

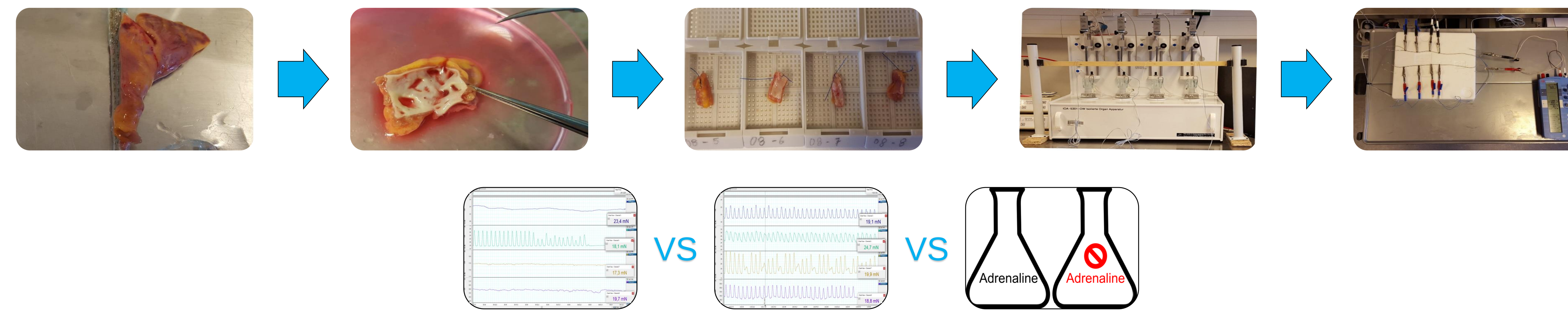
Introduction

- Multisite cardiac pacing may be a promising therapeutic option in atrial fibrillation (AF).
- As a first step we aimed to prove the electrical stimulability of small myocardial samples from amputated left atrial appendages in patients with AF.

Methods

- Left atrial appendages from 30 patients with atrial fibrillation were harvested from the beating heart or in cardioplegic arrest.
- Four small samples of each amputated appendage were investigated in the organ bath.
- Pre-stretched samples of about 1 cm length were paced using bipolar electrodes.
- The contractile responses to different voltages in single and simultaneous sample stimulation as well as the influence of adrenaline were measured.

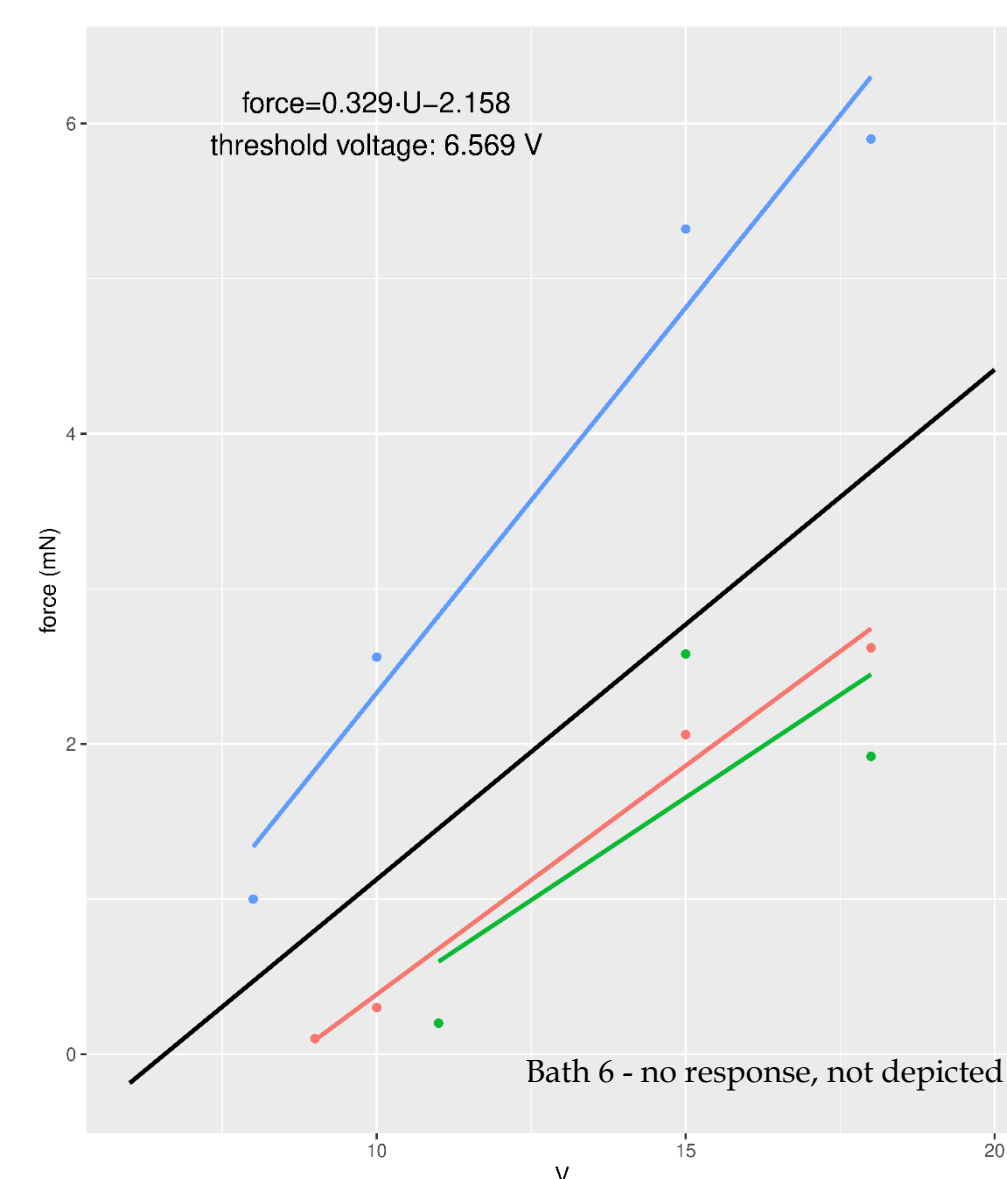
Methods



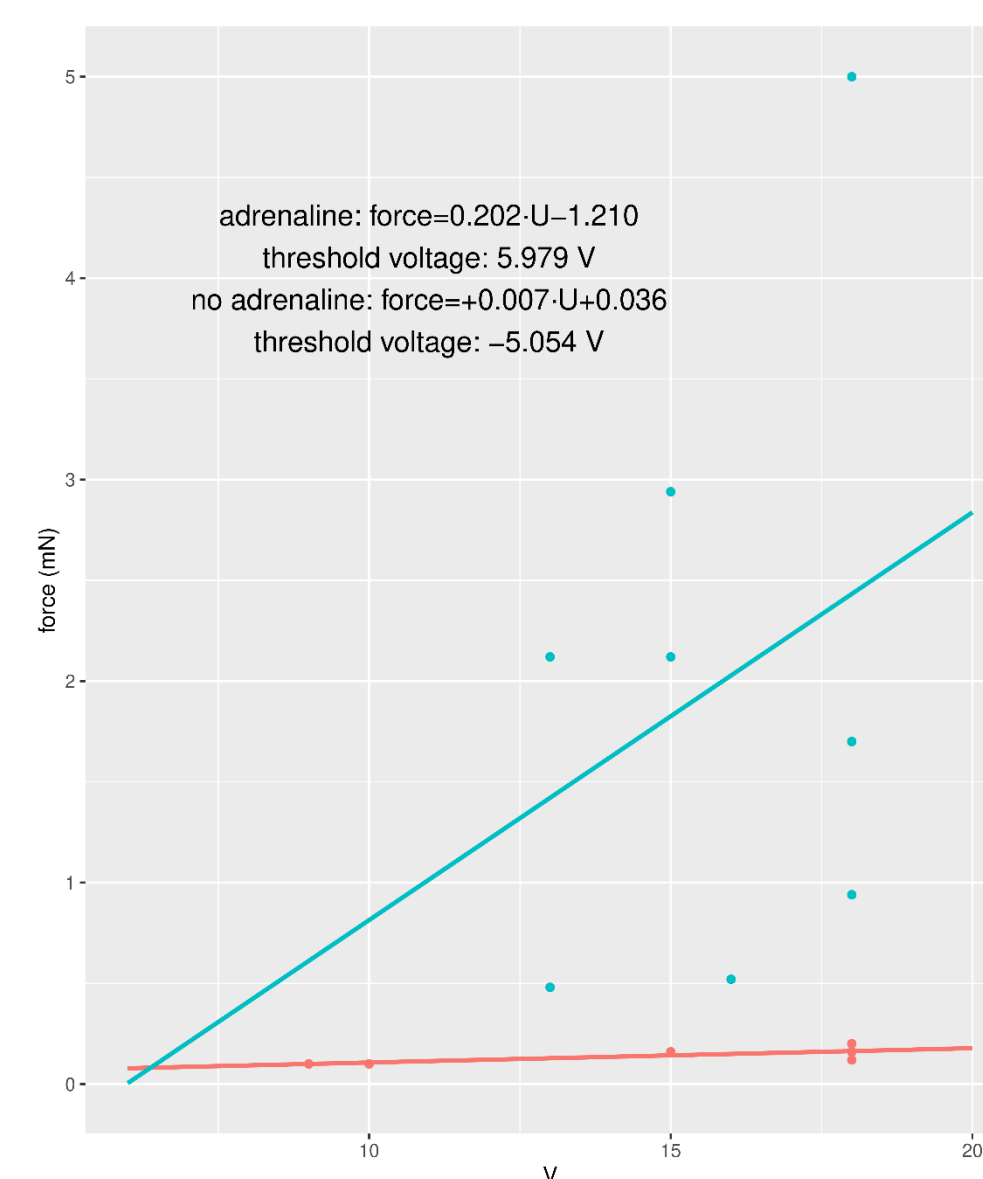
Results

Harvesting method (Ø Adrenaline)	Beating heart	Cardioplegic arrest
Stimulable	6	3
Not stimuable	13	8

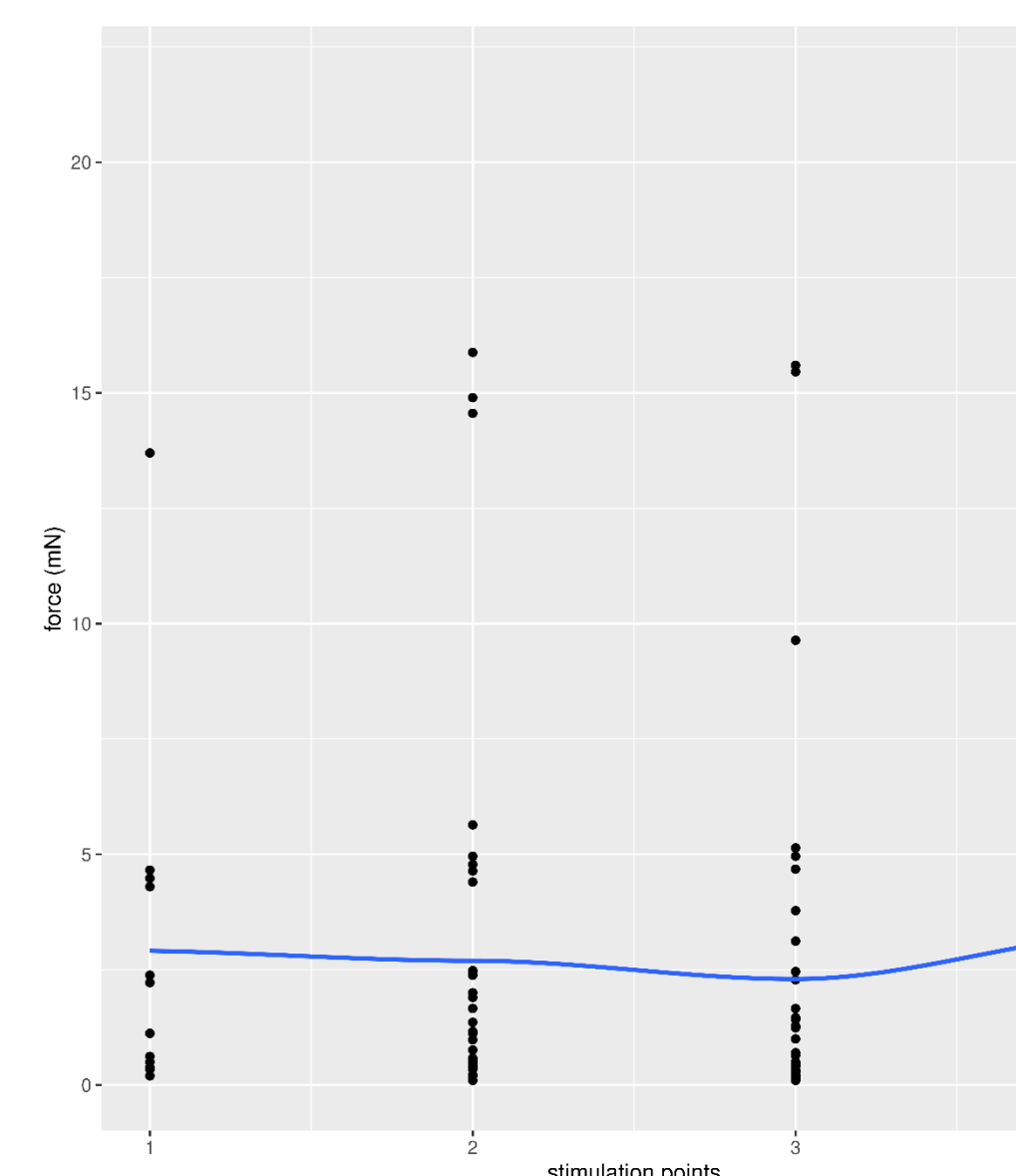
Pat. 15 w/ adrenaline: Contractile responses (mN) correlated with pacemaker stimulation (V)



Pat. 27: Contractile responses (mN) to different voltages (V) w/ and Ø adrenaline



Pat. 4, 17, 23 cumulative results 18 Volt: single or simultaneous stimulation of up to 4 samples



All samples exhibit similar contractile responses (mN) regardless of whether they are stimulated individually (1) or simultaneously as part of a parallel circuit (2-4)

Results

- The time point of harvesting had no influence on the stimulability of the samples (p-value = 1).
- Contractile responses to pacing with 60 bpm in the absence of adrenaline were detected in 11 samples from 9 appendages.
- After adrenaline was applied the response improved to 90 samples from 29 appendages.
- We observed a proportional relation between the voltage and the contractile force.
Slope Ø Adrenalin = 0,02 (0,01 to 0,19)
Slope w/ Adrenalin = 0,14 (0,06 to 0,25)
- Simultaneous sample stimulation did not decrease contractile forces compared to single stimulation (p-value = 0,78).

Conclusion

- Small samples of atrial myocardial tissue from patients with atrial fibrillation showed rhythmic response to electrical pacing.
- In vitro studies on larger myocardial tissue are planned before multisite cardiac pacing can be tested in vivo.