MODERN EVALUATION OF THE ENDOMETRIUM

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IN MY OPINION ANY NORMATIVE DATA FOR ENDOMETRIAL THICKNESS WILL NOT BE MEANINGFUL FOR INDIVIDUAL PATIENTS … AND UNDERSCORES THE PROBLEM THAT HAS ARISEN IN CLINICAL PRACTICE

HOWEVER…

- CAVITY SIZE WILL OFTEN BE A FUNCTION OF PARITY
- THE UTERUS GROWS WITH CHILDBIRTH
ALL WHO PRACTICE OB/GYN KNOW THAT THE AVERAGE MULTIPAROUS UTERUS IS LARGER THAN THE AVERAGE NULLIPAROUS UTERUS EVEN IN WOMEN OF SIMILAR AGE

HORMONAL STATUS OBVIOUSLY AFFECTS ENDOMETRIAL THICKNESS
THE ENDOMETRIUM CONSISTS OF A BASALIS AND A FUNCTIONALIS
ESTROGEN CAUSES THE FUNCTIONALIS TO PROLIFERATE

PROLIFERATIVE EM
Mitoses
Note AMOUNT (or HEIGHT) of tissue
PROGESTERONE (OR IN SEQUENTIAL HORMONE THERAPY THE USE OF A PROGESTIN) WILL CONVERT AN ESTROGEN PRIMED ENDOMETRIAL FUNCTIONALIS TO A SECRETORY PHASE.

AFTER SHEDDING OF THE FUNCTIONALIS THE BASAL ENDOMETRIUM THAT REMAINS IS INITIALLY QUITE THIN AND HAS A PENCIL LINE APPEARANCE ON TV U/S.
POST MENSTRUAL EM

IN MENOPAUSE THERE IS NO ESTROGENIC STIMULATION OF THE FUNCTIONALIS AND THE ENDOMETRIUM IS ATROPHIC

ATROPHIC EM

- Simple tubular glands
- Lacks mitotic activity
- Fibrotic stroma with increased collagen fibers
SO…

IF THERE IS NO "NORMAL’ WIDTH OF ENDOMETRIAL THICKNESS
WHAT IS THE PROPER USE OF THE ENDOMETRIAL ECHO CLINICALLY?

ANSWER

• THE HIGH NEGATIVE PREDICTIVE VALUE OF A THIN DISTINCT ECHO IN PATIENTS WITH BLEEDING

ENDOMETRIAL CANCER

• American cancer society (2011): 41,520 new cases, 8,145 deaths
• Vaginal bleeding will be the presenting sign in almost all
• Most women with PM bleeding actually bleed secondary to atrophic changes of vagina or EM
• Incidence of EM cancer in women with PMB ranges from 1-14%
POSTMENOPAUSAL BLOODING NOT SO EASILY DEFINED

- Menopause “The Final Menstrual Period”
- Retrospective diagnosis
- Classic definition: “No bleeding for 12 months due to a depletion of ovarian follicles”
- Serum measurements of FSH and estradiol notoriously unreliable – snapshot of ovarian function at that time.

 ERRATIC FUNCTION OF THE OVARIENS IN LATE PERIMENOPAUSE OFTEN MAKES IT DIFFICULT TO LABEL BLEEDING AS DEFINITIVELY POSTMENOPAUSAL

CLINICAL REALITY

- Postmenopausal bleeding is "endometrial cancer until proven otherwise" Mandates evaluation
- ACOG Practice Bulletin #14 (2000) "endometrial assessment to exclude cancer is indicated in any woman older than 35 years who is suspected of having anovulatory uterine bleeding"
ENDOMETRIAL ASSESSMENT

HISTORICAL BACKGROUND

- D&C (Dilatation & Curettage)
  - 1st described in 1843
  - Most common operation performed on women in hospital through much of the 20th Century
  - Prehysterectomy studies showed that when done blindly much of the uterine cavity goes unsampled

HISTORICAL BACKGROUND

VABRA ASPIRATOR

- Re-usable metal cannula attached to suction machine for in office EM sampling with little or no anesthesia
- High level of patient discomfort
- 86% accurate in diagnosing cancer
SUCTION PISTON BIOPSY INSTRUMENTS

- Smaller, cheaper, disposable plastic catheters with an internal piston to generate suction
- Marketing success of Pipelle brand ("Xerox, Kleenex")
- Similar efficacy but better patient acceptance when compared to Vabra

PIPELLE SUCTION PISTON BIOPSY

- 1st described by Cornier in an article in the Gray journal in 1984
- Of next 8 papers (1988-1991) 7 dealt with EM dating as part of infertility W/U (no longer utilized)
- One paper dealt with AMOUNT of tissue obtained with Pipelle compared to Vabra
- Next paper (1991) was WIDELY publicized

PIPELLE AND EM CARCINOMA

Stovall (1991)
- 40 women with known carcinoma
- Pipelle prior to TAH
- Cancer diagnosed in 39/40 patients
- “Accuracy” = 97.5%
- Widely publicized
• Rodriguez (1993) did prehysterectomy sampling with both. Pipelle sampled an average of 4% of EM lining (range 0-12%) vs. 41% for Vabra
• Pipelle agreed with post hysterectomy diagnosis in only 84% of cases

PIPELLE ENDOMETRIAL SAMPLING
65 pts with known carcinoma of EM Pipelle under anesthesia prior to TAH – missed 11/65 cancers of which
  3 were < 5% EM area
  4 were 6-25% EM area
  4 were 26-50% EM area
– 5/11 had tumor in polyps that were missed
Concluded “Pipelle is excellent for detecting global processes in the endometrium”

• Performed in 135 premenopausal patients before curettage
• 13 patients (10%) had different histologic results compared with curettage
• 5 of these patients had polyps, of which Pipelle sampling missed 3
• 18 patients had hyperplasia, of which Pipelle sampling missed the diagnosis in 7 (39%), thus underscoring the often focal nature of that pathologic process

FALSE NEGATIVE RATE OF PIPELLE IN PATIENTS WITH KNOWN CARCINOMA (OTHER STUDIES)

- 7% (missed 2/26)
- 17% (missed 14/80)
- 33% (missed 12/37)
- Not nearly as reliable as the original work by Stovall

TV U/S IN PMB: HISTORICAL PERSPECTIVE

In the early 1990’s, it was utilized in women with postmenopausal bleeding to see if it could predict which patients lacked significant tissue and could avoid D&C or endometrial biopsy and its discomfort, expense, and risk.

Consistently, the finding of a thin distinct endometrial echo < 4 to 5mm was shown to effectively exclude significant tissue in postmenopausal women with bleeding.

<table>
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<th>YEAR</th>
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<th>THICKEST EM ASSOCIATED WITH INACTIVE HISTOLOGY</th>
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TRANSVAGINAL ULTRASOUND

TRANSVAGINAL U/S VALIDATION OF EARLY STUDIES
Endometrial Thickness and Cancer Findings in Postmenopausal Women With Bleeding

<table>
<thead>
<tr>
<th>Reference</th>
<th>Endometrial thickness*</th>
<th>Number of women</th>
<th>Number of cancers</th>
<th>Negative Predictive Value</th>
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<td>≤ 4 mm</td>
<td>1,168</td>
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<td>Ferrazzi 1996</td>
<td>≤ 4 mm</td>
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<td>2</td>
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<td></td>
<td>≤ 5 mm</td>
<td></td>
<td>4</td>
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<td>Gull 2003</td>
<td>≤ 4 mm</td>
<td>394</td>
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TRANSVAGINAL U/S VALIDATION OF EARLY STUDIES

- For EM ≤ 4mm incidence of malignancy 1 in 917

IS ENDOMETRIAL BIOPSY STILL NECESSARY?

- False negative rate of TV U/S ≤ 4mm significantly less than a negative suction piston biopsy
- EM biopsy on patients with EM < 5mm: only 82% successfully performed, and of those only 27% gave a sample adequate for diagnosis
IS ENDOMETRIAL BIOPSY STILL NECESSARY? (Con’t)

- ACOG Committee Opinion (2/09)
  “When transvaginal ultrasound is performed for patients with postmenopausal bleeding and an EM thickness < 4mm is found EM sampling is not required”

TRANSGENIAL ULTRASOUND

GENERAL PRINCIPLES

- Use the highest frequency transducer that still yields adequate penetration
- Once EM echo well visualized use as much magnification as feasible
- Obtain multiple images in the Long Axis plane... midline as well as to the right and left of midline
- Measurements should be on a long axis view of the thickest point
IMPORTANCE OF “EM NOT WELL VISUALIZED”

- Not all uteri lend themselves to a meaningful US examination (Axial uterus, marked obesity, coexisting fibroids, previous surgery, etc.)
- Just because you can produce something that is “linear and white” DOESN’T mean you should!!!
- When an EM echo is not TOTALLY distinct, do NOT be afraid to indicate “EM echo not well visualized”

EXAMPLES OF “GOOD” EM ECHOS SEEN ORIGINATING FROM CERVICAL OS

EM ECHO

- IF you angle the transducer long enough you can probably find something linear and white (echogenic)
- If you freeze the frame and put on calipers, the image is not necessarily THE endometrial echo
ENDOMETRIAL TEXTURE

- Heterogeneity or irregularity may be important in addition to simply measured thickness

ENDOMETRIAL ABNORMALITIES ARE NOT ALWAYS GLOBAL

IMPORTANCE OF 3D RECONSTRUCTION

Realize that any single frozen ultrasound image is a two dimensional “snapshot” e.g. a single long axis view of a seemingly normal endometrium does not rule out pathology. The entire structure must be observed and three dimensional anatomy reconstructed.
BUT WHAT ABOUT NON BLEEDING PATIENTS?

POSTMENOPAUSAL ENDOMETRIUM

BIG DIFFERENCE BETWEEN INCIDENTAL FINDINGS AND PATIENTS WHO ARE BLEEDING !!!!

What have health care practitioners HEARD and DONE ?!?
If \(<5\text{mm}\) is good then \(>5\text{mm}\) must be bad.

But remember this was all done in women WITH BLEEDING

So without any validation women with EM \(>5\text{mm}\) ABSENT BLEEDING have been and often still are routinely biopsied.
But the problem is not with the imaging...

It is the INTERPRETATION of the imaging
So: 1) how COMMON is a thick EM echo in non bleeding patients?  
   2) when present what is its significance?

In POSTMENOPAUSAL Women
   – Inactive atrophic endometrium (single layer of basalis) would be expected to be < 4-5mm.
   – but what is the incidence of old quiescent inactive polyps or myomas that will give thicker measurements but do not need clinical intervention?

Few prospective studies exist but consider this…
10% of postmenopausal women trying to enroll in the Raloxifene uterine safety studies had asymptomatic endometrial polyps on sonohysterography

A. Parsons (verbal communication)

17% of 550 newly diagnosed postmenopausal breast cancer patients in Brussels had unsuspected ASYMPTOMATIC polyps prior to initiating tamoxifen therapy


- A randomly selected Danish population aged 20-74 underwent TV U/S and SIS
- Prevalence of uterine polyps overall= 7.8%
- Prevalence increased with age
- In PM women (n=169) prevalence of Asx polyps was 13.0% (n=22)

Dreisler et al Ultrasound Obstet Gyencol 2009:33-102
WHAT IS THE RISK OF MALIGNANCY IN SUCH POLYPS?


- Removed 117 polyps in PM women without bleeding
- NONE were malignant
- Discussed importance of distinguishing EM carcinoma with polypoid growth from carcinoma arising in a polyp (base and surrounding EM must be benign)


- Retrospective review of hysteroscopic database
- 175 PM women with Asx polyps
- No cancers, 1 complex hyperplasia (0.6%), 1 simple hyperplasia (0.6%)

- 1152 Asx PM women diagnosed with a polyp by SIS underwent hysteroscopic removal
- 1 EM cancer in a polyp (<0.1%)
- Mean diameter 40 mm
- 3 perforations, 7 cervical tears, 3 false passages
- 3 cancers (0.3%) occurred in Asx PM women that were not in polyps but were polypoid appearing on imaging and not global

Lev-Sagie A et al, BJOG 2005; 112: 379-382

- 82 postmenopausal women with incidental sonographic findings of EM “thickening”
- Operative hysteroscopy
- 67 (82%) inactive polyps, 7 submucosal myomas, 6 atrophic EM, 1 proliferative EM, 1 polyp with simple hyperplasia
- NO complex hyperplasia or carcinoma
- 3.6% total complication rate (2 perforations, 1 difficult intubation)

Gerber et al., Eur J Cancer 2001, 37: 64-71

- U/S detection of Asx EM cancer in screened PM women offers no prognostic advantage over symptomatic disease that had uterine bleeding for less than 8 weeks
- Thus for the negligible risk that an Asx polyp MIGHT harbor a cancer (<1 in a 1000) there is no therapeutic advantage over waiting until it results in bleeding; and such an approach would spare the other 999 out of a 1000 any intervention and its risks, discomfort and expense
IN POST MENOPAUSAL BLEEDING...

- “CANCER UNTIL PROVEN OTHERWISE”
- ROLE OF HIGH NEGATIVE PREDICTIVE VALUE OF A THIN DISTINCT EM ECHO
- PERFORM TV U/S FIRST, SONOHYSTEROGRAPHY IF NECESSARY, TO TRIAGE PTS TO 1) NO PATHOLOGY 2) GLOBAL PROCESS (BLIND BX) 3) FOCAL PROCESS (DIRECT VISION)

BUT...FOR AN INCIDENTAL FINDING OF EM THICKENING...

- There is NO validation whatsoever that these patients need AUTOMATIC EM sampling
- The incidence of thick EM echo is probably 10-17% and is much like “simple” cyst of the post menopausal ovary was 20 years ago
- Still appropriate (and always was) to use clinical JUDGEMENT if high risk (obese, diabetic, hypertensive, nulliparous)

SO ...IN POST MENOPAUSAL BLEEDING...

- “CANCER UNTIL PROVEN OTHERWISE”
- ROLE OF HIGH NEGATIVE PREDICTIVE VALUE OF A THIN DISTINCT EM ECHO
- PERFORM TV U/S FIRST, SONOHYSTEROGRAPHY IF NECESSARY, TO TRIAGE PTS TO 1) NO PATHOLOGY 2) GLOBAL PROCESS (BLIND BX) 3) FOCAL PROCESS (DIRECT VISION)
SALINE INFUSION
SONOHYSTEROGRAPHY

- REMEMBER FLUID ENHANCES SOUND TRANSMISSION

SONOHYSTEROGRAM

- FLUID INSTILLATION TO ENHANCE U/S DETAIL OF THE ENDOMETRIUM
- AMONG THE EASIEST TV U/S SCANS YOU WILL EVER PERFORM!
- TECHNICAL ASPECTS SIMPLE FOR GYNS, SLIGHTLY MORE DAUNTING FOR RADIOLOGISTS

SONOHYSTEROGRAM: TECHNIQUE

- Pelvic scan, unenhanced (baseline appearance)
- Palpatory bimanual (anteverted, retroverted)
- Insert speculum
- Cleanse cervix
- Thread catheter (flush air first)
SONOHYSSTEROGRAM:

TECHNIQUE

- Remove speculum (carefully)
- Insert vaginal probe
- Instill sterile saline (10cc syringe), slowly, watch the screen
- Scan from cornua to cornua
- “reload”, turn 90° and scan from fundus to cervix

UNSCHEDULED UTERINE BLEEDING IN PERIMENOPAUSAL WOMEN

- May be annovulatory, dysfunctional
- Heightened concerns about anatomic pathology (hyperplasia, polyps, submucous myomas, carcinoma)
- Invasive diagnostic procedures commonplace

Use of ultrasonic hysteroscopy for triage of perimenopausal patients with unexplained uterine bleeding

OBJECTIVES: Concerns about pathological anomaly in perimenopausal women with irregular uterine bleeding, more recently require magnetic resonance imaging and hysteroscopy. The study evaluated the use of transient saline echogenicity to examine the endometrial cavity with transabdominal ultrasonography or endocavity ultrasound. The study was performed using the endocavity ultrasound system in a transabdominal mode, with the speculum in place on the anatomic imaging plane. The study was performed in a transabdominal mode, with the speculum in place on the anatomic imaging plane. The study was performed in a transabdominal mode, with the speculum in place on the anatomic imaging plane. The study was performed in a transabdominal mode, with the speculum in place on the anatomic imaging plane.

RESULTS: Of the 50 patients, 2 had chronic endometrial thickening and endometrial polyps. The remaining 48 patients had normal endometrial thickness measurements. The diagnostic tool yielded normal endometrial thickness in 46 patients, but also identified 4 patients with abnormal endometrial thickness. The diagnostic tool yielded normal endometrial thickness in 46 patients, but also identified 4 patients with abnormal endometrial thickness. The diagnostic tool yielded normal endometrial thickness in 46 patients, but also identified 4 patients with abnormal endometrial thickness. The diagnostic tool yielded normal endometrial thickness in 46 patients, but also identified 4 patients with abnormal endometrial thickness.

CONCLUSIONS: Endometrial thickening cannot be diagnosed with saline contrast echogenicity in perimenopausal women. If indicated, transabdominal ultrasound and hysteroscopy are useful diagnostic tools. Transvaginal ultrasound and hysteroscopy may be performed to rule out gross abnormalities. The study demonstrated the feasibility and accuracy of endometrial thickness measurement with saline contrast echogenicity. A transvaginal approach may be used to identify patients with abnormal endometrial thickness.

Key words: Perimenopause, uterine bleeding, ultrasonography, sonohysteroscopy.
Pilot Study

- 21 perimenopausal women (age range 40-52)
- Clinical history of irregular vaginal bleeding
- Studied on day 4-6
- 5.3Fr Soules IUI catheter inserted
- Sterile saline infused under real-time vaginal ultrasound video taping

Results

- 8 patients with obvious polyps, triaged for hysteroscopic removal
- 3 patients with submucous myomas (2 offered wire loop resectoscopic surgery, 1 with extension to serosa treated expectantly)
- 9 patients with no anatomic lesion and surrounding endometrium < 3.2mm, all showed proliferative endometrium on biopsy. DX: DUB. Subsequently treated with progestin
- 1 patient with 8mm endometrium, path revealed simple hyperplasia without atypia: subsequently treated with progestin

Of note 9/21 patients had clinical and sonographic evidence of myomas but only 3/21 had a submucous component on sonohysterogram. Thus 6/21 had dysfunctional uterine bleeding co-existing with intramural/subserosal myomas.
CONCLUSION

- Broad based endometrial masses can be distinguished from those on a stalk or pedunculated
- Allows appropriate triage for operative hysteroscopy when needed
- Eliminates the need for diagnostic hysteroscopy in patients whose bleeding is dysfunctional

Ultrasongraphy-based triage for perimenopausal patients with abnormal uterine bleeding

Steven R. Goldstein, MD, Ilana Zeltser, BS, Camile K. Horan, RDMS, Jon R. Snyder, MD, and Lisa B. Schwartz, MD. Am J Obstet Gynecol 1997;177:102-8

Ultrasound based triage uses vaginal ultrasound screening of all patients and selected SIS when the unenhanced TV U/S is not thin or reliable.
MATERIALS AND METHODS

• 433 patients
• Perimenopausal
  (average age 47.4, range 37-54 years)
• Abnormal uterine bleeding
  (menorrhagia, metrorrhagia, or both)

ABNORMAL PERIMENOPAUSAL BLEEDING:

433 PATIENTS
Unenhanced Vaginal Ultrasound
280 patients < 5mm (day 4-6)
153 patients > 5mm or nonvisualization of EM
SALINE INFUSION SONOHYSTEROGRAPHY:

153 patients
44 (29%) for nonvisualization of EM
109 (71%) for EM > 5mm

THUS OF 433 PATIENTS:

- 342 (78.9%) had dysfunctional bleeding
- 23 (5.3%) had submucous myomas
- 58 (13.4%) had polyps of which 3 were endocervical
- 15 (3.5%) had hyperplasia (of which 5 were symmetrical, 4 were focal, and 6 were in polyps)

OF 15 PATIENTS WITH HYPERPLASIA

- 5 were symetrically thick (4 simple, 1 complex)
- 4 were focally thick (1 simple, 3 complex)
- 6 were in polyps (3 simple, 3 complex)
Pipelle biopsy alone could have missed up to 79 lesions (18%) in patients with polyps, submucous myomas, focal hyperplasia.

The study algorithm allows
- 65% to have ultrasound exam done
- 17% to have ultrasound and SIS only
- 2.3% to have U/S, SIS pipelle bx only
- 15.9% to have U/S, SIS D&C hysteroscopy

Pitfalls and Pearls for SonohysteroGraphy
PITFALL
- Inability to thread catheter

SOLUTION
- change position of speculum, use a “cervical stabilizer” (a fine toothed tenaculum). Small dilator (#13 Pratt) as last resort.

PITFALL
- anesthesia/analgesic

SOLUTION
- not required; now 3 cases (in over 1000 performed) of vaso-vagal response similar to days of IUD insertion into nulliparas.

PITFALL
- inadequate distention of cavity

SOLUTION
- requires very little fluid to outline cavity
- same problem in hysteroscopy (some cavities are more difficult to distend)
- check position of catheter look for acoustic shadow all the way to fundus
PITFALL  
- infection? GC, chlamydia cultures??, antibiotics???

SOLUTION  
- similar to traditional HSG, depends on your patient population, protocol

IMPORTANT CAVEAT  
- procedure is VERY time sensitive. It must be done on the last days of staining or the first days after the bleeding cycle ends when the endometrium will be as thin and uniform as possible
- as endometrium proliferates and thickens it is not always perfectly symmetrical (BEWARE “moguls” or small irregularities)

...ANOTHER EXAMPLE
WHILE WE’RE AT IT…

AVOID SONOHYSTEROGRAPHY WITH ACTIVE BLEEDING !!!

IN FACT…

...If the patient is bleeding so much or so often and cannot really tell what is a menses…
Consider an empiric course of a progestin “medical curettage” and then time the sonographic evaluation to the withdrawal bleed
AVOID GETTING AIR INTO THE CATHETER OR THE SYRINGE (AIR IS VERY ECHOGENIC !!)

IN MY OPINION…

No longer appropriate to do a blind office biopsy procedure unless you first verify that whatever the endometrial process it is indeed global and not focal.

I WROTE THAT SLIDE 17 YEARS AGO!!!!!
The primary imaging test of the uterus for the evaluation of AUB is transvaginal ultrasonography.

“If transvaginal ultrasonographic images are not adequate or further evaluation of the cavity is necessary, then sonohysterography (also called saline infusion sonohysterography) or hysteroscopy (preferably in the office setting is recommended).”
“An office endometrial biopsy is the first-line procedure of tissue sampling in the evaluation of patients with AUB.”

“Endometrial biopsy has high overall accuracy in diagnosing endometrial cancer when an adequate specimen is obtained and when the endometrial process is global.”

“If the cancer occupies less than 50% of the surface area of the endometrial cavity, the cancer can be missed by a blind endometrial biopsy sample.”
“A positive test result is more accurate for ruling in disease than a negative test result is for ruling it out.”

“These tests are only an endpoint when they reveal cancer or atypical complex hyperplasia.”

“Persistent bleeding with a previous benign pathology, such as proliferative endometrium, requires further testing to rule out nonfocal endometrial pathology or a structural pathology, such as polyp or leiomyoma.”
I ACKNOWLEDGE…
- Ultrasound does NOT give you a tissue diagnosis

The value of U/S and Sonohysterography is to TRIAGE patients to…
- NO anatomic pathology
- GLOBAL EM process (blind biopsy)
- FOCAL process (direct vision)

PUTTING IT ALL TOGETHER

A thin distinct homogenous EM echo ≤ 4-5mm with a hypoechoic zone surrounding it reliably predicts lack of SIGNIFICANT tissue.
In all other scenarios fluid instillation coupled with high resolution endovaginal probes can offer tremendous diagnostic enhancement as a simple inexpensive well tolerated office procedure.

This algorithm of U/S as the first step in the evaluation of AUB works in ALL CASES – as long as you understand the difference between patients who cycle vs. those who do not.

**CYCLING VS. NON CYCLING**

- In NON CYCLING patients – everyday is the same.
- In patients WHO ARE CYCLING, timing is crucial.
- Ultrasound evaluation should be performed at a time when the EM will be as thin as it will all month long (just as the bleeding ends).
- This prevents misinterpretation of EM “moguls” later in the cycle as being pathologic.
In Summary

- Good normative data for endometrial thickness does not exist
- The main use of endometrial thickness measured on TV U/S is the high negative predictive value of a thin distinct echo (lose the word “stripe”)

In Summary

- In women with postmenopausal bleeding EM< 4 mm has a risk of malignancy of 1 in 917 and does not require endometrial sampling

In Summary

- In postmenopausal women without bleeding the incidence of “thick” endometrial echo (mostly polyps) is 10-17% and no routine intervention in such non bleeding is indicated
In Summary

- THE RISK OF MALIGNANCY IN SUCH PATIENTS IS LOW (<4/1000) WHILE THE RISK OF SERIOUS COMPLICATIONS FROM OPERATIVE HYSTEROSCOPY APPROACHES 3.6%

In Summary

- IN PRE MENOPAUSAL PATIENTS WITH AUB AN EM ECHO <5MM EARLY IN THE CYCLE EXCLUDES SIGNIFICANT PATHOLOGY
- OTHERWISE SALINE INFUSION SONOHYSTEROGRAPHY WILL DISTINGUISH GLOBAL FROM FOCAL PROCESSES AND ALLOW APPROPRIATE TRIAGE