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**MORE
SCIENCE.
LESS
FEAR.**

“Outpatient” Prostatectomy and Mastectomy: Is it Safe?

Hanae K. Tokita, MD, FASA
 Director of Regional Anesthesia, Josie Robertson Surgery Center
 Assistant Attending
 Department of Anesthesiology & Critical Care Medicine
 Memorial Sloan Kettering Cancer Center, New York, NY

No relevant financial relationships exist

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Outline



- Nuts and bolts of ERAS implementation at an outpatient surgery center
- ERAS for Outpatient Minimally-Invasive Radical Prostatectomy (MIRP)
- ERAS for Outpatient Mastectomy

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Mission and Vision
To be the premier setting to provide outpatient and short-stay surgical care focused on:








Nuts and bolts of ERAS implementation: Where do you begin?



- Is there an opportunity?
- What is your role?
- Which surgical procedures?
- Main Perioperative issues?
- Specific goals?
- Resources?
- How will you get everyone on board?
- How do you “go live” with your ERAS protocol?

Goals of ERAS



Increased:

- Quality of care
- Patient satisfaction



Decreased:

- Hospital LOS
- Surgical morbidity
- Health care expenditures

Goals of Ambulatory Surgery ERAS Programs



Facilitate early patient recovery
Support the return of functions that allow patients to resume normal activities rapidly – “fast-track”

Strategies for implementing ERAS:

Teamwork



Kaplan, A. et al. Implementation of ERAS and how to overcome the barriers. International Journal of Surgery 7 (2009), 16-19

Complex Surgery in the Outpatient Setting: The Clinical Journey

-
- | PreClinic /Clinic | PST/ Consult | PreOp/ Admit | OR/ IntraOp | PACU & Recovery | Post D/C Home | Follow-Up Visit |
|--|--------------|--------------|-------------|-----------------|---------------|-----------------|
| <ul style="list-style-type: none"> Pre-op evaluation PONV and OSA risk assessment and protocols Standardized anesthesia care <ul style="list-style-type: none"> Guidelines for management- analgesics, fluids ERAS elements incorporated <ul style="list-style-type: none"> Liberalized NPO Opioid sparing techniques- acetaminophen, gabapentin, ketorolac Regional anesthesia Standardized peri-op surgical management <ul style="list-style-type: none"> Analgesics, labs with action plans | | | | | | |

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Outline

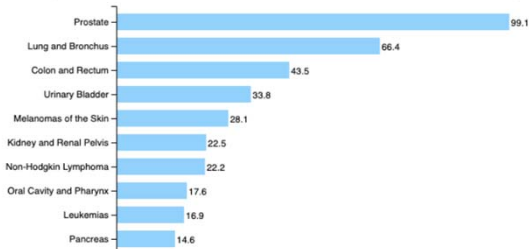
- Nuts and bolts of ERAS implementation at an outpatient surgery center
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CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

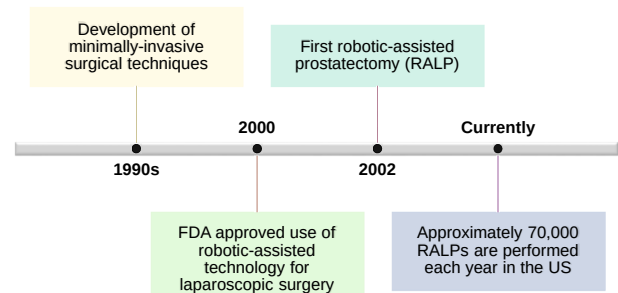
Top 10 Cancers by Rates of New Cancer Cases

All Types of Cancer, United States, 2015



Rate per 100,000 men

Timeline of Development of Robotic-Assisted Technology for Prostate Surgery



Radical Prostatectomy

- > 85% of radical prostatectomies performed in the U.S. are minimally invasive (MIRP)
- MIRP associated with:
 - Decreased surgical blood loss
 - Decreased transfusion rates: (0.4% - 5%) (**MSK = 1.2%**)
 - Decreased LOS
 - MSK LOS declined from 4days in 1998 to <24h by 2017**

McAlpine K, et al. Can Urol Assoc J 2018

Slide courtesy of Dr. Vincent Laudone, Chief of Surgery, JRSC

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ERAS considerations for outpatient MIRP

PREOPERATIVE

- Appropriate patient selection
- Patient education
- Multimodal analgesia
- 'Liberal' NPO guidelines

INTRAOPERATIVE

- Restrictive IV fluid management
- Positioning concerns (Steep Trendelenburg)
- Multimodal analgesia
- Timing of intraop medications

POSTOPERATIVE

- Clear recovery goals
- Early ambulation
- Early PO intake

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ERAS Elements for Outpatient MIRP at JRSC

PST and Preop Instructions

- Counseling and planning expectations for recovery and discharge
- Preop optimization (smoking/alcohol cessation, htn/DM management, etc)
- Gabapentin 300 mg if <65 yo

Perioperative Fluid Management

- Restrictive/delayed hydration intraoperatively
- Prior to bladder closure: Maintenance IVF @ 1-2 mL/kg/hr
- After bladder closure: consider up to 2L crystalloid

Intraop Anesthetic Technique

- GETA
- Minimize opioids
- Utilize non-opioid analgesics
- Prevent hypothermia

Analgesics: Opioid and Non-opioid

- IV acetaminophen 1 g after induction
- Ketorolac 15-30 mg at closure

Antiemetics

- Refer to department antiemetic protocol
- Dexamethasone 4 mg after induction
- Ondansetron 4 mg at closure

Local Infiltration

- Infiltration with Bupivacaine at trocar sites at end of case

Outcomes and metrics

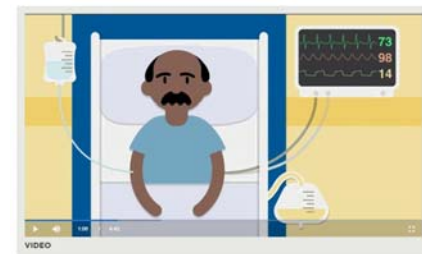
- Pain Scores in PACU and opioid consumption
- Rate of PONV
- Time to ambulation and distance of ambulation
- PACU length of stay

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Going Home after Your Prostate Surgery

Video

Add this resource to your list



This video will help you care for yourself after your prostate surgery.

Hemodynamic effects of steep trendelenburg

Reduced FRC and lung compliance

Airway edema

Increase in ICP, IOP


<https://www.xoduxmedical.com/ProductCategory/Trendelenburg>

To TAP or not to TAP?



Image: Waldbreis, R, P. Huerter, and K. Zorn. Canadian Journal of Urology. 20(5); October 2013

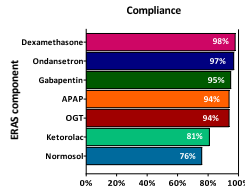
ERAS Clinical Outcomes-MIRP

Jan 2016 - Dec 2018
n = 1977

	2016-17	2018
Total Cases	1224	753
Intraop MME	61.0 [50.0-78.9]	50.0 [40.0-60.0]
Postop MME Total	12.0 [0.0-23.0]	12.1 [5.0-28.0]
Time to First PO Narcotic (hours)	6.1 [4.2-11.5]	4.8 [3.4-9.4]
PONV Rescue	20.7%	16.4%
Time to First Ambulation (hours)	5.2 [4.4-6.5]	5.3 [4.4-6.5]
PACU Length of Stay (hours)	19.9 [17.3-21.6]	20.1 [17.4-21.8]

Values are expressed as median (IQR) or n (%).

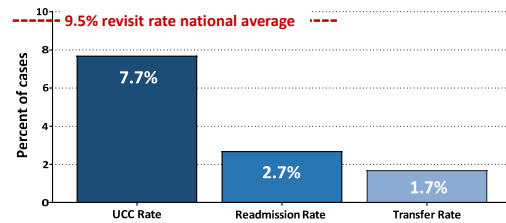
50 mcg Fentanyl = 10 MME



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JRSC ERAS Quality Outcomes: MIRP

Jan 2016 - Dec 2018
n = 1977



Steiner, et al. JAMA. 2015;314:1397-1399

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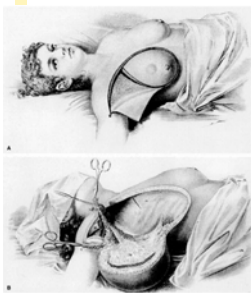
2018 Estimated Cancer Impacts

Total New Cases: ~1,735,350
Total Deaths: ~609,640

New Cases				Cause of Death			
Females							
Breast	266,120	30%		Lung & bronchus	70,500	25%	
Lung & bronchus	112,350	13%		Breast	40,920	14%	
Colon & rectum	64,640	7%		Colon & rectum	23,240	8%	
Uterine corpus	63,230	7%		Uterine corpus	21,310	7%	

Siegel RL, et al. Cancer statistics, 2018. CA Cancer J Clin 2018; 68: 7-30

Trends in Breast Cancer Surgery: The Swinging Pendulum



Halsted Radical Mastectomy (1882)

Modified Radical Mastectomy (1970s)

Breast Conserving Surgery (1980s)

Sentinel Lymph Node Mapping (2000s)

Skin Sparing Mastectomy with Options for Reconstruction

Son, et al. JAMA Surgery 150 (2015): 56.
Chouk, et al. Operative Oncology 9 (2016): 65-70



HEALTHCARE COST AND UTILIZATION PROJECT



STATISTICAL BRIEF #228

October 2017

Breast Reconstruction Surgery for Mastectomy in Hospital Inpatient and Ambulatory Settings, 2009-2014

2009-2014
↑ Breast reconstruction after mastectomy by >60%

150% ↑ in the outpatient setting

Minimal growth of inpatient breast reconstruction

Miller, et al. HCUP Statistical Brief #228, 2017

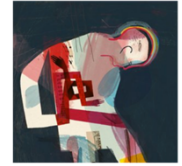
Factors Affecting Same Day Discharge After Outpatient Breast Surgery

- Pain
- Anxiety
- Nausea/Vomiting

Marie and Stafford. International Journal of Surgery 7 (2009), 338-323

Pain after breast surgery

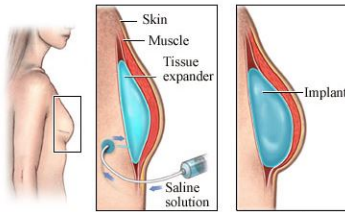
- Acute vs Chronic
 - Incidence of chronic pain **20-50%**
 - *Severe acute postoperative pain*
 - Neuropathic component



Jung et al. Pain 104 (2003) 1-13.
Stevens et al. Pain, 63 (1995), 61-68.
Image: NY Times

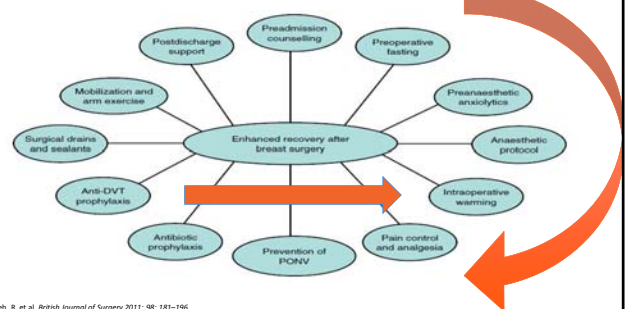
Pain after breast reconstruction

- Risk factors
 - Younger age
 - Bilateral surgery
 - Anxiety
 - Depression
- Tissue expanders
- Autologous Flap



Kulkarni et al. JPRAS Open 11 (2017) 1-13.
Image: <https://myhealth.ubports.ca/health/aftercare/information/pages/conditions.aspx?hwid=tw1262>

ERAS for Breast Surgery



Arslani-Zadeh, B. et al. British Journal of Surgery 2011; 98: 282-296

RESEARCH ARTICLE



Improved analgesia and reduced post-operative nausea and vomiting after implementation of an enhanced recovery after surgery (ERAS) pathway for total mastectomy

Catherine Chiu¹, Peiyun Ren², Laura J. Sommer², Christine Ingulstad², Edward Yip¹, Elizabeth L. Whitlock³ and Monica W. Harbell¹

ERAS pathway

- Preoperative acetaminophen, gabapentin, and scopolamine
- Postinduction Blocks (PECS 1 or 2, PVB)
- Intraoperative TIVA, dexamethasone and ondansetron, limit IV < 2L, normothermia

Postop Outcomes

ERAS	PONV	MME	Max Pain
Pre	50%	70.1	6
Post	27%	38.0	5.5

Chiu, Catherine, et al. BMC Anesthesiology 18:1 (2018): 41

Population:
Total skin-sparing mastectomy + immediate reconstruction TE

Pre-ERAS: n= 276

Post-ERAS: n= 96

ERAS considerations for Outpatient Mastectomy

PREOPERATIVE

- Patient education
- Preemptive analgesics: gabapentin
- Nerve blocks
- PONV prophylaxis

INTRAOPERATIVE

- Analgesics: multimodal, short-acting opioids
- Anesthetic technique: TIVA vs Inhalational
- PONV prophylaxis

POSTOPERATIVE

- Clear recovery goals
- Early ambulation
- Physical therapy for range of motion
- Patient education about analgesic medications

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ERAS Elements for Outpatient Mastectomy at JRSC

PST and Preop Instructions

- Clear fluids up to 2 hrs before scheduled arrival
- Education about preop nerve blocks
- Gabapentin 300 mg PO prior to OR
- Aprepitant 40 mg PO for patients Apfel >4

Perioperative Fluid Management

- Non restrictive Fluid Therapy (1-2 liters per case)

Intraop Anesthetic Technique

- GA with LMA (mastectomy) or ETT (mastectomy w/IR)
- Volatile anesthetic or TIVA (if Apfel >4)
- Short acting narcotics

Regional Anesthesia

- Preoperative blocks: paravertebral, serratus, and/or PECS blocks

Analgesics: Opioid and Non-opioid

- IV acetaminophen 1 g after induction
- IV Ketorolac 15-30 mg at closure

Antiemetics

- Refer to department antiemetic protocol
- Dexamethasone 4 mg after induction
- Ondansetron 4 mg at closure

Local Infiltration

- For AXR mastectomies: not generally needed with preop nerve block performed

Outcomes and metrics

- Pain Scores in PACU and opioid consumption
- Rate of PONV
- Time to ambulation and distance of ambulation
- PACU length of stay
- Recovery tracker outcomes



Regional Anesthesia for Ambulatory Breast Surgery

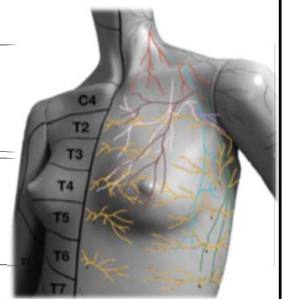
PAIN MEDICINE [Anesthesiology 2014; 120:705-13] Ultrasound-guided Multilevel Paravertebral Blocks and Total Intravenous Anesthesia Improve the Quality of Recovery after Ambulatory Breast Tumor Resection

Fang W, Aciklar M.D., Parnis J, Morgan M.D., F.R.C.P.C., Tan Ck M.D., F.R.C.S.C., Andrew McNaught M.D., F.R.C.P.C., James M. Eason M.D., F.R.C.S.C., John L. Serfaty M.D., F.R.C.S.C., Wei Wu M.D., Vincent W. Chen M.D., F.R.C.P.C.

Regional Anesthesia and Acute Pain Medicine [Anesth Analg 2017;125:294-302]

Pectoralis and Serratus Fascial Plane Blocks Each Provide Early Analgesic Benefits Following Ambulatory Breast Cancer Surgery: A Retrospective Propensity-Matched Cohort Study

Fang W, Aciklar M.D., Tan Ck M.D., Morgan M.D., Tan Ck M.D., F.R.C.S.C., Andrew McNaught M.D., F.R.C.P.C., James M. Eason M.D., F.R.C.S.C., John L. Serfaty M.D., F.R.C.S.C., Wei Wu M.D., Vincent W. Chen M.D., F.R.C.P.C.



Anesthetic technique: TIVA vs inhalational in cancer recurrence



Inhalational
associated with upregulation of oncogenic factors, increased cellular migration, invasion and immunosuppression

Propofol
Suggested to be anti-inflammatory and to inhibit cancer cell migration



Yoon, S., et al. *Anesthesiology* (2015) 120(1), 21-40. Yoon, A., et al. *Can J Anesth* (2015) 1-16.

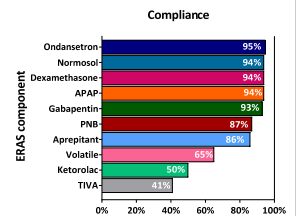
JRSC ERAS Clinical Outcomes Mastectomy

Jan 2016- Dec 2018
n = 2,992

	2016-17	2018
Cases	1,895	1,097
PNB used	37%	64%
TIVA Used	28.3%	38.5%
Postop MME Total	18.0 [7.0-33.0]	17.5 [6.1-32.5]
Narcotic Given in PACU	85.5%	82.7%
Time to First PO Narcotic (hours)	5.7 [3.9-9.7]	4.2 [3.0-7.9]
PONV Rescue	33.3%	21.1%
Time to First Ambulation (hours)	5.8 [4.5-9.7]	5.4 [4.2-8.5]
PACU Length of Stay (hours)	19.5 [17.4-21.6]	19.5 [17.5-21.9]

Values are expressed as mean (SD) or %.

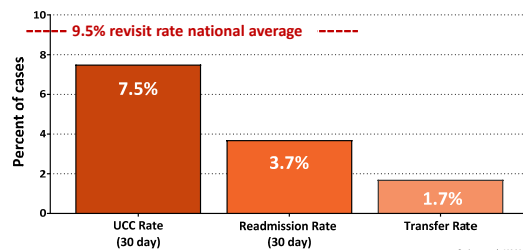
50 mcg Fentanyl = 10 MME



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JRSC ERAS Quality Outcomes: Mastectomy

Jan 2016 - Dec 2018
n = 2,992



Steiner et al. *JAMA* 2015;314:1397-1399

But...does our role end after the patient goes home?



"Care is steadily improved by a series of small, cumulative advances."

- Brett Simon, MD, PhD, Director of JRSC



Hanae K. Tokita, MD, FASA
tokitah@mskcc.org

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