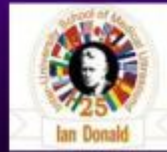


## Ultrasound and Postmenopause

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## Why GYN Ultrasound?

Ultrasound is “light” into female pelvis

Ultrasound can “help” in:

1. Diagnosis
2. Management



## Why GYN Ultrasound?

Taking ultrasound innovation  
in a new direction



## Objectives

- explain the value of ultrasound in gynecological practice
- discuss the ultrasound role in management of postmenopausal bleeding
- present the role of ultrasound in diagnosis of pelvic masses

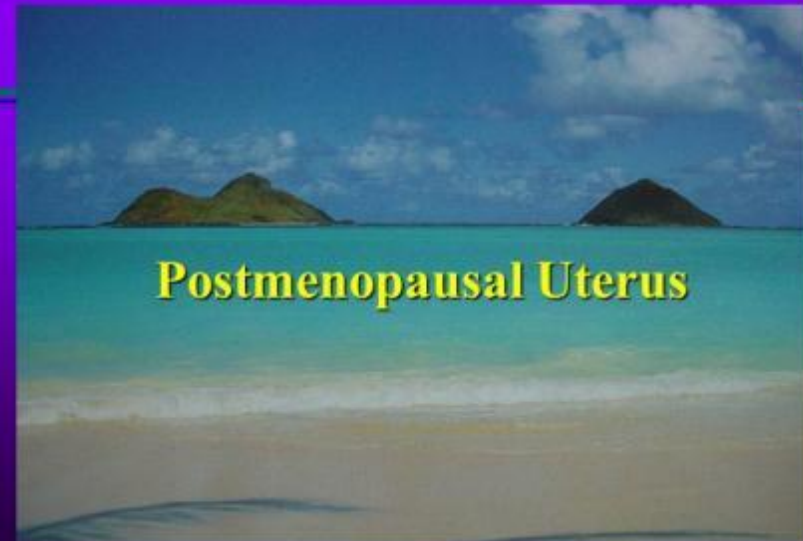


## GYN Ultrasound

### Indication:

- postmenopausal bleeding
- enlarged uterus
- uterus increasing in size
- adnexal mass
- obese patients (difficult to evaluate on bimanual exam)

5



6

## Fibroids

- location
- degeneration
- Submucosal fibroids: use SIS



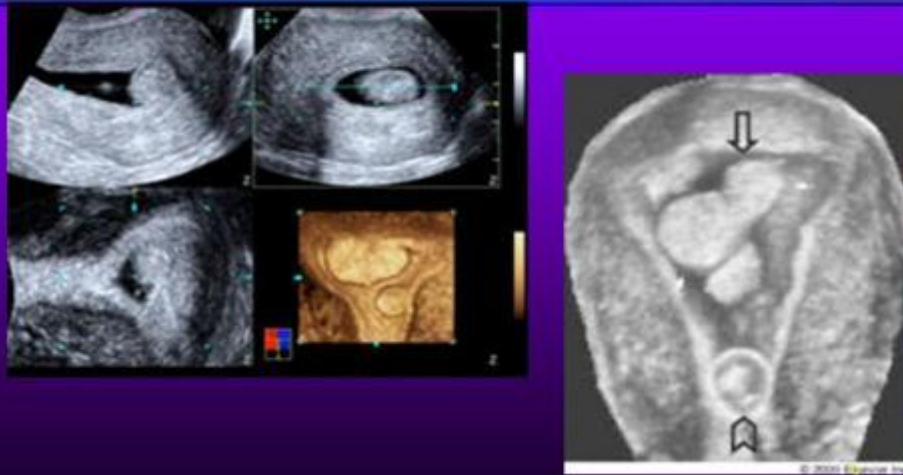
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## Sonohysterogram (SIS)



8

## Sonohysterogram (SIS)



## Endometrium

- Normal postmenopausal endometrium
  - » Atrophy seen as thin echogenic line
  - » Normal 4 mm or less
- Postmenopausal bleeding
  - » Endometrium
  - » Adnexal pathology



10

## Endometrium

- Ultrasound indicated in all postmenopausal women with any vaginal bleeding
- TVS provides highly magnified images
- High NPV of a thin distinct echo in patients with postmenopausal bleed



11

## Endometrial CA

- Most common GYN cancer
  - » In 2008: 41,520 cases & 8,145 deaths
- TVS: endometrium equal or less than 4 mm in Pts with bleeding:
  - » Risk of malignancy 1:917

*Goldstein S: AJOG 2009 Jul;201(1):5-11*

12

## Postmenopausal Bleed

- 1-14% of postmenopausal women with bleeding have endometrial CA depending on age and risk factors

*Tabor A et al. Obstet Gynecol 2002;99:663*

*Gupta JK et al. Acta Obstet Gyencol Scand 2002;81:799*

*Smith-Bindman R et al. Ultrasound Obstet Gyencol 2004;24:558*

13

## Sonohysterogram (SIS)



14

## Postmenopausal Bleed & Endometrial Cancer

Reference	Endometrium	No. of Pts	NPV
Karlsson 1995	4 mm or less	1,168	100%
Ferrazzi 1996	4 mm or less	930	99.8%
Gull 2000	4 mm or less	163	99.4%
Epstein 2001	5 mm or less	97	100%
Gull 2003	4 mm or less	394	100%

15

## Postmenopausal Bleed

- TVS helps with triage:
  - » Thin, regular, homogeneous endometrium:
    - expectant management
  - » Globally thick endometrium:
    - candidates for blind sampling
  - » Abnormally thick endometrium with focal abnormality:
    - SIS and direct sampling under visualization
- In women without bleeding, incidental abnormal findings have not been scientifically evaluated!

16

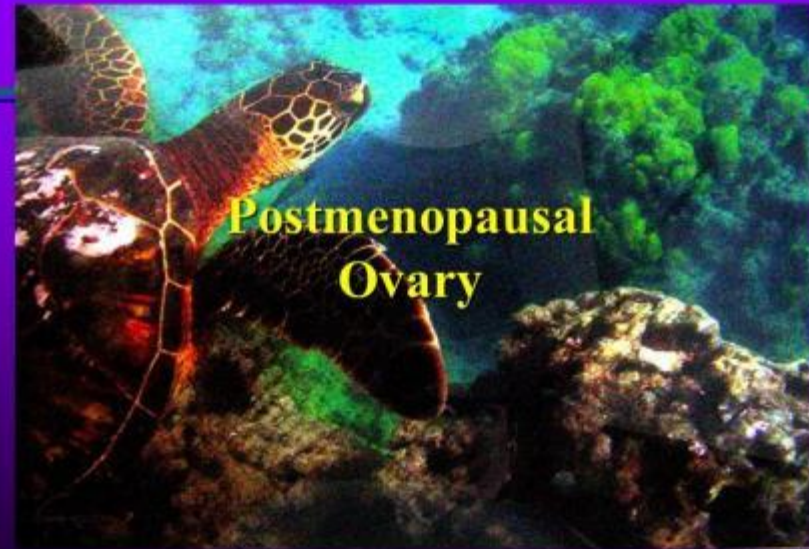


## ACOG Committee Opinion #440, August 2009

- A thin (4 mm or less) distinct endometrium on TVS in patients with bleeding has a very high NPV (99.4-100%)
- A thick endometrium (5 mm or more) in patients without bleeding is not validated yet and does not require automatic tissue sampling



17



18

## Ovaries

- Ovaries atrophy over time
- Often are not palpated
- Adnexal mass warrants further investigation
- Suspicion should be high for an ovarian malignancy until ruled out



19

## Adnexal Mass

- Main problems:**
1. benign vs. malignant
  2. appropriate surgery



20

## Postmenopausal Ovary

### “The palpable ovary syndrome”



*H. Barber 1971*

### “The visible ovary syndrome”

*1990s*

21

## “Syndrome of Visible Ovary”

### PROBLEM!

TVS has led to discovery of small ovarian cysts in asymptomatic postmenopausal women that otherwise would have not been detected.

Unfortunately, these visualized (mostly not palpable) cysts are often managed too aggressively.

22



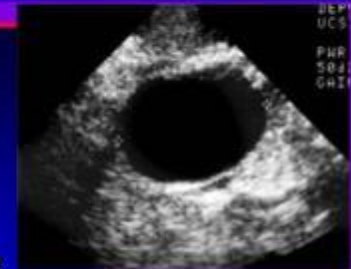
### Simple cyst



23

### Simple cyst

1. unilocular
2. anechoic
3. smooth walls
4. no papillary projections
5. no solid components



Incidence in asymptomatic postmenopausal women: 15-17%

24

## Ovarian cyst/mass

Findings suggestive for malignancy:

- Diameter 10 cm or more
- Multiple septations
- Thick septae
- Solid components
- Papillary projections
- Bilaterality
- Ascites / pelvic fluid
- Neovascularization



25

Conway C, Zalud I, Dilena M et al.  
*J Ultrasound Med* 1998;17:369

- Simple cysts are common in postmenopausal women.
- Simple cysts <5 cm are very unlikely to be malignant and are capable of being followed conservatively.

26

Modesitt SC et al.  
*Obstet Gynecol* 2003;102:594-9

- 2,763 Pts (18%) with 3,259 unilocular ovarian cysts:
  - 69.4% resolved spontaneously
  - 16.5% developed a septum
  - 5.8% developed a solid area
  - 6.8% persisted as a unilocular lesion
- No woman has developed ovarian cancer
- The risk of malignancy in cystic tumor < 10 cm in women > 50 years old is extremely low

27

Valentin L, Skoog, Epstein E  
*Ultrasound Obstet Gynecol* 2003;22:284-9

- Small (< 5 cm) cysts are so common in postmenopausal women - regarded as normal
- Support conservative management of adnexal lesions with benign ultrasound morphology incidentally detected in postmenopausal women

28

Dorum A et al.  
*Am J Obstet Gynecol 2005;192:48-54*

## Adnexal Mass

- Adnexa of 234 postmenopausal women who had died from non-gynecologic diseases were examined by a pathologist.
- Ovarian cysts incidence 15.4%. All cysts were benign.
- Because of the high prevalence of benign adnexal cysts, the identification of small unilocular cysts in postmenopausal women should be regarded as a normal finding.

- Factors influencing managements
  - Symptoms
  - Age
  - Sonographic appearance /changes



29



## Adnexal Mass

Modality	Sensitivity	Specificity
TVS	0.82-0.91	0.68-0.81
Doppler	0.86	0.91
CT	0.90	0.75
MRI	0.91	0.88
PET	0.67	0.79
CA 125	0.78	0.78

ACOG Practice Bulletin #83, July 2007 31



## Adnexal Mass

- In asymptomatic women with pelvic masses, wheatear premenopausal or postmenopausal, TVS is the imaging modality of choice.
- No alternative imaging modality has demonstrated sufficient superiority to TVS to justify its routine use.

ACOG Practice Bulletin #83, July 2007

32

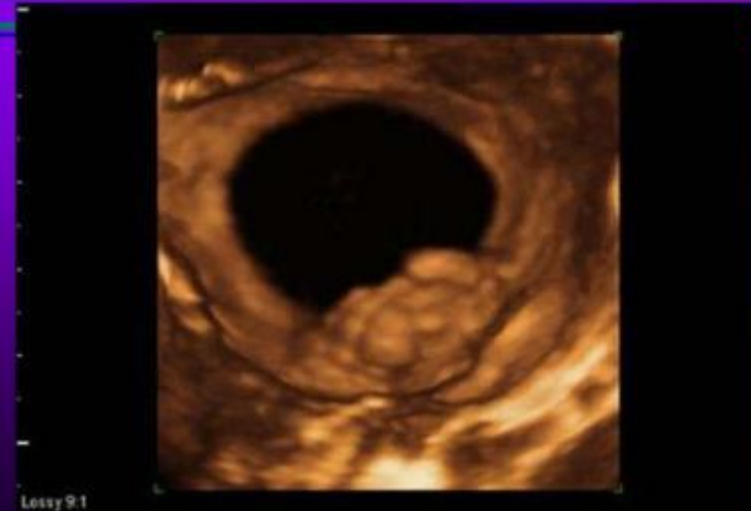


## 3D Ultrasound: Simple Cyst



33

## 3D Ultrasound: Complex Ovarian Mass



34

## Simple Cyst

**Simple cyst up to 10 cm in diameter on ultrasound findings are almost universally benign and may safely be followed without intervention.**

**ACOG Practice Bulletin #83, July 2007**



35

## Conclusions



36

## Conclusions

- TVS allows valuable and non-invasive approach to assessment of anatomy and pathology of the uterus and adnexa in postmenopausal patients.
- TVS is simple office procedure to triage patients with postmenopausal bleed



## Conclusions

- Simple cysts 10 cm or less in postmenopausal patients are very unlikely to be malignant and capable of being managed conservatively.
- Suspicious ovarian mass needs ultrasound exam by an appropriately trained and experienced sonologist.



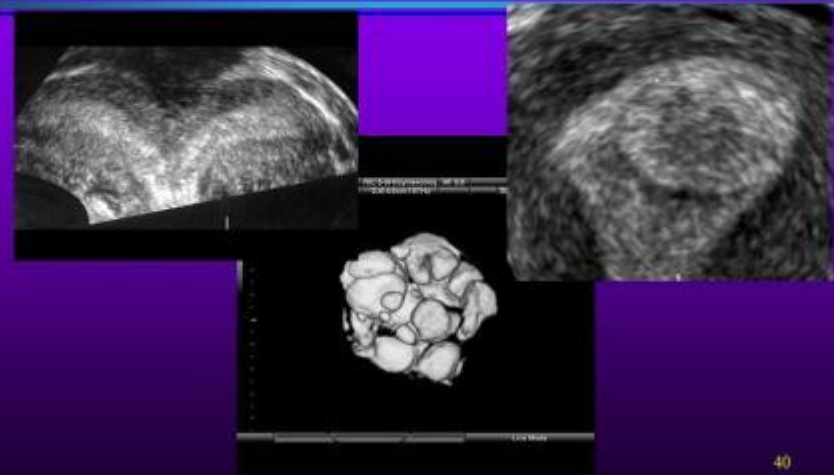
## Future endeavors

- 3D/4D imaging will expand and stimulate new areas of investigation and identify new frontiers where ultrasound can further enhance clinical care



39

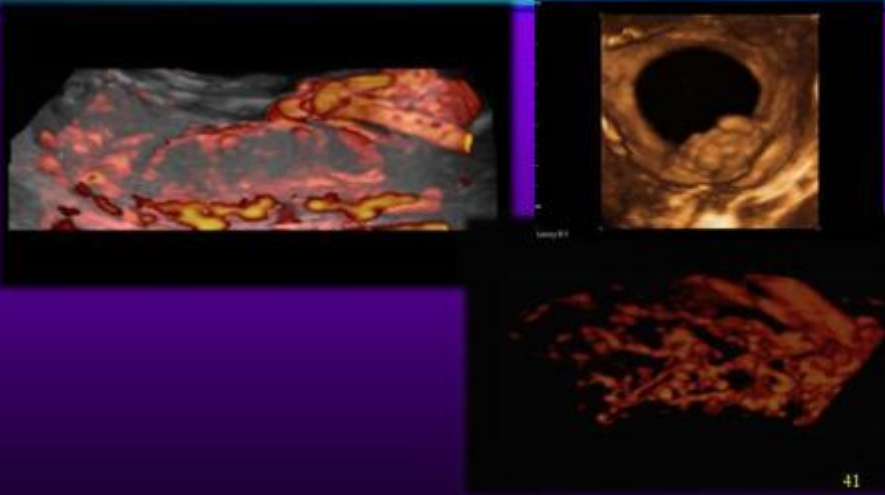
## 3D Ultrasound



40

## 3D Doppler

Goldstein SR  
*Am J Obstet Gynecol 1996;175:1498*



**Ultrasound should be used to prevent unnecessary surgery and to prevent undue anxiety but not to miss or, at the least, unduly delay the diagnosis of ovarian carcinoma when it is, in fact, present.**