Device Therapy For CHF

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Conflicts/Disclosures

Boston Scientific – Speaking Engagements, Clinical Trials

Biotronik – Speaking Engagements

Daiichi Sankyo – Clinical Trials

Objectives

- Discuss the problem of cardiac dyssynchrony
- Introduce the concept of Bi-Ventricular pacing
- Identify appropriate patients for Bi-Ventricular pacing

Case 1

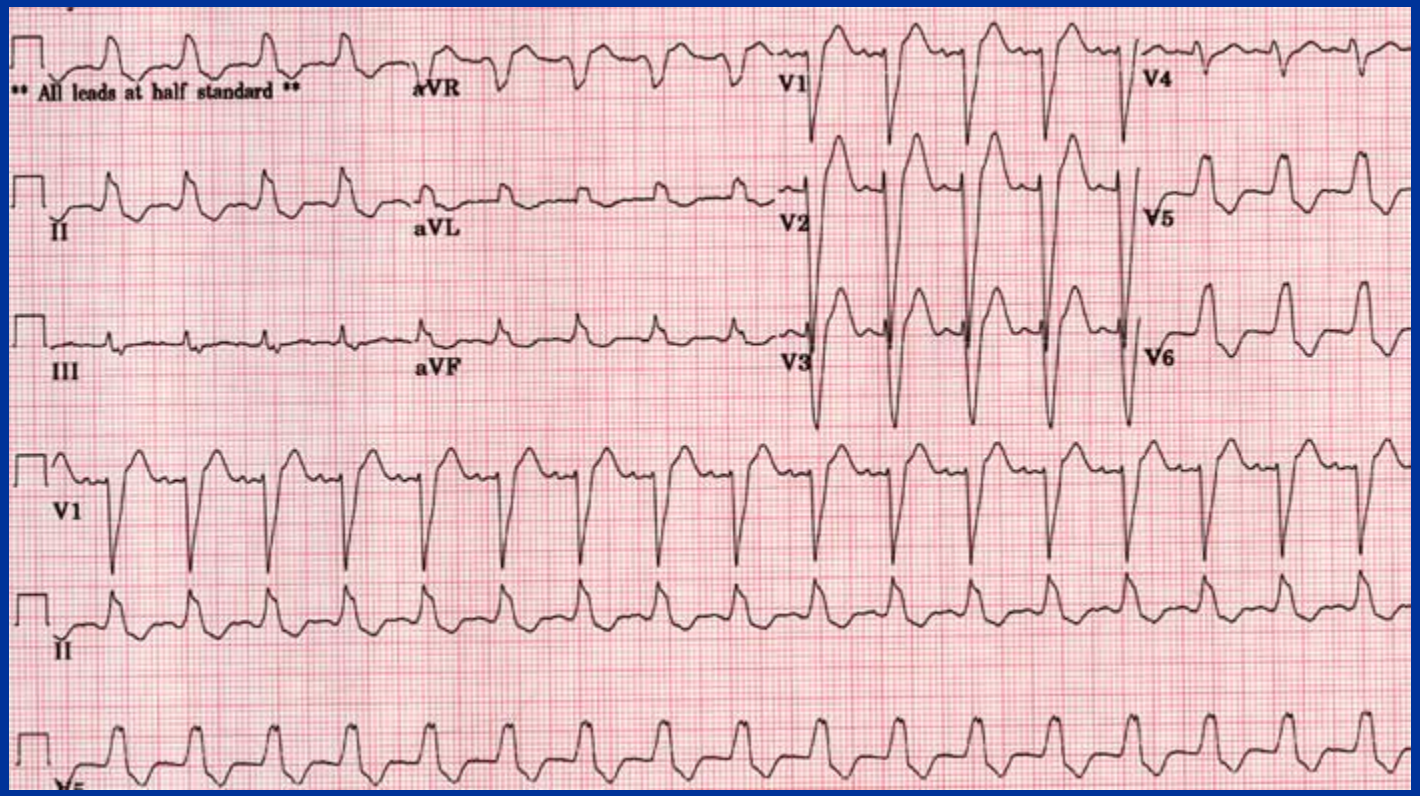
Mr. T is a 63 y/o male with an history of:

- MI with EF=30%
- Left bundle branch block (QRS = 160 ms)
- Recurrent CHF despite optimal medical therapy

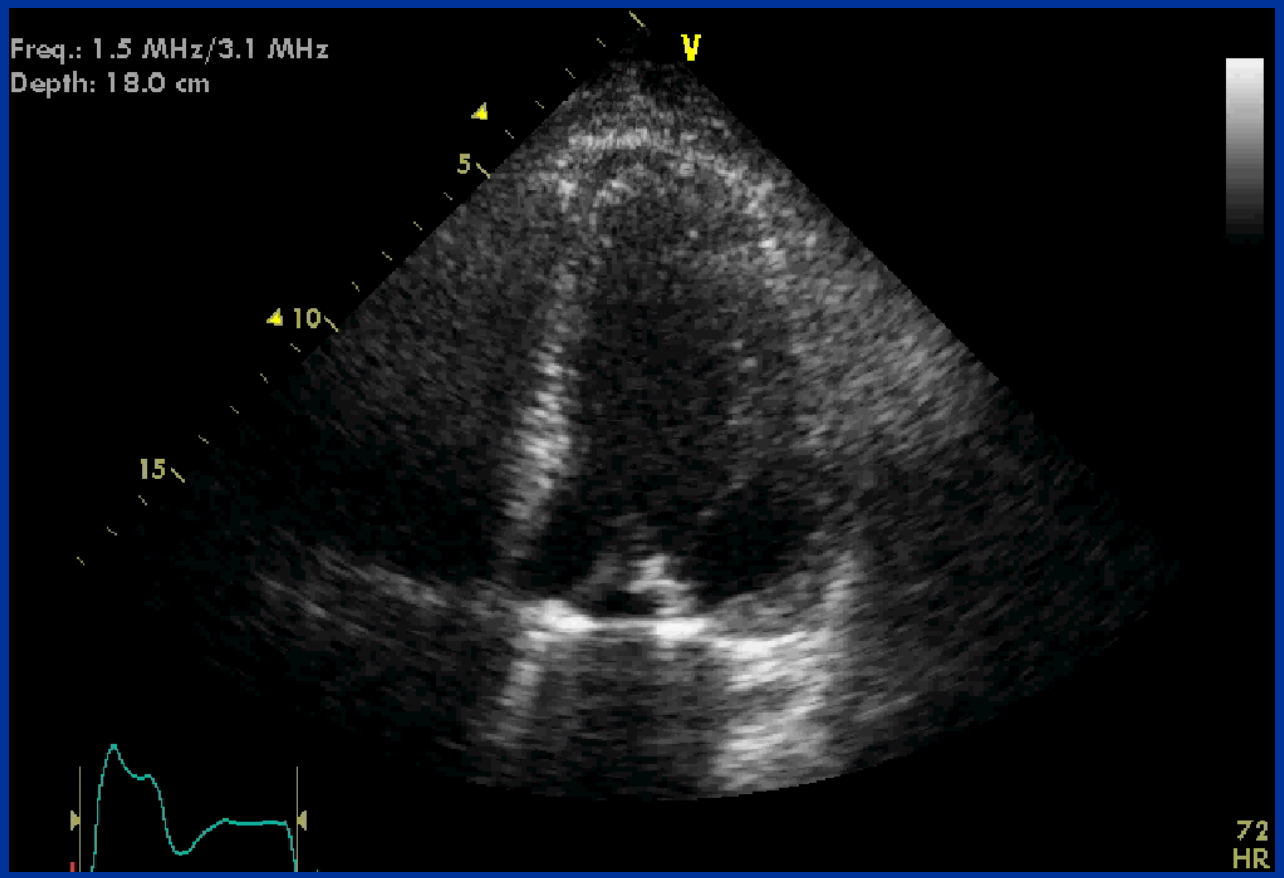
Symptoms

- Fatigue
- Dyspnea with minimal exertion – checking the mail

ECG

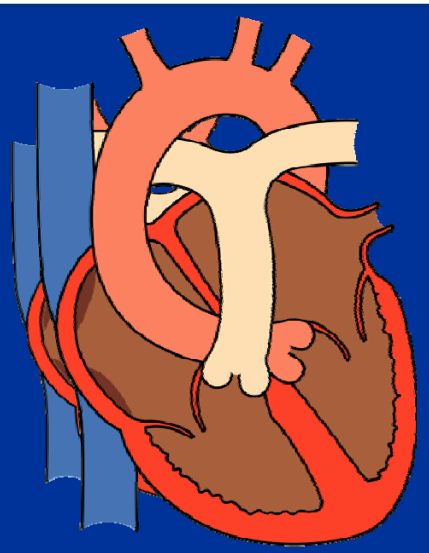

** All leads at half standard **
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II

Echo

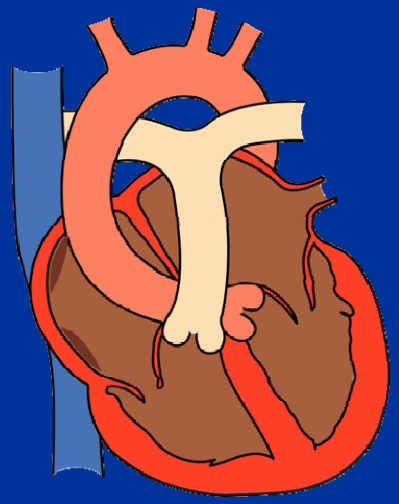


The Problem: Ventricular Remodeling and Dyssynchrony

- A change in the structure and function of the ventricle in response to injury
- Components:
  - Ventricular dilation
  - Intrinsic conduction abnormalities
    - LBBB
    - IVCD
  - Interstitial fibrosis
  - Valvular regurgitation



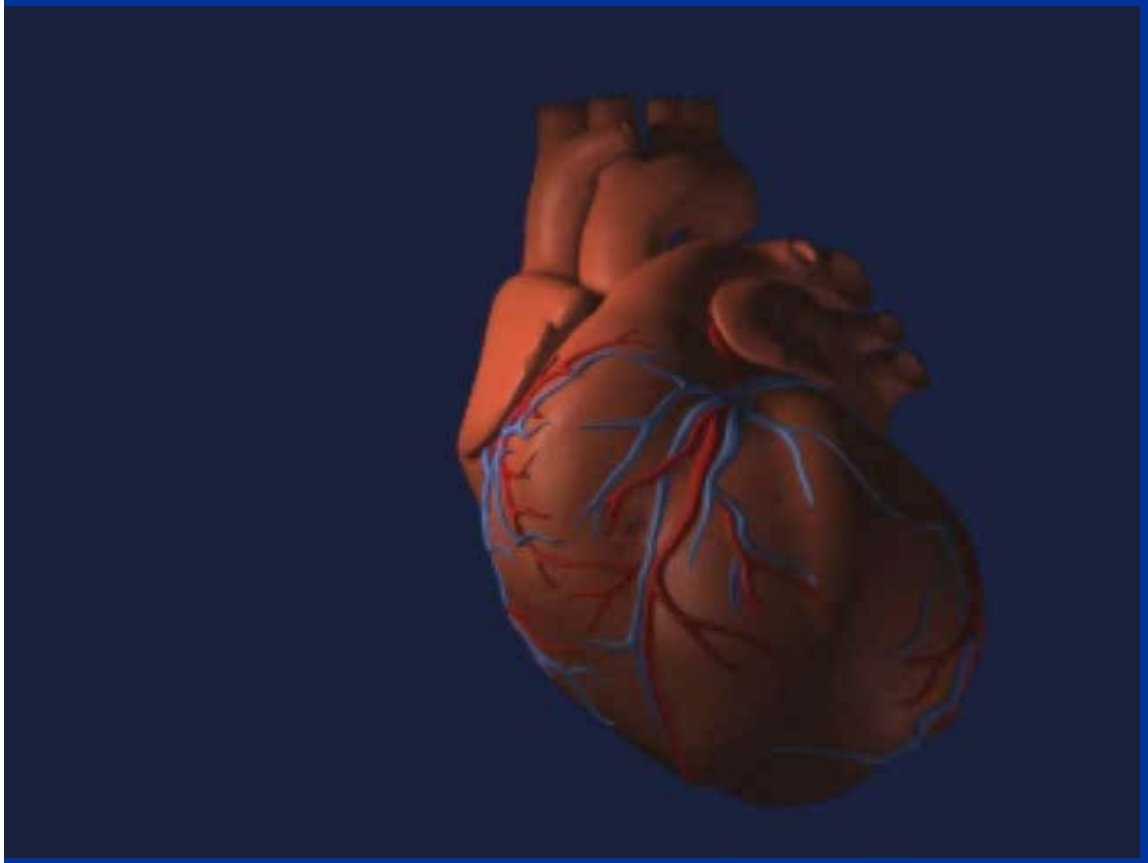
Normal



Dilated

Ventricular Remodeling

Delayed Ventricular Activation In Heart Failure



Early septal and late lateral wall conduction

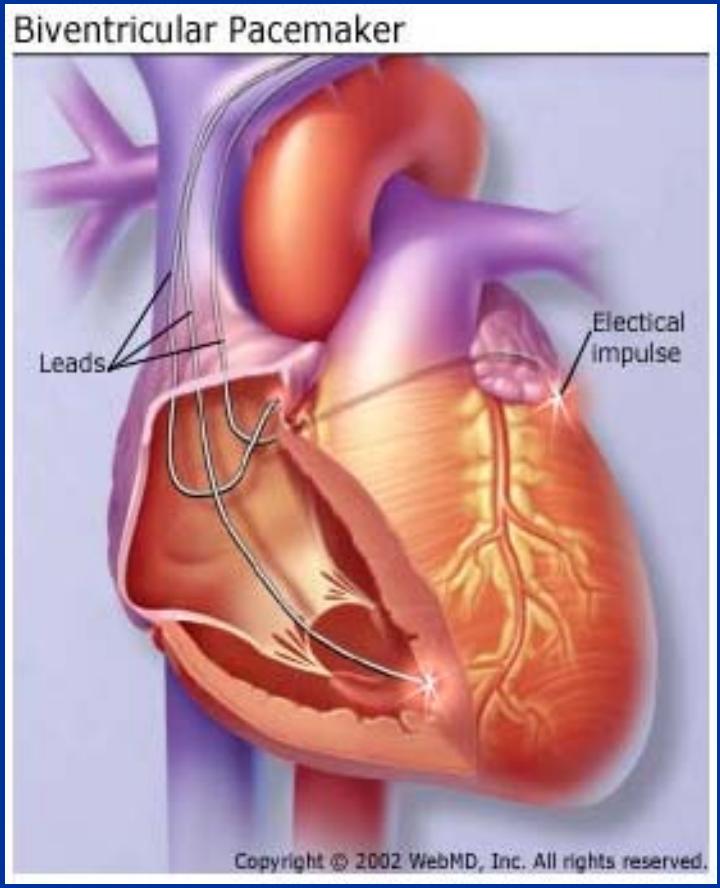
↓

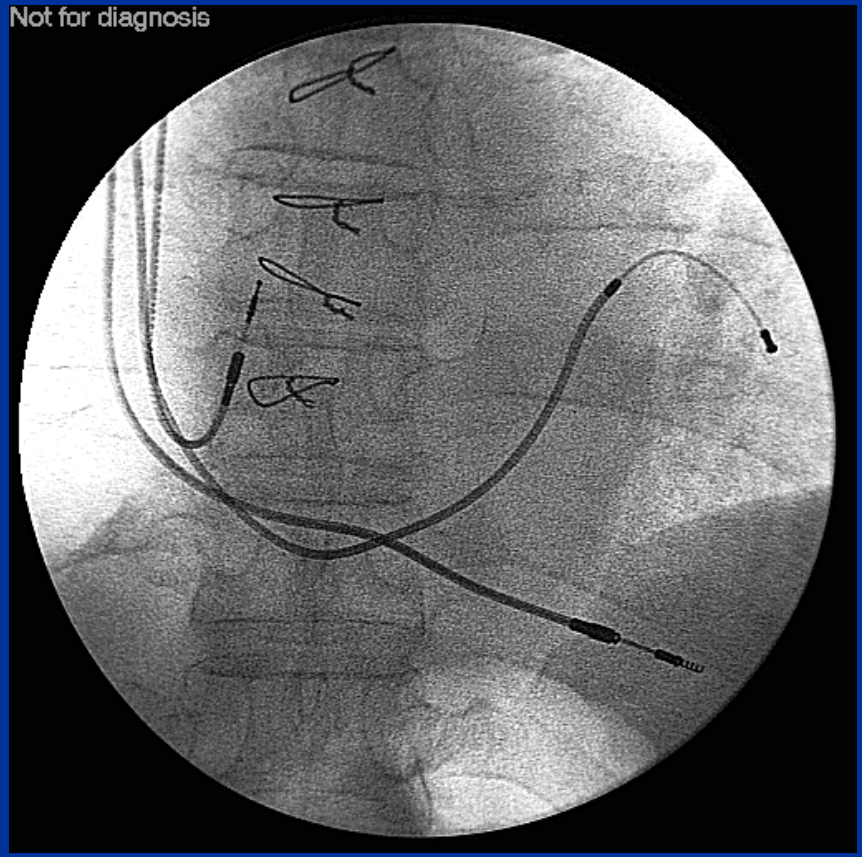
Disorganized ventricular contraction

↓

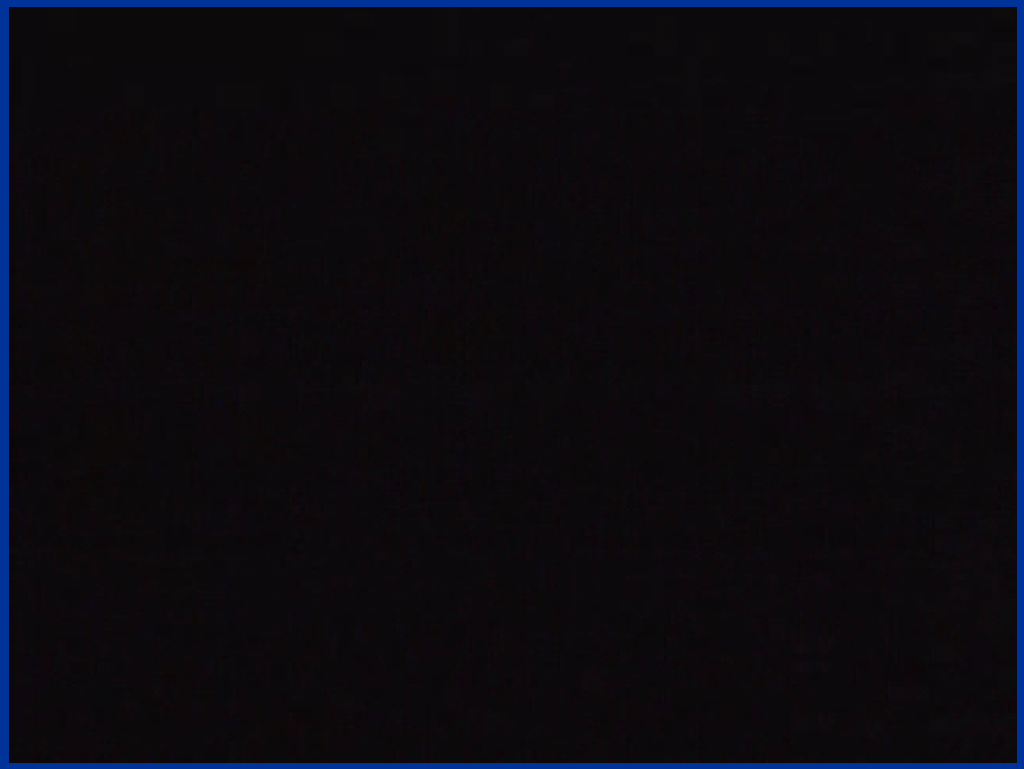
Decreased pumping efficiency

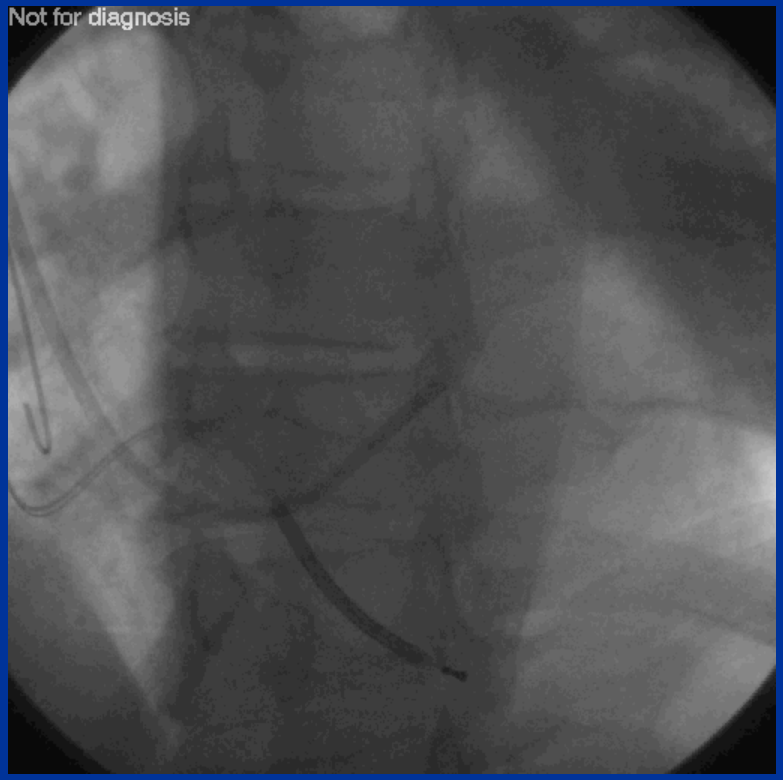
The Solution: Bi-Ventricular Pacing





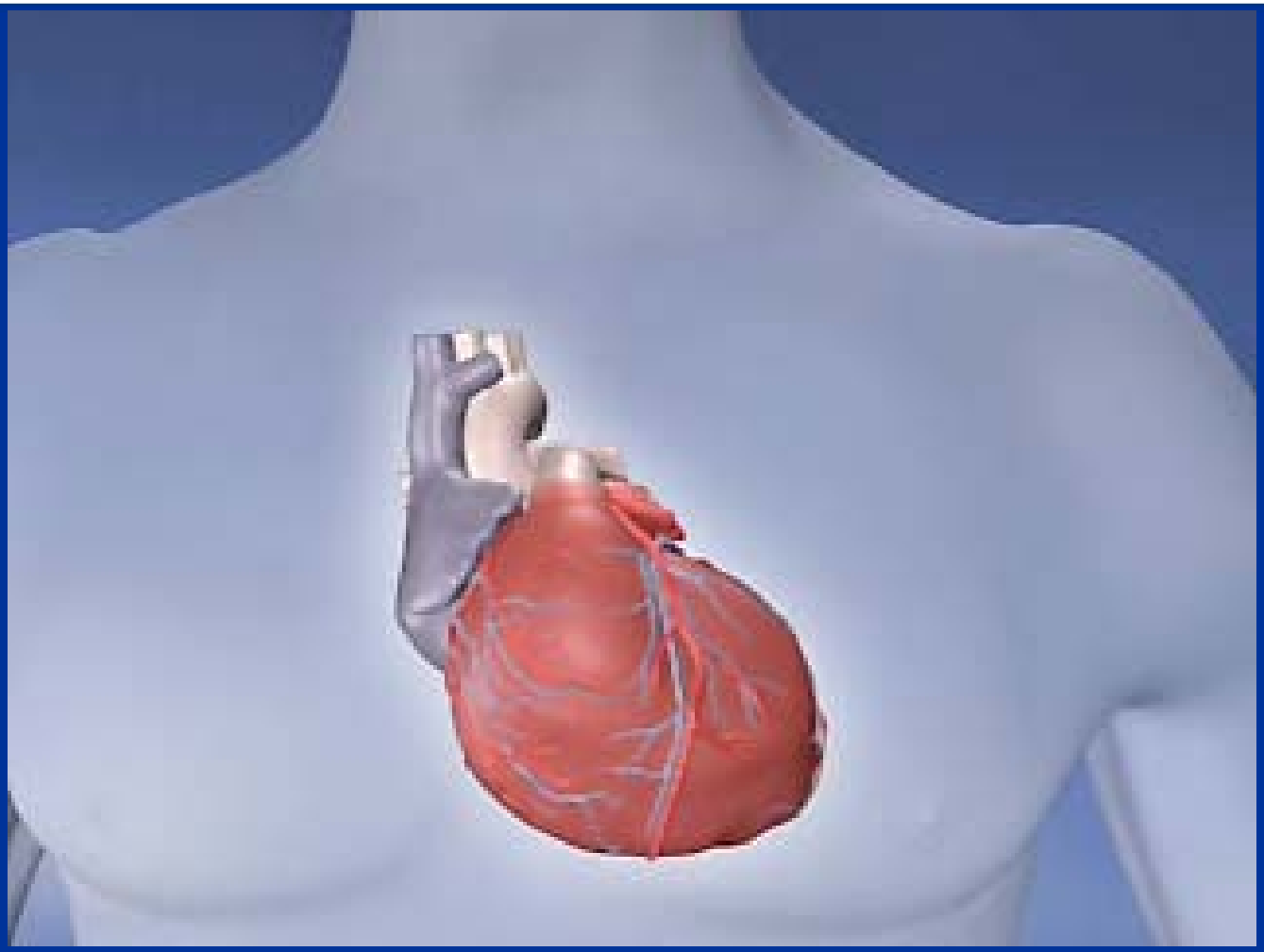
Cardiac Resynchronization Therapy (CRT)





Courtesy of Boston Scientific

The Result: Resyncronization



Courtesy of Medtronic

CRT Benefits

- Patient symptoms (NYHA Class) [1]
- Hemodynamic (dP/dt, pulse pressure) [2]
- Functional status (6-minute walk distance, VO_2) [3]
- Quality of life (Minnesota Living With Heart Failure Questionnaire) [4]
- Ventricular remodeling (increased EF, decreased LVEDD)[5]
- Hospitalizations [6]
- Survival [7]

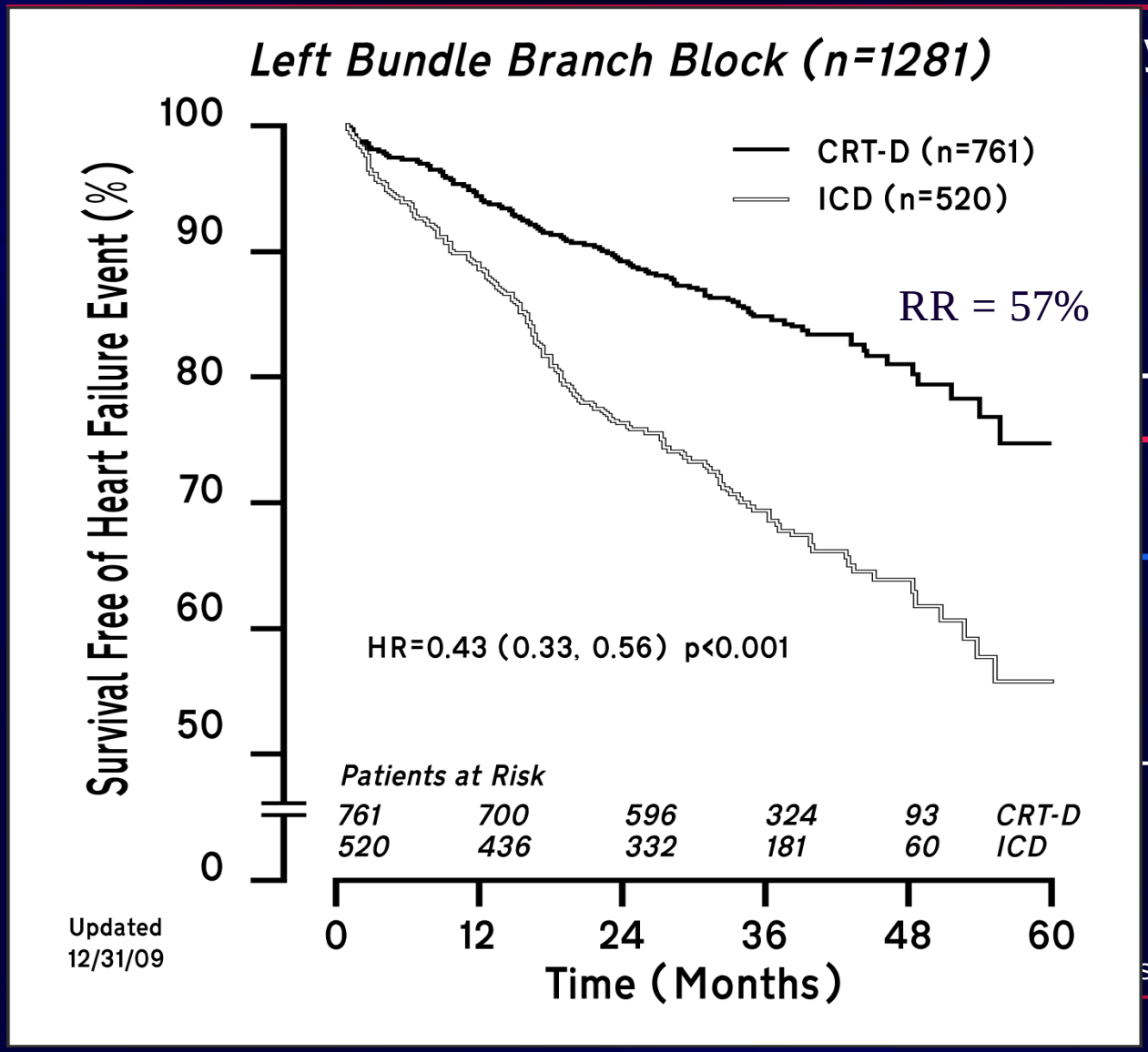
1-Miracle, Contak CD, Companion, CARE-HF
2-Path CHF
3-Miracle, Contak CD, Companion, CARE-HF
4-Miracle, Contak CD, Companion, CARE-HF
5-Miracle, Contak CD, CARE-HF
6-Miracle, Companion, CARE-HF
7-Companion, CARE-HF

Patient Selection
(ACC/AHA/HRS Class 1a Indication)

- Cardiomyopathy from any etiology
- NYHA Class 3 or 4 CHF
  - Symptoms with minimal exertion
    - Fatigue
    - Dyspnea
- Bundle Branch Block
  - QRS $\geq$ 120 ms
- Optimal Medical Therapy
- EF $\leq$ 35%

VBWG

MADIT-CRT: Survival free of HF according to treatment strategy



y, EF ≤30%,

34%RR (p=0.001)

-ICD

only

4

ss AJ et al. *N Engl J Med.* 2009;361.

Emerging Indications – MADIT - CRT

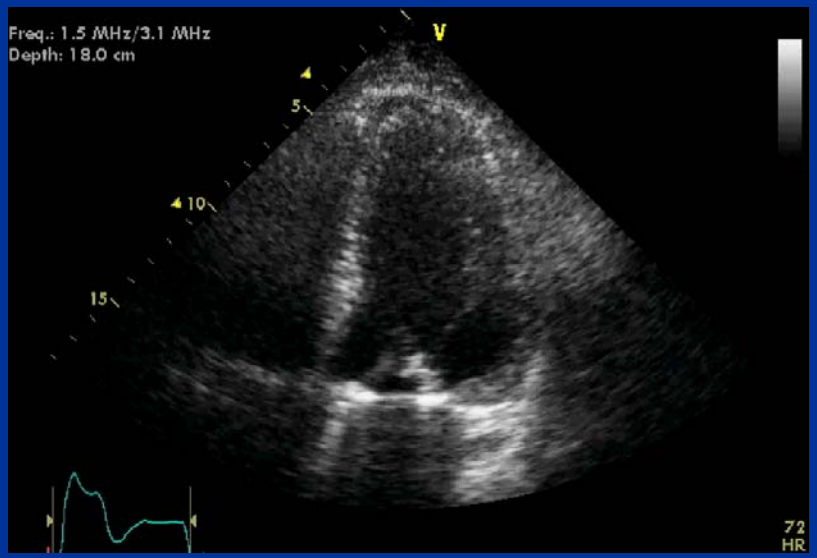
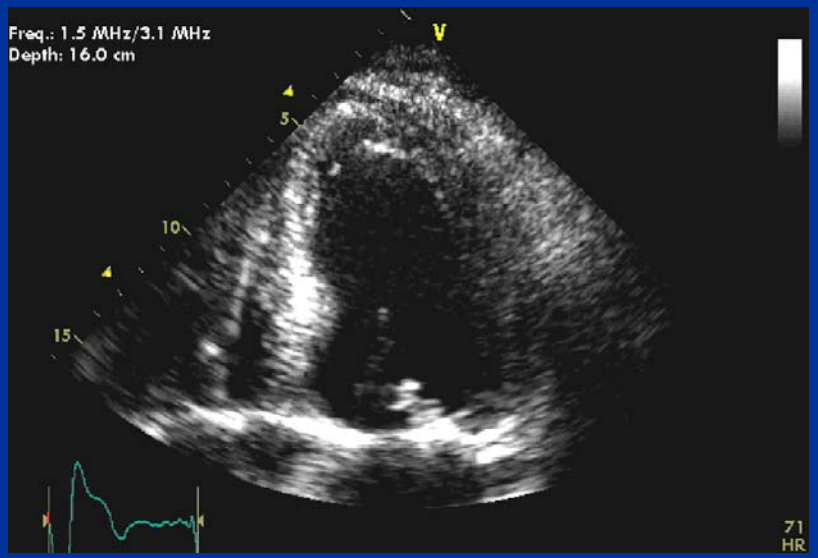
- Ischemic Cardiomyopathy
  - NYHA Class 1
- Cardiomyopathy from any etiology
  - NYHA Class 2
- EF $\leq$ 30%
- LBBB with QRS $\geq$ 130

Back to our case

- A Bi-Ventricular ICD was implanted
- After 6 weeks the patient had dramatic improvement
  - Now NYHA Class II
  - Walking laps at the mall 3 times per week
  - Improved energy

Back to our case

Pre Bi-V



Post Bi-V