Imaging the heart with ultrasound

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Imaging the Heart

M Mode

CW Doppler

1953

B Mode (25Hz)

1956

PW Doppler

1965

Color Doppler

1969

Tissue Doppler

1984

Strain rate

1990

3DE +strain

1992

1998

2009

2012

?
But....

1534  Vesalius
“the heart, for instance, has four chambers”

1706  Raymond de Vieussens,
first describes the structure of the heart's chambers and vessels and LV

1616 – Sir William Harvey first describes the importance of heart architectonic of ventricular function in his seminal treatise: De Motu Cordis

L. Spalanzani 1729-1777
M. Currie 1880

1977
Albert and Mary Lasker Foundation awarded Edler and Hertz with Clinical Medicine Research Prize
Myocardial Deformation Imaging

- 1961 Heart motion signal first recorded
- 1978 Pulsed Doppler myocardial velocity profile
- 1991 Color Doppler mean myocardial velocities encoded
- 1996 1D myocardial strain /SR
- 2007 2D strain application widely applicable
- 2009 3D strain
- 2012 Ultra high frame rate >1000 samples/s strain/ SR imaging

G. Sutherland, MDI 2012
Clinical role:

- Defining Normal Deformation
- Cardiac hypertrophy/athletes
- Ischemia/ Stress Echo
- Sub-clinical Diseases/ Therapy
- Right ventricular function
THE FUTURE?

Ultra high frame rate Deformation Imaging
NEW ECHOCARDIOGRAPHIC TECHNIQUES FOR MYOCARDIAL FUNCTION IMAGING
With live demonstrations

5ᵗʰ - 7ᵗʰ April 2012
Inter Expo Center - Sofia, Bulgaria