Surgical Tutorial 6: Tips and Tricks for Avoiding Complications in Laparoscopy

PROGRAM CHAIR
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Professional Education Information

Target Audience
This educational activity is developed to meet the needs of residents, fellows and new minimally invasive specialists in the field of gynecology.

Accreditation
AAGL is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

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Surgical Tutorial 6: Tips and Tricks for Avoiding Complications in Laparoscopy

R. Wendell Naumann, Chair

Faculty: Ted L. Anderson, John R. Miklos, Amanda Nickles Fader

This session provides ways to approach the most common problems encountered during laparoscopic hysterectomy. This will include difficult abdominal entry due to previous surgery or obesity, and ways to prevent ureteral and bladder injury in the face of difficult anatomy or multiple previous C/S, and describe methods for opening the retroperitoneal space for location of ureters, dealing with difficult bleeding during hysterectomy, and ways to evaluate, manage and repair complications.

Learning Objectives: At the conclusion of this course, the participant will be able to: 1) Reduce the risk of causing or missing complications during difficult laparoscopic hysterectomy.

Course Outline

12:10 Welcome, Introductions and Course Overview  R.W. Naumann
12:15 Did I Really Agree to Do Laparoscopy in This Woman?!  T.L. Anderson
12:25 The Retroperitoneal Space: The Solution To Difficult Laparoscopic Surgery  R.W. Naumann
12:35 Stuck Between a Bladder and a Hard Place  A. Nickles Fader
12:45 I’m in Trouble and the Urologist Can’t Fix It Without a Robot!  J.R. Miklos
12:55 Questions & Answers  All Faculty
1:10 Adjourn
PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop (listed in alphabetical order by last name).
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FACULTY DISCLOSURE
The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
Ted L. Anderson*
John R. Miklos
Consultant: Coloplast, CooperSurgical, Gyrus ACMI (Olympus)
Contracted Research: Olympus
R. Wendel Naumann
Consultant: AstraZeneca, Clovis, Janssen
Amanda Nickles Fader
Other: Honorarium: Apple Medical Corporation
Content Reviewer has no relationships.

Asterisk (*) denotes no financial relationships to disclose.
Did I Really Agree To Do Laparoscopy in This Woman?!

Surgical Tutorial 6: Tips and Tricks for Avoiding Complications in Laparoscopy

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OBJECTIVES
The participant will be able to:
1. Mitigate nerve and abdominal wall injury during laparoscopic surgery in patients with extremes of size
2. Describe techniques for safe laparoscopic entry in patients with multiple prior operations.
3. Mitigate the downstream consequences of intraoperative injury during laparoscopic procedures

DESIRED OUTCOME
That laparoscopists understand techniques to maximize safe patient positioning and abdominal cavity entry during laparoscopic surgery

Challenges to Safe Laparoscopy
• Extremes of patient size
  • Patient positioning
    • Patient stability
  • Abdominal adhesions
  • Site and method of entry
• Trocar injuries
  • Vascular
  • Bowel

The Morbidly Obese Patient
• First concern is to prevent slipping
• Second concern is to prevent nerve injury
• Third concern is appropriate trocar placement

Disclosures
I have no financial relationships to disclose

The Morbidly Obese Patient Positioning

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Obese Patient Positioning

- Patient slipping
  - Bean bag best overall support
  - Secure arms with expanders
  - Secure patient to table

- Nerve Injury
  - Exaggerated effect of angles
  - Attention to limb position
  - Adequate limb padding
  - Peroneal – foot drop
  - Femoral – decreased sensation anterior thigh, difficult extension
  - Obturator – decreased sensation medial thigh, adductor weakness
  - Sciatic – loss of sensation calf/foot and hamstring/calf weakness with loss of flexion

Trocar Placement

Avoid insertion in Trendelenberg’s position
Consider LUQ insertion first

Trocar Types

- Blunt and optical trocars do NOT prevent injuries

Avoid Soft Tissue Dystocia

Adhesive Disease

- Veress Needle
  - Opening pressure most sensitive for free placement

- LUQ trocar insertion
  - Palmer’s point
  - 3cm below costal margins
  - mid-clavicular line
  - No longer as valid in the era of bariatric surgery

- Hasson Open Entry
  - No evidence this approach is superior or inferior to other entry techniques
  - No evidence of reduced incidence of injuries

- Increased number of procedures equals increased risk
Risk of Postoperative Adhesions

- All abdominal surgery - 54%
  - Gastrointestinal surgery - 66%
  - Hernia repair with mesh placement - 60%
  - Ob/Gyn surgery - 51%
  - Urologic surgery - 22%
- Ob/Gyn – specific surgery (varies by incision)
  - Midline incision for gyn procedure (57%)
  - Pfannenstiel for gyn procedure (27%)
  - All incisions for OB procedure (22%)
- No history of surgery – 10%

Risk of Postoperative Adhesions

- Placement of 1st port
  - Results in bowel injury 7 /10,000 operations
  - Results in 2.5 - 5% risk of death
- Use of surgical scars to choose entry site
  - were correct 88% of the time
- Use of ultrasound to choose entry site
  - Visceral slide test
  - Correct 99.5% of the time

Visceral Slide Test

Bowel Injury
- Incidence up to about 0.5% of surgery
- Entry (lacertions) vs intraop (thermal)
- Up to 50% unrecognized
  - Leave trocar in place
  - Evaluate via alternative port site
  - Isolate and repair
  - Laparoscopy
  - Laparotomy
  - Run the bowel
  - General surgery consultation

Intraoperative Injury

Bladder Injury
- Incidence 0.2% – 8.3% of surgery
- Most during hysterectomies
- Up to 90% at dome
- Over 95% recognized at time of surgery
  - Stents vs no stents
  - Multi-layer closure
  - Foley decompression
  - Laparoscopy
  - Laparotomy
  - Check for leaks
  - Urology consultation

Vascular Injury
- Abdominal Wall
  - Balloon vs Balloon trocar vs Suture
  - Intraperitoneal
  - Between 0.04% - 0.5%
  - If major vessels involved, about 20% mortality rate
    - If small venous and no growing hematoma, pressure may stop
    - If arterial or venous and major vessel, call for help, open ASAP, add pressure

Intraoperative Injury


Tips and Tricks for Avoiding Complications in Laparoscopy

References


Questions?

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The Retroperitoneal Space: The Solution to Difficult Surgery

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Disclosures
Consultant: AstraZeneca, Clovis, Janssen

OBJECTIVE

Explain how to utilize the retroperitoneal space to prevent complications

Paravesical and Pararectal Spaces

Branching of the Uterine Artery

Common Sites of Ureteral Injury

DANGER ZONES!
Finding the Ureter

Cross Sectional Anatomy

GU Injury during TLH

Blood Supply to Uterus/Vagina
Uterine Arteries

Isolating the Ovarian Vessels

Carollinas Medical Center

MIGS

Ureteral Stents

Ureteral Injury at the Cuff


What is the most common site of ureteral injury

A. Renal pelvis
B. Pelvic brim
C. Passing under uterine artery
D. Vaginal cuff
E. Ureterovesical junction

Correct answer: B
I’m in Trouble and the Urologist Can’t Fix It Without a Robot!

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Miklos & Moore Urogynecology
Atlanta ~ Beverly Hills ~ Dubai
45th AAGL Meeting
Orlando, FL – Nov. 14-18, 2016

Disclosure
• Consultant
  Coloplast, CooperSurgical, Gyrus ACMI
• Contracted Research
  Olympus

Objectives
• Evaluate and understand the management of bladder & ureteral injuries
• Discuss the placement and use of postoperative ureteral stents
• Evaluate and determine whether a patient has a bladder injury postoperatively

Bladder & Ureteral Injury Incidence
• True Rate - ????
• Bladder Injury Rate - 0.2% - 1.8%
• Ureteral Injury Rates - 0.03% - 1.5%
• # 1 reason - gynecologic of lawsuit

Bladder & Ureteral Injury Incidence
• Abdominal, Laparoscopic, Vaginal
• Cancer, Radiation, Endometriosis
• Hysterectomy ****
• Injury specific to procedure

The Answer is: Abdominal Hysterectomy
• Leading cause of VVF in USA?
• Are ureteric injuries more common in Vaginal or TAH?
• The #1 reason why gyn surgeons are sued for lower UT injury is during which surgery?
Intraoperative Bladder Injury

- Gross Injury
  - Bladder mucosa
  - Foley Bulb
  - Urine
- Foley Bag
  - Blood
  - Gas

Intraoperative Diagnosis - Bladder Injury

- Laparoscopic
  - Bladder mucosa
  - Foley Bulb
  - Ureteric Stents
- Cystoscopic

Bladder Injury Management – Intra Op

- Bladder Dome
  - Extraperitoneal
- Bladder Dome
  - Intraperitoneal
- Bladder Base

Ureter Injury - Intraoperative

- No ureter efflux
- Ureter enlargement
- Intraperitoneal dye
- Gross ureteral damage

Ureter Evaluation

- Cystoscopy
  - Indigo, Methylene blue
  - Fluorescein, Vit B, Pyridium
- Ureteral Stent
  - Visualize laparoscopically
- Blocked ureter
  - Remove suture

Ureter Evaluation – 2nd time

- Cystoscopy – 2nd time
- Ureteral Stent
  - Visualize laparoscopically
- Blocked ureter
  - Remove suture
Ureter Injury Management - Intra Op
Call for Help

- Partial Thickness
- Kinking
- Crush Injury
- Ureterotomy
- Transection

Bladder Injury – Post Op

Signs & Symptoms
- Hematuria
- Suprapubic Pain
- Peritoneal Sign
- Urine Output
- Distension
- Guarding

Diagnosis

Bladder Injury – Work Up

Labs and Imaging
- Creatinine
- CBC w/diff
- CT cystogram
- IV urogram
- Cystoscopy

IV Urogram

Ureteral Injury Post Op

Symptoms
- Flank Pain
- Fever
- Hematuria
- Abdominal distension
- Secondary hypertension

Presentation

Labs & Imaging
- Intravenous Urogram
- CT w/ Contrast
- Retrograde Ureterogram
- Renal US
- CBC with differential
- Creatinine

IV urogram

Ureteral Injury Post Op

Bladder Injury – Catheter Management

Labs & Imaging
- Transurethral Foley
  - 7-21 days
  - Stops draining?
- Suprapubic Catheter
  - Relief Valve
  - 14-21 days
SupraPubic & Transurethral Foley

- Transurethral Foley
  - Hematuria clears
  - Catheter removed

- Suprapubic Catheter
  - Relief Valve
  - 14-21 days

Ureteral Injury – Stent Management

- Days – Months
- Severity of Injury
  - Partial
  - Full
  - Transection

Bibliography


LAPAROSCOPIC REPAIR OF BLADDER INJURY
CULTURAL AND LINGUISTIC COMPETENCY

Governor Arnold Schwarzenegger signed into law AB 1195 (eff. 7/1/06) requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California’s physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP).

**California Business & Professions Code §2190.1(c)(3)** requires a review and explanation of the laws identified above so as to fulfill AAGL’s obligations pursuant to California law. Additional guidance is provided by the Institute for Medical Quality at [http://www.imq.org](http://www.imq.org).

**Title VI of the Civil Rights Act of 1964** prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 [http://www.usdoj.gov/crt/cor/pubs.htm](http://www.usdoj.gov/crt/cor/pubs.htm).

**Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency”,** signed by the President on August 11, 2000 [http://www.usdoj.gov/crt/cor/13166.htm](http://www.usdoj.gov/crt/cor/13166.htm) was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

**Dymally-Alatorre Bilingual Services Act** (California Government Code §7290 et seq.) requires every California state agency which either provides information to, or has contact with, the public to provide bilingual interpreters as well as translated materials explaining those services whenever the local agency serves LEP members of a group whose numbers exceed 5% of the general population.

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**If you add staff to assist with LEP patients,** confirm their translation skills, not just their language skills. A 2007 Northern California study from Sutter Health confirmed that being bilingual does not guarantee competence as a medical interpreter. [http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2078538](http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2078538).