Research Group
HuCE – microLab
Heart surgery through a key hole –
heart valve repair of the future

Project Description
Mitrai valve regurgitation (mitral insufficiency) is a condition in which malfunctioning of the mitral valve allows backflow of blood into the left atrium, which eventually results in heart failure (see figure below).

Mitral insufficiency is the most common form of valvular heart disease. According to the Cleveland Clinic and the American Heart Association, mitral valve regurgitation occurs in about 2% of the world’s population. Every year about 250’000 patients are diagnosed with it worldwide. Approximately 160’000 people suffer from this disease in Switzerland.

The current gold standard therapy for mitral valve regurgitation is surgical repair. While the surgical treatment of mitral valve malfunctioning results in excellent outcome, the procedure is delicate and thus requires exquisite surgical skills and experience as the surgeon needs direct access to the valve.

In this project we are developing various instruments allowing surgeons to perform the surgery in a minimally invasive way. Due to its complexity this is a challenging task that requires a multi-disciplinary approach combining different specialists to reach an optimal result.

The project started with funding from the Swiss Federal Commission for Technology and Innovation (CTI). It combines teams and talents with different backgrounds and disciplines, such as academia and clinical science, as well as industry. Collaboration includes the Berne University of Applied Sciences, specifically the Institute of Human Centered Engineering (HuCE-microLab), the Cardiovascular Engineering group of the ARTORG Center for Biomedical Engineering Research of the University of Berne, various clinical and medical advisors and specialists at the Inselspital, the Berne University Hospital, and other hospitals, and experts for medical devices from the industry partner CoreMedic AG.

The exceptional interactions and networking possibilities between the surgical, engineering and scientific disciplines involved in this collaboration allow testing and evaluation of the products by the intended users with continuous and direct feedback.

Project Partner
CoreMedic AG

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http://www.heart-valve-surgery.com/heart-surgery-blog/2012/02/08/mitral-regurgitation-progression-craig-smith