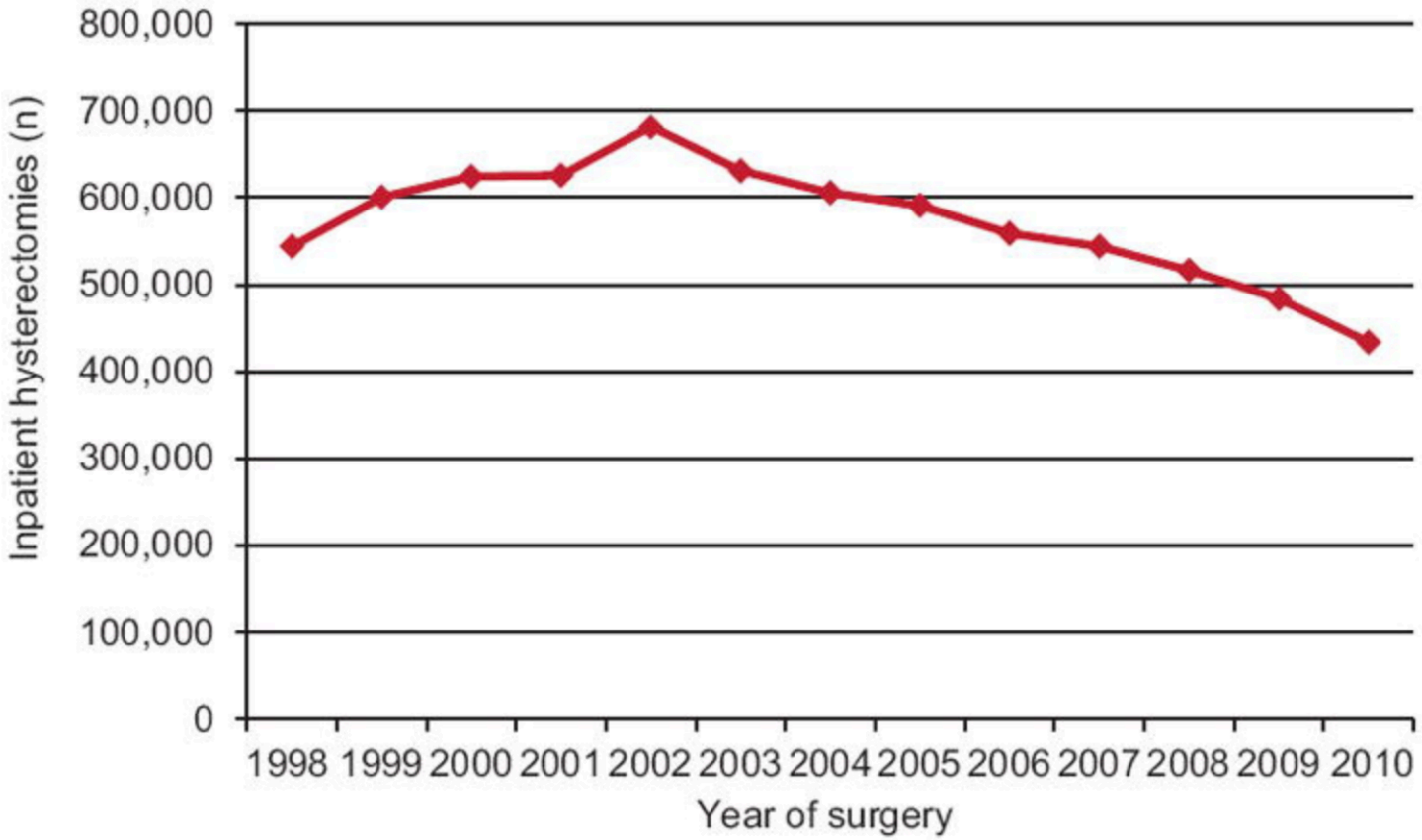
Hysterectomy trends

2003 Nationwide Inpatient Sample, Agency for Healthcare Research and Quality

Type	All	Benign
Abdominal	371,029 (61.6)	323,152 (60.0)
Vaginal	122,583 (20.3)	117,173 (21.8)
Laparoscopic	67,088 (11.1)	63,729 (11.8)
Total	602,457	538,722

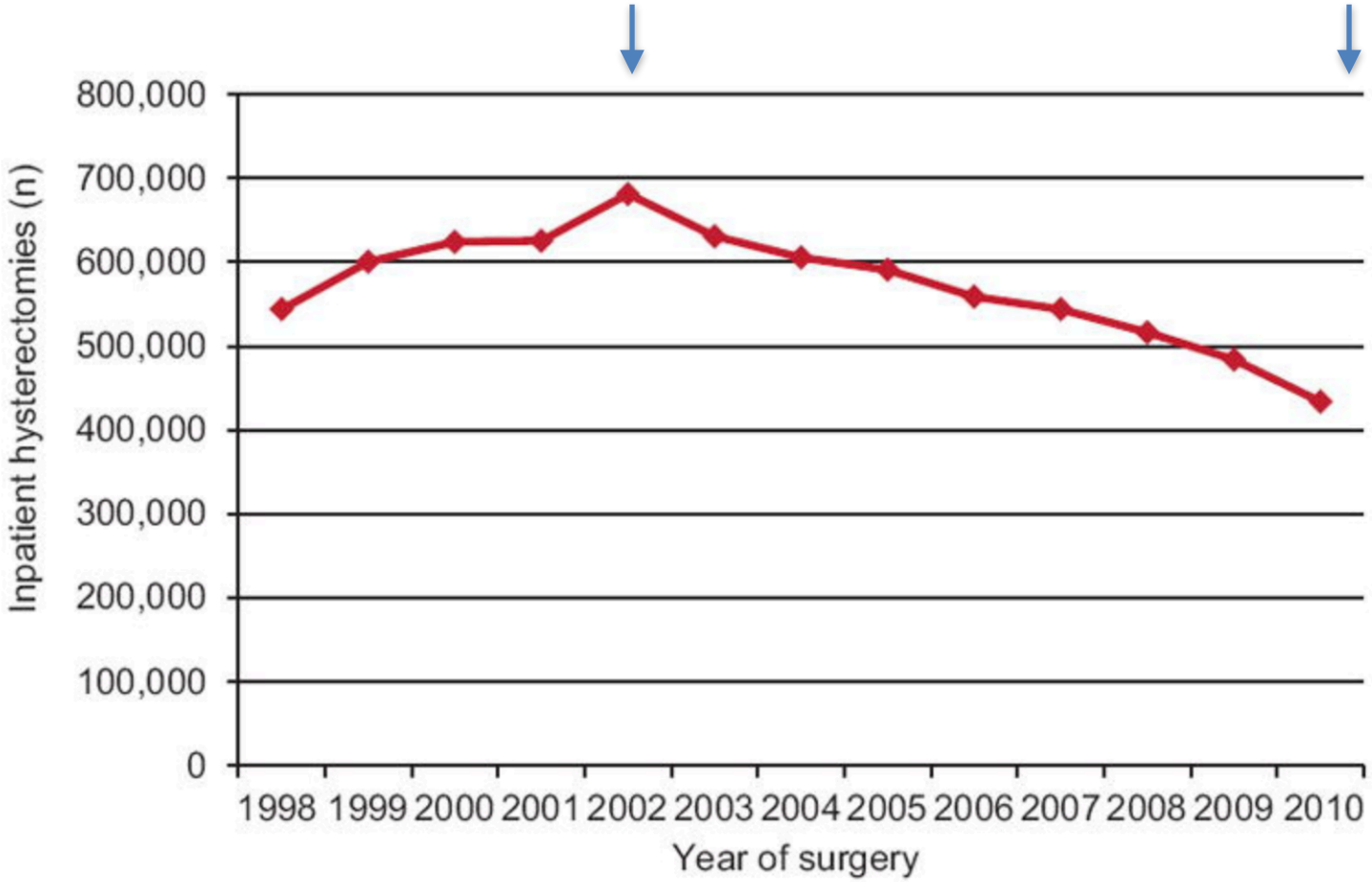
Wu JM. Obstet Gynecol, 2007.

Hysterectomy trends



Wright JD. Obstet Gynecol, 2013.

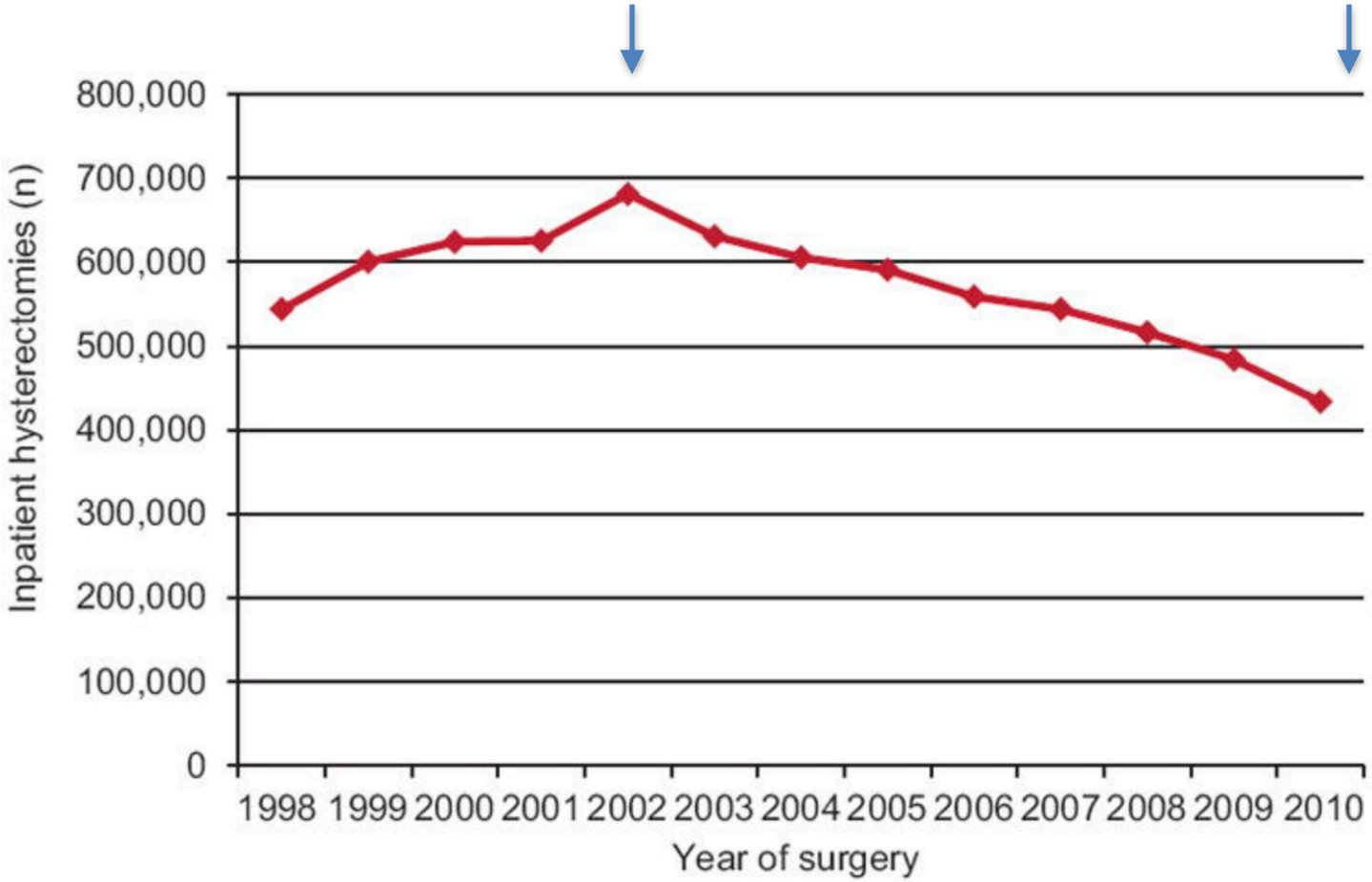
Hysterectomy trends



36.4% fewer hysterectomies from 2002 to 2010

Wright JD. Obstet Gynecol, 2013.

Hysterectomy trends



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- Uterine sparing therapies

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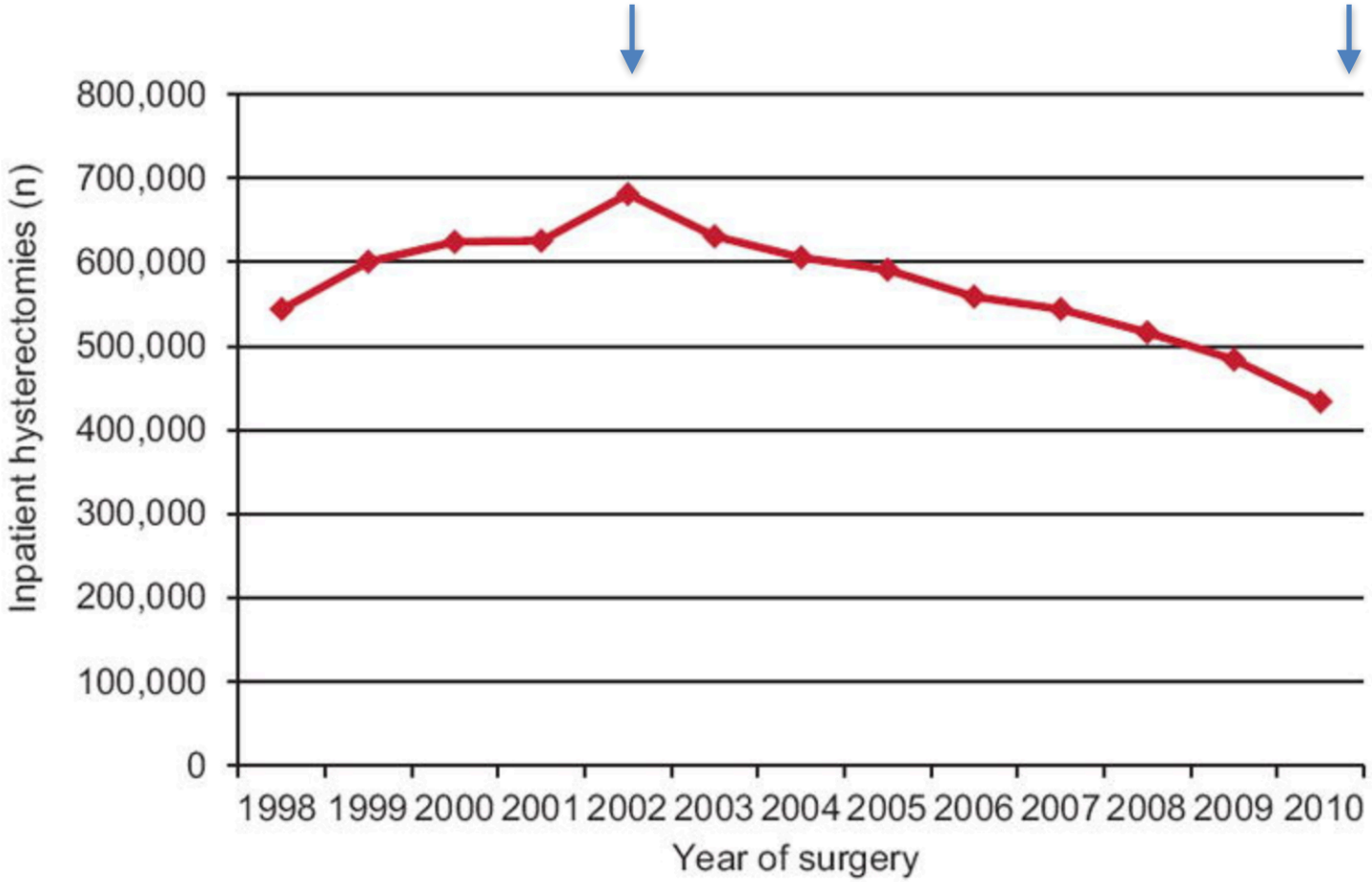


36.4% fewer hysterectomies from 2002 to 2010

- Uterine sparing therapies
- Minimally invasive surgery

Wright JD. Obstet Gynecol, 2013.

Route of hysterectomy

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

Number 701, June 2017 *(Replaces Committee Opinion Number 444, November 2009)*

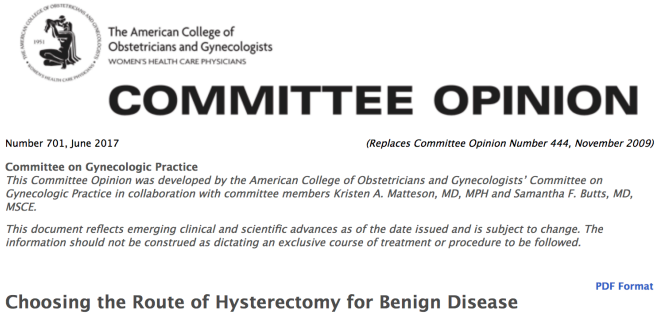
Committee on Gynecologic Practice
This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice in collaboration with committee members Kristen A. Matteson, MD, MPH and Samantha F. Butts, MD, MSCE.

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

PDF Format

Choosing the Route of Hysterectomy for Benign Disease

Route of hysterectomy



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Choosing the Route of Hysterectomy for Benign Disease

Box 1. Comparison of Different Approaches to Hysterectomy

Vaginal Hysterectomy Compared With Abdominal Hysterectomy

- Shorter duration of hospital stay
- Faster return to normal activity
- Better functional capacity and improved pain assessment
- No evidence of difference in satisfaction, intraoperative injury, or complications
- No studies evaluated costs

Vaginal Hysterectomy Compared With Laparoscopic Hysterectomy

- Shorter operating time
- Lower overall costs
- Patients were more satisfied than those who had a laparoscopically assisted vaginal hysterectomy (no difference between vaginal hysterectomy and total laparoscopic hysterectomy)
- No evidence of difference in return to normal activities, urinary tract injury*, complications

Laparoscopic Hysterectomy Compared With Abdominal Hysterectomy

- Faster return to normal activity
- Shorter duration of hospital stay
- Fewer wound or abdominal wall infections
- Longer operating time
- Higher rate of lower urinary tract (bladder and ureter) injuries
- Improved quality of life in the first months and at 4 years postsurgery
- No evidence of difference in satisfaction or major long-term complications
- No evidence of difference in overall cost (limited studies)

Laparoscopic Hysterectomy Compared With Robot-Assisted Laparoscopic Hysterectomy

- No evidence of difference in any of the measured outcomes
- No studies evaluated costs

Route of hysterectomy

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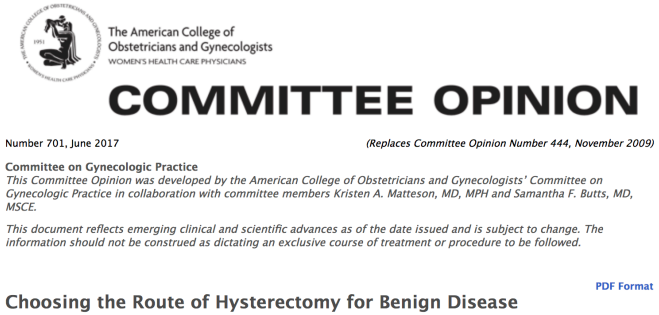

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Route of hysterectomy

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following conclusions and recommendations:

- Vaginal hysterectomy is the approach of choice whenever feasible. Evidence demonstrates that it is associated with better outcomes when compared with other approaches to hysterectomy.
- Laparoscopic hysterectomy is a preferable alternative to open abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible.
- For an individual patient, the surgeon should account for clinical factors and determine which route of hysterectomy will most safely facilitate removal of the uterus and optimize patient outcomes, given the clinical situation and surgeon training and experience.
- Selection of the route of hysterectomy for benign causes can be influenced by the size and shape of the vagina and uterus; accessibility to the uterus (eg, descensus, pelvic adhesions); extent of extrauterine disease; the need for concurrent procedures; surgeon training and experience; average case volume; available hospital technology, devices, and support; whether the case is emergent or scheduled; and preference of the informed patient.
- The obstetrician–gynecologist should discuss the options with the patient and make clear recommendations on which route of hysterectomy will maximize benefits and minimize risks given the specific clinical situation.
- The relative advantages and disadvantages of the approaches to hysterectomy should be discussed in the context of the patient's values and preferences and the patient and health care provider should together determine the best course of action after this discussion.
- Opportunistic salpingectomy usually can be safely accomplished at the time of vaginal hysterectomy.
- The role of robotic assistance for execution of laparoscopic hysterectomy has not been clearly determined and more data are necessary to determine the most appropriate evidence-based applications for this technology.

Route of hysterectomy

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG COMMITTEE OPINION

Number 750

Committee on Gynecologic Practice

This document is endorsed by the American Urogynecologic Society. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice in collaboration with committee member Amanda N. Kallen, MD.

Perioperative Pathways: Enhanced Recovery After Surgery

Route of hysterectomy

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG COMMITTEE O

Number 750

Committee on Gynecologic Practice

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Perioperative Pathways: Enhanced Recov Surgery

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following recommendations and conclusions regarding the implementation of Enhanced Recovery After Surgery (ERAS) pathways:

- Enhanced Recovery After Surgery pathways were developed with the goal of maintaining normal physiology in the perioperative period, thus optimizing patient outcomes without increasing postoperative complications or readmissions.
- The goals of decreasing surgical stress and helping the body mitigate the consequences of such stress with ERAS pathways is achieved by the implementation of a combination of multiple elements, which when bundled together, form a comprehensive perioperative management program.
- The basic principles of ERAS include attention to the following: preoperative counseling and nutritional strategies, including avoidance of prolonged perioperative fasting; perioperative considerations, including a focus on regional anesthetic and nonopioid analgesic approaches, fluid balance, and maintenance of normothermia; and promotion of postoperative recovery strategies, including early mobilization and appropriate thromboprophylaxis.

Route of hysterectomy

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG COMMITTEE O

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Perioperative Pathways: En Surgery

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following recommendations and conclusions regarding the implementation of Enhanced pathways for these ERAS or "fast track" programs in gynecologic surgery.

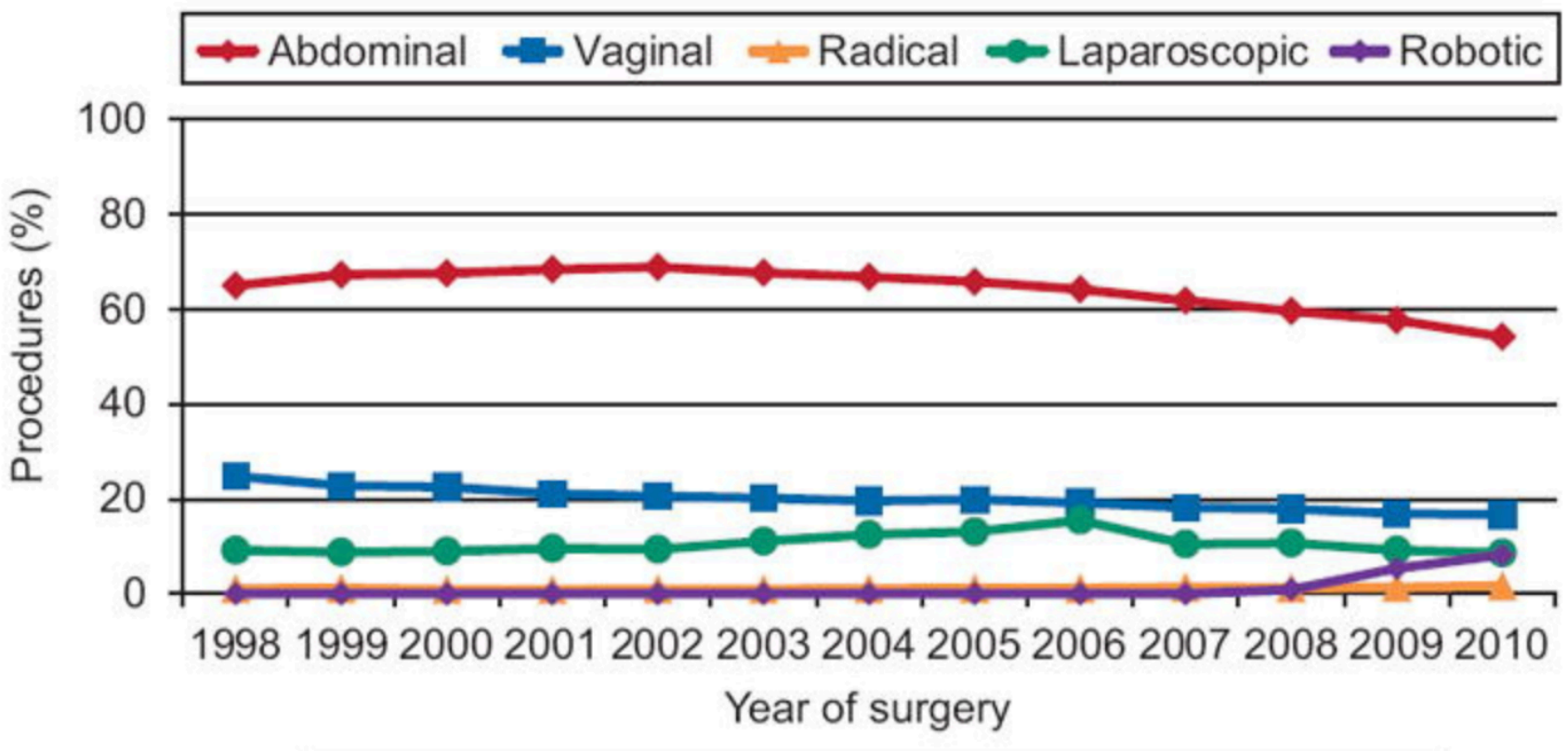
- Benefits of ERAS pathways include shorter length of stay, decreased postoperative pain and need for analgesia, more rapid return of bowel function, decreased complication and readmission rates, and increased patient satisfaction. Implementation of ERAS protocols has not been shown to increase readmission, mortality, or reoperation rates.
- Institutions considering adoption of ERAS programs should carefully examine their own infrastructure and patient flow through the preoperative and postoperative phases of care.
- In order for an ERAS program to be sustainable, it should be embedded as a standard model of care in a health care delivery system.
- Enhanced Recovery After Surgery is a comprehensive program, and data demonstrate success when multiple components of the ERAS pathway are implemented together.
- The use of ERAS pathways should be strongly encouraged within institutions.
- The basic principles of ERAS include attention to counseling and nutri- voidance of prolonged erioperative consid- on regional anesthetic pproaches, fluid bal- f normothermia; and e recovery strategies, ion and appropriate implementation of a combination of multiple elements, which when bundled together, form a comprehensive perioperative management program.

Background

It is well known that surgical stress induces a catabolic state that leads to increased cardiac demand, relative tissue hypoxia, increased insulin resistance, impaired coagulation profiles, and altered pulmonary and gastrointestinal function (3). This response can lead to organ dysfunction with increased morbidity and delayed surgical recovery (4). The consequences of delayed postoperative recovery may include nosocomial infections, development of venous thromboembolism (VTE), long term diminishment of quality of life (5), and increased health care costs.

Enhanced Recovery After Surgery pathways were developed with the goal of maintaining normal physiology in the perioperative period, thus optimizing patient outcomes without increasing postoperative complications or readmissions. The goals of decreasing surgical stress and helping the body mitigate the consequences of such stress with ERAS pathways are achieved by the implementation of a combination of multiple elements, which when bundled together, form a comprehensive perioperative

Hysterectomy trends



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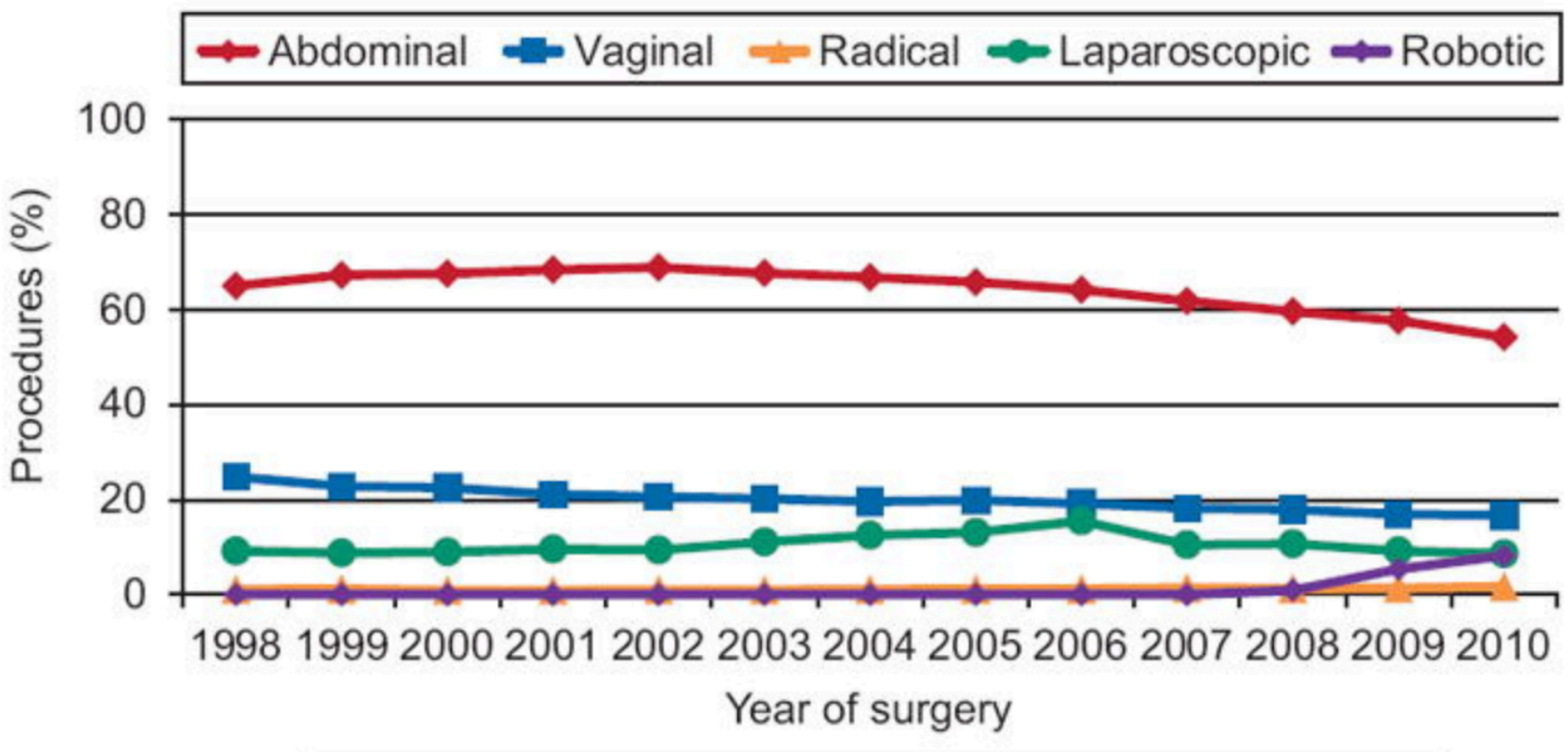

1998-2010: AH decrease 65% to 54%

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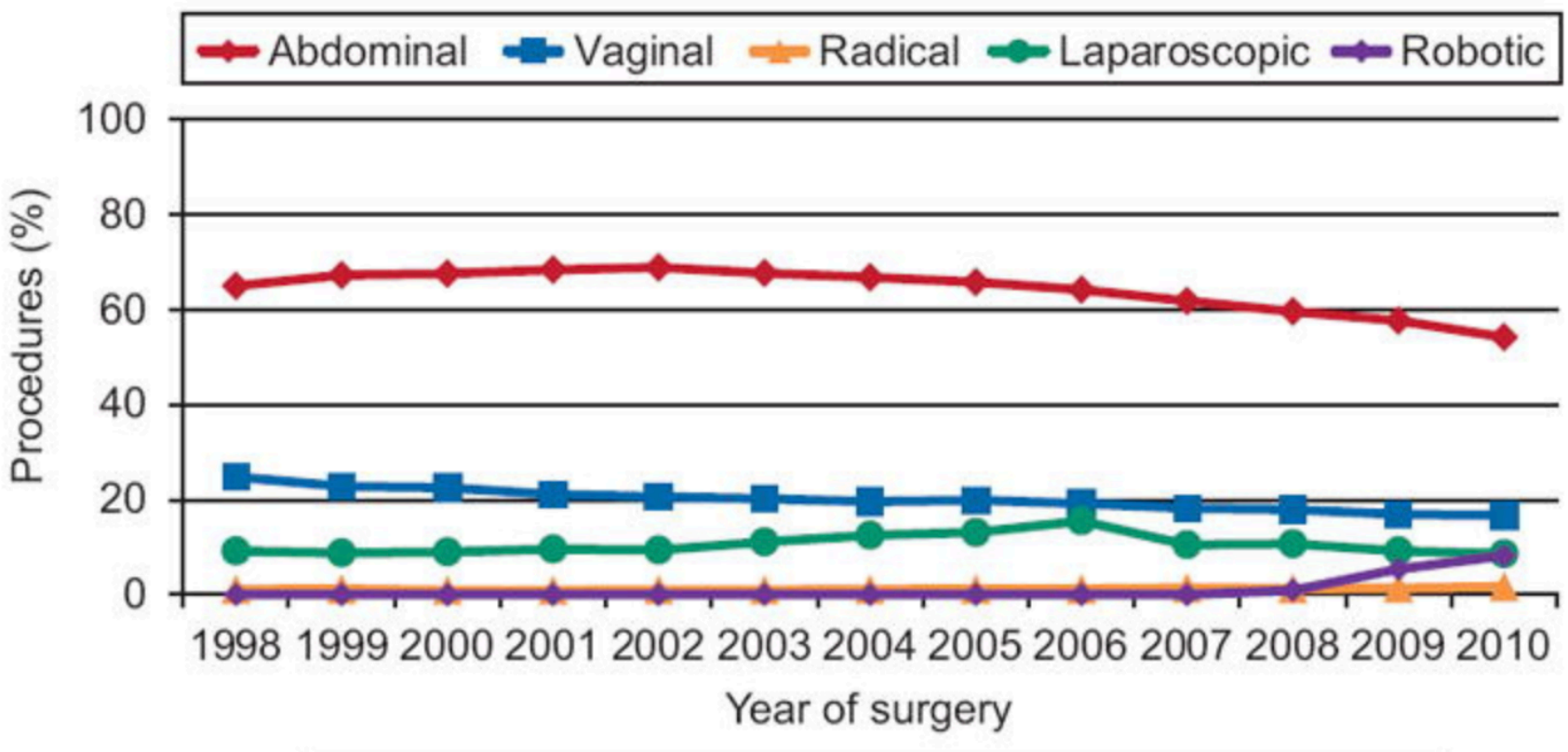
Hysterectomy trends



1998-2010: AH decrease 65% to 54%

1998-2010: VH decrease 25% to 17%

2006-2010: LH decrease 16% to 9%

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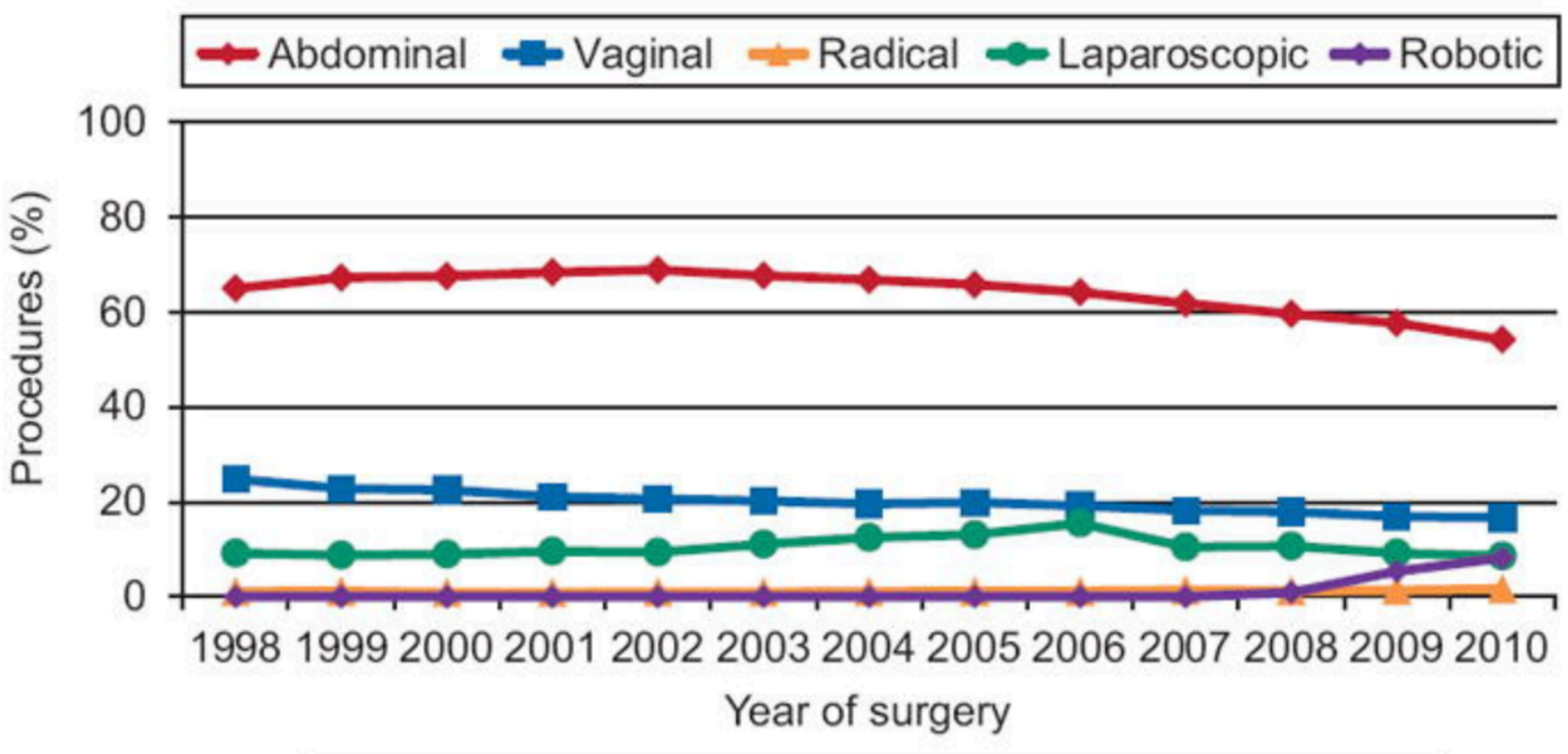

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1998-2010: VH decrease 25% to 17%

2008-2010: RH increase 1% to 8%

2006-2010: LH decrease 16% to 9%

Wright JD. Obstet Gynecol, 2013.

Outpatient hysterectomy volume

2011 State Ambulatory Surgery and Services Database, U.S. Healthcare Cost and Utilization Project

Type	N from 16 states
Abdominal	1461 (2.3)
Vaginal	9090 (16)
Laparoscopic	54,054 (81.5)
Other	7
Total	64,612

Cohen SL. Obstet Gynecol, 2017.

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Estimated **163,058** outpatient hysterectomies performed in United States in women older than 18 years

Cohen SL. Obstet Gynecol, 2017.

Safety of outpatient hysterectomy

- **Overall readmission rate for benign gynecological procedures: 1.1% to 6.7%**

Jennings AJ. AJOG, 2015.

Safety of outpatient hysterectomy

2012 NSQIP, 30-day readmission following laparoscopic hysterectomy same-day discharge

- 30-day readmission rate for outpatient laparoscopic hysterectomy: 3.2%
  - Patient characteristics:
    - Diabetes
    - Chronic obstructive pulmonary disease
    - Disseminated cancer (6 times higher readmission rate)
    - Chronic steroid use
    - Daily alcohol use
    - Bleeding disorders
  - Surgical characteristics:
    - Increased operative time
    - Increased surgical complexity

Jennings AJ. AJOG, 2015.

Safety of outpatient hysterectomy

2012 NSQIP, 30-day readmission following laparoscopic hysterectomy same-day discharge

- 30-day readmission rate for outpatient laparoscopic hysterectomy: 3.2%
    - Readmission diagnoses
        - Infection
        - Surgical causes (bleeding, pain, infection, VTE)
- No significant difference in readmission compared to POD #1 discharge (2.6%)

Jennings AJ. AJOG, 2015.

Safety of outpatient hysterectomy

2010-2015 NSQIP, 30-day readmission following laparoscopic hysterectomy same-day vs POD 1 discharge

- Exclusions: ASA>2, preoperative comorbidities (cardiac, renal, pulmonary), metastatic cancer, concomitant procedures (cancer staging, prolapse repair)

Sheyn D. JMIG, 2017.

Safety of outpatient hysterectomy

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	N	Readmission	Mean time to readmit (days)	Reasons for readmission
POD 0	3,032	66 (2.17)	11.5	Fever Post-op pain
POD 1	6,064	101 (1.66)	7.9	Surgical site infection

Sheyn D. JMIG, 2017.

Safety of outpatient hysterectomy

Review of clinical outcomes of outpatient vaginal hysterectomy

- Outpatient vaginal hysterectomy protocol (ERAS)
- 1,071 total vaginal hysterectomies
- 1,029 discharged the same day (96%)
- 5 readmissions or ED presentation within 30-days (0.5%)
  - 1 ED = nausea/vomiting
  - 4 readmissions = pain with fever, PE, vesicovaginal Vistula

Zakaria MA. Obstet Gynecol, 2012.

Outpatient hysterectomy - #1 Patient selection

Preoperative

- Interested/motivated patient
- Support at home for at least first 48 hours post-operatively
- ASA </= 2 (Individualize if BMI > 40 is the only factor raising ASA classification)
- Additional considerations
  - Chronic pain
  - Post-operative nausea/vomiting, motion sickness
  - Prior surgical/anesthestic complication

Outpatient hysterectomy - #1 Patient selection

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Intraoperative

- Uncomplicated minimally invasive surgery (vaginal, laparoscopic, mini-laparotomy)
- Acceptable blood loss in a non-anemic patient

Outpatient hysterectomy - #1 Patient selection

Postoperative

- Hemodynamically stable and appropriate exam
- Tolerating PO
- Pain controlled
- +/- Spontaneous void
- Phone call POD 1

Outpatient hysterectomy - #2 Enhanced recovery pathway

Preoperative components

- Health optimization
- Decrease amount of time spent fasting preoperatively
- Eliminate mechanical bowel preparation
- Chlorhexidine bath and skin care

Outpatient hysterectomy - #2 Enhanced recovery pathway

Intraoperative components

- Analgesia
  - Prophylaxis - Oral NSAID, gabapentin (for chronic pain and cancer patients), acetaminophen
  - Intraoperative - IV Toradol/acetaminophen, regional anesthesia, local infiltrating analgesia
- Post-operative nausea and vomiting
  - Prophylaxis - scopolamine patch for high risk patients
  - Intraoperative - dexamethasone, ondansetron

Outpatient hysterectomy - #2 Enhanced recovery pathway

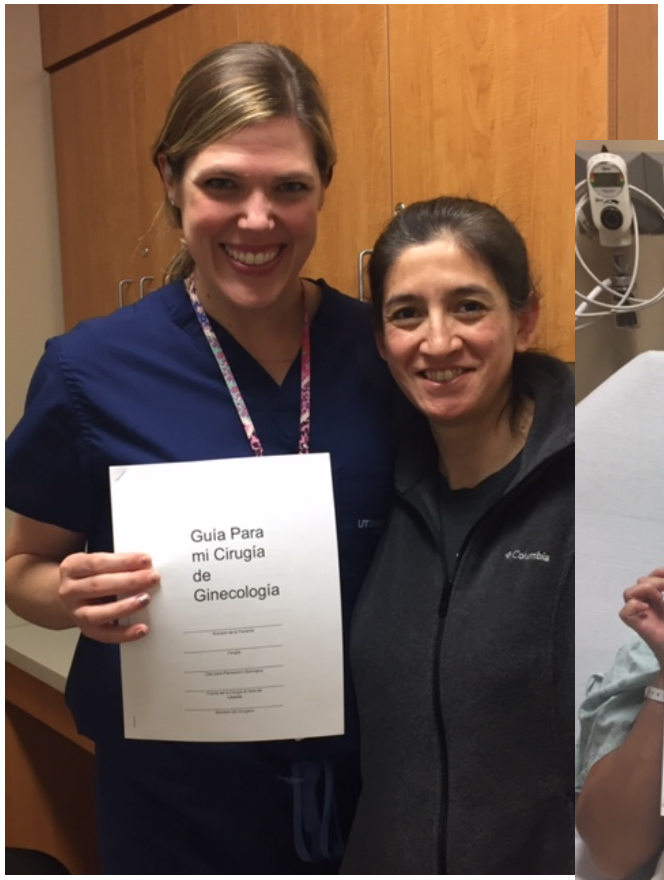
Intraoperative components

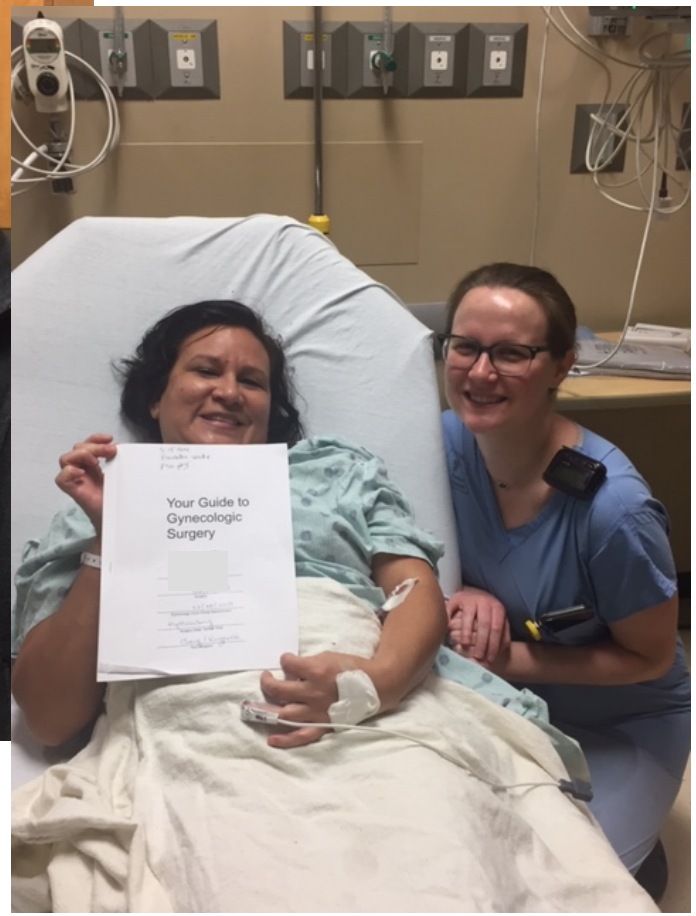
- Antimicrobial therapy
  - Prophylactic antibiotics - dosage considerations with weight, EBL, and operative time
  - Skin and vaginal preparation
  - Hair clipping
- Fluid optimization
- Maintenance of normothermia
- VTE prophylaxis
- Avoidance of drains/packs

Outpatient hysterectomy - #3 Patient education

Preoperative counseling

- Optimization of medical comorbidities
- Preoperative instructions/restrictions
- Postoperative pain expectations and medication regimen
- Activity
- Diet
- Postoperative organ function and expectations
- Hospital contact information and ER warnings





Outpatient hysterectomy - #4 Surgeon volume

"The relationship between surgical volume and outcomes has long been recognized; patients operated on by high-volume surgeons and at high-volume centers have superior outcomes…."

Ruiz MP. Obstet Gynecol, 2018.

What's next? Outpatient hysterectomy in Gynecology Oncology

Source	Readm SDD %	Readm Adm %	ER visit SDD %	ER visit Adm %
Gien et al.	4.8	5.8	12.9	13.5
Rettenmaier et al.	0	0	NA	NA
Lee et al.	2.5	7*	5.1	11.6*
Penner et al.	11	17	9.3	4.4
Rivard et al.	1.4	1.4	NA	NA
Melamed et al.	3.1	5.7	1	4.7*

Nahas S. Gynecol Oncology, 2016.

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Rivard et al.	1.4	1.4	NA	NA
Melamed et al.	3.1	5.7	1	4.7*

Predictors for admission
* Patient age
* Long operative time
* Late OR start time

Nahas S. Gynecol Oncology, 2016.

Conclusion

- Outpatient hysterectomy accounts for a significant number of hysterectomies performed annually in the United States
- Outpatient hysterectomy for benign indications and potentially some malignant indications is safe in well-selected patients
- Multidisciplinary teamwork and patient education are crucial to success

References

- American College of Obstetricians and Gynecologists: Choosing the Route of Hysterectomy for Benign Disease. Committee Opinion No. 201, June 2017.
- American College of Obstetricians and Gynecologists: Perioperative Pathways: Enhanced Recovery After Surgery. Committee Opinion No. 750, September 2018.
- Cohen SL, Ajao MO, Clark NV, et al: Outpatient Hysterectomy Volume in the United States. Obstet Gynecol. 2017;130(1):120-137.
- Jennings AJ, Spencer RJ, Medlin E, et al: Predictors of 30-day Readmission and Impact of Same-day Discharge in Laparoscopic Hysterectomy. Am J Obstet Gynecol. 2015;213:344.e1-7.
- Nahas S, Feigenberg T, Park S. Feasibility and Safety of Same-Day Discharge after Minimally Invasive Hysterectomy in Gynecologic Oncology: A Systematic Review of the Literature. Gynecol Oncology. 2016;143:439-442.
- Ruiz MP, Chen L, Hou JY, et al: Outcomes of Hysterectomy Performed by Very Low-Volume Surgeons. Obstet Gynecol. 2018;131(6):981-990.
- Sheyn DS, El-Nashar S, Billow M, et al: Readmission Rates after Same-Day Discharge Compared with Postoperative Day 1 Discharge after Benign Laparoscopic Hysterectomy. J Minim Invasive Gynecol. 2018;25:484-490.
- Wright JD, Herzog TJ, Tsui J, et al: Nationwide Trends in the Performance of Inpatient Hysterectomy in the United States. Obstet Gynecol. 2013;122(2): 233-241.
- Wu JM, Echter ME, Geller EJ, et al: Hysterectomy Rates in the United States, 2003. Obstet Gynecol. 2007;110(5):1091-1095.
- Zakaria MA, Levy BS. Outpatient Vaginal Hysterectomy: Optimizing Perioperative Management for Same-Day Discharge. Obstet Gynecol. 2012;120:1355-1361.