

# Heart surgery mortality rates significantly reduced

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Fifty years have passed since the first heart operation was carried out with a heart-lung machine at the MedUni Vienna in the Vienna General Hospital. Since then cardiac surgery has developed at an astonishing rate – to the great benefit of patients. "Mortality rates during, or in the first 30 days post-, cardiac surgery now lie at two to three percent even though these are consistently serious cases being operated on; 50 years ago they were still at 10 to as much as 30 percent," says Günther Laufer, head of the Clinical Department of Cardiac Surgery. Many contributing technical achievements were, and are being, co-developed at the MedUni Vienna and taken further. For this reason, the MedUni Vienna is

regarded as one of the leading centres in Europe for cardiac surgery.

According to Laufer the reduction in the mortality rate for heart operations is all the more remarkable "as patients are getting older, and often have several additional diseases such as long-term diabetes and are long-term dialysis patients – this complicates the work of [cardiac surgery](#) ." Despite this, in the most commonly performed heart surgery at the Vienna General Hospital – the aortocoronary bypass for acute coronary atherosclerosis - the mortality rate dropped to under one percent in 2012.

One advance also connected to developments at the MedUni Vienna and the Vienna General Hospital: it was here that the intra-aortic balloon pump was developed and used for the first time at the end of the 1960s to support a weak heart, after a heart attack for instance. The first artificial heart, in the development of which Viennese scientists played a considerable part, was implanted in Vienna in 1986. Modern pumps to support the heart, with which MedUni Vienna researchers work at the Vienna General Hospital, are no bigger than a thumb and almost take over the entire job of the left ventricle of a weakened heart. As a bonus comes the fact that by far the greatest number of heart pump implantations can be done with "small incisions", and thus the procedure is minimally invasive – a surgical-technical milestone in the development of which the Department of Cardiac Surgery at the MedUni Vienna/Vienna General Hospital played a significant part.

## **Major development in cardiac surgery**

One of the greatest developments in cardiac surgery in recent years has been the use of the light mini-centrifugal pump, which only weighs 150 milligrams, in the development of which the MedUni Vienna was also a significant participant around ten years ago. In this pump the system rotor hovers contact-free in a magnetic field, which means there are no mechanical parts to wear out. As a result the life of the pump is

practically unlimited.

Says Laufer: "In recent years it has therefore been possible to clearly improve the prognosis of patients with acute heart failure as not all patients can be supplied with a suitable donor heart."

Further such advances are in the pipeline. In the future a new technology (assist devices) will make it possible to analyse the performance of the heart pump extremely accurately. The next advance is the development of intelligent pumps that automatically adjust their operating level to the requirements of the patient. "We are working to make this possible," says Laufer. The transmission of the data, which at present takes place via cable, is to be wireless in future – likewise the charging of the batteries in the pumps. In future everything will be implanted within the body and serviced via a type of Wi-Fi.

With heart valve operations too an increasing number of surgeries are being performed in a minimally invasive way, this means conducted with small and even tiny incisions. In parallel with this there is the development of new heart valve prostheses, which are only now enabling the wider use of minimally invasive access points. In the future, it will also be necessary to conduct some operations minimally invasively through a close collaboration with the cardiology department in the form of a hybrid operation, thus reducing the strain on the patients whilst maintaining the efficacy of the treatment.

After 50 years of cardiac surgery at the MedUni Vienna/Vienna General Hospital, its Cardiac Surgery Department is one of the few clinics worldwide carrying out the whole spectrum of cardiac surgical interventions including transplantation and paediatric [heart](#) surgery and advancing innovations in many branches.

Provided by Medical University of Vienna

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