

## First wireless right atrial pressure measurement in patients with severe tricuspid regurgitation before and after percutaneous or surgical treatment

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### Background

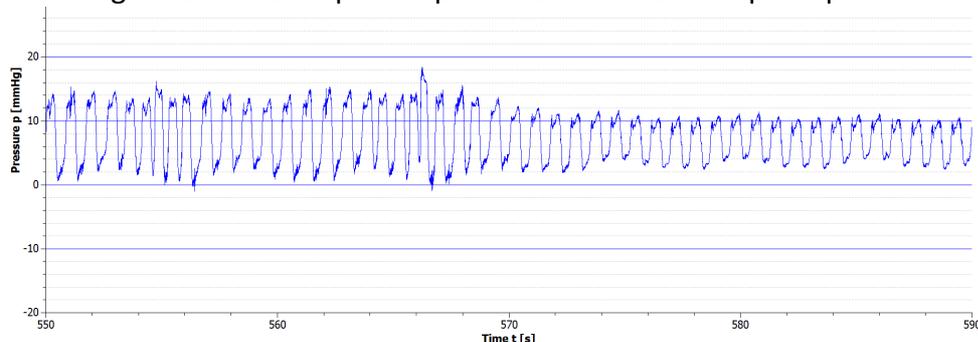
In patients with tricuspid regurgitation (TR) the right atrial (RA) pressure may better reflect the symptom status of the patients than the data derived from echo. The Cor/log Device is a novel wireless system which offers the opportunity to continuously measure the RA pressure. This is the First-In-Man report using this system in patients with severe to torrential TR 2 to 3 days before and 5 to 8. days after a percutaneous or surgical repair of the tricuspid valve.

### Methods

RA pressure measurement was performed using the Cor/log System (EMKA Medical, Aschaffenburg, Germany) which consists of a Cor/log Probe 1P, a Cor/log connect, and a Cor/log APP. The Cor/log Probe is a wireless pressure transducer with high frequency (more than 100 Hz) pressure profile sensing. The probe, which has a shaft profile of 3 F and a tip profile of 5 F is introduced via the subclavian vein with the tip in the RA. The Cor/log connect which receives data from Cor/log Probe 1P stays outside the patient and is attached to the skin. From there the data are transferred wireless to the Cor/log App and can be retrieved as displays of pressure profiles  $p(t)$ , first derivatives  $dp/dt$ , and acceleration.

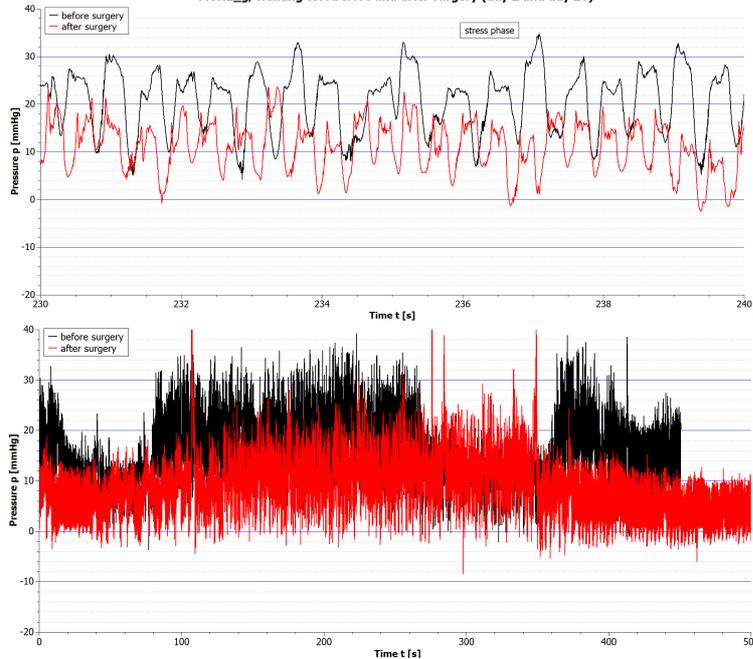
### Patients

**Patient 1** had a combined mitral- and tricuspid regurgitation and severe left ventricular dysfunction (Ejection fraction 28%). She was 85 yrs old, had an ICD implanted and suffered from heart failure symptoms NYHA III. Six months before a MitraClip (Abbott Vascular, Santa Clara, California) procedure was performed with recurrence of MR. The patient received 2 Clips (NTR und XTR) in mitral position with a reduction in MR from III+ to I+, and 1 clip (XTR) in a antero-septal position of the tricuspid valve with a reduction from massive to mild to moderate. After the procedure symptoms improved from NYHA III-IV before treatment to II after. Fig 1 shows the drop in RA pressure after the tricuspid clip.



**Patient 2** was a 69 yrs old male with severe Parkinson disease and and isolated torrential TR in NYHA ambulatory IV. He received 3 Clips (XTR), 2 in the antero-septal and 1 in the postero-septal position without significant reduction of TR. No change in RA-pressure was found after treatment.

**Patient 3** was a 67 yrs old male with heart failure NYHA III due to isolated torrential TR. A clip procedure failed and open heart surgical tricuspid reconstruction was performed leading to a reduction of TR from severe to mild. Fig 2 A and B show the striking difference in RA pressure during 6 min walk test before and after surgery.



## Conclusions

Continuous precise measurement of the RA pressure using the Cor/log System is feasible. The system does not interfere with pacemaker leads, or with a percutaneous or surgical intervention for TR. It provides information on the significance of TR at rest and during exercise and may serve as a valuable tool to judge the effect of treatment.