Planning your TLH: objectives

- Education of your patient.
- Education of surgeon.
- Clearance.
- SCIP, Multimodal pain prevention
- Patient positioning, shoulder bolsters
- Prep, drape,
- Manipulators, trocars.
- Anesthesia concerns.
Planning her TLH

• Prepare yourself:
  • Get last op-report of any significant prior pelvic or abdominal surgery.
  • Review discs of any MRI, CT, PET.
  • Arrange clearance. You are responsible for every Rx they are on.
    – Clear with prescriber of meds.
    – Clear with Cardiologist if diabetic

Planning her TLH

• Prepare patient by setting her expectations.
  • Provide a printed handout so she has your information and does not rely on web.
  • Describes recovery, walking, pain management, discharge date, resumption and limitations of various activities, complications, disability duration.
    • ERAS in Gynecologic Surgeries
    • Modesitt et al, O&G, 2016
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Preoperative Instructions and Recovery Information (5/2016)

Name

Date of surgery

Surgery

Reason for surgery

This document is intended to help you prepare for your surgery, reduce any fear, counteract any misinformation, and ease any anticipation about your upcoming surgery. Please read every page. As you read this, please highlight and underline any areas of concern and write your questions on the sides of the pages so that you can be sure to ask them during your surgery-planning visit. Bring this material with you to every pre-operative visit and to the hospital so that you can read and refer to it after your surgery because it also contains your discharge orders. Please have your spouse, partner, or friend who will be your main caregiver read this entire document so as to be most helpful during and after your hospitalization.

How to decide if you might benefit from:
Hysterectomy - removal of the uterus
Oophorectomy - removal of the ovaries (4/2014)

Any surgery should be done for a very good reason, by the most appropriate surgical route, in the least debilitating way, allowing the speediest recovery of function. Deciding if the uterus or ovaries should be removed is actually two separate processes, for two different sets of reasons. So hysterectomy will be considered first and removal of the ovaries will be discussed later in this paper. First are listed a few definitions, then some background information about hysterectomy and then a section on all the reasons why some women would benefit from surgical removal of the uterus while others may happily avoid surgery.

First: the older surgical approaches (incisions):
Total Abdominal Hysterectomy (TAH): This most commonly performed surgery requires a four to
Mechanical Bowel Preparation Before Laparoscopic Gynecologic Surgery
A Randomized Controlled Trial

- Minimal residue diet plus mechanical bowel preparation provides a better surgical view compared with the fasting only group or the minimal residue diet group (P< .01).
- The minimal residue diet plus mechanical bowel preparation group also had significantly better bowel handling than the two other groups (P< .04).
- Replete K, Cl and Bicarb.
Bowel prep

- More room for pelvic surgery.
- None of patients’ GI problems complicating her early recovery:
  - Chronic constipation and pushing.
  - Irritable bowel and frequent diarrhea.
- Less soilage if colotomy.
- Many choices: liquid, pills, combination.
- Many cost points: Rx, OTC.
- I Rx if I’m expecting to do any bowel surgery.

ERAS guidelines for TLH cases

- NPO solids for 6 hours.
- NPO clears for 2 hours.
- Take pre-op pills with 10oz Ensure Clear 2 hours before case.
  - Gabapentin 600mg
  - Celecoxib 400mg
  - Acetaminophen 1,000mg
  - Pyridium 150mg
### DVT/PE risk categories

**PROCEDURE, PATIENT HEALTH:**
- Low: duration <30 min, age <40 years.
- Mod: duration >30, but + risk factors. (major surgery, no risk factors)
- High: duration >30 min, age >60 years. (major surgery, + risk factors)
- Highest: major surgery, >60, cancer.

**PREVENTION:**
- Early mobilization.
- LMWH 40 + SCD
- LMWH 40 + SCD
- LMWH 40 + SCD and consider continuing LMWH after D/C if low mobility.

ACOG Practice Bulletin, 2007

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**Table 3. ERAS Pre-Op Beverages – Evidenced-Based and Others Used**

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Mfg/Available In</th>
<th>Total Carb (g)</th>
<th>Maltodextrin (g)</th>
<th>% Carb</th>
<th>Calories</th>
<th>Volume (ml)</th>
<th>Osm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact AR®</td>
<td>Nestle</td>
<td>45</td>
<td>0</td>
<td>18.5</td>
<td>340</td>
<td>237</td>
<td>890</td>
</tr>
<tr>
<td>Ensure Clear®</td>
<td>Pepsico</td>
<td>43</td>
<td>0</td>
<td>21.5</td>
<td>200</td>
<td>200</td>
<td>700</td>
</tr>
</tbody>
</table>

- A fat free refreshing fruit-flavored nutrition drink.
- Contains no fruit juice.
- Gluten-free.
- Halal (certain flavors).
- Suitable for lactose intolerance.
- Kosher.

**Safety Precautions**
- Not for people with galactosemia.

**Liquid Mixed Fruit:**
Water, Corn Maltodextrin, Sugar, Whey Protein Isolate. Less than 0.5% of: Natural Flavor, Malic Acid, Phosphoric Acid, Citric Acid,acesulfame potassium, FD&C Red #40, Saccharin, Zinc Sulfate, d-Alpha-Tocopherol Acid, Ferrous Sulfate, Niacinamide, Manganese Sulfate, Calcium Pantothenate, Cupric Sulfate, Vitamin A Palmitate, Thiamine Chloride Hydrochloride, Pyridoxine Hydrochloride, Riboflavin, Follic Acid, Chromium Chloride, Sodium Molybdate, Biotin, Potassium Iodide, Sodium Selenate, Phytolquinone, Vitamin D3, and Cyanocobalamin.

**Allergens:** Contains milk ingredients.
### ERAS/SCIP antibiotics

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Redose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefazolin 2g if no appy.</td>
<td>4h</td>
</tr>
<tr>
<td>Cefoxitin 2g if appy.</td>
<td>4h</td>
</tr>
<tr>
<td>If PCN allergic:</td>
<td></td>
</tr>
<tr>
<td>Metronidazole 500mg</td>
<td>8h</td>
</tr>
<tr>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Levaquin 500mg</td>
<td>24h</td>
</tr>
</tbody>
</table>

### ERAS guidelines post-operation

- No drains, or NGT;
- Remove foley asap.
- Ambulate in Recovery room or same day.
- Immediate regular diet, even if bowel resection, always in chair, only.
- Prevent pain PO, IV if N or V.
  - Celecoxib, IBU, Naproxen, ketorolac
  - acetaminophen 4g/d
  - Gabapentin (sleepy)
Prevention of surgical pain

• APAP and NSAID may not be effective for everyone’s arthritis, but they work for surgical pain.
• Do not alter pain Rx of chronic pain patients.
• Commit to just Rx for THIS surgery:
  – Gabapentin 600mg pre-op only
  – Celecoxib 400mg pre-op and 200 bid
  – Acetaminophen 1,000mg qid
  – Pyridium 150mg pre-op and prn dysuria.

ERAS fluid standards: don’t overload

• Start IV line in pre-op, but don’t start IVF’s.
• During surgery, anesthesia administers as much fluid as needed according to the Massimo-Pleth Variability index.
• Post-op IVF’s decreased to 40cc/hour, and stopped on POD1.
ERAS mobility/feeding standards: OOB!

- Once in room: up to chair. Dine only in chair.
- OOB ambulating three times daily at least.
- Ambulation must continue at home or use enoxaparin 40/day.

A Multimodal Approach Addresses the Complex Nature of Pain Transmission


COX-1 (Constitutive) vs. COX-2 (Inducible)

- **Prostaglandins**
  - ↑ GI Cytoprotection
  - ↑ Platelet Function
  - ↑ Renal Function
  - ↓ GI Cytoprotection
  - ↓ Platelet Function
  - ↓ Renal Function

- **NSAID’s**
  - ↑ Inflammation
  - ↑ Pain
  - ↑ Fever
  - ↓ Inflammation
  - ↓ Pain
  - ↓ Fever

- **Increased bleeding, gastric, renal risk**
- **Increased CV risk**

COX-1 and UGI bleeds

- Systematic review: NSAID.
  - Risk of upper GI bleeding/perf:
    - IBU: 1.5-2.7.
    - Ketorolac: 5.8-14.5.
- More COX-1 inhibition associated with more UGI bleeds.
- Parenteral NSAIDs posed a higher risk.
- Celecoxib and ibuprofen posed a lower risk than other NSAIDs.

2. Chang Pharmacoepidemiol Drug Saf 2011

IV IBU: Intra- and post-op

- 319 women had TAH received
  - placebo control
  - 800 IV IBU intra-op, q6h x 2d, q6h prn for 5 days.
  - Also had morphine PCA pump or patient request.

<table>
<thead>
<tr>
<th></th>
<th>Narcotic use after 800 mg IV IBU</th>
</tr>
</thead>
<tbody>
<tr>
<td>First 24 hours at rest</td>
<td>↓ 21%</td>
</tr>
<tr>
<td>First 24 hours with movement</td>
<td>↓ 14%</td>
</tr>
<tr>
<td>Reduction in median narcotic use</td>
<td>↓ 19%</td>
</tr>
<tr>
<td>Reduction in mean narcotic use</td>
<td>↓ 16% (P &lt; 0.001)</td>
</tr>
</tbody>
</table>

**IV IBU: pre- and post-op**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Pain reduction</th>
<th>Narcotic reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hysterectomy</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Joint replcmt</td>
<td>32%</td>
<td>31%</td>
</tr>
</tbody>
</table>

No significant difference in bleeding, adverse events, blood transfusions, or other serious adverse events.

More patients receiving IV ibuprofen experienced vomiting, and more patients receiving placebo experienced dyspepsia.


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**A Multimodal Approach Addresses the Complex Nature of Pain Transmission**

- Opioids,
  - Alpha-2 agonists
  - Acetaminophen,
  - some NSAIDs
- NE-reuptake inhibitors
- Local anesthetics (epidural),
  - Opioids,
  - Alpha-2 agonists
- Local anesthetics (Peripheral nerve block)
- Local anesthetics (field block),
  - NSAIDs, Coxiibs

1. NE = norepinephrine
2. NSAIDs = nonsteroidal anti-inflammatory drugs

Acetaminophen (APAP) in CNS

- “Central serotonergic descending inhibitory pathways by reducing the active oxidized form of COX 2,3 cyclo-oxygenase to an inactive form.”
- Blocks reuptake of opioidergic systems, eicosanoid systems, endocannabinoid and/or nitric oxide containing pathways involved.
- Need CNS levels for effective analgesia, better if APAP given before induction than end of case.

2. Lucas et al. Faseb J 2005

IV APAP 2g pre-op

- APAP resulted in 30% less requirement for narcotic with no increase in pain scores.
- Lower incidence of postop N&V.
- APAP+IBU
  - better analgesia. (p = 0.018)
  - fewer side effects than Tylenol No. 3. (p = 0.045)

Gastric absorption of oral ACET is unreliable perioperatively in the starved and stressed patient. Parenteral ACET gave therapeutic concentrations in 96% given parenteral, and 67% given oral ACET. Parenteral ACET gave higher plasma concentrations throughout the study.

A Multimodal Approach Addresses the Complex Nature of Pain Transmission

Enhanced Recovery in Gynecologic Surgery

Elphtheia Kolagen, MD, Jamie N. Bakkar-Gomez, MD, Christopher J. Janikowski, MD, Emanuel Trabuco, MD, Jenna K. Lovely, MD, Sarah Danner, Pamela L. Sterling, RN, CNS, Amy L. Weaver, Lindsey R. Haas, Bijan J. Borah, PhD, April A. Burstein, RN, Michael T. Walsh, MD, William A. Cliby, MD, and Sean C. Deedy, MD

OBJECTIVE: To investigate the effects of enhanced recovery as a multimodal perioperative care enhancement protocol in patients undergoing gynecologic surgery.

METHODS: Consecutive patients managed under an enhanced recovery pathway and undergoing cytoreductive, surgical staging, or pelvic organ prolapse surgery between June 20, 2011, and December 20, 2011, were compared with consecutive historical controls (March to December 2010) matched by procedure, Wilcoxon rank-sum, v², and Fisher’s exact tests were used for comparisons. Direct medical costs incurred in the first 30 days were obtained from the Olmsted County Healthcare Expenditure and Utilization Database and standardized to 2011 Medicare dollars.

RESULTS: A total of 241 enhanced recovery women in the case group (81 cytoreduction, 84 staging, and 76 vaginal surgery) were compared with women in the control groups. In the cytoreductive group, patient-controlled anesthesia use decreased from 96.7% to 33.3% and overall opioid use decreased by 80% in the first 48 hours with no change in pain scores. Enhanced recovery resulted in a 4-day reduction in hospital stay with stable readmission rates (5.9% of women in the case group compared with 17.9% of women in the control group) and 30-day cost savings of more than $2,600 per patient (10.8% reduction). No differences were observed in rate (63% compared with 71.4%) or severity of postoperative complications (grade 3 or more: 21% compared with 20.5%). Similar, albeit less dramatic, improvements were observed in the other two cohorts. Ninety-five percent of patients rated satisfaction with perioperative care as excellent or very good.

CONCLUSIONS: Implementation of enhanced recovery was associated with acceptable pain management with reduced opioids, reduced length of stay with stable readmission and morbidity rates, good patient satisfaction, and substantial cost reductions.

(Obstet Gynecol 2013;122:319–28)

DOI: 10.1097/AOG.0b013e378280a7b0

(Obstet Gynecol 2013;122:319–28)
Local Bupivacaine should be given before incision to both layers with pain fibers: intradermal to skin and deep to fascia and sub peritoneal layers.

Kalogera et al, Obstet Gynecol 2013
Pre-emptive Analgesia and anti-emetics - upon arrival to pre-op

- Celecoxib 400 mg orally once (if sulfa allergic, must give PO ibuprofen 800 or IV ketorolac 30)
- Acetaminophen 1,000 mg orally once
- Gabapentin 600 mg orally once

- Pre-incision: dexamethasone 4 mg IV once plus droperidol 0.625 mg IV once
- Pre-closure: granisetron 0.1 mg IV once


Scheduled post-op pain prevention

- No PCA.
- Prevention is around the clock:
  - APAP 1,000mg IV if nausea, or PO q8h;
    - Max is 4,000 mg/24 h from all sources.
  - IBU 800mg IV q8h if nausea, or celecoxib PO q12 h
    - Max is 2,400 mg/24 h from all sources.

- Breakthrough: If pain > 4:
  - Continue preventive medications.
  - IV Hydromorphone .5mg q4h if nausea, or Tramadol 50-100mg PO q6h
Scheduled home pain prevention

- First two days prevention: Around the clock, PO:
  - APAP 650 - 1000 mg QID;
    - Max is 4,000 mg/24 h from all sources.
  - Naproxen 440 - 500 mg QID.
    - Max is 2,400 mg/24 h from all sources.

- Breakthrough pain > 4.
  - Tramadol  50-100mg PO q6h. Give Rx for 5 tabs.

- Use Miralax or MOM for constipation.

Anesthesia concerns for patient

- All diabetics get clearance if metabolic syndrome.
- No oral hypoglycemics.
- Half dose SQ hypoglycemics.
- Take all anti-hypertensives, esp ACE Inhibitors.
- Optimize pulmonary toilet for 1 week, 4 if COPD.
- Consider stopping oral hormones.
- Off ASA 72 hours ago.
- Assess for trendelenburg and pneumoperitoneum.
Anesthetic myths

- Trendelenburg impossible because bolsters cause brachial plexopathy.
- COPD, ASCVD are contraindications to MIS.
- Pneumoperitoneum impossible for obese.
- If pCO₂ approaches 60, you must open.

- BUT.....They care about what you care about:
The patient!!!
Shoulder pain after gynaecological laparoscopy caused by arm abduction

EDITOR:
Shoulder pain after laparoscopic surgery has been thought to be due to the irritation of the phrenic nerve, which may be mainly caused by insufflated carbon dioxide [1]. However, shoulder pain can be caused by stretching of the shoulder, which is constrained by many muscles and ligaments [2]. We investigated postoperative shoulder pain in 72 patients who underwent gynaecological laparoscopy by the gasless, wall-lift method. In 36 patients, the right arm, with attached intravenous catheter, was abducted 80–90 degrees from the trunk while the left arm remained at the patient’s side, with the head in a neutral position with a slight turn to the right side. In 16 patients, both arms were anteriorly flexed at the shoulder and the elbow with both hands on the forehead. On inquiry, one day after operation, shoulder pain was reported by 19% of the patients with flexed arms, significantly less often than by the patients with an abducted arm (99%) (Table 1).

During gynaecological laparoscopy, patients are placed in a head-down position. Despite previous warnings [3] and a report of brachial plexus injury [4], the arm is often abducted in the Trendelenburg position for the safety of the intravenous catheter.
Arm AD-duction Does Not Stretch the Plexus

Brachial plexus fixed at 2 points:
1. Cervico-thoracic vertebrae
2. Axillary sheath

Arm abduction, external rotation, and caudal displacement by wrist restraints will also stretch plexus

Stretch of the nerve ↓ intra-neural perfusion

Arm AB-duction Causes Nerve Stretching

Stretch ↑ by internal & external rotation of the arm
Stretching & compression of BP and subclavian artery between 1st rib and clavicle within retroclavicular space
5-10% stretch ↓ intraneural blood flow 50%
15% stretch ↓ blood flow to zero

Traction on BP and median nerve within axillary sheath
“Shoulder supports, Brachial plexus injury and head-down tilt”

- "The shoulder supports were closely applied to each shoulder”
- At 33° Trendelenberg, with 15° right lateral tilt, “the dependent right shoulder may have been relatively more fixed than the left.”
  Craig, Anesthesia, 2004

- Bolsters must be centered on acromion process.

“Bilateral brachial plexus palsey due to shoulder braces”

- "Shoulder braces were placed between the shoulders and the neck by the assistant surgeon and the circulating nurse”
- The patients arms were abducted to 60° to allow access to the IV site and monitors.”
  Kent, J Clin Anesthesia, 2007

- Arms must be Adducted by patient’s side.
- Anesthesia must have good access before tucking arms at side.
- Bolsters must be correctly placed by responsible physician.
Bolster is “centered” on acromion process.

Brachial plexus between fingers, protected.
Bolsters correctly applied, will be far lateral to brachial plexus, and centered on acromion process.
Nerve Strain by Position

Increase in strain in the median nerve

- Median nerve at humerus
- Median nerve at wrist

- Adduction, no depression (RP)
- 90° Abduction, no depression
- 90° Abduction, depression

AAAGL 41st Global Congress of Minimally Invasive Gynecology
Coppieters MW, Anesthesiology 104:1361, 2006
Trendelenburg-Related Brachial Plexus Injuries in Gynecologic Surgery

Nigel Pereira, MD, Loretta Hallock, DO, Colleen Yen, BS, Irene Grias, DO, Minda A. Green, MD
Department of Obstetrics and Gynecology, Drexel University College of Medicine, Philadelphia, PA, USA (Dr. Pereira).

- 1980-2012 literature search, found .16% Brachial plexopathy.
- Conclusions:
  - Minimize time in T-Burg.
  - Braces on AC joint, lateral.
  - Both arms always tucked.
  - Anesthesia and nurses monitor changing position.


Trial the Trendelenburg if obese or planning morcellation through vagina
Cushion elbows, posterior head, feet to avoid numbness.
Hips at edge, nearly 180° straight.
Knees nearly 90 degrees flexed.
Arms at sides, shoulder bolster, warming blanket.
Before draping, tilt to max to assess movement in pt’s skin.
Hands should be tucked to avoid risk of trauma when lower half of table is compressed.
Arms tucked, cushioned in “sled” to prevent nerve compression
30° Trendelenburg

- We must have 30° tilt for optimal pelvic surgery.
- No evidence-based contra-indication when arms
  - AT SIDES,
  - using shoulder-bolsters.
- Even for obese: accommodate with interruptions of Trendelenburg as needed
  - even for COPD or ASCVD

Important Physiologic Effects of Trendelenberg

- Auto-transfusion of 1 litre of blood (transient effect)
- Weight of viscera on diaphragm
  - ↑ work of breathing
  - Further cephalad displacement of diaphragm and carina
Anesthetic challenges can be met — with collaboration

• Pneumoperitoneum and Trendelenberg:
  - ↓ venous return
  - ↓ cardiac output, regional perfusion
  - Venous stasis
  - Hypovolemia 2° NPO status, bowel prep
  - ↓ lung compliance,
  - ↑ difficulty of ventilation & oxygenation

• Introduction of risk:
  - DVT’s & PE
  - Hypoxia, atelectasis
  - R-mainstem intubation
  - Barotrauma
  - Gas embolism

Original Research

Total Laparoscopic Hysterectomy: Body Mass Index and Outcomes

Katherine A. O’Hanlan, MD, Lisbeth Lopez, Suzanne L. Dibble, DNS, RN,
Anne-Caroline Garnier, Gloria Shining Huang, MD, and Mirjam Leuchtenberger

OBJECTIVE: This retrospective review of patients undergoing total laparoscopic hysterectomy examines whether differences in outcomes exist on the basis of body mass index (BMI).

METHODS: All cases of total laparoscopic hysterectomy performed from September 1996 to July 2002 for benign diagnoses, and microinvasive cervical, early endometrial, and occult ovarian carcinoma were reviewed. There were 336 patients analyzed by BMI category (range, 18.5–54.1): ideal (n = 150) less than 24.9 kg/m², overweight (n = 95) 25 to 29.9 kg/m², and obese (n = 78) 30 kg/m² or more. Seven patients were converted to laparotomy (four ideal BMI, two overweight, one obese) leaving 323 (96.3%) for analysis. Mean age (50 years), height (65 in.), and parity (1.2) were similar, with 39% nulligravidas in each group.

RESULTS: Mean operating time (156 minutes), blood loss (160 mL), and length of hospital stay (1.9 days) did not vary by BMI group. Total complication rates (8.9%), and major (5.9%) and minor (3.4%) complication rates were similar in each BMI group. Ureteric injury was observed in 3.1%, with two-thirds occurring in the first one-third of the patient series.

CONCLUSION: Total laparoscopic hysterectomy is feasible and safe, resulting in short hospital stay, minimal blood loss, and minimal operating time for patients in all BMI groups. The laparoscopic approach may extend the benefits of minimally invasive hysterectomy to the very obese, for whom abdominal surgery poses serious risk. (Obstet Gynecol 2003;102:1384–92. © 2003 by The American College of Obstetricians and Gynecologists.)
Anesthesiologists’ Pulmonary Management during laparoscopy

• Ventilation - 7-25% more CO2 to excrete.
  – ↑ VE 15%
  – Select best compliance to avoid barotrauma.
  – Increase rate rather than volume.
• Oxygenation - ↑ FiO2, add PEEP
• Verify position of endotracheal tube.
  – it can move after T’berg.
• Permissible PaCO2
  – Keep pH > 7.25 in patients with cardio-pulmonary disease
  – Keep PaCO2 < 60 or desufflate and breathe down to 25. Repeat.

Intra-op monitoring of CO2 and O2

• Trendelenburg is not a problem.
• Use shoulder bolsters.
• If CO2 rises, take “break” and:
  – Desufflate abdomen.
  – Flatten table.
  – Wait for CO2 to drop to 25ish, then resume.
• Can repeat this intermittently for entire case, safely, to maintain normal CO2 and O2.
• Can you try pressure at 8-10mmHg?
The vagina can be sterilized

- **Iodophore prep** reduces vaginal bacteria 98.6%.
- **Scrub effective in reducing vaginal cultures.**
  - Osborne & Wright, O&G, 1977.
“Combined single field prep”

Iodophore or chlorhexidine prep sufficient for treating abdomen, perineum, vagina as one field. 1970 cases now.  
» (O’Hanlan et al JMIG 2012)

Combined field prep: scrub abd, entire perineum and deep vagina thoroughly.

Post-hysterectomy SSI

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Prep</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osborne, O&amp;G, 1978</td>
<td>50</td>
<td>Povidone</td>
<td>92% bacteria free</td>
</tr>
<tr>
<td>Vorherr, J Infect, 1984</td>
<td>150</td>
<td>Chlorhexidine</td>
<td>99% bacteria free</td>
</tr>
<tr>
<td>Culligan AJOG, 2005</td>
<td>50</td>
<td>Chlorhexidine v. Povidone Vigorous vag scrub</td>
<td>No difference after 30 minutes</td>
</tr>
<tr>
<td>Levin, JWH, 2011</td>
<td>256</td>
<td>Chlorhexidine v. Povidone Vag not specified</td>
<td>5% SSI p=.011 15% SSI</td>
</tr>
<tr>
<td>Darouiche NEJM, 2010</td>
<td>82</td>
<td>Chlorhexidine v. Povidone Vag not specified</td>
<td>0% SSI NS 2.3% SSI</td>
</tr>
<tr>
<td>Chang, ANZJOG, 2008</td>
<td>310</td>
<td>Prep not specified, LAVH</td>
<td>2.7% SSI</td>
</tr>
<tr>
<td>Donnez. BJOG, 2010</td>
<td>1577</td>
<td>Prep not specified, LAVH, TLH</td>
<td>.76% SSI</td>
</tr>
<tr>
<td>O’Hanlan, JMIG, 2011</td>
<td>1337</td>
<td>Povidone Vag scrub, prep, dwell, TLH, RLH, nodes</td>
<td>1.8% SSI</td>
</tr>
</tbody>
</table>

Based on above data, we use single field prep, scrub and dwell with CHG:saline, 1:1
Current single field preparation

• No shave. No clip.
• Prep abdomen, perineum, vagina, cervix as one:
  – 70% EtOH Chlorhexidine prep entire abdominal field far laterally,
  – 4% EtOH Chlorhexidine scrub vulva, vagina and cervix, anus, discard.
• Place foley after draping.
• Place V-Care Manipulator.
• No double glove.
• Entire field is one.
  » O’Hanlan, AORNJ, May 2013
  » O’Hanlan, JMIG, 2012
Quality Improvement: Single-Field Sterile Scrub, Prep, and Dwell for Laparoscopic Hysterectomy

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ABSTRACT

The vulva and vaginal interior are considered a contaminated surgical area, and current OR guidelines require surgeons who are gloved and gowned at the abdominal field to avoid contact with the urethral catheter, the uterine manipulator, and the introitus or to change their gloves and even regown if contact occurs. It is our belief that the perception of the vaginal field as contaminated reflects a lack of specific standards for the preoperative cleansing of the deeper vagina and a lack of preoperative prep instructions for the combined fields. We developed a comprehensive single-field prep technique designed to improve surgical efficiency and prevent contamination of the sterile field. Combining a methodical scrub, prep, and dwell, this technique allows the entire abdomino-perineovaginal field to be treated as a single sterile field for laparoscopic procedures. Our surgical site infection rate of 1.8% when using this single-field prep technique and the subsequent surgical treatment of the abdominal, vaginal, and perineal fields as a single sterile field is well within reported norms. AORN J 97 (May 2013) 539-546. © AORN, Inc.
Catheter tubing clamped in place so as not to lose tubing when cystosufflate or scope.
Consensus for prevention of urologic injury

• Panel of 14 international Gyn scope experts.
• Delphi process.
  – Education, training, videos, lectures.
  – Surgery under supervision.
  – Uterine manipulator in every case:
    • Elevates uterine arteries from ureter.
    • Deflects uterus laterally.
    • Presents the fornices.
  – Optimal location before coagulate uterine artery and vein, close to uterus.
  – Correct instrument near urologic structures.
  – Indigo carmine if no efflux of urine from os.

Janssen et al, JMIG, 2011
If you think you perforated, inflate balloon and snug it back to keep cup snug on CVM
—KELLI BEINGESSER, MD

Laparoscopic Ergonomics

• Operating surface height influences shoulder excursions, reduces the discomfort in the shoulders, back, and wrists of the surgeon.

• Optimal operating surface height is **just below elbow height.**
  – Elbows at 90°.
  – Joint excursions stay neutral >90% of case.
  – Biceps brachii stays within 15% of the maximum muscle activity.

• **Use a lift as needed.**

Laparoscopic Ergonomics

- Trapezius and deltoid EMG values, discomfort and difficulty ratings were all lowest when instrument handles were positioned at elbow height.
- Higher: worse pain and changes.
- Surgeon on lift for optimum table height: laparoscopic instrument handles close to surgeons' elbow. Elbows at side.