In-vivo validation of a new 3D myocardial strain estimation tool

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Introduction

Studying regional LV mechanics by echocardiography: 3D > 2D

- Avoid out-of-plane motion
- All myocardial strain components with one acquisition

New 3D strain software:

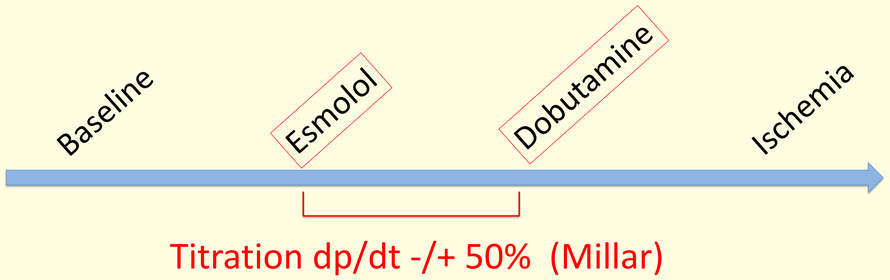
- Quantitative evaluation of LV function

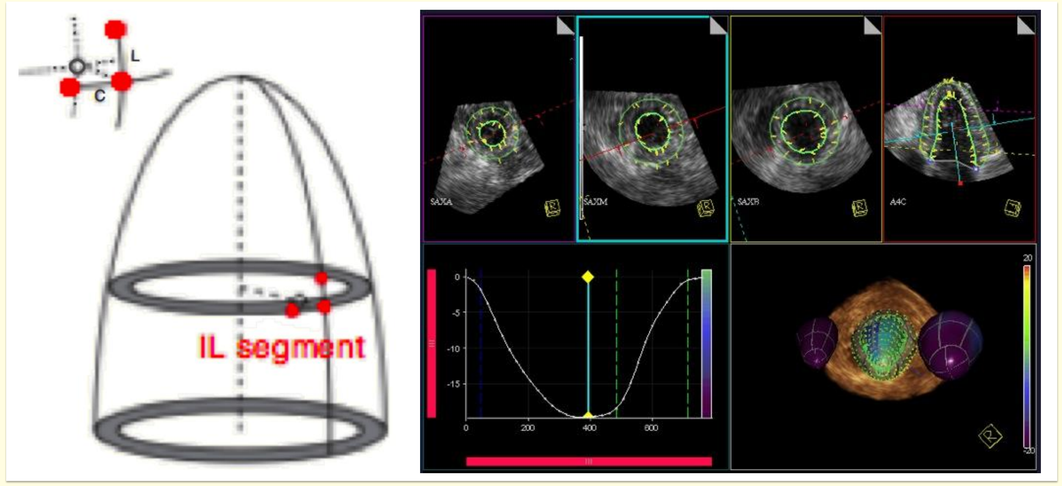
Study Protocol

- Sternotomy and suspension heart pericardial cradle (sheep n:14)
- Sonomicrometry Mid-Inferolateral wall (reference)
- 3D echocardiographic measurements (Siemens SC2000)
  - Semi-automatic contour detection of LV borders at ED
  - Automatic LV wall tracking
  - 18-segment model LV : ES strain values
- IL wall strain : Correlation echo vs sonomicrometry strain (4 stages)

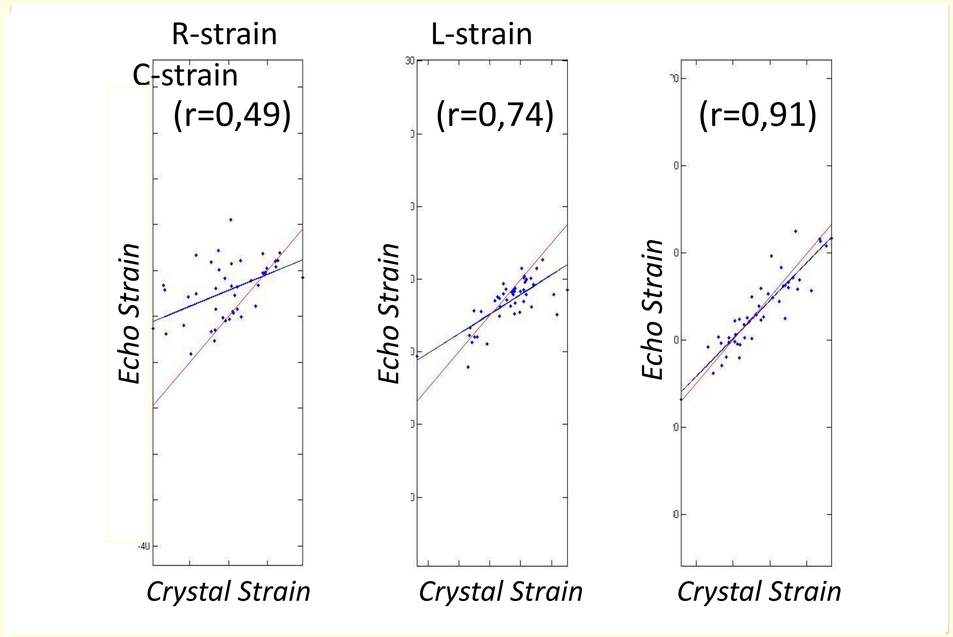
Analysis

47 (56) datasets (excluded : 5 Ischemia, 2 Dobutamine, 2 Esmolol)





Results



Conclusion: - accurate estimates C and L strain.
- less reliable for R strain (correlation sonomicrometry)