Surgical Tutorial 2 - Surgeons in Harm: Bladder, Ureters and Endometriosis in a Deadly Embrace
Professional Education Information

Target Audience
This educational activity is developed to meet the needs of surgical gynecologists in practice and in training, as well as other healthcare professionals in the field of gynecology.

Accreditation
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Surgical Tutorial 2-Surgeons in Harm: Bladder, Ureters and Endometriosis in a Deadly Embrace

**Co-Chairs:** Jon I. Einarsson and Filipa Osorio

**Faculty:** Ted Lee, Anna Novosad

This highly interactive session will allow for the liberal use of videos in describing the management of severe endometriosis.

**Learning Objectives:** At the conclusion of this course, the participants will be able to: 1) Discuss different management options for severe endometriosis; and 2) discuss the latest medical protocols and surgical techniques for the management of patients with severe endometriosis.

Each Speaker will present a 10-minute talk on their approach to Endometriosis of the Bladder and Ureter My Approach.

**COURSE OUTLINE**

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PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop (listed in alphabetical order by last name).
Linda J. Bell, Admin Support, AAGL*
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Honorarium: Teleflex Medical, MedIQ
Mark W. Dassel, MD
Contracted Research: Myovant Sciences
Linda Michaels, Executive Director, AAGL*
Vadim Morozov, MD
Speaker: AbbVie
Consultant: Medtronic, Lumenis
Erinn M. Myers, MD
Speakers Bureau: Laborie Medical Technologies, Teleflex Medical
Other: Unrestricted educational grant to support NC FPMRS Fellow Cadaver Lab: Boston Scientific Corp. Inc.
Amy Park, MD
Speaker: Allergan
Nancy Williams, COO, CME Consultants*
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Jon I. Einarsson, MD, PhD, MPH
Consultant: Arthrex, Hologic, Olympus
Filipa Osorio, MD*

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).
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Consultant: Arthrex, Hologic, Olympus
Ted Lee, MD*
Anna Novosad, MD*
Filipa Osorio, MD*

Content Reviewers have nothing to disclose.
Asterisk (*) denotes no financial relationships to disclose.
All relevant financial relationships noted have been mitigated.

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Linda Michels, Executive Director, AAGL*
“Endometriosis of the bladder and ureter, my approach”

Filipa Osório, MD - Hospital da Luz Lisboa - 2021

I have no conflicts of interest to disclose

Urinary tract endometriosis...
- Urinary tract is affected in 1-6% of cases
- UE prevalence < 1% in endometriosis patients
- UE prevalence increases up to 20% in deep endometriosis

Gabriel B. Urology 2011
Abrao MS, Fertil Steril 2009
Comiter CV. Urol Clin N Am 2002

Extrinsic
- Compromise of adventitia & surrounding connective tissue
- More frequent (80%)

Ureter nodule...

Intrinsic
- Infiltration of the muscularis & uroepithelium
- Rare (20%)

Extrinsic
- Compromise of adventitia & surrounding connective tissue
- More frequent (80%)

LANDMARKS

VASCULARIZATION
To avoid
- Silent loss of renal function
- Maybe easily missed on
  - Clinical examination
  - Laparoscopic inspection
- Requires great awareness and vigilance

Pre-op assessment
- Ultrasound
- Uro-TC
- Uro – MRI
- Renal Scintigraphy / Renogram

Signs
- Ureteral stenosis
- Uretero-hydronephrosis
- Irreversible kidney damage
- Silent loss of renal function

Specific Strategy
- Ureterolysis
- Resection & Anastomosis
- Ureteroneocystostomy

Surgery
- Ureterolysis
  - First approach
  - If stenosis – JJ stent prior to surgery
- Ureteroureterostomy
  - Severe persistent stenosis
  - Intrinsic disease
Surgery
- Ureteroneocystostomy
- Multifocal disease
- Stenosis > 3-4cm
- Lesion at ureterovesical junction

Post-Op Care
- Double J catheter left in place for 6-8 weeks
- Bladder catheter for 5-10 days
- If previous stenosis and ureterohydronephrosis
  - Pyelography before JJ stents removal
  - Consider ureter dilation with balloon if stenosis remain

Ureteral dilatation with balloon
- 6-8 weeks after ureterolysis (with JJ stenting)
- Stenting after the procedure – 4 weeks
- Retrograde pyelography before removal
"ENDOMETRIOSIS OF THE BLADDER AND URETER, MY APPROACH"

THANKS
Urinary Endometriosis-
How Does Location and Size Impact Management

Ted Lee, M.D.
Director, Minimally Invasive Gynecologic Surgery
Magee Womens Hospital
University of Pittsburgh Medical Center

Conflict of Interest Disclosure

I have no financial relationship to disclose

Objectives

► Become familiar with anatomy-based principles on surgical management of bladder and ureteral endometriosis.
► Incorporate information regarding size and location of lesions from imaging and cystoscopy to surgical planning.

Bladder Endometriosis

Definition: endometriosis infiltrating detrusor muscle

Clinical Features

► Similar to other deep infiltrating endometriosis.
► It can be iatrogenic from previous c-sec.
► Rarely occur in isolation. Frequently co-exist with severe rectovaginal endometriosis requiring bowel surgery. Exception is endometriosis associated with c-sec

Surgical Treatment

► Simple partial cystectomy with two layer closure for bladder dome nodule.
► Ureteral stents are recommended especially for lower nodules.
► Need to develop vesicovaginal space for nodule closer to the vesicouterine junction. Partial resection of myometrium maybe necessary for vesicouterine nodule
► For large defect, retropubic space should be developed for tension free closure.
Surgical Treatment

- If nodule is close to ureteral orifice, intravesical portion of ureter may be involved. Ureteroneocystostomy may be necessary especially in patients with known hydronephrosis.
- Consider GnRh agonist in patient with very large nodule to minimize the loss of bladder capacity.
- Bladder is backfilled to ensure watertight closure.
- Foley catheter is left in place for 7-10 days. Followed by VCUG.
Laparoscopic Treatment of Bladder Endometriosis

Prognosis after Partial Cystectomy for Deep Bladder Endometriosis

- Dome lesions: symptom recurrence 7%, objective recurrence 0% in 3 years.
- Bladder base lesions: symptom recurrence 37%, objective recurrence 26%.

Fedele et al., Fertil Steril June 2005;83: 1729-1733

Symptoms of Ureteral Endometriosis

- Some present with symptoms of acute obstruction. Flank pain in 25%
- Hematuria in 15%
- Asymptomatic in 50%
- Most with symptoms typical for endometriosis in general.
- Secondary hydronephrosis resulted from extrinsic as well as intrinsic obstruction.

Distribution of Ureteral Endometriosis

- Extrinsic lesion 70-80%
- Intrinsic lesion 20-30%
- Bilateral involvement 12%
- Unilateral involvement 88%
- Left 83%. Right 5%

Diagnosis of Ureteral Endometriosis

- Screening renal ultrasound for patients with suspected endometriosis.
- IVP
- Ureteroscopy
- Endoluminal ultrasound
- Laparoscopy

Medical Treatment of Ureteral Endometriosis

- Largely ineffective as fibrosis does not respond to hormonal suppression.
Surgical Treatment of Ureteral Endometriosis

- Uretolysis followed by double J stent
- Segmental ureteral resection with end to end anastomosis or ureteroneocystotomy with or without psoas hitch.

Extrinsic vs Intrinsic Endometriosis

- Nearly impossible to distinguish preoperatively.
- Uretolysis vs segmental resection determined at the time of surgery.
- Usually start with uretolysis first unless intrinsic endometriosis is determined preoperatively or during surgery.

Ureteroureterostomy / End to end anastomosis vs Ureteroneocystotomy / Ureteral Reimplantation

- Usually come down to personal preference as there is not much evidence specifically addressing it.
- Most urologists prefer ureteral reimplantation/ureteroneocystotomy as they believe that risk of stricture is higher. Risk of reflux is low 4%.
- Ureterectomy with ureteroureterostomy is suitable for short defect that can be anastomosed without excessive tension.

Outcome of Laparoscopic Uretolysis

- 33 patients underwent uretology for moderately severe hydronephrosis with median 16 month follow-up.
- Bilateral involvement 12%
- Unilateral involvement 88% with the left ureter involvement in 83%
- Ureteral obstruction recurrence rate 12%.

Ghezzi et al, Fertil Steril 2006;86:418-422
Laparoscopic Treatment for Ureteral Endometriosis.

Surgical Treatment of Ureteral Endometriosis

Regardless of types of surgical treatments (uretolyis, segmental resection anastomosis, ureteroneocystotomy), endometriosis should be excised in addition to the treatment of hydronephrosis to ensure pain/symptom relief as well as to minimize the risk of recurrent hydronephrosis.

Summary and Recommendations

- Urinary endometriosis is relatively rare.
- Non specific urinary symptoms maybe present. Most patients have endometriosis elsewhere in the pelvis and presents with typical symptoms of endometriosis.
- High index of suspicion is often required to ensure proper preoperative workup, which is useful for proper inform and consent.
- Initial medical treatment for bladder endometriosis is reasonable after confirmation of diagnosis.
- Most patients respond well to partial cystectomy especially if the nodule is located at the bladder dome.

Summary and Recommendations

- Endometriasis nodule near trigone may require ureteroneocystotomy.
- Screening renal ultrasound in patients with suspected endometriosis is useful to prevent silent loss of renal function.
- Medical treatment of ureteral endometriosis associated with persistent hydronephrosis is largely ineffective.
- The majority of ureteral endometriosis is extrinsic in nature. Uretolysis can be attempted in most patients with hydronephrosis but reparative ureteral surgeries may be required in some.
References


Endometriosis of the Bladder and Ureter. My approach

A. Novosad MD, PhD; R. Botchorishvili MD, Associate Professor; V. Lishchuk MD, PhD, I. Nigutsa MD, PhD

The authors declare that they have:
"no financial relationships to disclose"
"no conflict interest"

A. Novosad MD, PhD; R. Botchorishvili MD, Associate Professor; V. Lishchuk MD, PhD, I. Nigutsa MD, PhD

Endometriosis is a chronic and benign condition thought to affect up to 10% of female-born individuals

- ovarian endometriosis
- superficial peritoneal endometriosis
- deep infiltrating endometriosis (DIE)

Deep infiltrating pelvic endometriosis (DIE) is defined as implantation of the stroma and/or endometrial glandular epithelium outside the endometrial cavity and the uterine musculature, penetrating into the retroperitoneal space or the wall of the pelvic organs to a depth of at least 5 mm

General theories of endometriosis etiology:
- retrograde menstruation,
- coelomic metaplasia,
- spread of endometrium-derived stem/progenitor cells,
- altered genetic/epigenetic or immune factors
- iatrogenic
- previous Caesarean section (for bladder endometriosis)
Clinical manifestations

- Asymptomatic (6%)
- Bladder pain or dysuria
- Hematuria
- Urinary frequency
- Urinary tract infection

The most part of patients are of reproductive age (28-38 years)

Laboratory testing and imaging

- Urinalysis to assess for infection or hematuria
- Urine culture if infection is suspected
- Renal function (women with unilateral endometriosis due to unilateral stenosis, hydronephrosis and hydroureter)
- Cystoscopy with biopsy (in all cases of hematuria)
- Pelvic and renal ultrasound
- Computed tomography
- MRI (for evaluating lesions that are intramural and are not visible on cystoscopy)

Our approach:

- Asymptomatic women can be observed
- Medical therapy (avoids the risk of surgical complications)
- Surgery treatment in cases:
  - Failed medical therapy
  - Cannot receive medical therapy
  - To avoid chronic medical therapy
  - As primary treatment in cases with combined bladder endometriosis and hydronephrosis
  - Ureteral endometriosis (intrinsic and extrinsic)

Medical treatment

- Combined estrogen-progestin contraceptives
- Progestins
- Gonadotropin releasing hormone agonists

Surgical indications

- To remove symptoms
- To restore anatomy by division of adhesions
- To restore and/or maintain fertility
- To preserve neurological pelvic functions
- To improve Quality of Life

What kind of surgery for BE?

- Cystoscopy – to evaluate the size of the lesions and measure the distance between the lesion and urethral ridge
- Diagnostic Laparoscopy
- Laparoscopic shaving of serosal lesions
- Resection of deeply infiltrating lesions
  - Partial cystectomy to remove the entire nodule and prevent recurrence
  - Resection of the vesicouterine space to mobilize the bladder from the uterus
- Resection of all endometriosis
- Bladder closure – two layers of transverse sutures. At the end of the procedure, the bladder is backfilled to confirm that the closure is watertight. Postoperatively, we leave a bladder catheter in place for 7 to 10 days to prevent fistula formation
Cystoscopy – to evaluate the size of the lesions and measure the distance between the lesion and urethral ridge

Diagnostic Laparoscopy
Laparoscopic shaving of serosal lesions  
Resection  
Bladder closure

What kind of surgery - UE?

- **Ureteral stent placement** - if there is a distance of less than 2 cm between the inferior border of the lesion and the interureteric ridge
- **Ureterolysis** - to normalize the distorted anatomy
- **Resection of all endometriosis**
- **Ureterectomy with Ureteroureteral Anastomosis** is the choice for middle or upper third UE
- **Ureterolysis, Ureterectomy, and Ureteroneocystostomy** - for distal third UE. For women with documented ureteral stenosis and significant hydronephrosis

Surgical treatment should be provided at the endometriosis referral center by Urologist and minimally invasive gynecologist

Using ICG for ureteral identification in case of DIE

Conclusions

- surgical complications remain a reality due to the infiltrative and anatomic-distorting nature of endometriosis,
- formalized multidisciplinary preoperative diagnosis and surgical treatment in an endometriosis referral center

References

Thank you for your attention
Endometriosis of the bladder and ureter - my approach

Jon Ivar Einasson MD PhD MPH
Director of Minimally Invasive Gynecologic Surgery
Brigham and Women's Hospital
Professor of Obstetrics, Gynecology and Reproductive Biology
Harvard Medical School

I am a consultant for Arthrex, Hologic and Olympus

I have ownership in Freyja Healthcare, a startup company developing several medical devices

Objectives

- To discuss my approach to the surgical management of urinary tract endometriosis

Urinary tract endometriosis

- The bladder or ureter are only involved in 1% of women with endometriosis
- A ratio of 40:5:1 has been described for proportion of bladder to ureteral to renal involvement
- Specific symptoms are lacking
- Often an incidental finding during surgery for pelvic pain
- Most significant outcome can be silent loss of renal function due to progressive obstruction and hydronephrosis
- Loss of renal function occurs in up to 50% of cases

Ureteral endometriosis

- Endometriosis of the ureter
  - Intrinsic - invades the ureter wall
  - Extrinsic - endometriosis of surrounding structures causes ureteral compression
  - Incidence of extrinsic to intrinsic is approximately 4:1
- Symptoms
  - Flank pain (25%)
  - Gross hematuria (15%)
  - Asymptomatic (50%)

End-to-end vs. reimplantation

- End-to-end anastomosis
  - For lesions less than 3-4 cm
  - Simpler
  - Can be done by a gynecologist
  - Ureteroneocystostomy
    - For lesions larger than 3-4 cm
    - For lesions located in proximity to the bladder or involving the trigone
    - May need a vesico-psoas hitch and/or a Boari flap for a tension free anastomosis
    - Usually requires collaboration with urology
  - Nephrectomy
    - Can be considered if GFR is less than 10 ml/min
    - Observation is also acceptable
    - Indicated if there is suspected malignancy
A recent review identified 151 published cases
- 75 laparoscopic
- 18 laparotomy
- 1 robot
- 57 unspecified
- Operating time was about 300 minutes
- Recurrence of obstructive uropathy occurred in 11 cases (7.3%)

Segmental bladder resection is the treatment of choice
- Lesions at the bladder dome are more common and easily resected and repaired
- Keep catheter in for 7-10 days post op
- Can perform retrograde cystogram to confirm bladder integrity at that time
- If the lesion is near the trigonal area, stenting is recommended and concurrent cystoscopic guidance is advisable during the resection
- Ureteral reimplantation may be necessary
Urinary tract endometriosis is fairly rare. Surgical management is generally indicated. Bladder endometriosis is most common and generally most easily treated surgically. Ureteral endometriosis is often extrinsic, but if intrinsic, then either end-to-end anastomosis or reimplantation are required. Renal function is compromised in up to 50% of patients and a nephrectomy is sometimes indicated.

References
- Goggins et al. Ureteroureteral anastomosis for endometriosis involving the ureter: Case series and literature review. J endometriosis and pain disorders. May 2019
Assembly Bill 1195 was signed into law on July 1, 2006 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). It is the intent of the Legislature to encourage physicians and surgeons, continuing medical education providers located in California, and the Accreditation Council for Continuing Medical Education to meet the cultural and linguistic concerns of a diverse patient population through appropriate professional development.

**Cultural and Linguistic Competency**

Linguistic Competence: Providing readily available, culturally appropriate oral and written language services to limited English proficiency (LEP) members through such means as bilingual/bicultural staff, trained medical interpreters, and qualified translators.

Cultural Competence: A set of congruent behaviors, attitudes, and policies that come together in a system or agency or among professionals that enables effective interactions in a cross-cultural framework.1

Cultural and Linguistic Competence: The ability of health care providers and health care organizations to understand and respond effectively to the cultural and linguistic needs brought by the patient to the health care encounter.

Cultural competence requires organizations and their personnel to:
- Value diversity.
- Assess themselves.
- Manage the dynamics of difference.
- Acquire and institutionalize cultural knowledge.
- Adapt to diversity and the cultural contexts of individuals and communities served.

California Business & Professions Code §2190.1(c)(3) states that associations that accredit continuing medical education courses shall develop standards before July 1, 2006, for compliance with the cultural competency requirements. The associations may update these standards, as needed, in conjunction with an advisory group that has expertise in cultural and linguistic competency issues. Cultural competency means a set of integrated attitudes, knowledge, and skills that enables a health care professional or organization to care effectively for patients from diverse cultures, groups, and communities. At a minimum, cultural competency is recommended to include the following: (A) Applying linguistic skills to communicate effectively with the target population. (B) Utilizing cultural information to establish therapeutic relationships. (C) Eliciting and incorporating pertinent cultural data in diagnosis and treatment. (D) Understanding and applying cultural and ethnic data to the process of clinical care, including, as appropriate, information pertinent to the appropriate treatment of, and provision of care to, the lesbian, gay, bisexual, transgender, and intersex communities.

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 (Assembly Bill 305) requires that state agencies that serve a substantial number of non-English-speaking people employ a sufficient amount of bilingual persons in order to provide certain information and render certain services in a language other than English.