

What would the practice of Obstetrics be like without ultrasound ?

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Perinatal Ultrasound

Then



And now



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1969 : A story



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“Nobody likes surprises. Placenta previa should not be one of them”

Confucius or Tolstoy, or someone smart

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The menu: The pathway and some examples of the obvious

1. Timeline of the evolution of U/S
2. Dating
3. Multiple pregnancies
4. Placenta accreta/vasaprevia
5. Invasive procedures
6. Fetal growth

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History of Obstetric Ultrasound

A stroll down memory lane



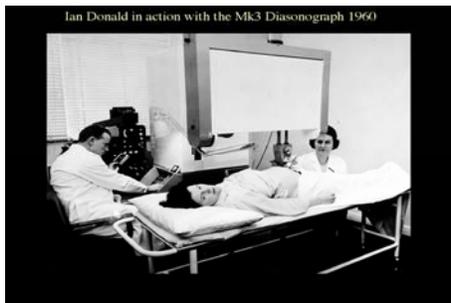
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Evolution of Ultrasound Imagery

- A mode 1960s
- B mode 1970s—real-time at the end
- Gray scale 1980s
- Doppler 1980s
- Sophisticated Color Doppler 1990s
- 3-D and 4D 2000s

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Ian Donald and Early US System



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The first images required some imagination



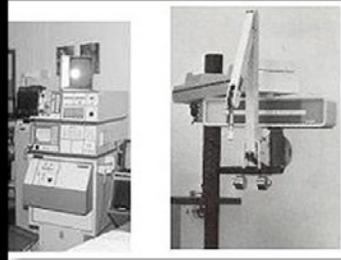
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Another vintage image



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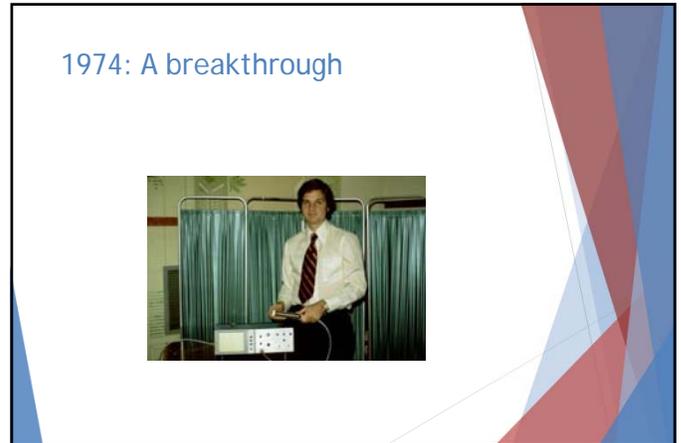
A Picker Console and Static Scanner



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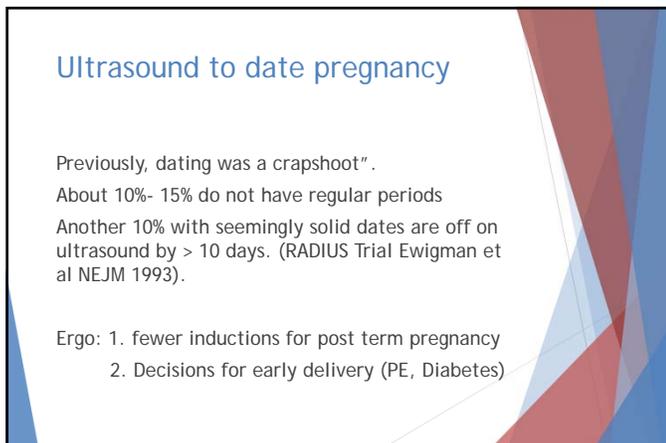
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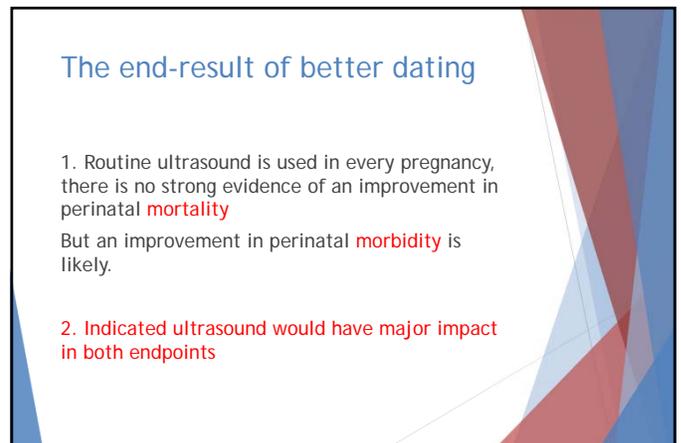
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Multiple gestation

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Multiple gestation without U/S

Twin to twin transfusion syndrome would go unnoticed
Delivery would be a "winging it" endeavor
Selective growth restriction would not be identified and monitored

Perinatal morbidity and mortality would be increased
1970-1984 PNM for twins= 78/1000, though dropping
1996- 5.8/1000.

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Placenta accreta/vasaprevia

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Transvaginal Surprise



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Vasa Previa

Incidence - 1 : 2500

Risk Factors

- ▶ Multiple pregnancies
- ▶ 2nd trimester low-lying placenta
- ▶ IVF
- ▶ Bleeding
- ▶ Bi-lobed / Succenturiate lobed placenta
- ▶ IVF 1 in 290

Types

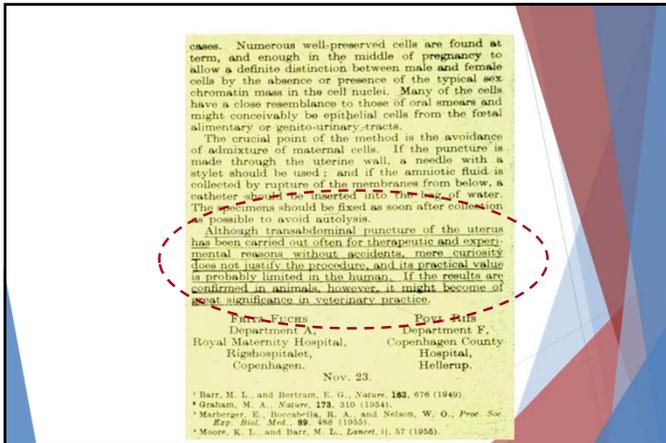
- ▶ (1) Velamentous cord insertion
- ▶ (2) Succenturiate placenta

Mortality - 70-90%-- if not diagnosed!

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Invasive procedures

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Invasive procedures

Amniocentesis: Fetal loss
 Pre U/S - no data
 Now- 1:750-1:1000 (initially- 1:100. (Tabor et al))

Intrauterine transfusion
 Life- saving in most cases
 Chance of salvage without hydrops: 92%; with hydrops 70%.
 (Weiner et al 1997)
 Pre-U/S, if severe: < 30% survived

TTTS/ fetoscopy
 No good data because U/S always a part of the procedure

CVS
 Can you guide a needle or catheter into the placenta without U/S?

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Fetal Growth

Fetuses with EFWs < 10th % occur in about 1 in 10 pregnancies
 At least half of those have FGR and are at high risk of morbidity
 Therefore, 1 in 20 pregnancies need surveillance.
 Without U/S (Doppler, cardiac function, amniotic fluid assessment, fetal behavior), we are left with the NST alone- a lousy predictor of morbidity)

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Importance of ultrasound

1. It provides essential information regarding almost every problem that we encounter.
2. It engages patients to participate in their care
3. It occupies a majority of our time

It is our bread and butter

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Yet, ultrasound still needs fine tuning

1. Training inadequacies
2. Dependence on protocols
3. Abuse

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Yet, by any measure the quality of training is woefully lacking

- ▶ Detection rates for fetal anomalies: 13%-82%, best is in Europe
- ▶ CREOG: 75% of residencies have < 4 weeks rotation in U/S
- ▶ Fellows: Only 20% of fellows knew about U/S safety standards

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Special Report

Proceedings: Beyond Ultrasound First Forum on improving the quality of ultrasound imaging in obstetrics and gynecology
 Beryl R. Benacerraf, Katherine K. Minton, Carol B. Benson, Bryann S. Bromley, Brian D. Coley, Peter M. Doubilet, Wesley Lee, Samuel H. Maslak, John S. Pellerito, James J. Perez, Eric Savitsky, Norman A. Scarborough, Joseph Wax, Alfred Z. Abuhamad

Obstetric and gynecologic ultrasound curriculum and competency assessment in residency training programs: consensus report
 Alfred Abuhamad, Katherine K. Minton, Carol B. Benson, Trish Chudleigh, Lori Crites, Peter M. Doubilet, Rita Driggers, Wesley Lee, Karen V. Mann, James J. Perez, Nancy C. Rose, Lynn L. Simpson, Ann Tabor, Beryl R. Benacerraf

Expert Reviews

Premenstrual disorders
 Kimberly Ann Yonkers, Michael K. Simoni

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Competency of sonologists, in general

No real quality control

The only formal assessment:
 ACOG and FMF accreditation of practices

Voluntary accreditation through route taken by sonographers

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Quality of ultrasound

Languishing skills.

Often heard statements:

1. "I don't need to do any scanning. I have an excellent sonographer"
2. "I don't have the time"

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Not enough time: a demand/supply mismatch

Demand (overuse):

1. Unnecessary scans
 - a. Well- intended, but misguided, diagnostic requests
 - b. Insecurity (malpractice fears)
 - c. Greed

Supply: simply inadequate resources

So, something has to give!

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The common solution to the supply/demand mismatch

"We need to see more patients in the same amount of time"

Ergo: speed up the conveyor belt

This results in burnout for everyone and repetitive movement injuries for sonographers and, most importantly, patient dissatisfaction.

So: the answer is no.

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Abuse of ultrasound

Studies have shown that routine ultrasound makes sense:

1. In the second trimester (18-22 weeks). Best bang for the buck
2. First trimester -Official bodies just coming around on this
3. Third trimester scan for fetal growth. No agreement

Guess who often pulls the string? The third-party payers.
Yet, not always:

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Will not leave on a bad note

How lucky are we to be in this field?

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Parting thought

This is the most rewarding
job anybody can have
and
Ultrasound contributes to
that enjoyment every day.

Relish it!



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