



Pioneering Prostate Diagnostics

Semi-robotic MRI/Ultrasound-guided Fusion Biopsy with ARTEMIS™

As Senior Physician, Adjunct Professor Dr Marko Brock coordinates the Prostate Cancer Competence Centre at the Marien Hospital Herne of the University Hospital of the Ruhr-University Bochum. To optimise the diagnosis and follow-up of prostate cancer, state-of-the-art technologies and internationally recognised diagnostic and treatment procedures are used. The interdisciplinary team at the centre relies on a tailor-made treatment concept for each patient.

This allows patients to receive their personalised treatment at an early stage. The procedure can take as little as 10-15 minutes and for the patient it is almost painless under local anaesthesia. Thanks to Hitachi's innovative probe technology, no pressure is applied on the prostate and deformation of the organ is avoided. As a result, the examination can not only be more effectively visualized, ARTEMIS™ also enhances patient comfort when it comes to removing biopsies placing the patient in a left lateral position with legs slightly bent.

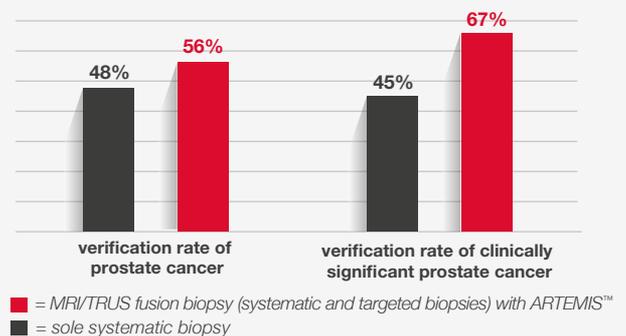


Prostate cancer detection: finding the needle in a haystack?

Although prostate cancer is the most common cancer affecting men throughout Germany, the malignant tissue often remains undetected for a long time. "As part of our efforts to diagnose prostate cancer more effectively, the ARTEMIS system represents a crucial diagnostic tool, allowing us to optimize the entire diagnostic chain", explains Dr Brock. Thanks to ARTEMIS™, Dr Brock and his team have been able to increase the detection rate of prostate cancer from 48 to 56% compared to conventional biopsies. The detection rate for clinically significant carcinomas has also increased from 45 to 67%. According to Dr Brock, that is a remarkable achievement.

Greater certainty: detecting prostate cancer even earlier

With more than 500 prostate biopsies performed a year, the Herne Competence Centre is one of the largest and most renowned throughout Germany. Dr Brock pursues a holistic approach to treatment, which starts with prevention, education and diagnosis. As part of the special prostate diagnostic consultation, the semi-robotic ARTEMIS™ biopsy system, used alongside Hitachi's innovative probe technology and ultrasound imaging solutions, has been firmly established since December 2016. Thanks to the combined system, which is distributed by Hitachi Medical Systems in Europe, software solutions developed specifically for urology can be used to detect even the smallest tumour lesions at an early stage.





Robot-guided fusion biopsy: targeted removal of suspicious tissue

The ARTEMIS™ system for sampling prostate tissue provides a semi-robotically guided fusion biopsy in combination with multi-parametric MRI and ultrasound in real time. Compared to other prostate biopsy systems, ARTEMIS™ paves the way for so-called elastic fusion. This means that the system can calculate and adjust for differences between the live ultrasound images and the previously acquired MRI images of the prostate. By means of the fusion image, as well as the systematic removal of samples, targeted biopsies of suspicious tissue can be obtained.

MRI findings are collected by the in-house radiology team according to international PI-RADS classification. After electronically transferring the labelled MRI images to the urology department, Dr Brock plans the exact puncture areas using the special ProFuse software. In the next step, the preliminary discussion with the patient on the ARTEMIS™ system takes place in the treatment room immediately before the procedure. During the subsequent biopsy, the robotic arm stabilises the ultrasound probe, helping the examiner to guide the needle quickly and precisely. While doing that, exact locations where tissue samples are taken is recorded automatically. The histological examination of the pathologist, as well as further patient data can then be loaded into the system to ensure comprehensive reporting. This is advantageous, in particular during the active surveillance of patients with a low-risk tumour that need not necessarily be treated.

Ensure sustainability, share expert knowledge, educate patients

As a semi-robotic system, ARTEMIS™ provides highly reproducible, researcher independent results – an important prerequisite, particularly to university hospitals. Continuous training of physicians and residents, 30 to 40 scientific publications a year and regular contributions to national and international conferences form an integral part of the activities of the Prostate Cancer Competence Centre at the Marien Hospital Herne. The team has repeatedly received accolades for their research projects.



In Europe, the semi-robotic ARTEMIS™ system produced by Eigen is marketed in designated geographical areas by Hitachi Medical Systems Europe Holding AG, Steinhausen, Switzerland and its subsidiaries. It can be combined with various Hitachi ultrasound systems, including the ARIETTA and HI VISION systems. The ARTEMIS™ system can be used to perform either transrectal (TRUS) or transperineal (TP) fusion biopsies.



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