

CUSTOMER REPORT

Surgical and Interventional guidance using TOMTEC



Dr Chirojit Mukherjee, Head of Anaesthesiology and Intensive Care

Determining the valve pathology and ventricular function is essential for the success of mitral valve surgeries. One pitfall: The haemodynamic of awake and anesthetized patients can vary significantly, therefore pre-operative measurements can change significantly intraoperatively. To receive best results for the patients, the Helios Hospital in Karlsruhe, Germany, perform intraoperative TEE to acquire pre, intra and post-surgery /intervention – and use TOMTEC software to immediately assess the function of the valves and ventricles.

Dr Chirojit Mukherjee, Head of Anaesthesiology and Intensive Care at the Helios Clinic, Karlsruhe explains why the TOMTEC software is beneficial in the operating theatre: "Because of the possible discrepancies between pre- and intraoperative valvular functions, we first need to identify the intraoperative setting and differentiate the function under anesthetized patients. There are for example patients with a preoperative mitral regurgitation Grade III presents as Grade I intraoperatively. Before the surgeon can take any interventional steps, we need to draw a precise picture of the patient's heart. With the TOMTEC software we are able to perform all measurements with TEE directly in our minimal invasive mitral valve surgery and hybrid operating theatre."

Saving time – raising quality

All measurements literally refers to the complete spectrum of measurements which is offered by the TOMTEC software – especially the assessment of the right ventricle. For Dr Mukherjee this is a crucial advantage of TOMTECs software because so far it is his favourite software solution that can perform intraoperative assessment of the right ventricle. "The right ventricle is totally volume dependent. With TOMTEC software we can display any changes immediately at the monitors in the OR. In experienced hands it takes approximately a minute to get results and make a decision – compared to several minutes, which is the time it would take if we would need to go to the routine echo to perform the assessment."

In heart surgery this decision can be crucial for the long-term results of the intervention, for example when the surgeon has to decide whether a patient needs uni- or biventricular assist. This is something the software can calculate and therefore support the echo cardiographer and surgeon directly "at the desk".

INSTITUTION

The Helios Hospital in Karlsruhe in South Germany is a specialized center for heart surgery. It is equipped with the latest techniques, modern infrastructure and a specialized hybrid OR. It is a busy and high volume cardiac center in southern Germany, performing about 3000 cardiac cases annually of which 500 hybrid procedures in state-of-art hybrid operating room.

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Using the TOMTEC software in the Helios Hospital in Karlsruhe didn't need any extra equipment in the ORs, as Chirojit Mukherjee explains: "All our ORs are equipped with high-end ultrasound machines and digital technology anyway. So we already had the workstations and monitors needed to run the software and performing our assessments. Intraoperative measurements are provided "live in the operating room" as the work station is installed within the OR. This helps in providing better intraoperative decision making and patient outcome."

Certified anaesthesiologists optimizing the workflow

Another advantage and characteristic of the Helios Hospital: Performing the TEE and using the software intraoperatively is an anaesthesiologist's job. As a former Echo committee chairman of the European Association of Cardiothoracic Anaesthesiology (EACTA), Chirojit Mukherjee himself worked out a certification protocol in accordance with the European Society of Cardiology that sets standards to train anaesthesiologists in performing the examination and assessments. "In our hospital, the cardiologists do the pre-operative work but during the intervention, it is the responsibility of our trained and certified anaesthesiologists to identify any discrepancies and to support the surgeon in the decision making process. So during surgery and hybrid interventions, we do not need the support of consulting cardiologists – which is an additional time saving factor that optimizes the workflow and the patient outcome.

Although the TOMTEC software is easy and comfortable to use for anybody, only senior anaesthesiologists are trained according to the standardized protocol. The experience of the doctor is important to achieve best results: "The software is very intuitive and can be easily learned by new fellows. But you need to know what you are measuring and with relevant consequences – this needs clinical experience to be juxtaposed with echocardiography skills", Dr Mukherjee adds.

Further potentials of TOMTECs TAVR Package

Using the TAVR Package from TOMTEC for intraoperative assessment in the OR is not the only possible method in Helios Hospital, Karlsruhe. "The TAVR package from TOMTEC offers all the measurements that are necessary for TAVR procedures. If the TOMTEC (TAVR package) is used routinely, we could avoid contrast agents, this would be a huge benefit for the patients because significant number of octogenarians have kidney disease which may predispose them to post-operative renal failure due to pre and intraoperative exposure to contrast agents."

KEY FOCUS AND MODULES IN USE

Intraoperative imaging using Real Time 3D Echo/ TOMTEC Template/ and Echo navigator in the cardiac suite, a pioneering concept in Germany for intraoperative use is routinely practiced for optimal patient outcome. The implementation of "fast track" / ERAS cardiac program in Karlsruhe, where patients are transferred to the wards/IMC on the same day after cardiac surgery is a revolutionary approach in the treatment of post-surgical cardiac patients, leading to cost reduction, enhanced recovery and reduced in-hospital length of stay. Helios clinic Karlsruhe has been designated as a center of excellence by virtue of this concept. Three years in succession Helios Clinic in Karlsruhe has been able to achieve 100% of all Helios internal quality control landmarks.

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"The TAVR package from TOMTEC offers all the measurements that are necessary for TAVR procedures."

Dr Chirojit Mukherjee

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