

Endometriosis of the Urinary Tract

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SEP 20, 2017



Objectives

- Review the background, epidemiology and pathophysiology of urinary tract endometriosis (UTE)
- Outline the clinical presentation and workup of UTE
- Present the treatment options for UTE including hormonal and surgical interventions
- Highlight operative cases from VGH involving collaboration between Gynecology and Urology



Background

Endometriosis: the presence of endometrial glands and stroma outside of the uterus

- Prevalence: 6-10% in women of reproductive age, up to 50% among women with infertility
- Three main categories:
 - Ovarian endometriosis
 - Superficial peritoneal endometriosis
 - Deep infiltrating endometriosis (DIE)

Deep infiltrating endometriosis (affects ~1% of women of reproductive age)

- Infiltrates the peritoneum by > 5mm
- Common sites include: **bladder, ureter**, rectovaginal septum, rectum, retrosigmoid colon, uterine ligaments, vagina



Epidemiology

- 1% of patients with pelvic endometriosis have urinary tract involvement
- 20-50% of patients with Deep Infiltrating Endometriosis have urinary tract involvement
- Prevalence at specific sites:

• Bladder	70-85%	Kidney	4%	Urethra	2%
• Ureter	9-23%				
	• Extrinsic (80%) – submucosa or adventitia				
	• Intrinsic (20%) – mucosa or muscularis propria				
- Risk factors:
 - Nulliparity, prolonged exposure to endogenous estrogens (early menarche, late menopause), short menstrual cycles (<27 days), family history, heavy menstrual bleeding, dysmenorrhea, obstruction of menstrual outflow, height > 68in, low BMI, high consumption of trans unsaturated fats



Pathophysiology

Theories include:

- Retrograde menstruation
 - Most lesions are in the pelvis, in dependent areas – lower ureter more affected than upper ureter
 - Left side deposits are more common – “anatomic sheltering” by the sigmoid colon
 - Bladder is involved far less when uterus is retroverted
- Altered immunity
 - Dysregulation of immune system leads to poor clearance of ectopic endometrial cells
 - Higher incidence in patients with auto-immune and atopic diseases
- Coelomic metaplasia - Normal peritoneum transforms into endometrial tissue
- Mullerian rest transformation* – stimulated by estrogen exposure
- Benign metastasis – hematological/lymphatic spread
- Iatrogenic – port site and scar site lesions
- Genetic modification – early studies only with no definitive findings

Nezhat et al, Nature Rev Urol 2017



Biological Alterations in DIE

- Upregulation of estrogen biosynthesis
- Decreased inactivation of estrogen
- Alteration of estrogen and progesterone receptors
 - Leads to resistance of endometrial tissue to progesterone’s anti-proliferative effect
- Higher expression of invasive mechanisms (matrix metalloproteinases and activins)
- Increased expression of neuroangiogenesis genes
 - Vascular endothelial growth factor (VEGF), Nerve growth factor (NGF),

Ferrero et al, Fertil Steril 2015



Pain in DIE

- Pain in DIE is not simply from compression/mass effect
- Lesions are directly innervated by sensory and sympathetic fibers
- Increased number of activated mast cells
 - Cytokine release
 - Immune mediated inflammatory response
- Increased nerve density
 - correlates directly to severity of pain
 - Upregulation of nerve growth factor (NGF) by local inflammatory response

Ferrero et al, Fertil Steril 2015



Presentation

- Severe pain: >95%¹
 - Dysmenorrhea, deep dyspareunia, non-menstrual pelvic pain
- Prevalance of LUTS in UTE is unclear: 2-77% in reported studies²
 - Dysuria: 21-69%
 - Hematuria: 0-35%
- Ureteral lesions are often asymptomatic
 - Silent loss of renal function in 25-50%³
 - Often discovered incidentally during laparoscopy
 - Rectovaginal lesions >3cm predict ureteral lesions⁴ (OR 3.92, 95% CI 1.84-8.34, P<0.001)
- Significant crossover between UTE and other chronic pain syndromes
 - Overactive bladder, interstitial cystitis/chronic pelvic pain, bladder cancer
- Bowel involvement may lead to associated symptoms
 - Constipation, dyschezia, menstrual diarrhea, menstrual hematochezia

1 Berlanda et al, Eur J Obstet Gynecol Reprod Bio 2017
3 Wang et al, Int J Clin Exp Med 2015

2 Maggiore et al, Eur Urol 2017
4 Knabben et al, Fertil Steril 2015



Presentation

TABLE 1
Symptoms in patients with deep infiltrating endometriosis.

Symptoms	Without UTE (n = 101)	With ureteral endometriosis (n = 106)	With bladder endometriosis (n = 16)	P value	
				Control vs. ureteral ^a	Control vs. bladder ^b
Dysmenorrhea	84 (83.2)	80 (75.5)	14 (87.5)	1.000 (NS)	1.000 (NS)
Dyspareunia	51 (50.5)	49 (46.2)	11 (68.8)	.579 (NS)	.192 (NS)
Chronic pelvic pain	44 (43.6)	39 (36.8)	4 (25)	.326 (NS)	.184 (NS)
Fertility	35 (34.7)	38 (35.9)	7 (43.8)	.885 (NS)	.577 (NS)
Cystitis	6 (5.9)	13 (12.3)	11 (68.8)	.15 (NS)	< .001
UTI	2 (2)	1 (0.9)	2 (12.5)	.814 (NS)	.29 (NS)
Recurrent UTI	0	0	0		
Recurrent UTE	1 (1)	5 (4.7)	2 (12.5)	.213 (NS)	.049

Note: Values presented as n (%), and control of female. P values derived by Fisher's exact test. NS = not statistically significant, UTI = urinary tract infection, UTE = urinary tract endometriosis.

^a Comparison between patients with ureteral endometriosis and control group (without UTE).

^b Comparison between patients with bladder endometriosis and control group (without UTE).

Bladder: Urinary tract endometriosis. Fertil Steril 2015.

Knabben et al, Fertil Steril 2015



Evaluation

- History
 - Symptoms, localization of pain, cyclical nature, questionnaires
- Physical Exam
 - Bimanual exam
- Laboratory Investigations
 - CBC, Creatinine, Urinalysis/culture
- Imaging
 - Ultrasound
 - MRI
 - IVP
- Procedures
 - Laparoscopy
 - Cystoscopy
 - Ureteroscopy



Evaluation: Bladder

- Transvaginal Ultrasound¹
 - Sensitivity 0.62 (95% CI 0.4-0.8)
 - Specificity 1 (95% CI 0.97-1)
 - Positive likelihood ratio 208.4 (95% CI 21-2066)
 - Able to more accurately detect distance from lesion to ureteric orifice than MRI²
 - Less expensive, easier access than MRI
- MRI³
 - Sensitivity 0.64 (95% CI 0.48-0.77)
 - Specificity 0.98 (95% CI 0.96-0.99)
 - Improved resolution, better tissue characterization, better multiplanar capability⁴

1 Guerriero et al. Ultrasound obstet gynecol 2015
3 Medeiros et al Arch Gynecol Obstet 2015

2 Thonnon et al. J Minim Invas Gynecol 2015
4 Mallampati et al. MRI Clin J N Am 2004



Evaluation: Bladder

- Cystoscopy
 - Usually normal due to majority of lesions not invading the mucosa
 - Best to perform immediately before or during menstruation
 - Utilized preoperatively to determine distance from lesion to ureteric orifice
- Urodynamics¹
 - Increased bladder sensation and painful bladder filling comparing BE to other DIE lesions

Panel et al. Int Urogynecol J 2016

Evaluation – Bladder Summary



Approach	Pros	Cons	Comments	LE	GR
Diagnosis					
Physical examination	Noninvasive	Experience required to achieve accuracy	Allows detection of a bladder nodule that may be painful (53–100%)	Ib	B
Questionnaires	Cost-effective, accurate for BE diagnosis, detailed description of LUTS	Time-consuming	Can be useful in improving diagnosis of and monitoring changes in LUTS after medical/surgical treatment	Ib	
TVS	Highly accurate, noninvasive, cost-effective, estimation of the distance between ureteral orifices and nodule borders	–	First-line technique for BE diagnosis	Ia	A
MRI	Highly accurate	Not cost-effective	Should not be routinely performed in clinical practice	Ia	A
Cystoscopy	Cost-effective, estimation of the distance between ureteral orifices and nodule borders, biopsy	Invasive	Should not be performed routinely, only in cases of suspicion of malignancy or to estimate the distance between ureteral orifices and nodule borders if not clearly evaluable by TVS	IV	D
Urodynamics	Objective assessment of lower urinary tract changes	Invasive, time-consuming	Should only be used for scientific purposes	III	C

Maggiore et al, Eur Urol 2017

Evaluation: Ureter

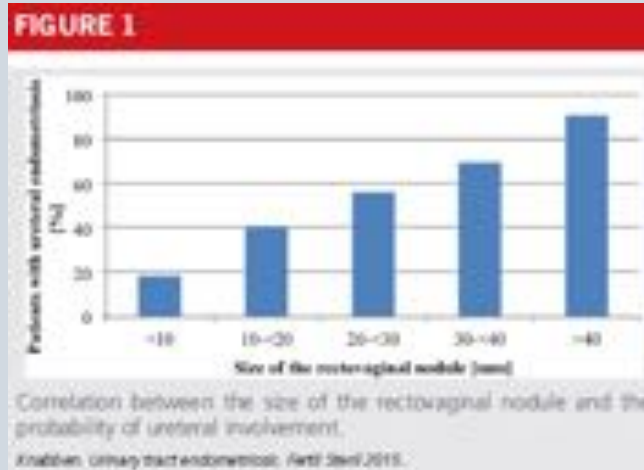


- Ultrasound
 - Able to detect hydronephrosis/hydroureter
- MRI
 - Sensitivity and specificity comparable to laparoscopy for detecting intrinsic ureteric lesions¹
 - “ideal” imaging modality for urinary tract involvement²
- IVP
 - Traditional imaging modality
 - Can provide location of lesion, degree of stenosis, presence of hydronephrosis
 - Retrograde pyelogram can be substituted if IV contrast is contraindicated
- Nuclear medicine
 - MAG-3 or DMSA to look at split function – is the kidney worth salvaging?
- Ureteroscopy
 - Only useful for diagnosis of intrinsic ureteral lesions

1 Sillou et al. Diagn Interv Imaging 2015 2 Maccagnano et al. Urol Int 2013



Evaluation: Ureter



Evaluation: Ureter

Table 2. Comparison of patients requiring and not requiring urologic surgical intervention

	Extensive Surgical Intervention (n = 15) n (%)	Minimal or No Surgical Intervention (n = 67) n (%)	OR (P Value, 95% CI)
Presenting symptoms			
Urinary symptoms	5 (33.3)	4 (6.0)	7.86 (P = .002, 1.80-34.40)
Dyspareunia	1 (6.7)	9 (13.4)	0.46 (P = .469, 0.05-3.94)
Dysmenorrhea	3 (20.0)	17 (25.4)	0.74 (P = .661, 0.19-2.92)
Pelvic pain	5 (33.3)	26 (38.8)	0.79 (P = .693, 0.24-2.57)
Abdominal pain	6 (40.0)	31 (46.3)	0.77 (P = .659, 0.25-2.42)
Flank pain	5 (33.3)	7 (10.4)	4.29 (P = .023, 1.14-16.18)
Back pain	0 (0.0)	2 (3.0)	0.00 (P = .915, 0.00-NA)
Abnormal uterine bleeding	3 (20.0)	21 (31.3)	0.55 (P = .383, 0.14-2.15)
Asymptomatic	0 (0.0)	6 (9.0)	0.00 (P = .402, 0.00-NA)
Physical examination findings			
Abdomen/Pelvis tender to palpation	3 (20.0%)	23 (34.3%)	0.48 (P = .281, 0.12-1.87)
Vaginal bleeding	3 (20.0%)	7 (10.4%)	2.14 (P = .307, 0.48-9.49)
Abdominal/Pelvic mass	2 (13.3%)	26 (38.8%)	0.24 (P = .06, 0.05-1.16)
Laboratory findings			
Average Cr	Mean \pm SD (range) 0.82 \pm 0.19 (0.5-1.3)	Mean \pm SD (range) 0.76 \pm 0.13 (0.5-1.1)	P = .20
Average WBC	9.07 \pm 4.62 (2.9-19.0)	7.80 \pm 2.36 (3.6-16.5)	P = .14
Imaging findings			
Hydronephrosis	13 (86.7%)	5 (7.8%)*	76.70 (P < .001, 13.38-439.76)

O, confidence interval; Cr, creatinine; OR, odds ratio; WBC, white blood cell count.

* Percentage calculation based on 64 patients as 3 had unknown preoperative hydronephrosis status.



Evaluation: Ureter

TABLE 2

Proposal for a classification of ureteral endometriosis.

- Grade 0 Peritoneal endometriosis overlying the ureter
- Grade 1 Retroperitoneal endometriosis with entanglement of the ureter but no dilatation
- Grade 2 Dilatation of the ureter and/or hydronephrosis without functional impairment (urodynamic no relevant obstruction)
- Grade 3 Urodynamically relevant obstruction with symmetrical renal split clearance in renal furosemide scintigraphy and normal total clearance
- Grade 4 Urodynamically relevant obstruction with impaired split clearance in renal furosemide scintigraphy or impaired total clearance
- Grade 5 Silent kidney

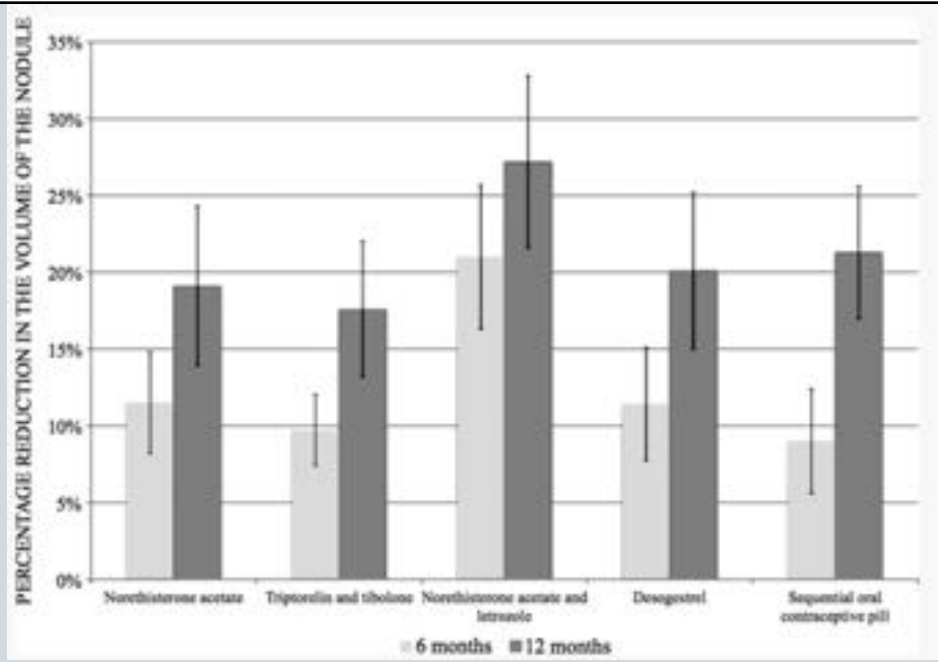
Knabben. Urinary tract endometriosis. Fertil Steril 2015.

Medical Management

Variable	Pros	Cons	Comments	Grade of recommendations for DUE treatment
Nonsteroidal anti-inflammatory drugs	Cost-effective Not contraceptive	No cytotoxic effect	Only one randomized controlled trial has been published	No studies available
Progestagens	Generally cost-effective Effective in improving pain symptoms Available in different formulations (oral, intravaginal, depot, implant) Well tolerated	Contraceptive for women desiring to conceive	First-line therapy	A
Combined hormonal contraceptives	Cost-effective Effective in improving pain symptoms Available in different formulations (oral, vaginal, cutaneous) Well tolerated	Contraceptive for women desiring to conceive	First-line therapy	A
Gonadotropin releasing hormone agonists	Highly effective in improving pain symptoms Available in different formulations (intranasal, IM, SC)	Short-term use (5 mo) without add-back therapy Hypogonademic AEs Expensive Contraceptive for women desiring to conceive	Second-line therapy	B
Danazol	Cost-effective Effective in improving pain symptoms	Androgenic AEs Need for barrier contraception	Low popularity due to their androgenic AEs	B
Aromatase inhibitors	Generally effective in improving pain symptoms in combination with hormonal contraceptives, progestagens, or GnRH agonists	CE-label High rates of hypogonademic AEs Short-term use (5 mo)	To be used only in patients refractory to conventional therapies and in the setting of scientific research	B
Surgery	Highly effective in improving pain symptoms	Intraoperative complications Expensive	To be considered in patients refractory to hormonal treatment Second-/third-line therapy	A

Ferrero et al. Fertil Steril 2015

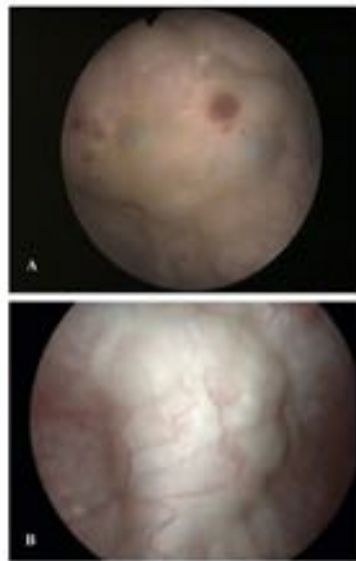
Medical Management: Volume reduction



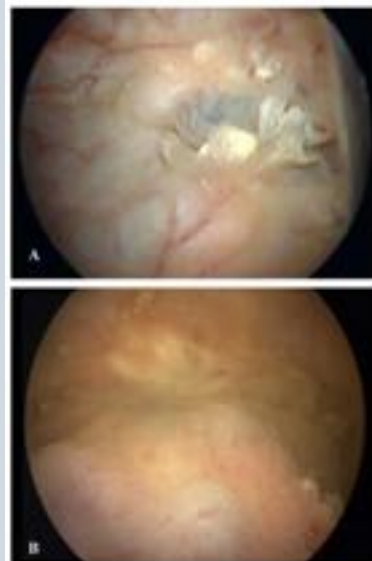
Ferrero et al. Arch Gynecol Obstet 2013

Medical Management: Cystoscopic Findings

Cystoscopic appearance of bladder detrusor endometriosis in a patient in the GnRH agonist group. (A) Before treatment. (B) Same patient, after treatment.



Cystoscopic appearance of bladder detrusor endometriosis in a patient in the continuous OC group. (A) Before treatment. (B) Same patient, after treatment.



Fedele et al. Fertil Steril 2008

Medical Management: Volume, Pain and Hematuria

Table 2. Clinical and US data at the beginning of the treatment and at follow-up in the six patients.

	1	2	3	4	5	6
Chronic pain (total score)						
Time 0	10	9	11	10	9	12
Month 3	4	2	3	2	2	2
Month 12	4	3	3	3	1	2
Bladder nodule volume (cm³)						
Time 0	5.49	11.76	1.67	4.18	2.87	7.32
Month 3	2.51	8.02	1.4	3.54	1.89	4.58
Month 12	2.61	7.85	1.5	3.83	2.10	3.85
Dysuria (Y/N)						
Time 0	Y	Y	Y	Y	Y	Y
Month 3	N	N	N	N	N	N
Month 12	N	N	N	N	N	N
Haematuria (Y/N)						
Time 0	N	Y	N	Y	Y	Y
Month 3	N	N	N	N	N	N
Month 12	N	N	N	N	N	N

Angione et al, Gynecol Endocrinol 2015

Medical Management: Ureteric Obstruction



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ORIGINAL ARTICLE

Check for updates

Conservative management in ureteric hydronephrosis due to deep endometriosis: Could the levonorgestrel-intrauterine device be an option?

Elisa Simón, Álvaro Tejerizo, José Luis Muñoz, Carmen Álvarez, Laura Marqueta and Jesús S. Jiménez
Department of Obstetrics and Gynecology, Hospital 12 de Octubre, Madrid, Spain



Medical Management: Side Effects

Treatment (reference)	Side effects
Progestogens	
Medroxyprogesterone acetate (93-100)	Weight increase (53%); acne (5%-29%); edema (67%); muscle cramps (17%); spotting (5.4%-71.8%); amenorrhea (17.9%-20%); nausea (11.2%-30%); headache (3.3%-28%); depression (10%-20%); breast pain, tenderness (5.3%-15%); libido decrease (2.3%-30%); hot flashes (2.3%-10%); loss of hair (10%); sleep disturbance (2.3%)
Cyproterone acetate (101, 102)	Spotting (28%); breakthrough bleeding (7%); swelling (32%); weight increase (19%); libido decrease (16%); depression (11%); hot flashes (7%); irritability (7%); vaginal dryness (5%); headache (5%)
Desogestrel (107)	Breakthrough bleeding (20%)
Dieneogest (50, 108-111)	Spotting (61.6%-95%); hot flashes (9.5%-50%); headache (2.5%-25%); weight gain (6.7%); depression (5.0%); libido decrease (4.2%); acne (4.1%); alopecia (3.3%); sleep disturbance (1.7%); vaginal dryness (1.7%); nausea (8%); breast tenderness (8%)
Norethindrone acetate (88)	Weight increase (29%); headache (5%); depression (7%); libido decrease (8%); acne (5%); swelling (9%); erythematous cutaneous reaction (2%)
Levonorgestrel-releasing intrauterine system (112-116)	Spotting (30%-37%); acne (10%-58.3%); oily skin (74.1%); melasma (22.2%); weight increase (10%-62.9%); breast pain, tenderness (5%-66.7%); headache (15%-48.1%); nausea (40.7%); leukorrhea (3.7%); libido decrease (5%); pelvic pain (5%-40%); irregular bleeding (65%); simple ovarian cyst (55%)
Combined hormonal contraceptives	
Oral contraceptives (117-120)	Hot flashes (4%-14.6%); spotting (25%); libido decrease (14%); mood changes (18%); headache (21%); paresthesias (4%); breast pain, tenderness (18%); weight increase (14%); peripheral edema (4%); nausea (24%); irregular bleeding (27.1%-60.0%)
Vaginal ring and transdermal patch (103, 121)	Weight increase (5%-7%); headache (6%-18%); vomiting (2%); nausea (2%-8%); depression (5%-6%); libido decrease (4%-5%); breast pain, tenderness (5%-8%); cutaneous reactions (5%); bloating (3%-10%); vaginal dryness (2%-7%); irregular bleeding (2.8%); dissatisfaction (2.1%)
GnRH agonists (122-132)	Hot flashes (19.6%-80%); headache (8.5%-68%); stiff shoulder (12.8%); vaginal dryness (28%-37%); libido decrease (19%-24%); fatigue (58%); irritability (47%); depression (32%); sleep disturbances (11%); ache (26%)
Aromatase inhibitors (133)	Vaginal bleeding (75%); weight gain (50%); abdominal bloating (41.7%); depression (33.3%); asthenia (33.3%); musculoskeletal pain (16.7%); nausea (16.7%); headache (16.7%); peripheral edema (8.3%)
Danazol (134)	Headaches (60%); fatigue (40%); irritability (40%); depression (50%); sleep disturbances (30%); vaginal dryness (30%); vasomotor symptoms (60%); acne (60%)

Ferrero et al. Fertil Steril 2015

Medical Management: Bladder



Medical treatment					
Combined hormonal contraceptives and progestogens	Generally cost-effective, available in different formulations (oral, cutaneous, intrauterine device, implants), well tolerated	Contraceptive for women desiring to conceive	First-line therapy	III	C
GnRH-a	Highly effective in improving symptoms, available in different formulations (intranasal, IM, SC)	Short-term use (6 mo) without add-back therapy, hypoestrogenic AEs, expensive, contraceptive for women desiring to conceive	Second-line therapy	III	C
Aromatase inhibitors	Generally effective in improving symptoms in combination with hormonal contraceptives, progestogens	Off-label, high rates of hypoestrogenic AEs, short-term use (6 mo)	To be used only in patients refractory to conventional therapies and in the setting of scientific research	III	C

Maggiore et al, Eur Urol 2017



Surgical Management

• Bladder

• Options

- Bladder shaving for partial thickness lesion
- Transurethral resection (rarely used)
- Partial cystectomy +/- TUR

• Principles

- Excision of entire lesion with bladder preservation
- Prolonged drainage (10 days) +/- cystogram
- Ureteric stent if lesion within 2cm of ureteric orifice

• Ureter

• Options

- Ureterolysis
- Ureteroureterostomy
- Ureteroneocystostomy
- Nephrectomy

• Principles

- Ureteral preservation where possible
- Prolonged ureteric stenting



Surgical Management: Bladder

Surgical treatment

TUR	Minimally invasive, fast recovery (day surgery)	Incomplete lesion removal, persistence of symptoms, risk of bladder perforation	Scanty evidence support this technique that should be used just in combination with partial cystectomy	IV	C
Partial cystectomy	Complete lesion removal, concomitant treatment of other endometriotic lesions, very low risk of disease and symptoms recurrence	Risk of inadvertent removal of healthy bladder muscle	Simple and safe technique with excellent long-term efficacy	IIb	B
Combined TUR and partial cystectomy	Complete lesion removal, concomitant treatment of other endometriotic lesions, very low risk of disease and symptoms recurrence	Scanty literature based on only case reports	Combines the advantages of both techniques	IV	C



Surgical Management: Bladder

Cystoscopy-assisted laparoscopy for bladder endometriosis: modified light-to-light technique for bladder preservation

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- 25 patients
- Laparoscopic partial cystectomy
 - Cystoscopic assist
 - Use of transvaginal manipulation
- Mean size of lesion 2.75cm
- Mean OR time 138 minutes
- Mean hospital stay 1 night
- No recurrence (32 months follow up)

Stopiglia et al, Int Braz J Urol 2017



Surgical Management: Bladder

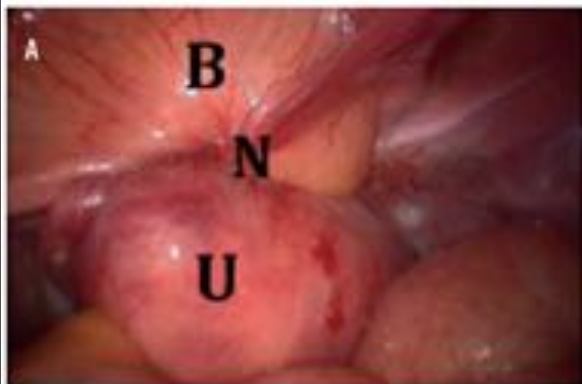
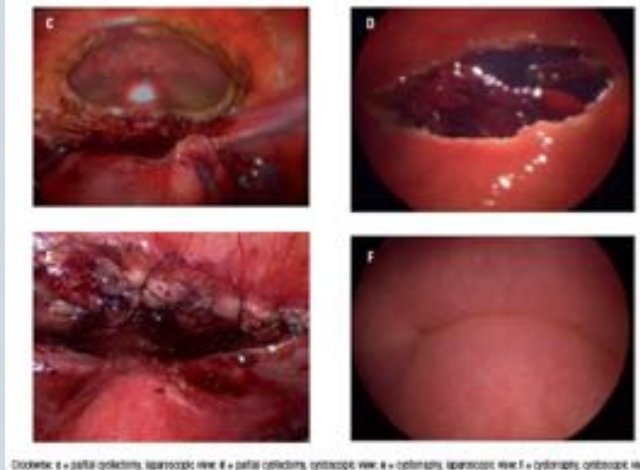


Figure 1D, (a) (left): laparoscopic view; (B-Bladder, N-Node, U-Uterus); Figure 1D, (b) (right): cystoscopic view; (N-node)

Stopiglia et al, Int Braz J Urol 2017



Surgical Management: Bladder



Diagrams: C = partial cystectomy, laparoscopic view; D = partial cystectomy, cystoscopic view; E = cystectomy, laparoscopic view; F = cystectomy, cystoscopic view

Stopiglia et al, Int Braz J Urol 2017



Surgical Management: Ureter

Group A studies involving varied laparoscopic surgical techniques (87% required only ureterolysis)

Group B studies including only ureteroneocystostomy

	GROUP A (overall) % [95% CI]	GROUP B (overall) % [95% CI]	OVERALL % [95% CI]
No cases (UE)	668	32	700
Follow-up			
Median/range length (months)	-	-	-
Major postoperative complications* (n)	3.1% [1.1-5.0]	6.3% [0-21.4]	3.2% [1.3-5.1]
Reoperation for UE persistence/recurrence (n)	3.9% [0.5-7.3]	0%	3.9% [0.5-7.2]
Improvement of symptoms (n)	90.2% [80.6-99.8]	100%	90.5% [81.7-99.3]

Major complications

- Ureteral fistula/stenosis
- Hemorrhage
- Bowel anastomotic leak
- Bowel perforation
- Bladder atony
- Vesicovaginal fistula

Cavaco-Gomez et al, Eur J Obstet Gynecol Repro Bio 2017



Surgical Management: Recent Studies

Surgical Outcomes of Urinary Tract Deep Infiltrating Endometriosis

Basma Darwish, MD, Emanuela Stochino-Loi, MD, Geoffroy Pasquier, MD, Fabrice Dugardin, MD, Guillaume Defortescu, MD, Carole Abo, MD, and Horace Roman, MD, PhD*

From the Expert Center in Diagnostic and Management of Endometriosis, Department of Gynecology and Obstetrics, Rouen University Hospital, Rouen, France (Drs. Darwish, Abo, and Roman), Research Group EA 4308, Spermatogenesis and Male Gamete Quality, Rouen University Hospital, Rouen, France (Dr. Roman), Division of Gynecology and Obstetrics, Department of Surgical Sciences, University of Cagliari, Cagliari, Italy (Dr. Stochino-Loi), and Department of Urology, Rouen University Hospital, Rouen, France (Pasquier, Dugardin, and Defortescu).


- 81 patients: 39 bladder, 31 ureter, 11 both
- Treatment
 - Bladder: 70% partial cystectomy, 30% bladder shaving
 - Ureter: 78% ureterolysis, 22% primary resection,
 - no nephrectomies
- Complications (\geq Clavien-Dindo Gr III):
 - Bladder 8%
 - Ureter 16%
- No recurrences

Darwish et al, J Minim Invasive Gynecol 2017



Surgical Management: Recent Studies

Management of ureteral endometriosis with hydronephrosis: Experience from a tertiary medical center

Jing-Zhi Huang, Hong-Ling Guo, Jin-Bo Li and Shu-Qin Chen 

Department of Gynecology and Obstetrics, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

- 46 patients with hydronephrosis
- Intrinsic ureteral endometriosis
 - 73% if severe hydro
 - 17% if mild hydro
- Treatment

• Ureterolysis	24%
• Ureteroureterostomy	9%
• Ureteroneocystostomy	61%
• Nephrectomy	6%
- Complications in 20%
- Resolution of hydro at 6 months in 85%

Huang et al, J Obstet Gynaecol Res 2017



Surgical Management: Recent Studies

Laparoscopic Management of Ureteral Endometriosis and Hydronephrosis Associated With Endometriosis

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From the IRCAD (Research Institute Against Digestive Cancer), Strasbourg, France (all authors), Hospital da Luz, Lisboa, Portugal (Dr. Alves), Department of Gynecological Oncology, Universidad del Desarrollo Chile (Dr. Puga), FCESP FMUSP Instituto do Câncer do Estado de São Paulo, São Paulo, Brazil (Dr. Fernandes), and Clínica Alemana Santiago, Facultad de Medicina Universidad del Desarrollo, Hospital Clínico Universidad de Chile (Dr. Miranda), and the University Hospitals of Strasbourg, Strasbourg, France (Dr. Wattiez).

- 198 patients (28 with hydronephrosis)

Treatment	Patients with hydronephrosis	Patients without hydronephrosis
Ureterolysis	15/28 (54%)	162/170 (95%)
Ureteroureterostomy	12/28 (43%)	8/170 (5%)
ureteroneocystostomy	1/28 (3%)	0

- Complications in 10%
 - No difference between ureterolysis and ureteroureterostomy
- Recurrence in 19%

Alves et al, J Minim Invasive Gynecol 2017



Conclusions

- Urinary tract endometriosis is more common than originally thought, particularly in patients with deep infiltrating endometriosis
- Patients with urinary tract endometriosis often present without lower urinary tract symptoms
- Ultrasound is the preferred initial imaging modality over MRI for urinary tract endometriosis
- Medical management, with progestogens (Dienogest) or combined hormonal contraceptives, are the first line treatment options
- Surgical management with laparoscopy provides excellent outcomes for patients who fail or have contraindications to medical therapy



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Dr. Ryan Paterson



Case 1

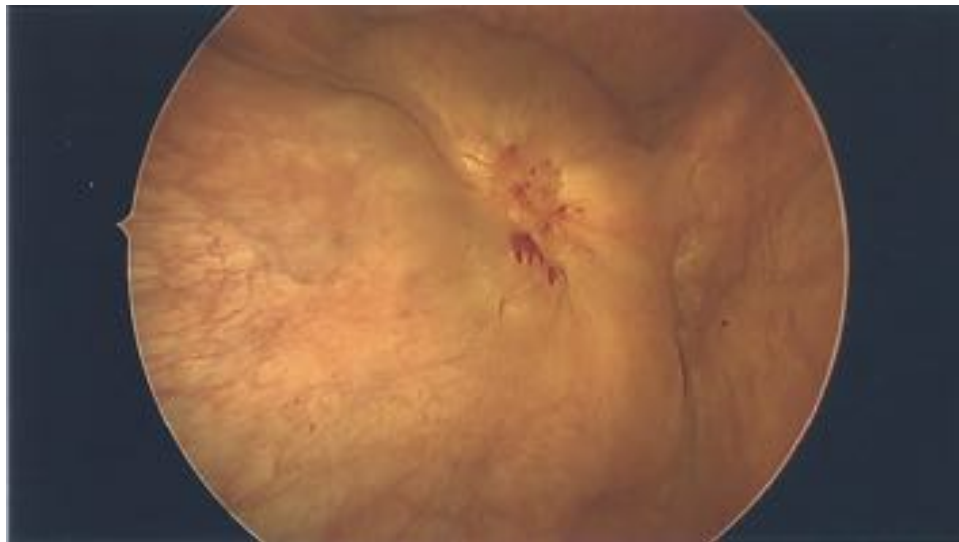
- 36 year old G0
- Focal nodular hyperplasia vs. Hepatic adenoma
- Cyclical pelvic pain and hematuria
- Previous cystoscopic biopsy of bladder mass
- Exam: Rectal nodule (14mm)
- Ultrasound: Bladder nodule (35mm)

Case 1

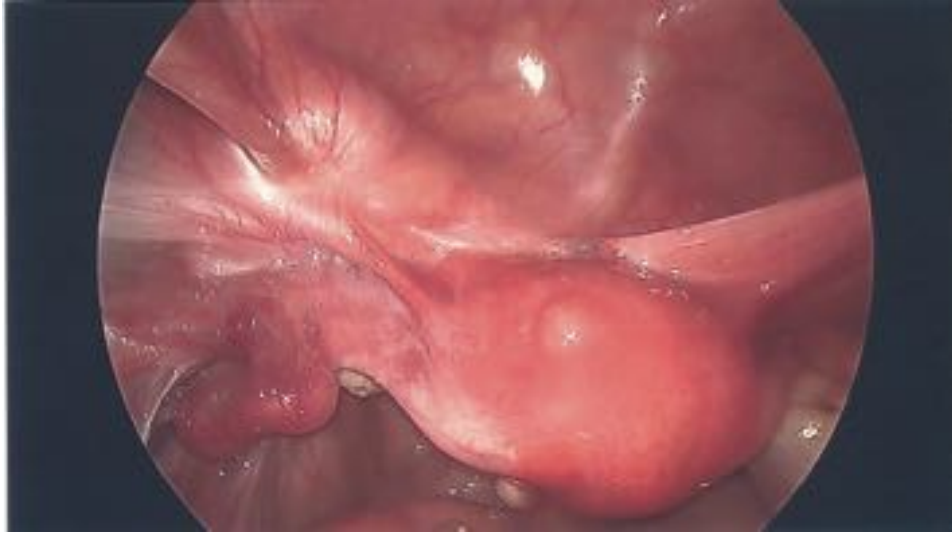


- OR
 - MIS excision of rectal nodule
 - Cystoscopy: posterior wall extravesical mass
 - Bilateral stents
 - Pfannenstiel, partial cystectomy, Boari flap
- Pathology: endometriosis

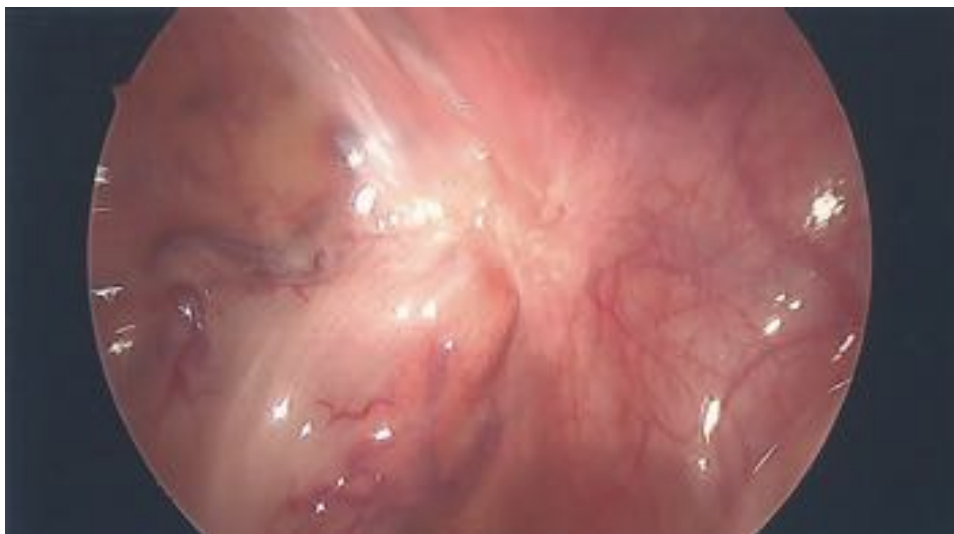
Case 1



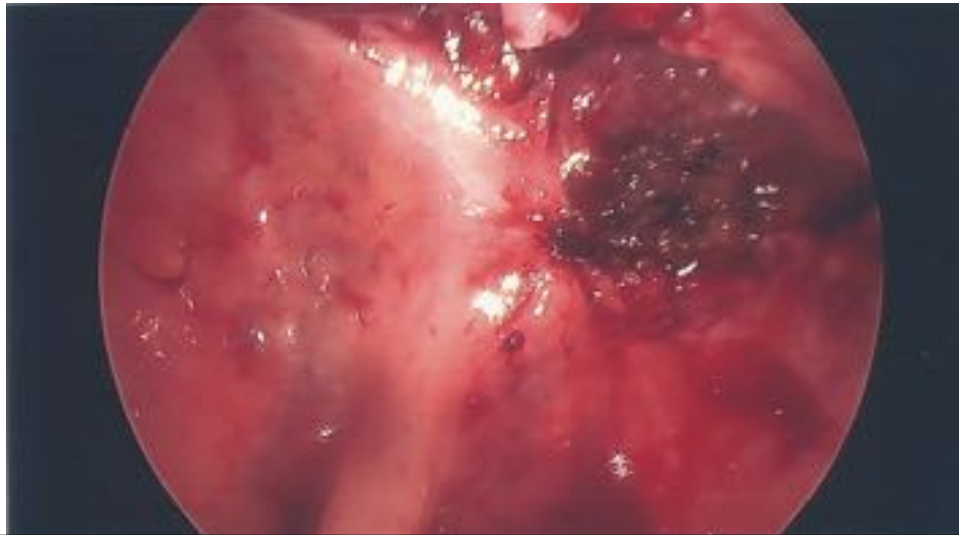
Case 1



Case 1



Case 1



Case 1



- 1 week post-op: infected hematoma (primarily subcutaneous)
- 5 months post-op: Pain free on dienogest (progestin); Liver lesions stable; Discharged



Case 2

- 33 year old G1P1, healthy
- Dysmenorrhea, deep dyspareunia, dyschezia
- New right flank pain
- Exam: vaginal nodule (35mm)
- Ultrasound: left endometrioma on ovary; moderate right hydronephrosis
- Cystoscopy: extrinsic compression of bladder
- Labs: Creatinine 115



Case 2

- OR
 - MIS left ovarian cystectomy
 - Cystoscopy: mass effect
 - Bilateral stents
 - MIS right ureterolysis (released ureter from vaginal nodule) and omental wrap
 - Residual disease
- Pathology: endometriosis

Case 2



- 12 months post-op: pain with breakthrough bleeding on OCP, mild right hydronephrosis, renal scan showed moderate decreased functioning parenchyma right kidney but no obstruction, Creatinine 109

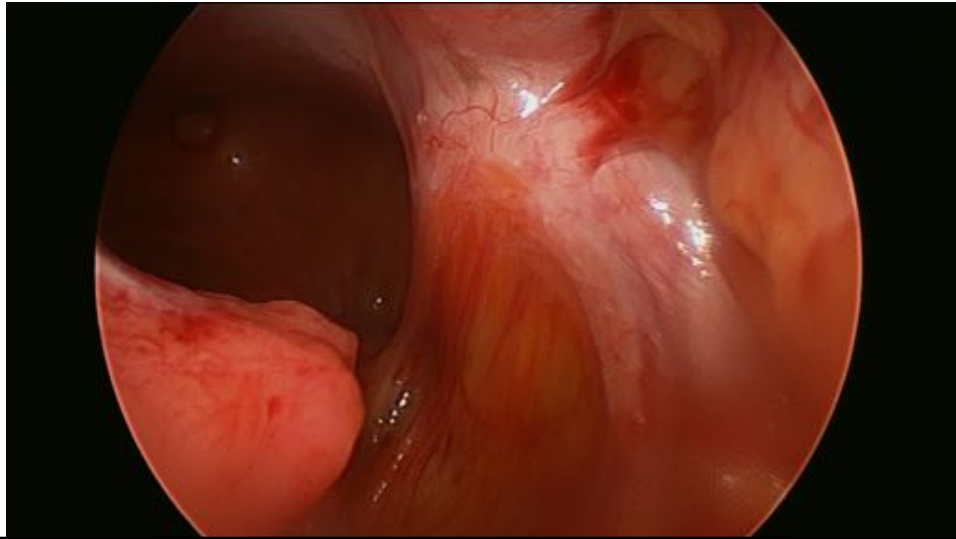
→ patient completed childbearing, requesting hysterectomy

Case 2

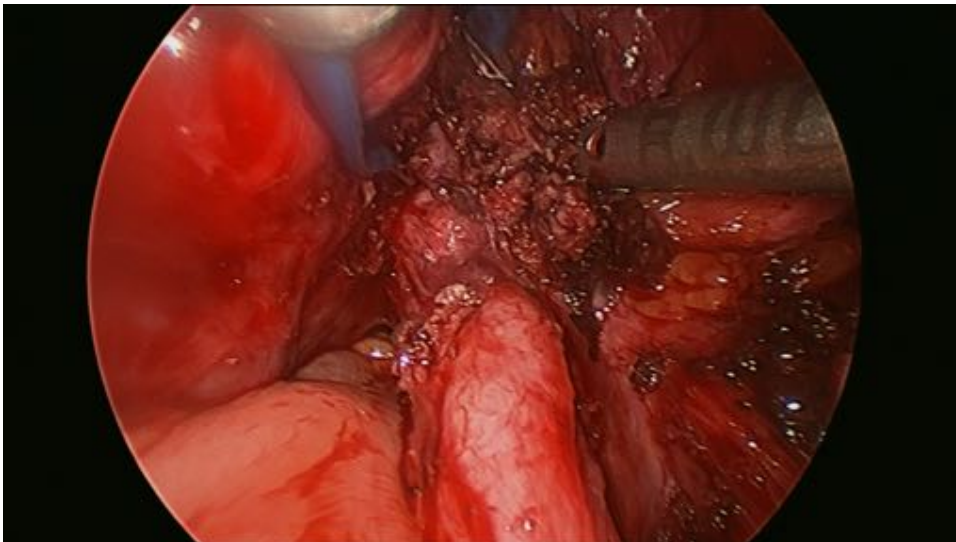


- OR:
 - Total laparoscopic hysterectomy, R. oophorectomy, complete excision of endometriosis
 - Ureteroscopy: slight narrowing distal right ureter but adequate calibre
 - Bilateral stents
 - MIS right ureterolysis

Case 2



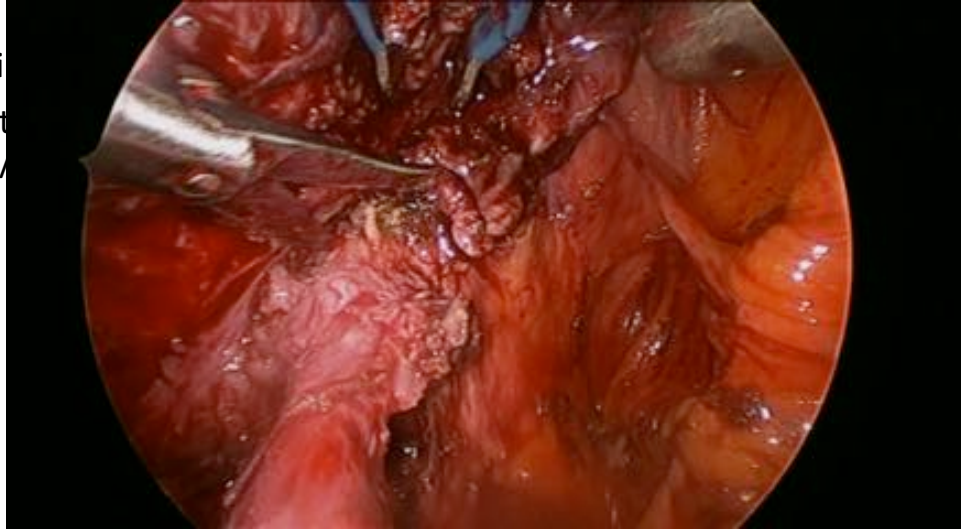
Case 2



Case 2

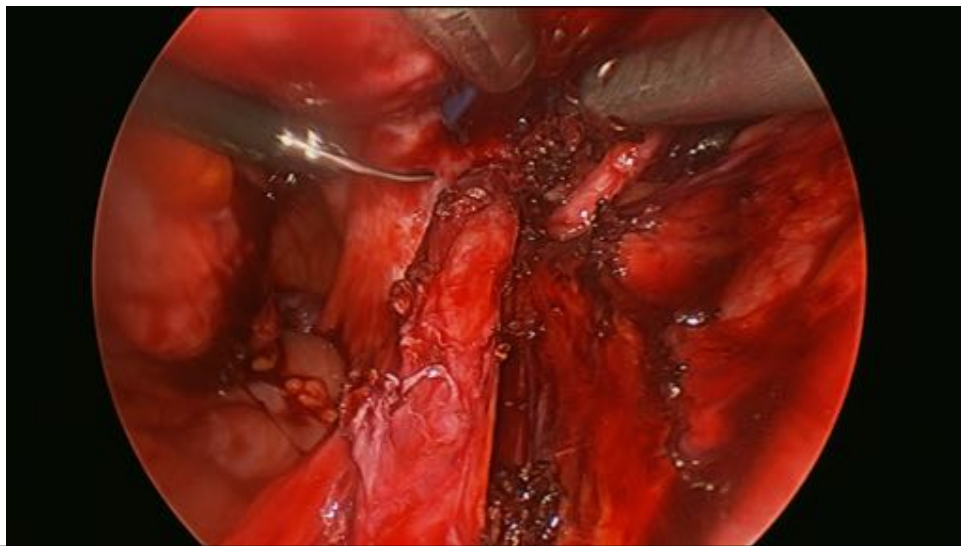


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Case 2





Case 2

- 3 months post-op: No pain (no hormones), small granulation tissue at vaginal vault, right hydronephrosis “largely resolved”, renal scan unchanged, Creatinine 128

→ Chronic renal insufficiency, follow renal function, refer to nephrology if decreasing GFR



Endometriosis specialists

- Centre for Pelvic Pain and Endometriosis (BCWH/VGH/UBC)
 - Allaire
 - Williams
 - Bedaiwy
 - Yong
- VGH/UBC:
 - Mehra

Womenspelvicpainendo.com