MOUNT AUBURN HOSPITAL

Advances in Endometriosis: Diagnosis and Treatments

School of Pharmacy and Pharmaceutical Sciences
Bouve College of Health Sciences
Northeastern University

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Disclosures/Confession

- No relevant financial disclosure
- I have been “practicing” ObGyn for now over 30 years and while I have been trying to get it right, I think I am still working on this complex disease.

Why we do what we do

Goals: to know...

HEAR - Increase practitioners' awareness and clinical suspicion for endometriosis by understanding the importance of the history.

KNOW – The critical role that Providers play in the triaging of adolescents.

SEE - Conceptualize how wrong origin paradigms determine wrong treatment paradigms and how current management of endometriosis is harmful in many ways.

TREAT - Know the biologic rationale for treating patients with endometriosis within a new care paradigm.

Subtext Goals: to know…

- How retrograde menstruation theory has supported 97 years of medical error and harm
- How standard endometriosis treatment is an issue of social justice and how that is changing
- The social forces driving the changes in endometriosis care
- What are the current economic drivers of endometriosis surgery and how that is changing

176 Million
10% of reproductive age women

- Diabetes 6%

Hypertension 8%

What is Endometriosis?

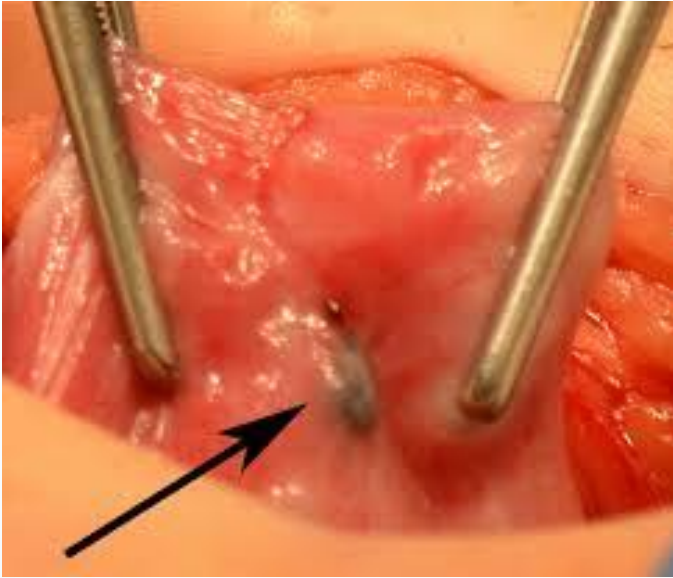
- **Dis/Misplaced menstrual tissue**

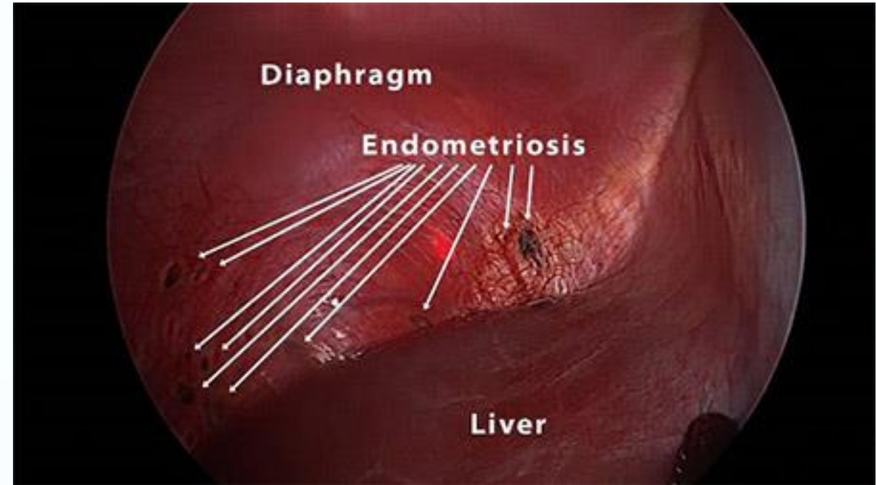
- **BUT ITS MORE COMPLICATED THAN THAT**

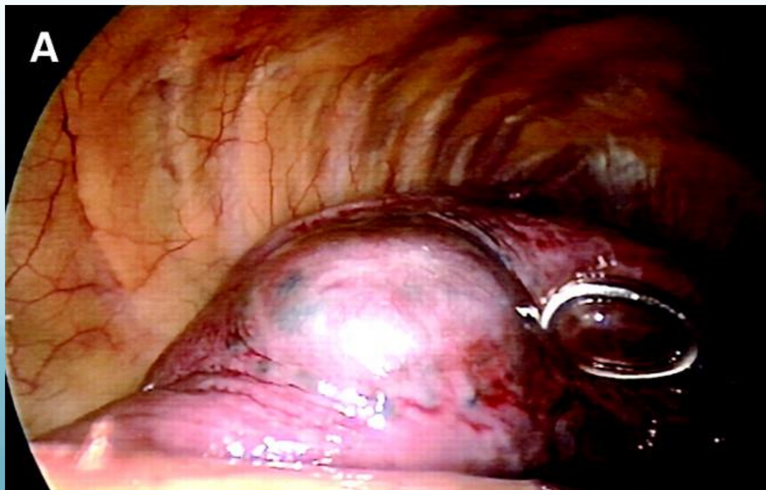
Where is Endometriosis?

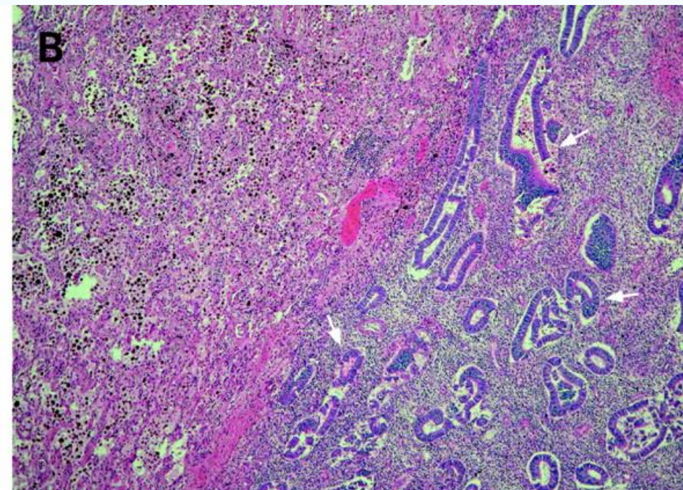
- **In the Pelvis and Abdomen: sidewalls, bladder, large and small intestine, diaphragm, thoracic cavity…….**

Endometriosis: its everywhere





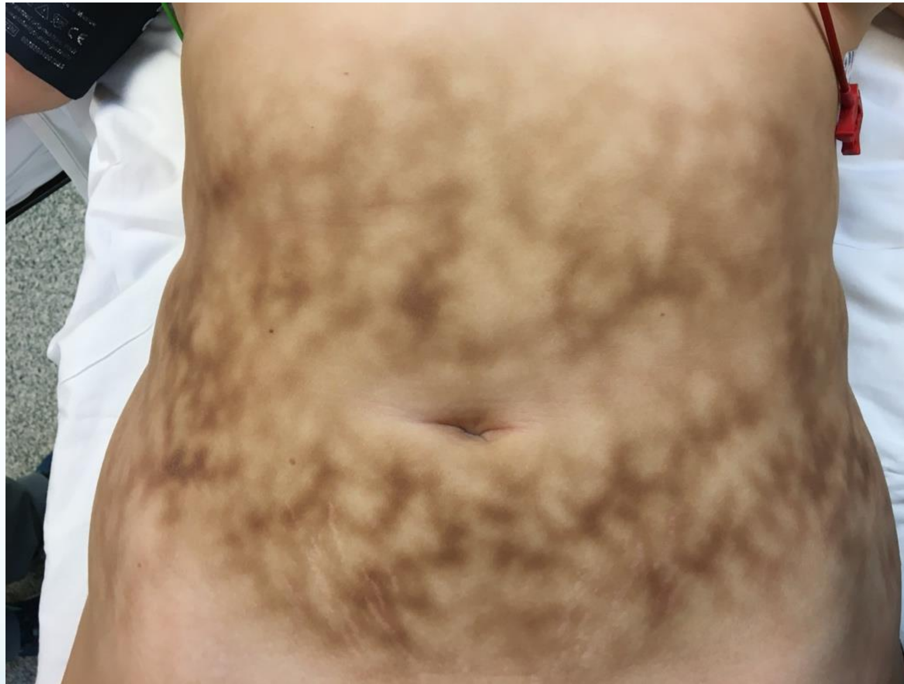




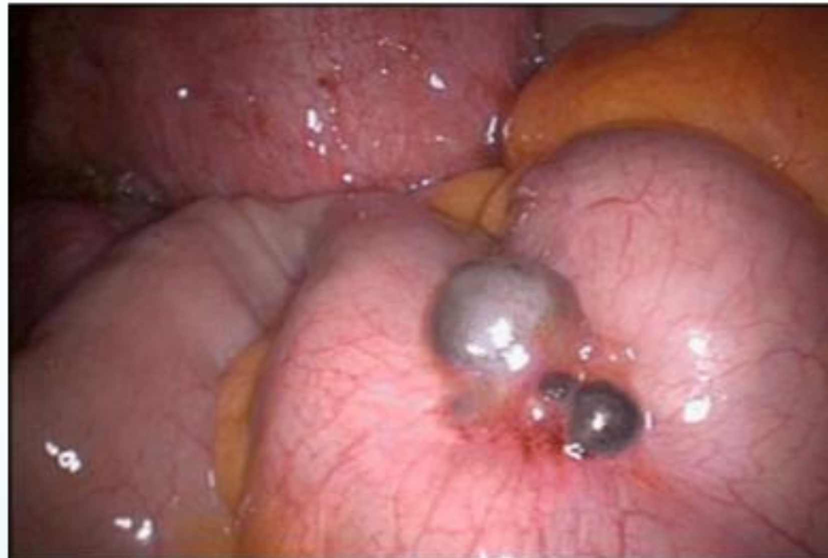
What does Endometriosis Cause?

- **Locally - Causes pain and dysfunction wherever it is located and……**
- **Systemically - Because of the release of prostaglandins and cytokines can demonstrate systemic effects.**

Gastrointestinal



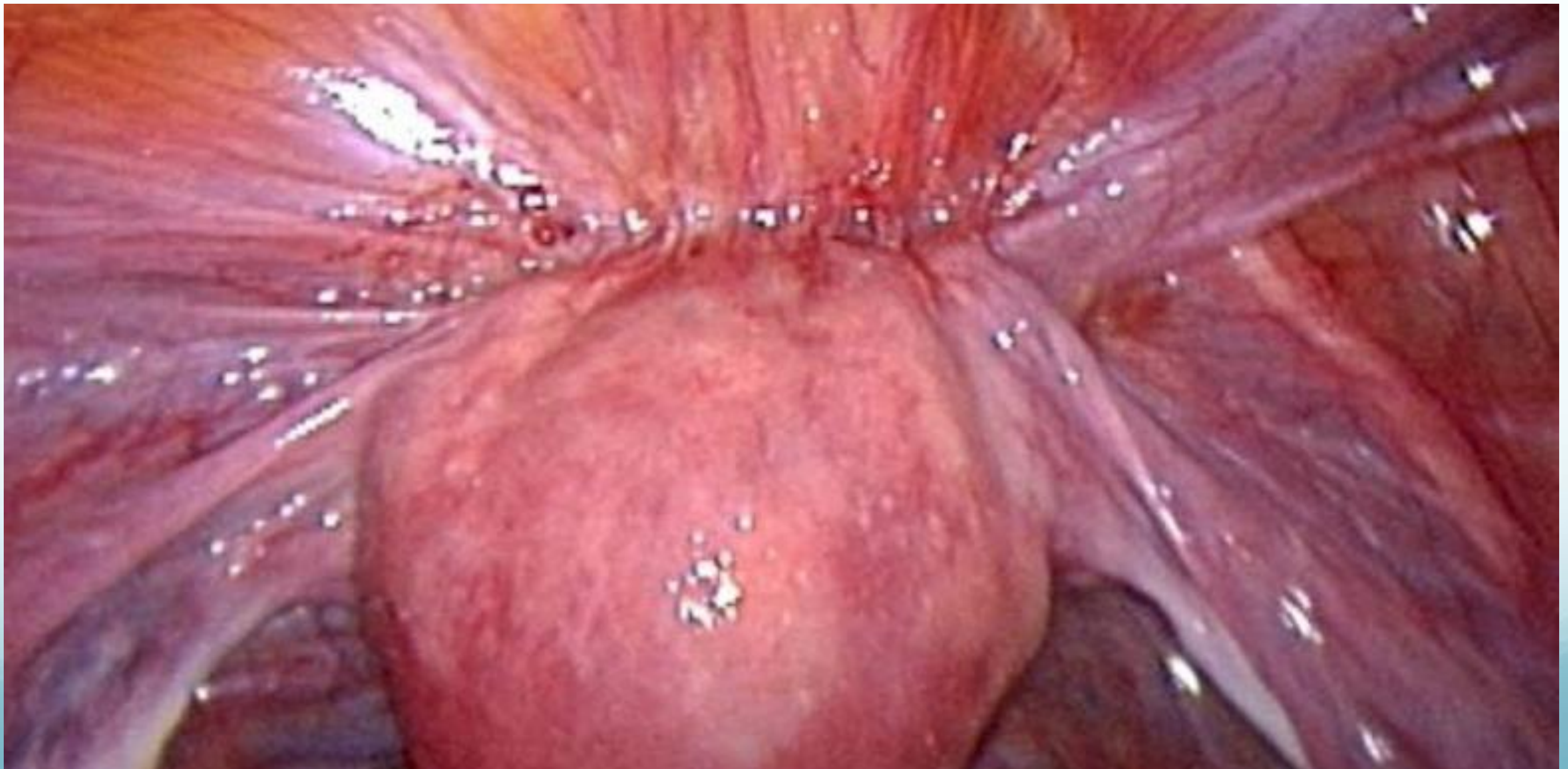
Gastrointestinal



Urologic

www.elsey.com

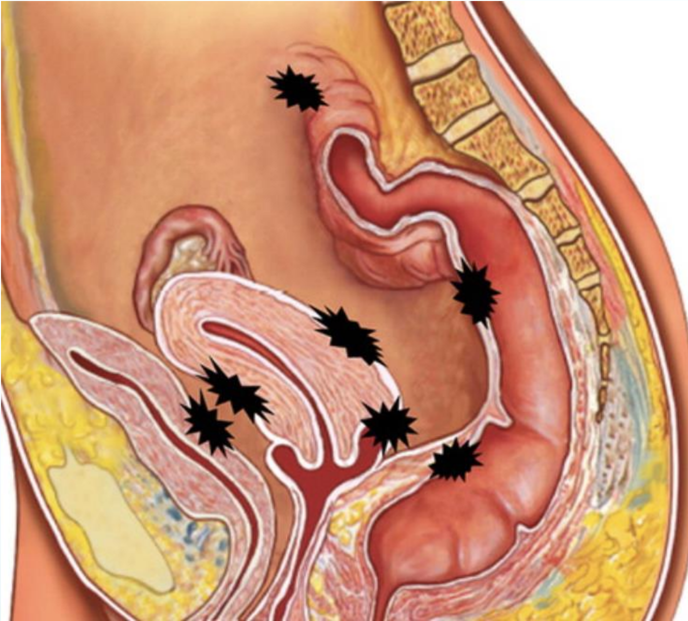
Urologic

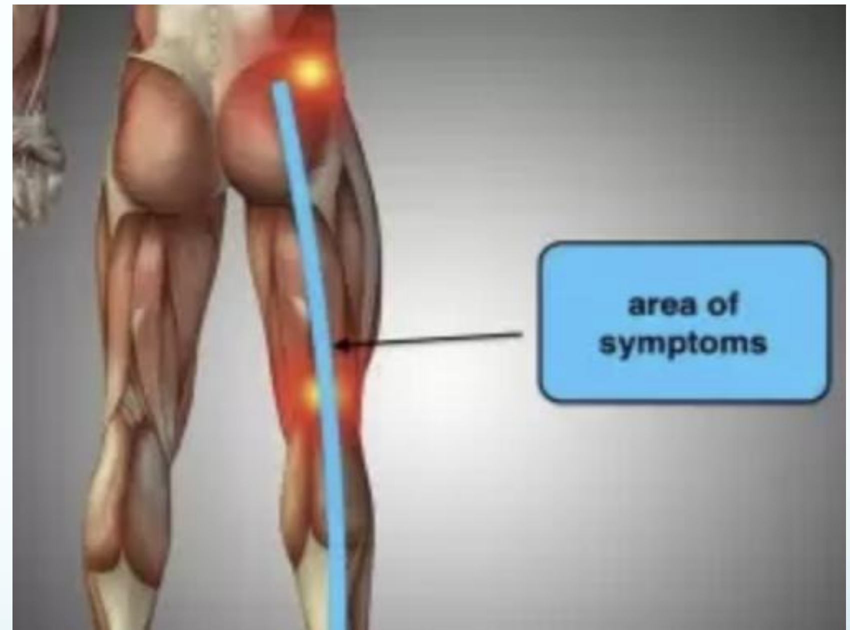


Orthopedic

Artcyclopedia.com

Orthopedic





And Everything is "NORMAL"

Urology

Orthopedics

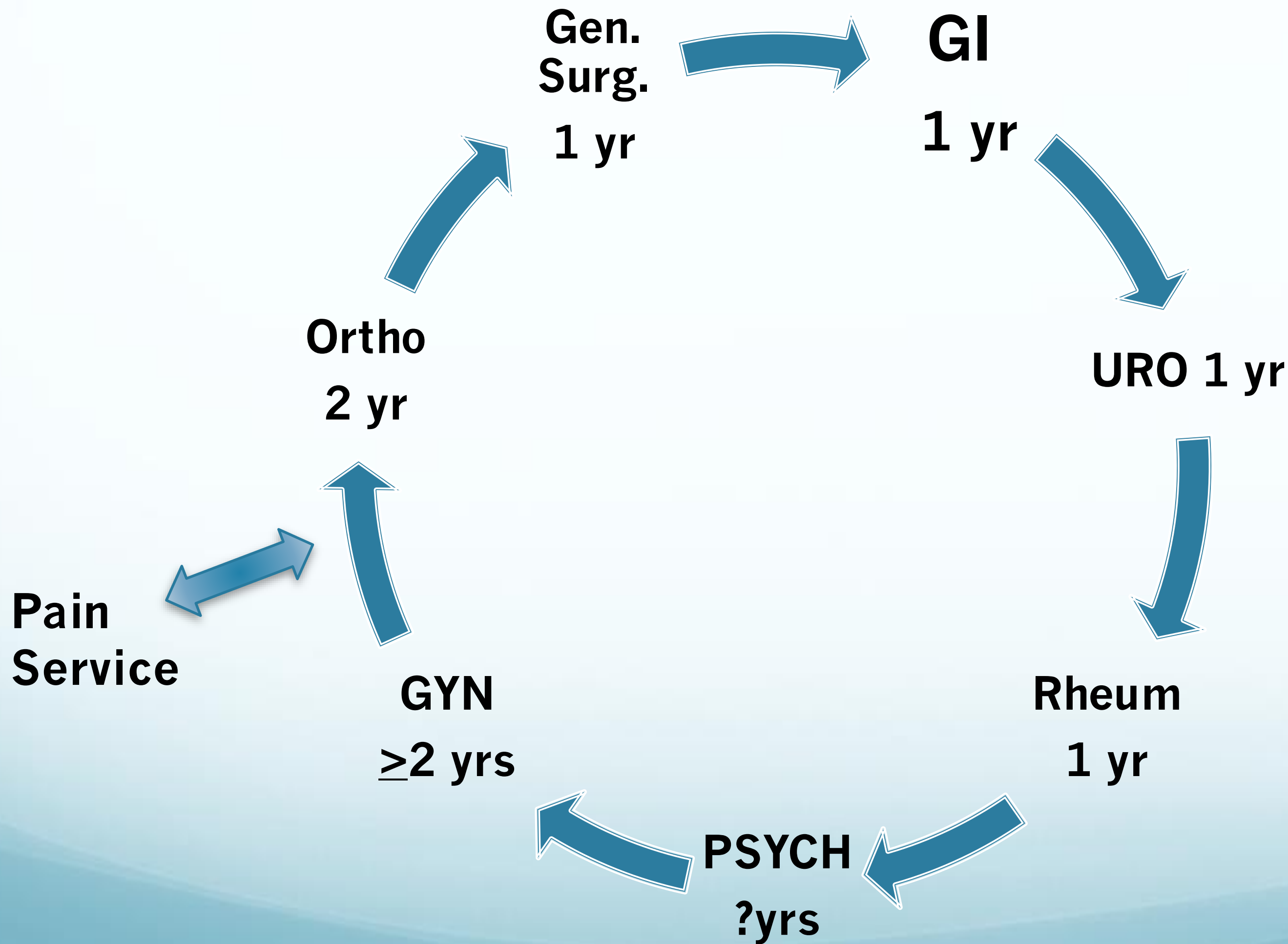
Dermatology

Rheumatology

Radiology

Gastroenterology

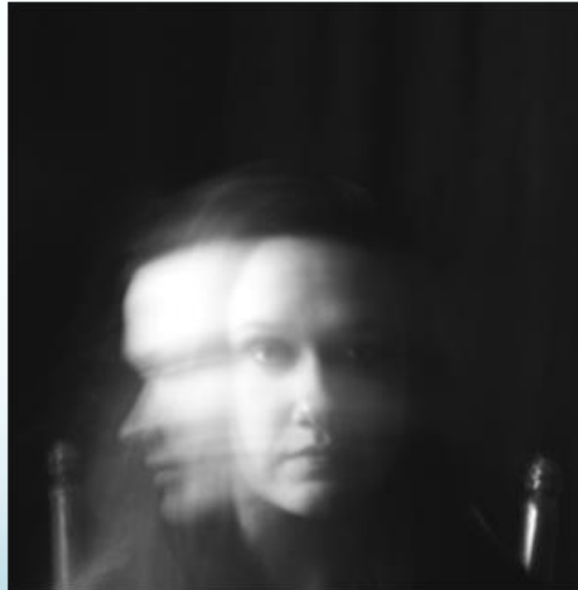
The Endometriosis Odyssey "Care Plan"



My Endometriosis Stories

- MY SCHOOL NURSE AND MY BEST FRIEND CINDY TRAP
- THE STD TRAP
- THE DRUG ADDICT TRAP
- THE ANXIETY TRAP
- THE PAIN SCALE TRAP

How about that Mental Health? Maybe I am just Crazy?



Are we really Listening? ...to women?

History of Present Illness

- Sir William Osler – "98% of the diagnosis is in the history."

Missing Middle School because of her period

- 98% predictive of endometriosis

Endometriosis and the Fetal Position

100% PPV if adding….

- **Fetal positioning during menses**
- **Fetal positioning on the bathroom floor during menses**
- **"tummy pains" "picky eater" three years prior to menarche**

Hear the Endometriosis

- Pain and symptoms of premenstrual timing – gradual expansion to the entire month.
- Not painful periods: high athleticism, the school's principal/guidance counselor/teacher
- Early BCP use
- PCOS
- Gastrointestinal dysfunction – IBS, Soft stool constipation (obstipation), post obstructive diarrhea, hematochezia, nausea, vomiting – all Negative workup

Hear the Endometriosis

- Voiding Dysfunction: Urgency, Frequency, hx of culture negative UTI's, microhematuria, desultory voiding patterns, nocturia.
- Neurologic: lower extremity dysesthesias, "nerve pain".
- Cardiovascular: POTS, Autonomic dysfunction.
- Pulmonary: catamenial pneumothorax, cyclical SOB

Hear the Endometriosis

- LOCAL EFFECTS: PAIN AND DYSFUNCTION
- SYSTEMIC EFFECTS: DYSFUNCTION – THINK PROSTANOIDS AND CYTOKINES

- **CHRONIC DIFFUSE SYMPTOMS WITH NEGATIVE WORKUP OR SOFT DIAGNOSES**

The story of the elephant and the sharp clawed animal

WHAT'S THE PROBLEM?

- SOCIAL JUSTICE?
- INSTITUTIONALIZED MYSOGENY?
- FEAR?
- MENSTRUAL TABOO?

Origin of Endometriosis

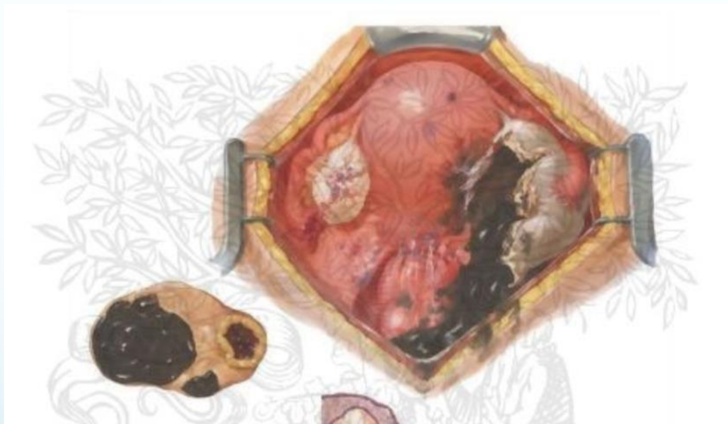
- How we understand the origin of endometriosis informs how we treat it

A disease of theories

- Lymphatic spread – brain, lung, bone, liver
- Metaplastic – Villars nodules
- Retrograde menstruation – Sampson's theory

Retrograde Menstruation

- Sampson's Theory – 1927. "Peritoneal Endometriosis Due to Menstrual Dissemination of Endometrial Tissue Into the Peritoneal Cavity"



1873-1946

http://en.wikipedia.org/wiki/File:John_A._Sampson.jpg

Origin Paradigm informs Treatment Paradigm

- “Chronic Disease” - ”you’ll never get rid of it”!
- Repetitive “Conservative surgeries” until....

‘‘DEFINITIVE TREATMENT’’

WHAT’s THAT?

The Problem

- The Enemy: **Menstruation**
- The Target: the **UTERUS**
- Aiding and Abetting: the **OVARIES**

Are we surprised?

ACOG Practice Bulletin 2010: "Total Hysterectomy and BSO is curative"

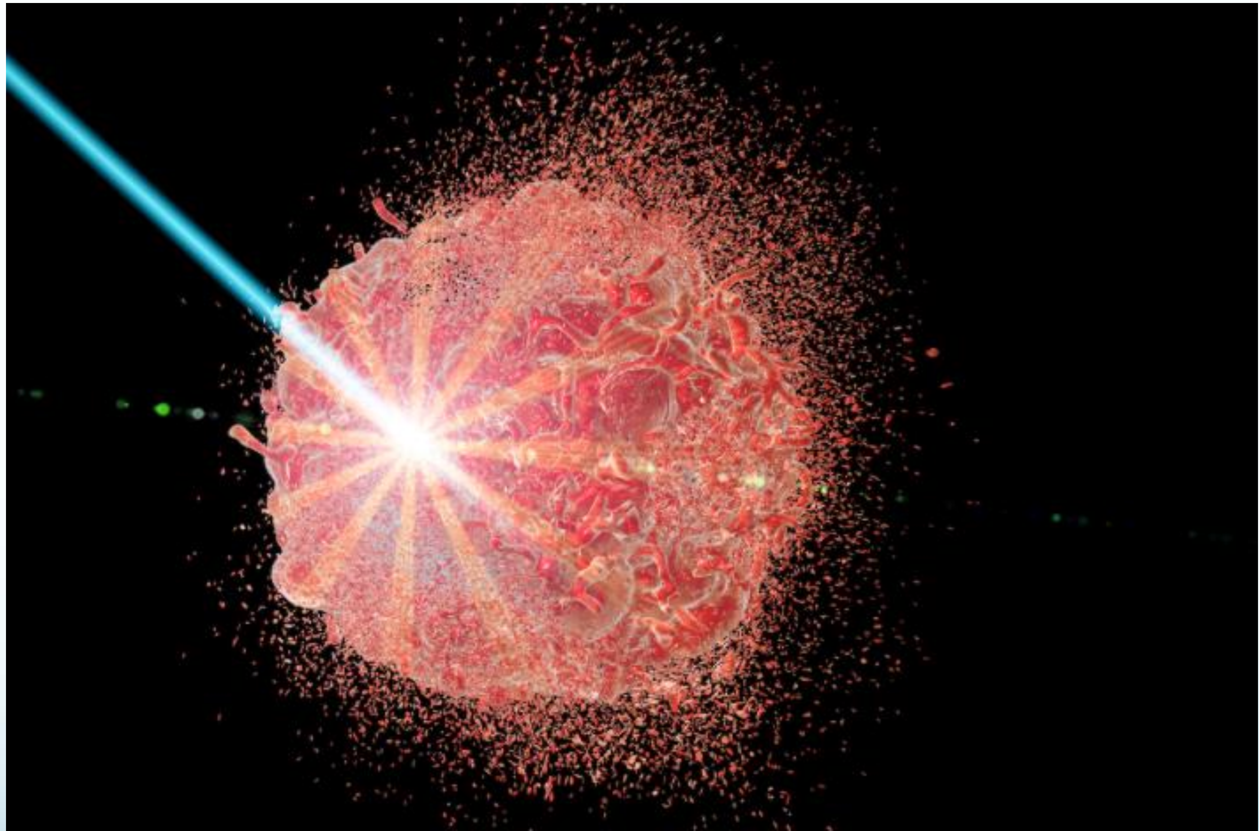
Hysterectomy – 60% "recurrence" and 30% additional surgery

Hysterectomy BSO – 10% Symptom recurrence and 4% additional surgery

Surgical Treatment

Endometriosis is the only disease where the **standard of care involves taking something else out other than the disease**

How about Conservative Surgical “Treatment”



Surgical "Treatment"

Conservative treatment – laparoscopic surface ablation aka fulgeration, burning, coagulation, cauterization with laser, radiofrequency, pizoelectric .....

Medical “treatment”

- **Suppress Menstruation**

Medical Treatment

- Birth control pills
- Birth control Shots.....Birth control patches and pills, birth control rings and shots and different pills and how about a different pill and maybe another shot and

Medical Treatment

- Birth control Shots.....

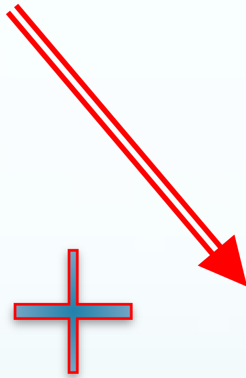
- ....Birth control patches and pills, and and birth control rings and shots and different pills and how about a different pill and maybe another shot and maybe we can try that progesterone again and agan and and againnsnd baingsopjog smpblkdaosdfijd.....

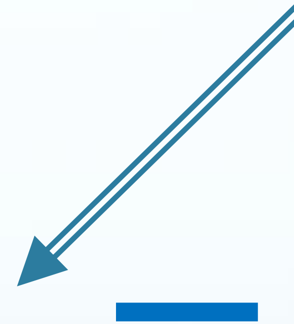
A Reproductive Physiology Primer

- Rational basis

ESTROGEN

PROGESTERONE





~~Endometrium~~

ENDOMETRIOSI
S

Endometriosis “Treatment”

- Decrease Estrogen
- Increase Progesterone

Reproductive Physiology

- Hypothalamus
  - Anterior Pituitary Gland
    - Ovary
      - Uterus

Cholesterol

DHEA-S

Pregnenalone

17-OH Pregnenalone

DHEA

Androstendiol

Progesterone

17OH-Progesterone

Androstenedione

Testosterone

Aromatase *

*Aromatase

Estrone

Estradiol

Aldosterone

Cortisol

“Treatment”

- OCP’s – cyclical and continuous combination OCP’s. Dienogest
- Progesterones – Norethindrone, Megace. Mirena IUD
- Ulipristal - SPRM
- Danazol
- GnRH agonists/antagonists

Surgical Treatment

60% of previously surface ablated lesions when resected, will demonstrate active endometriosis

Redwine - 1998

Are we hopeful?

ACOG Practice Bulletin 2010: Similar results were seen in a more recent study of 120 patients who underwent excision of the endometriosis and hysterectomy with or without oophorectomy. … Most patients did not require reoperation, even with conservation of the ovaries. Therefore, in patients with normal ovaries, a hysterectomy with ovarian conservation and removal of the endometriotic lesions should be considered.

Standard of Care – PB114

- Hysterectomy, with bilateral salpingo-oophorectomy, often is regarded as definitive therapy for the treatment of endometriosis associated symptoms…. Based on the results of a retrospective analysis of women monitored for a mean duration of 54 months after hysterectomy, ovarian conservation was associated with a 62% likelihood of recurrent symptoms and a 31% chance of requiring additional surgical treatment. **The limitation of this study is that it is unclear if the endometriosis was removed at the time of hysterectomy.**

Surgical Treatment – ACOG PB 114

- in a more recent study of 120 patients who underwent **excision** of the endometriosis and hysterectomy with or without oophorectomy…. patients did not require reoperation, even with conservation of the ovaries. Therefore**, in patients with normal ovaries, a hysterectomy with ovarian conservation and removal of the endometriotic lesions should be considered.**

Retrograde Menstruation

Endometriosis = backward flow through the tubes and implantation of lesions.

REALLY?

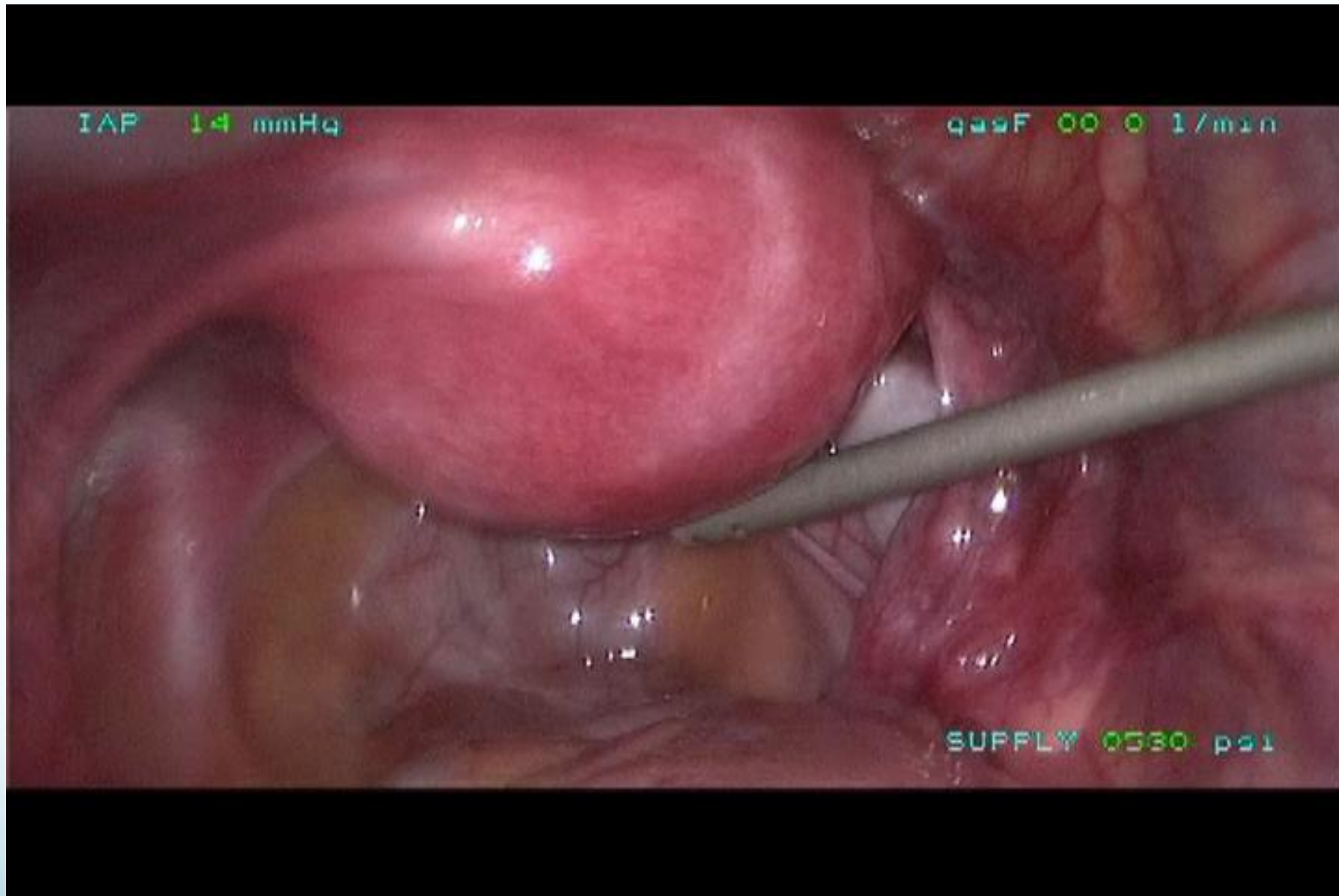
American Professors of Gynecology and Obstetrics

- Retrograde Menstruation - "The most flawed yet most widely believed theory"- 2015

Retrograde Menstruation: Doubt Creeps In

- The premenarchal adolescent with endometriosis
- The male with endometriosis in the ventral prostate
- The mean number of endometriosis implants equal across all ages at time of first laparoscopy – Redwine 2004
- Uterine agenesis with endometriosis
- Bloody peritoneal fluid in pts with prior tubal ligation - Halme 1984

Retrograde menstruation?



Embryology Primer

6-7 weeks gestation:

Bilateral mullerian ducts developing to the side of the gonadal ridge, migrate caudad and to the midline, and after fusing, separates the cloaca to meet an invagination.

Embryology

At 6-7 weeks gestation could there possibly be......

Dispersal of endometrioid cellular rests outside the endometrium during this descent of the mullerian ducts and ovary?

Mullerianosis

Embryologic origin of endometriosis: analysis of 101 human female fetuses. J Cell Physiol. 2012 Apr;227(4):1653-6.

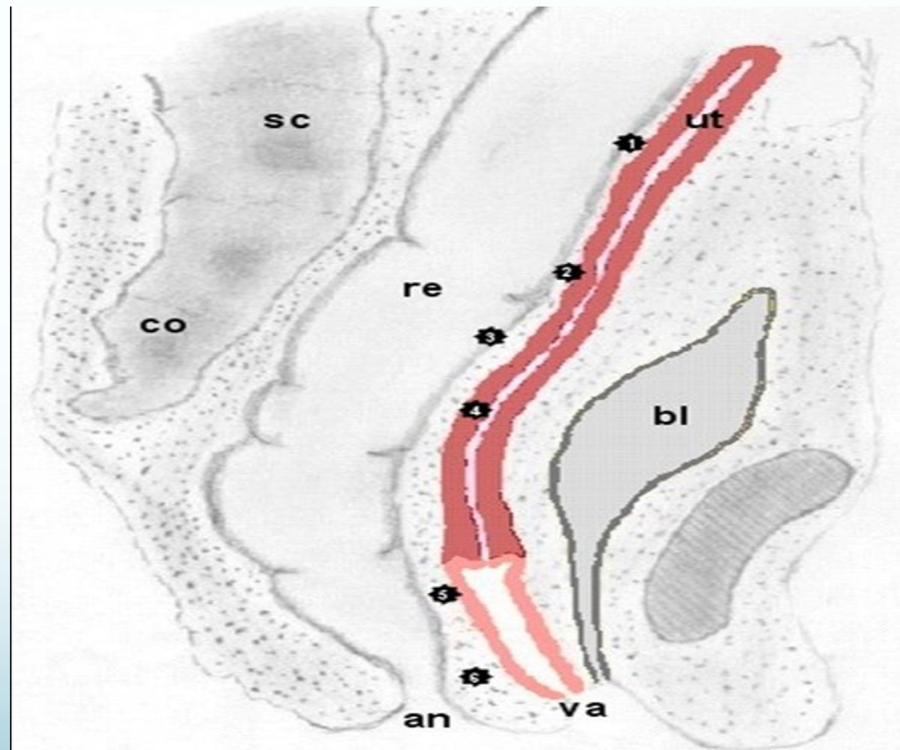
Mullerianosis

101 female fetuses (16-24 wks gestation) –

9 with endometriosis.

Mullerianosis

Embryologic origin of endometriosis: analysis of 101 human female fetuses. J Cell Physiol. 2012 Apr;227(4):1653-6.



Surgical Treatment: what an informed carrot farmer can teach us

IT'S A DEMONIC DISEASE

Angiogenesis Factor

Neurogenic Growth Factor

Fibrosis

Aromatase

Embryologic Origin

One Chance to Develop Endometriosis

One Dose of Endometriosis

All the endometriosis one will ever get is laid down at 6 wks fetal age.

Theory Informs Practice

Adolescents can and do have endometriosis

Some women have a lot and some a little across all ages – it’s a static disease

Men can have it. Mullerian duct remnants

Hysterectomy isn’t curative – except for adenomyosis

Oophorectomy won’t be curative – except endometriomas -

Complete Excision is curative

So What is and Why "Radical Widefield Excision of Endometriosis"

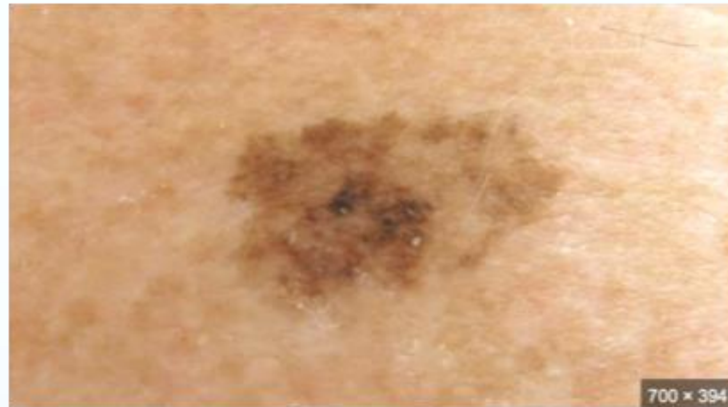
- Grossly Visible and non-visible lesions – 2 cm

ORAL PRESENTATION
Volume 226, Issue 3, Supplement S1273-S1274March 2022

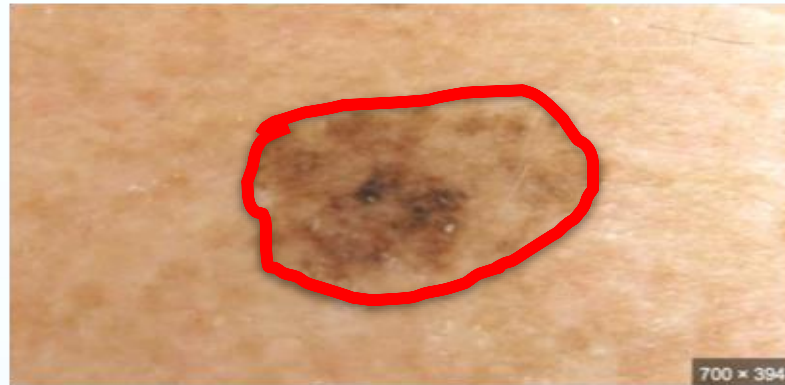
Improved pain and quality of life after complete pelvic peritonectomy

M. Misal2 · M. Girardo1 · M. Wasson3

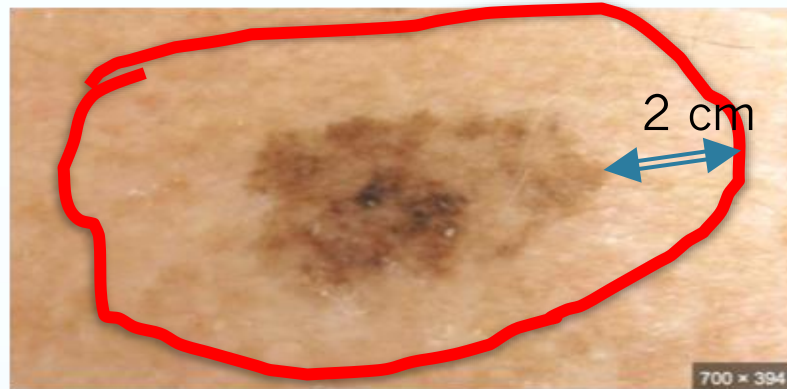
Skin Lesions?



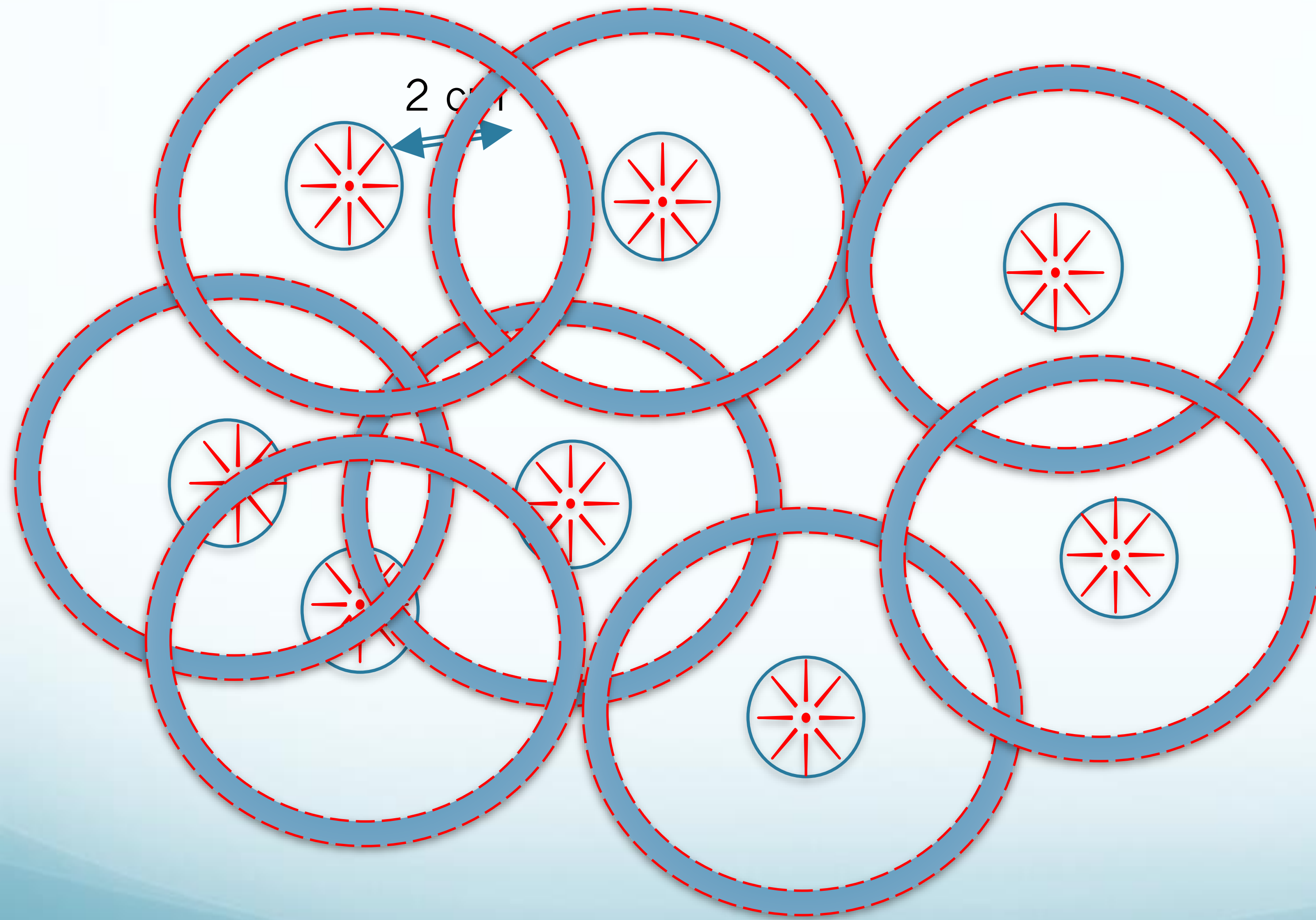
Skin Lesions: Site specific?



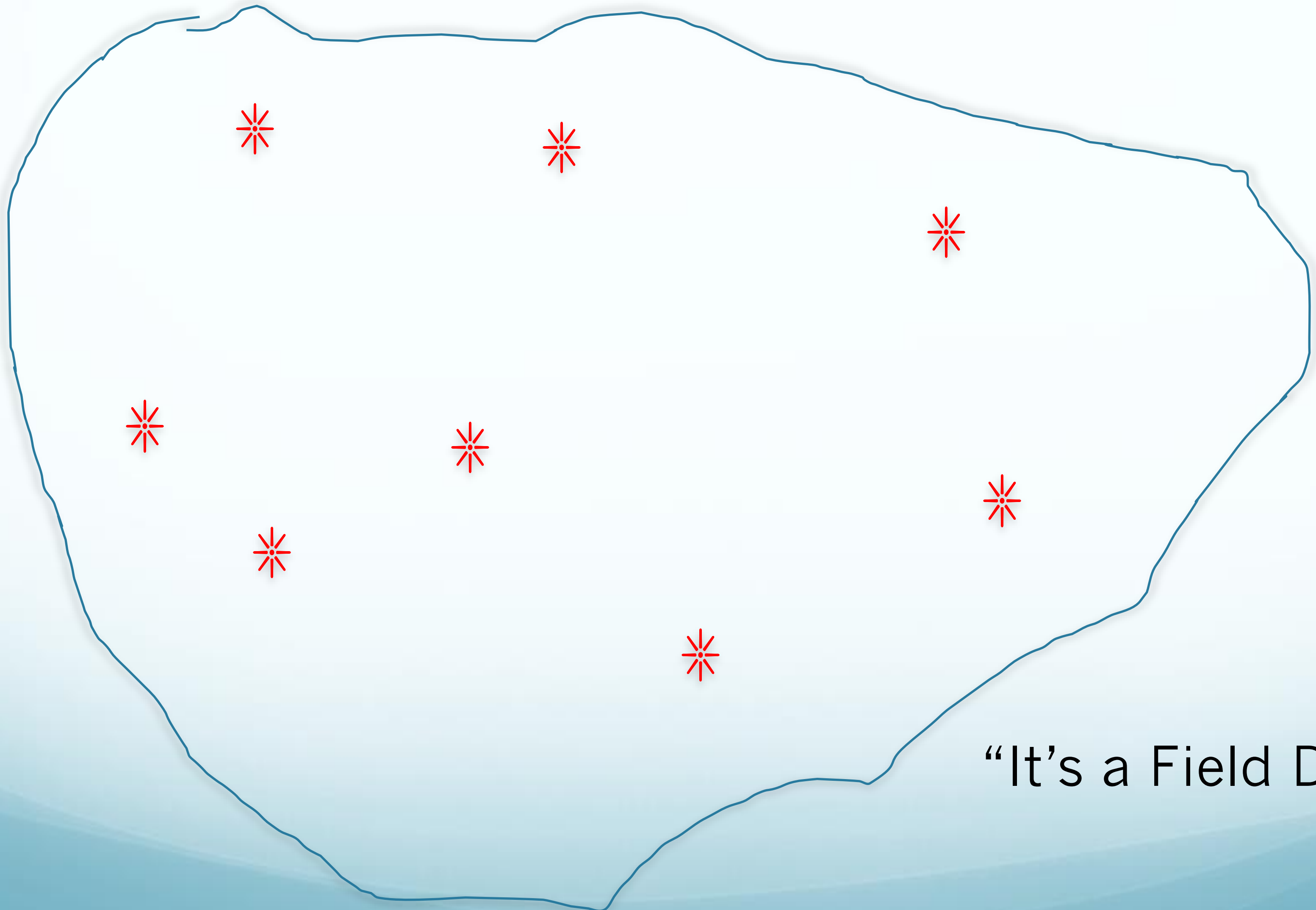
Skin Lesions: Or widefield?



Site specific Excision?

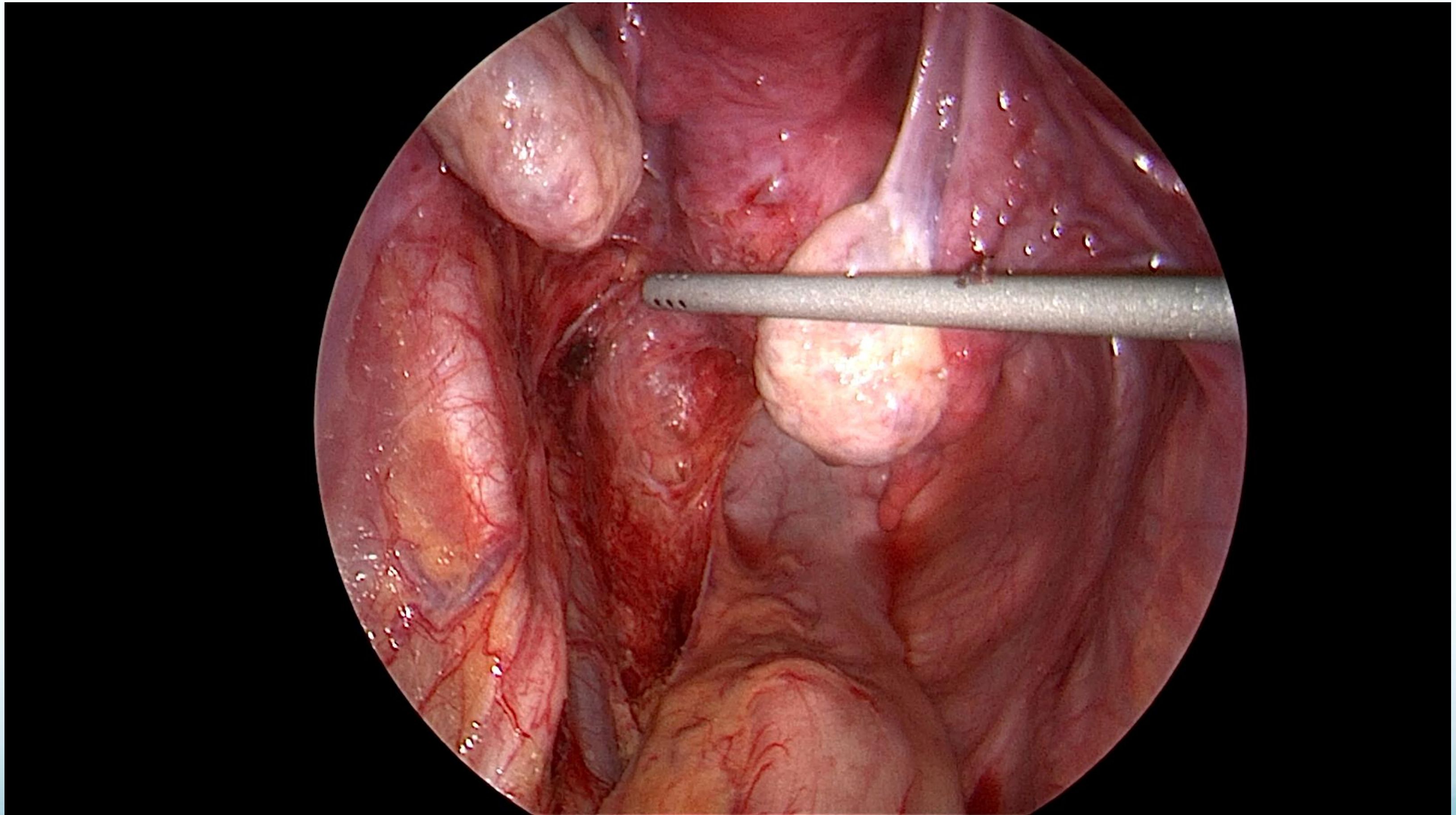


Radical Widefield Excision

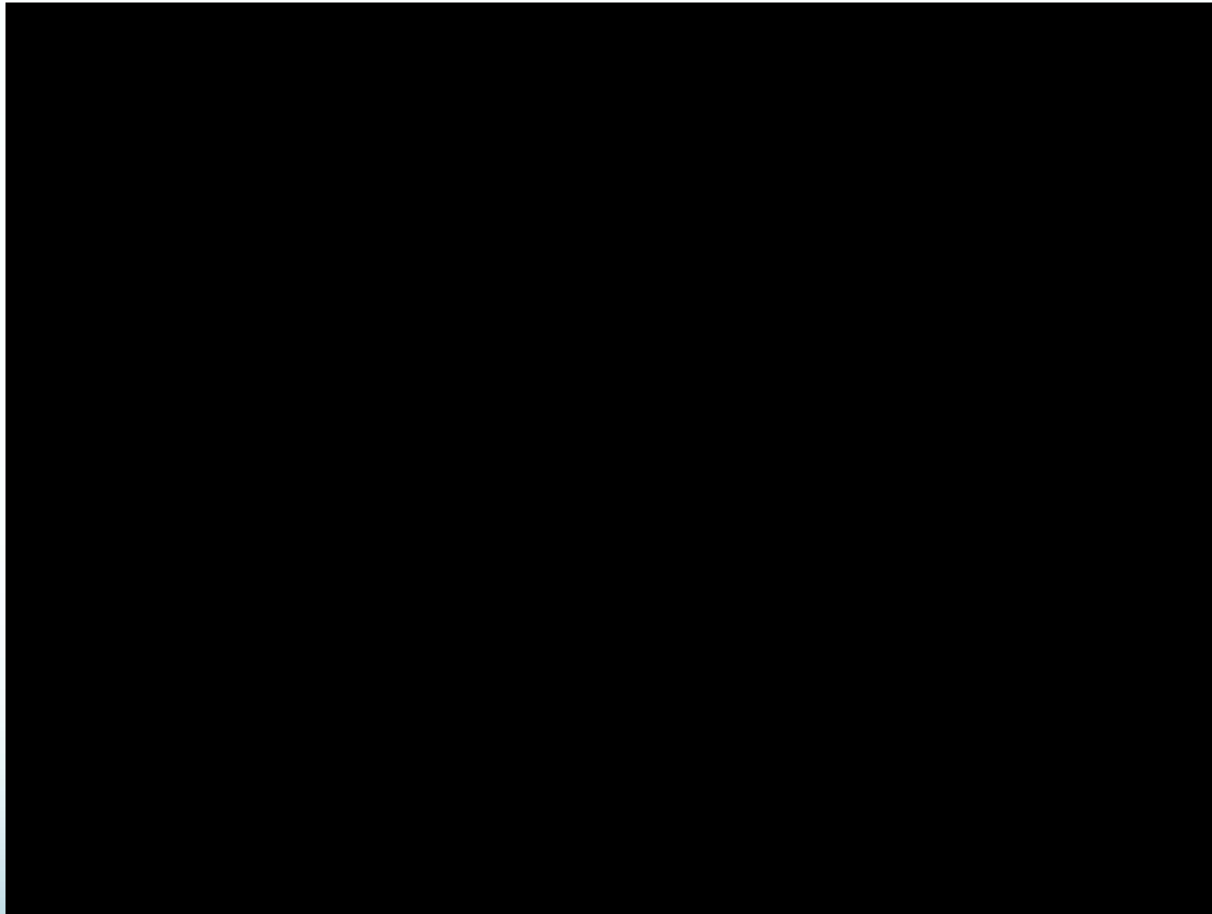


"It's a Field Defect"

Radical Widefield Excision of Superficial Disease



Radical Widefield Excision of Infiltrating Disease



Surgical Treatment

- APGO – "Although excisional biopsy and resection offers a higher success rate in treating the disease, **surgical excision also requires a higher level of surgical skill** …. The need to improve surgical approach and/or engage in timely referrals is unquestionable." (*APGO Educational Series on Women's Health Issues* Diagnosis & Management of Endometriosis: Pathophysiology to Practice)

Surgical Treatment

AAGL – "The requirements would include the gynecologist's ability to independently **perform the full spectrum of procedures** encountered in DIE (deep infiltrating endometriosis) surgery, **including resection and suture repair of bladder, ureteral, vaginal and bowel endometriosis.** Nerve sparing technique may be relevant." (Koh, AAGL SIG NewScope Oct-Dec 2013, p 7.)

Endometriosis: Laparoscopy

- GOAL:

Laparoscopic radical wide-field excision of all classic and atypical lesions – not just DIE

Preserve fertility

Restore normal anatomy

- There is no such thing as "Recurrent disease": it is because the last surgeon in there did not take out all the endometriosis.

HOW ABOUT THE ECONOMICS of ENDOMETRIOSIS SURGERY?

The story of

58571 and 58662

ACGME Residency Minimums – where's endometriosis excision?

Procedure	Minimum
Abdominal hysterectomy	15
Vaginal hysterectomy	15
Laparoscopic hysterectomy	15
Total hysterectomy (includes abdominal, vaginal, and laparoscopic hysterectomies)	85
Incontinence and pelvic floor procedure (excludes cystoscopy)	25
Cystoscopy	10
Laparoscopy	60

Physician's Fee Schedule – Surgery Codes 2021

58565 00	Surgery	54.33	13.43	$ 3,803.10	$ 940.10
58570 00	Surgery	23.62	23.62	$ 1,653.40	$ 1,653.40
58571 00	Surgery	26.60	26.60	$ 1,862.00	$ 1,862.00
58572 00	Surgery	30.51	30.51	$ 2,135.70	$ 2,135.70
58573 00	Surgery	35.76	35.76	$ 2,503.20	$ 2,503.20
58575 00	Surgery	56.41	56.41	$ 3,948.70	$ 3,948.70
58578 00	Surgery	0.00	0.00	BR	BR
58579 00	Surgery	0.00	0.00	BR	BR
58600 00	Surgery	10.94	10.94	$ 765.80	$ 765.80
58605 00	Surgery	9.91	9.91	$ 693.70	$ 693.70
58611 00	Surgery	2.24	2.24	$ 156.80	$ 156.80
58615 00	Surgery	7.49	7.49	$ 524.30	$ 524.30
58660 00	Surgery	20.05	20.05	$ 1,403.50	$ 1,403.50
58661 00	Surgery	19.21	19.21	$ 1,344.70	$ 1,344.70
58662 00	Surgery	20.98	20.98	$ 1,468.60	$ 1,468.60
58670 00	Surgery	10.96	10.96	$ 767.20	$ 767.20

Physician's Fee Schedule – Surgery Codes 2021

58571 00	Surgery	26.60

$1862.00

58662 00	Surgery	20.98

$1468.60

The Economics of Endometriosis EXCISION Surgery

- Two ports. Ablation of three lesions in the culdesac – 40 minutes – 58662
- 7 ports. Excision of Stage IV endometriosis, excision of rectovaginal lesion with rectal defect two layer closure, excision of invasive lesion of the bladder with two layer closure, excision of diaphragmatic lesion, bilateral endometrioma cyst wall excision with closure and bilateral oopheropexy, rectoscopy and rectal integrity testing – 8.5 hrs - 58662

The Economics of Endometriosis EXCISION Surgery

private practice vs hospital employed

The Economics of Endometriosis EXCISION Surgery – Physician

58662 - 8.5 hr surgery

private practice = cash only

$12,000 - $62,000

hospital employed = commercial insurance

$1468

Endometriosis is on the March

© AudreyMichel Photography

Patient Advocacy – International, National, Local, Societies, Social Media

- Amy Schumer
- Abbvie advertising
- Nancy’s Nook
- Australia, England
- AAGL Endometriosis Focus Group
- ACOG

Elizabeth Warren and Orrin Hatch in the same room? You have to be kidding!!

- https://www.youtube.com/watch?v=tAu0TPNbRGw

ICD-10 => CPT ----// Comp.

- Budget Neutrality Act – Balanced Budget Act 1997
  - +/- $20 million

More for Gyn means less for other Specialties

UNLIKELY TO HAPPEN

HOSPITAL CARE IS KEY TO COMPENSATION

ACOG

Training

- 2018 – 3 endo “fellowships”
- 2022 – 8 endo fellowships
- 2024 – 6 endo fellowships (62 AAGL FMIGS;endo not a standard training)

Changing incentives: AAGL and ICD-10

- Updated ICD-10 Codes will now reflect laterality, depth of invasion, volume of disease and exact organ(s) involved. Published 10-1-22.
- Detailed operative notes are critical to utilize advanced coding
- Patient outcomes, disease tracking, and resource allocation will be improved

AAGL and ICD-10

- 205 Additional endometriosis diagnostic codes
- 9 No change
- 1 Revision

ICD-10 => CPT codes => Compensation

- Staging Systems
  - ASRM-r
  - AAGL

ICD-10 =>CPT codes => Comp?

Figure 45.8 ASRM Classification of Endometriosis form.

AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE
REVISED CLASSIFICATION OF ENDOMETRIOSIS

Patient's Name ______________ Date ______________

Stage I (Minimal) - 1-5
Stage I (Mild) - 6-15
Stage III (Moderate) - 16-40
Stage IV (Severe) - >40
Total ______________

Laparoscopy ________ Laparotomy ________ Photography ________
Recommended Treatment ______________

Prognosis ______________

	ENDOMETRIOSIS	<1cm	1.3cm	> 3cm
PERITONEUM	Superficial	1	2	4
	Deep	2	4	6
OVARY	R Superficial	1	2	4
	Deep	4	16	20
	L Superficial	1	2	4
	Deep	4	16	20

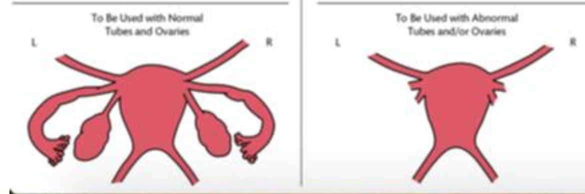
POSTERIOR CULDESAC OBLITERATION	Partial	Complete
	4	40

	ADHESIONS	< 1/3 Enclosure	1/3–2/3 Enclosure	> 2/3 Enclosure
OVARY	R Filmy	1	2	4
	Dense	4	8	16
	L Filmy	1	2	4
	Dense	4	8	16
TUBE	R Filmy	1	2	4
	Dense	4*	8*	16
	L Filmy	1	2	4
	Dense	4*	8*	16

***If the fimbriated end of the fallopian tube is completely enclosed, change th point assignment to 16.**
Denote appearance of superficial implant types as red [(R), red, red-pink, flamelike, vesicular blobs, clear vesicles], white [(W), opacifications, peritoneal defects, yellow-brown], or black [(B) black, hemosiderin deposits, blue]. Denote percent of total described as R___%, W___% and B___%. Total should equal 100%.

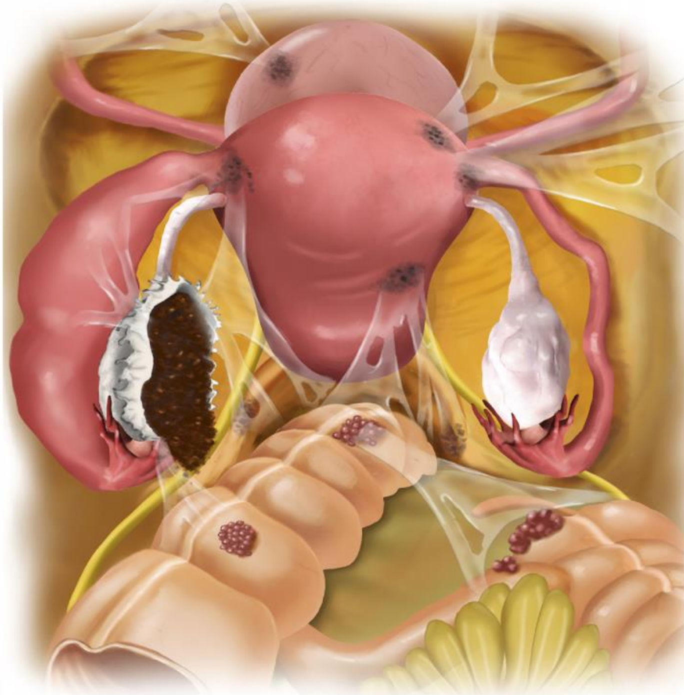
Additional Endometriosis: ______________

Associated Pathology: ______________



ICD-10 => CPT => Comp?.

Superficial	Score
< 3 cm	2
≥ 3 cm	4
Vagina (muscularis)	**Score**
< 3 cm	5
≥ 3 cm	8
Left Ovary	**Score**
Superficial	2
< 3 cm	5
≥ 3 cm	7
Left Ureter	**Score**
Extrinsic	6
Intrinsic	8
Hydroureter	9
Left Fallopian Tube	**Score**
Slight serosal involvement /damage	2
Moderate immobility	4
Severe immobility	6
Complete obstruction	7
Cul-de-sac obliteration	**Score**
Partial	6
Complete	9
Rectum/ Sigmoid colon	**Score**
< 3 cm	7
≥ 3 cm	9
Rectovaginal septum	**Score**
Present	8



Retrocervical	Score
< 3 cm	5
≥ 3 cm	8
Bladder/ detrusor	**Score**
< 3 cm	5
≥ 3 cm	7
Right Ovary	**Score**
Superficial	2
< 3 cm	5
≥ 3 cm	7
Right Ureter	**Score**
Extrinsic	6
Intrinsic	8
Hydroureter	9
Right Fallopian Tube	**Score**
Slight serosal involvement /damage	2
Moderate immobility	4
Severe immobility	6
Complete obstruction	7
Small bowel/ Cecum	**Score**
< 3 cm	6
≥ 3 cm	8
Appendix	**Score**
Present	5

AAGL Endometriosis Stage	Total Score
Stage 1	≤8
Stage 2	9 to 15
Stage 3	16 to 21
Stage 4	>21

Endometriosis Care Center at MAH

- Advanced Surgical Excisional Treatment:
  - Urology – Andrew Wagner, MD
  - Colorectal – Michele Fakler, MD
  - Cardiothoracic – Ammara Watkins, MD

Endometriosis Care Center at MAH

Referral Non-surgical care: PT, Social Work, Pain Management

Endometriosis Care Center at MAH

- Academic Initiatives
  - "Patient Perception of Laparoscopic Excision vs. Ablation of endometriosis: a crowd-sourced comparative evaluation of symptom and Quality of Life outcomes" – Isaac, Kapetanakis, Chatburn, Thibeault, Mackenzie
  - 12 Video Submissions: AAGL, SGS, ACOG
  - 8 Abstracts: HMS, MAH, AAGL, SGS

Endometriosis Care Center Surgical Cases

- June 2017 to May 2018 :
- **271 cases**...7 OR days/month...
- June 2023 to May 2024:
- **543 cases**....16 OR days/month

Endometriosis Care Center Significant Dates/Facts

First radical excision: February 5, 2010

Drs. Chatburn, Parent learn technique: 2015-2017

2 separate endo cases at the same time: August 2017

First operative note identifying "Radical Widefield Excision" - 2017

Erica Thibeault PA hired – 2018

Fellowship in Advanced Endometriosis Care - 2020

Endometriosis Care Center Significant Dates/Facts

Three Endo OR's running simultaneously August 2022

Longest case duration: 9 hrs 22 minutes

Shortest case duration: 1 hr 3 minutes

Average case duration: 3 hrs 6 minutes

Endometriosis Care Center at MAH

Robust outcomes assessment – Preoperative and 6, 12, 18 and 24 month Postoperative assessment. 3 embedded validated questionnaires, assessment of >100 symptoms

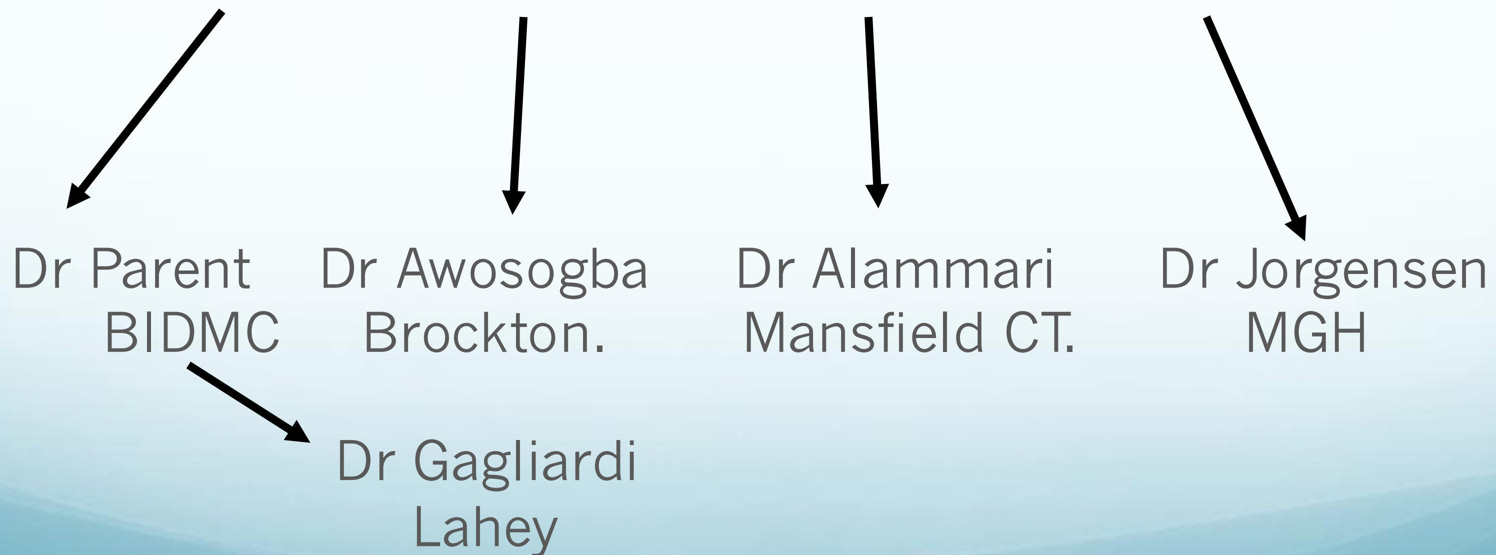
OVERALL HEALTH AND WELL BEING (0-100): 0=Complete impairment 100=No impairment

TIME OF QUESTIONNAIRE	PREOP	18 Months POSTOP	24 Months POSTOP
QOL MEASURE	71.5 (<.001)	40.4 (<.001)	29.4 (<.001)

Mount Auburn Endometriosis Care Center Diaspora

Mount Auburn Hospital

Dr. Chatburn, Dr. Kapetanakis, PA Thibeault



Clavian-Dindo

- **Grade I – Any deviation from normal postop not requiring advanced therapeutic measures**
- **Grade II – Requiring pharmacologic treatment including transfusion, TPN…**
- **Grade III – Requiring surgical, endoscopic or radiologic intervention**
  - Grade IIIA – intervention without need for GA
  - Grade IIIB – intervention under GA

Grade IV – **Life threatening complication requiring ICU**

IVa – single organ dysfunction (including dialysis)

IVb – multiorgan dysfunction

Grade V – Death of patient

ENDOMETRIOSIS COMPLICATIONS

- Non-endo surgery – 9-15%
- Endo centers – 2-6%

Major Complications – 1.0%

- Major complications: **Clavian-Dindo Classification Level III only** (no Level IV or V)
- May 2017 to May 2019
- 896 Cases, 107 (12%) Stage 4
- 3 ureter injuries: Stent 3-4 months with healing.
- 4 bowel injuries with abscess: 1 prolonged antibiotics, 3 ostomy and later takedown
- 2 Postoperative hemorrhage: 1 IR, 1 Return to OR.
- Intraoperative transfusion: None

Endometriosis Care Center
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Major Complications – .9%

- Major complications: **Clavian-Dindo Classification Level III only** (no Level IV or V)
- Jan 2023 to June 2024
- 815 Cases, 79 (9.7%) Stage 4
- 7 level III -
- **Also**....8 postop UTI....4 Surgicel Inflammatory Sterile abscesses and massive ascites

Endometriosis Treatment

Historically

long interval from symptoms to diagnosis, many ineffective ablative surgeries with significant detrimental impact across wide QOL realms.

The Goal

Comprehensive, trauma-informed care with the surgical centerpiece being a single surgical excision of endometriosis instead of a long debilitating pursuit of ineffective “treatments”. Postoperative care of comorbidities: adenomyosis and pelvic floor muscle spasm.

Goals

- How retrograde menstruation theory has supported 95 years of medical error and harm
- How standard endometriosis treatment is an issue of social justice and how that is changing
- What are the economic challenges to excisional treatment
- What are the social forces driving the changes in endometriosis care
- What is happening within MAH endometriosis care

Why we do what we do

THANK YOU FOR EARNING YOUR ENDOWARRIOR BADGE LEVEL 3