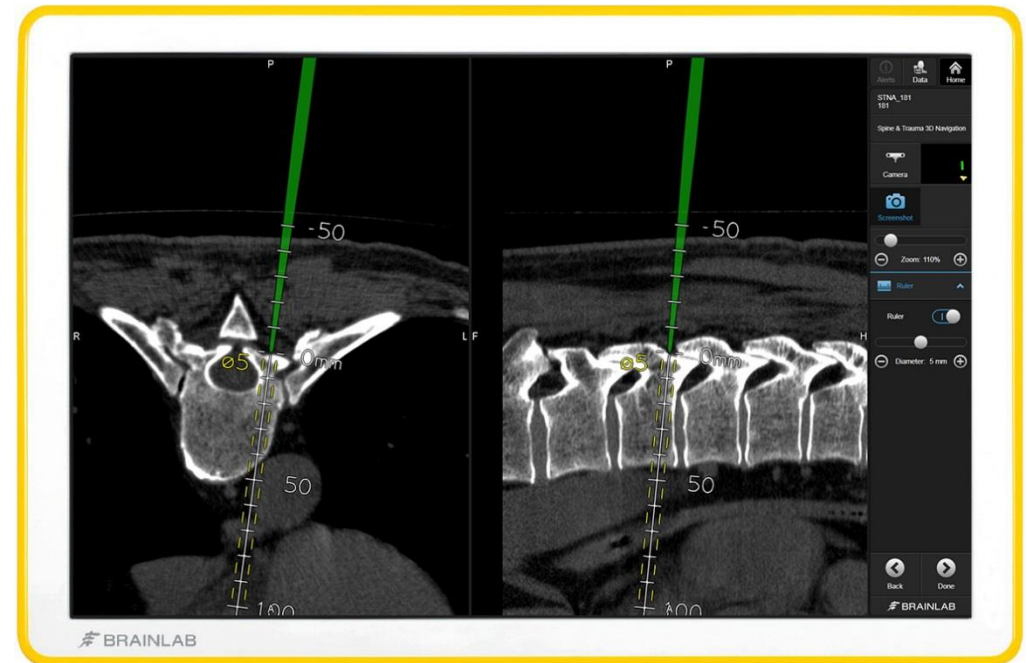# SPINE
NAVIGATION

IMAGE GUIDED SPINE SURGERY

CONFIDENCE AND ACCURACY

Brainlab Spine Navigation combines state-of-the-art touch screen based image control with best-in-class registration methods for image guided surgery. As an open navigation platform, Brainlab Spine Navigation enables accurate pedicle screw placement as well as drastic reduction of X-Ray exposure to both the surgical team and the patient. Navigation of implants and instruments is possible in 2D images, 3D fluoroscopy scans, MR or CT datasets at all stages of surgery—from incision planning to implant placement.

The indication range covers pedicle screw placement in any area of the spine, placement of C1-C2 screws, complex deformity correction, tumor surgery and surgical planning.

MULTIPLE INDICATIONS

GREATER VISUALIZATION

The indication range of Brainlab Spine Navigation spans cervical and high thoracic dorsal instrumentations to routine lower lumbar surgery, tumor treatment and deformity surgery planning and visualization.

Navigation is possible in 2D images as well as 3D scans from various scanners; both pre- and intraoperative CT images can be registered. Pre- and manually calibrated instruments can be utilized, as well as instruments from any other implant system which are integrated with universal adapter clamps.

Depending on the surgical case, additional features such as Co-Registration, CT-Fluoro Matching or CT/MR-Fusion provide a wide range of image information.
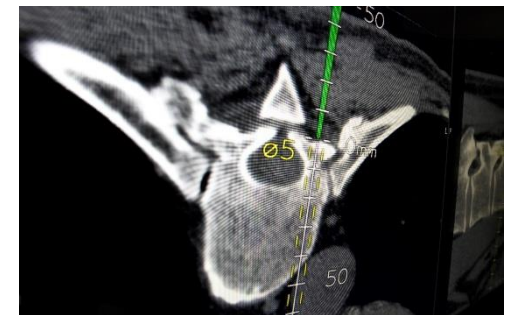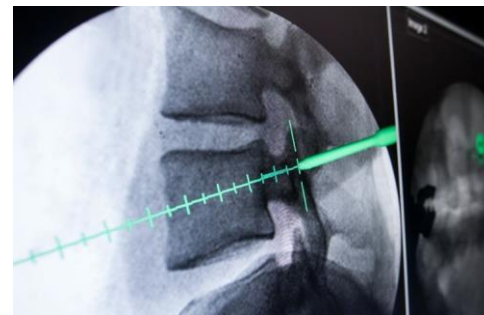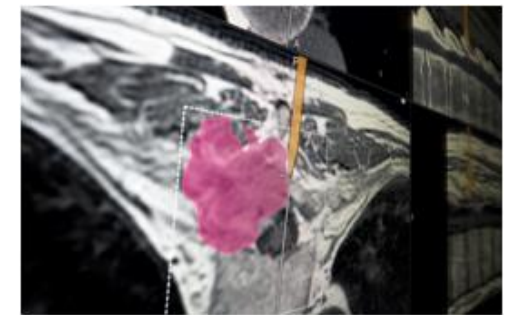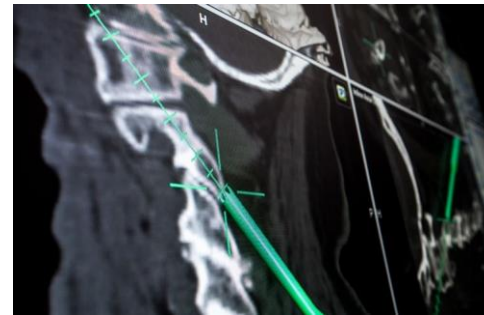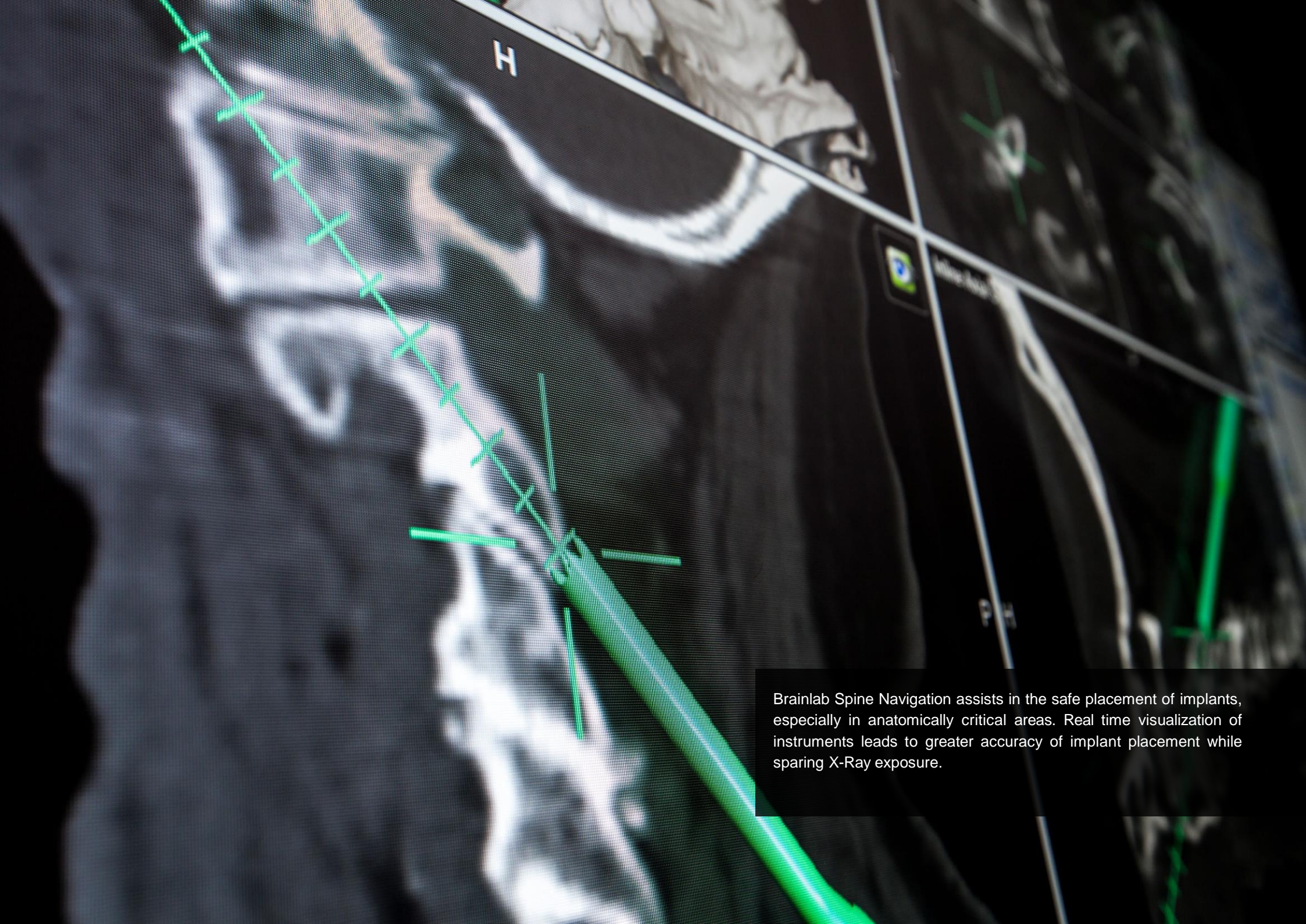
Brainlab Spine Navigation assists in the safe placement of implants, especially in anatomically critical areas. Real time visualization of instruments leads to greater accuracy of implant placement while sparing X-Ray exposure.
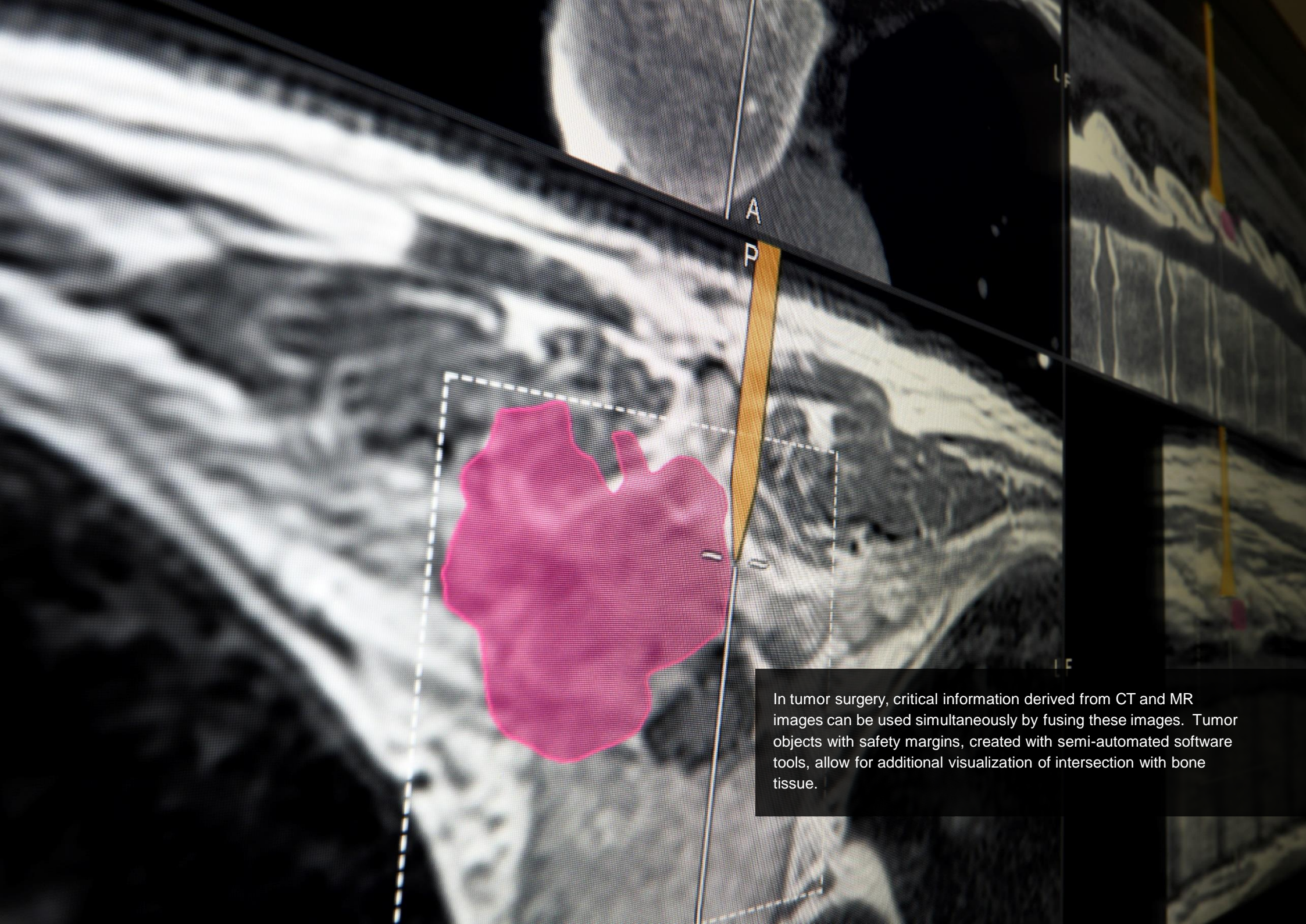
In tumor surgery, critical information derived from CT and MR images can be used simultaneously by fusing these images. Tumor objects with safety margins, created with semi-automated software tools, allow for additional visualization of intersection with bone tissue.
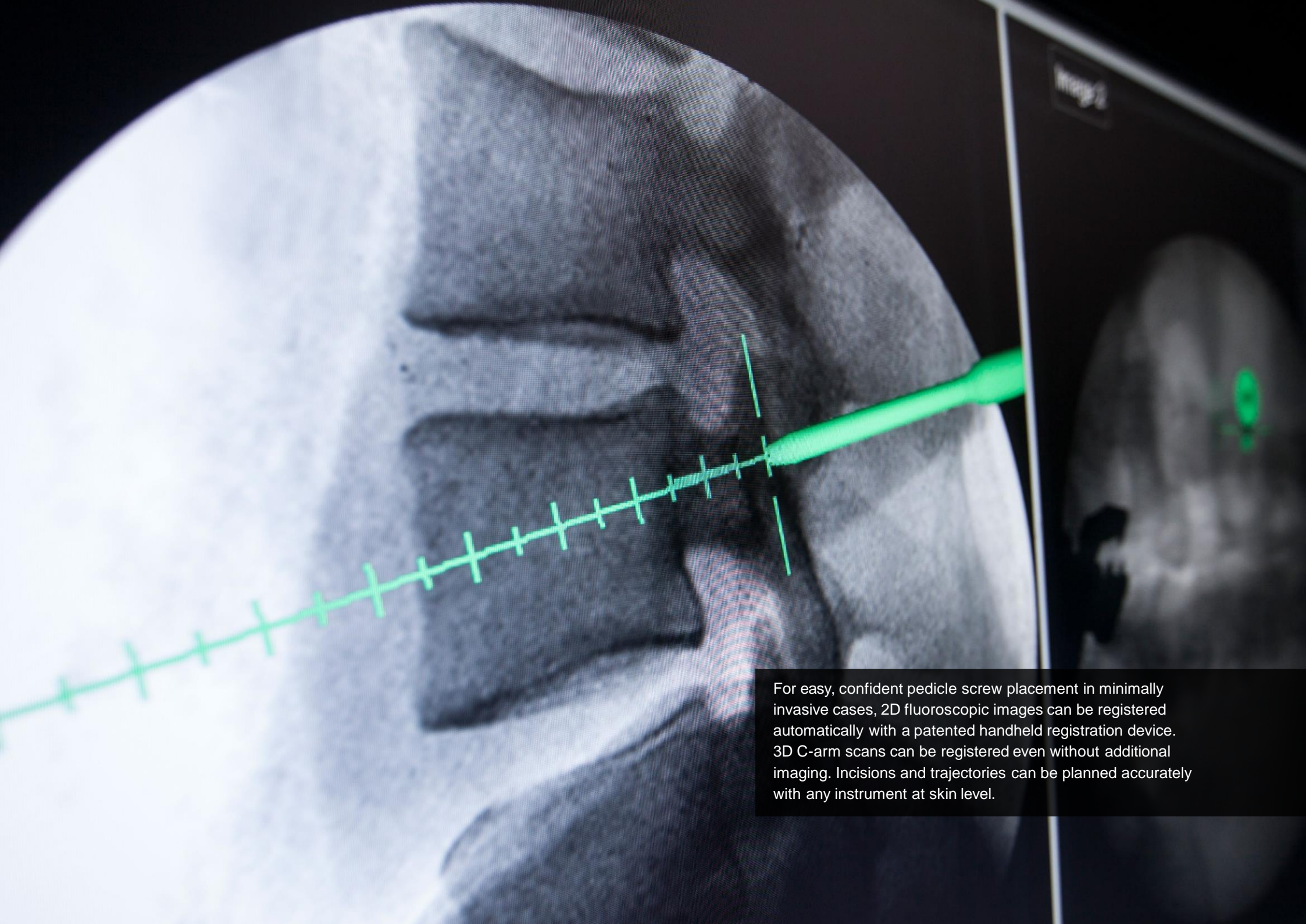
For easy, confident pedicle screw placement in minimally invasive cases, 2D fluoroscopic images can be registered automatically with a patented handheld registration device. 3D C-arm scans can be registered even without additional imaging. Incisions and trajectories can be planned accurately with any instrument at skin level.
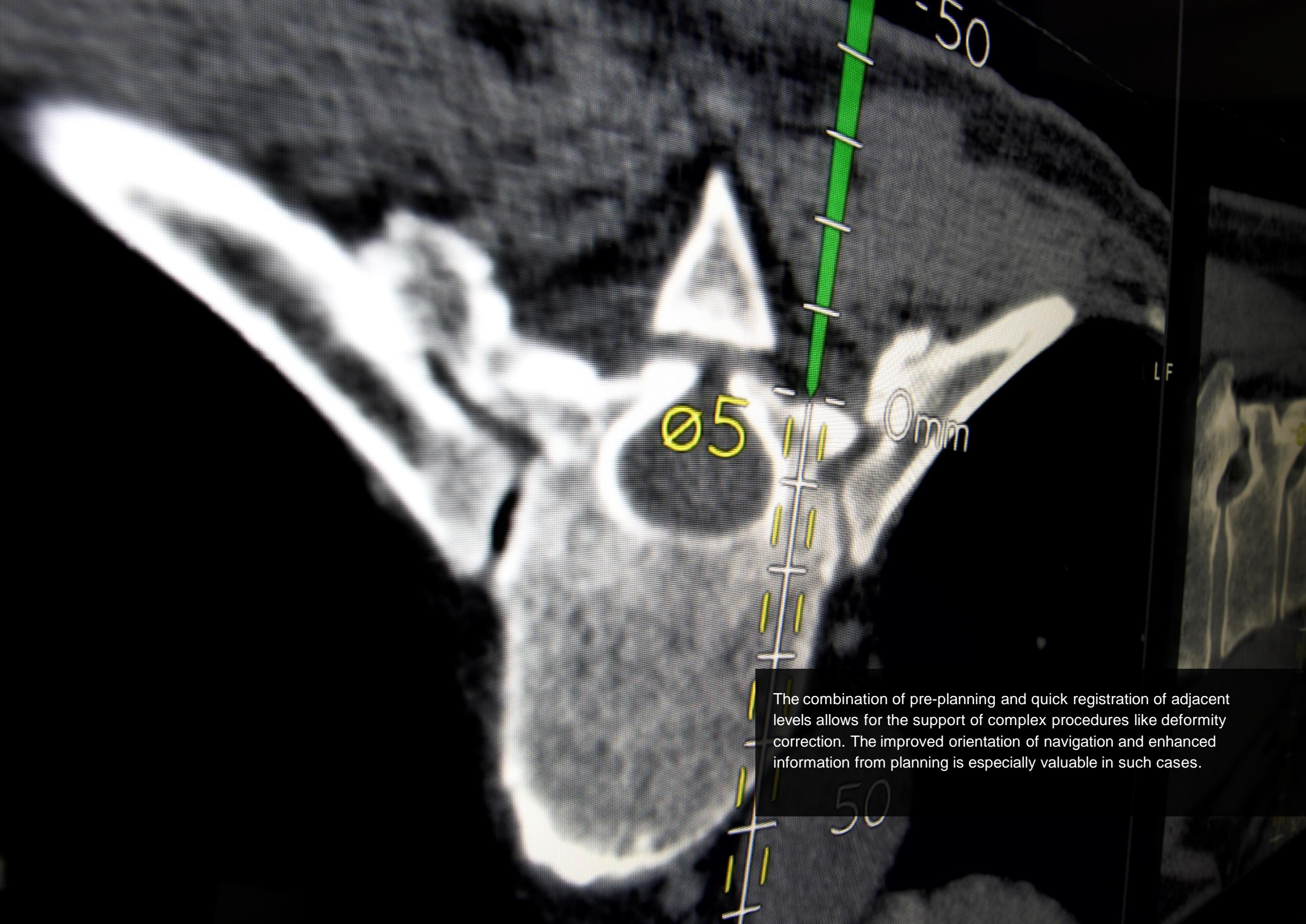
The combination of pre-planning and quick registration of adjacent levels allows for the support of complex procedures like deformity correction. The improved orientation of navigation and enhanced information from planning is especially valuable in such cases.
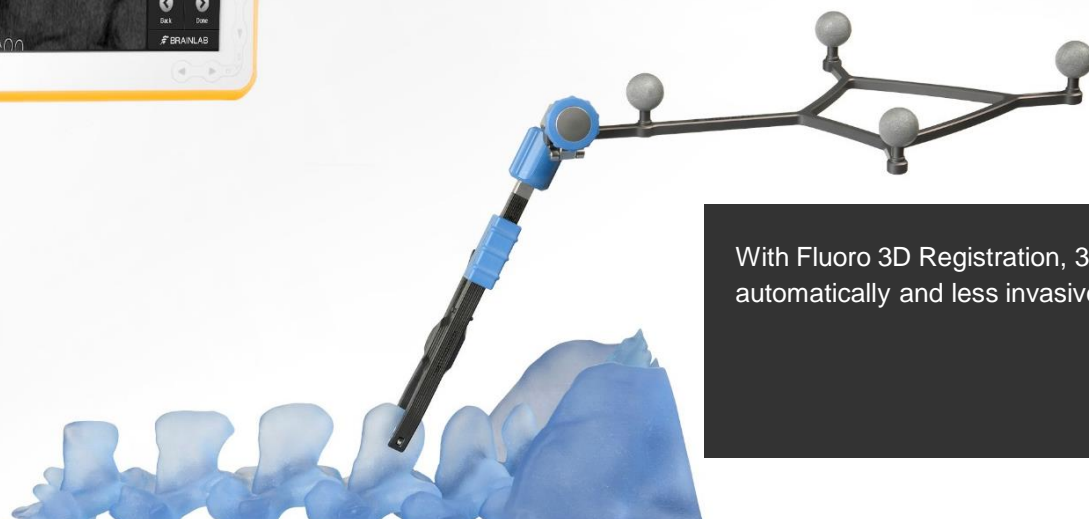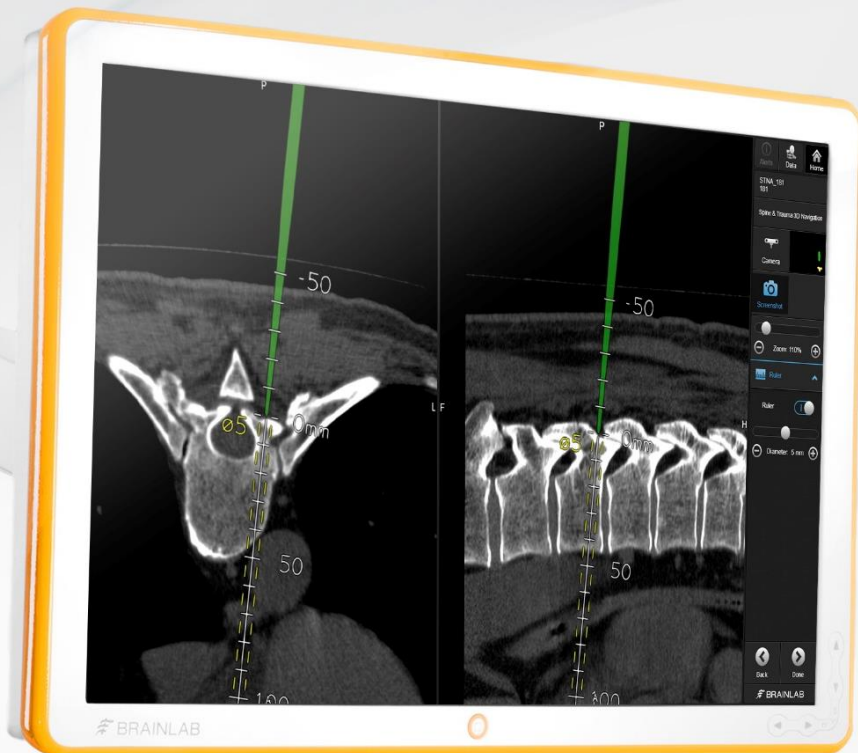
SIMPLE REGISTRATION

PRACTICAL SIMPLICITY

Navigation can be performed in any common image format from 2D and 3D images to MR, CT and robotic iAngio 3D scans, regardless of pre- or intraoperative image acquisition. After a quick automatic image registration or point based registration, navigation can begin. Attached to the pointer, SmartClip enables remote control of the application.
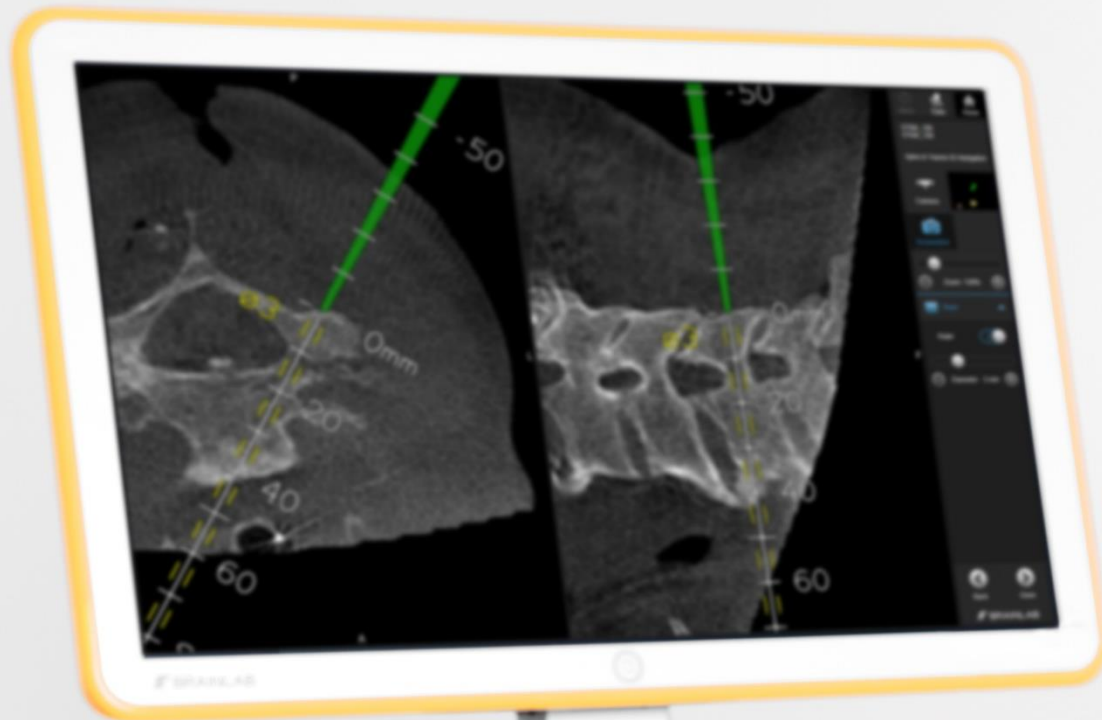

Automatic Image Registration with Airo Mobile Intraoperative CT

Minimally invasive 2D Fluoro Registration can be easily performed with a patented autoclavable handheld registration device.
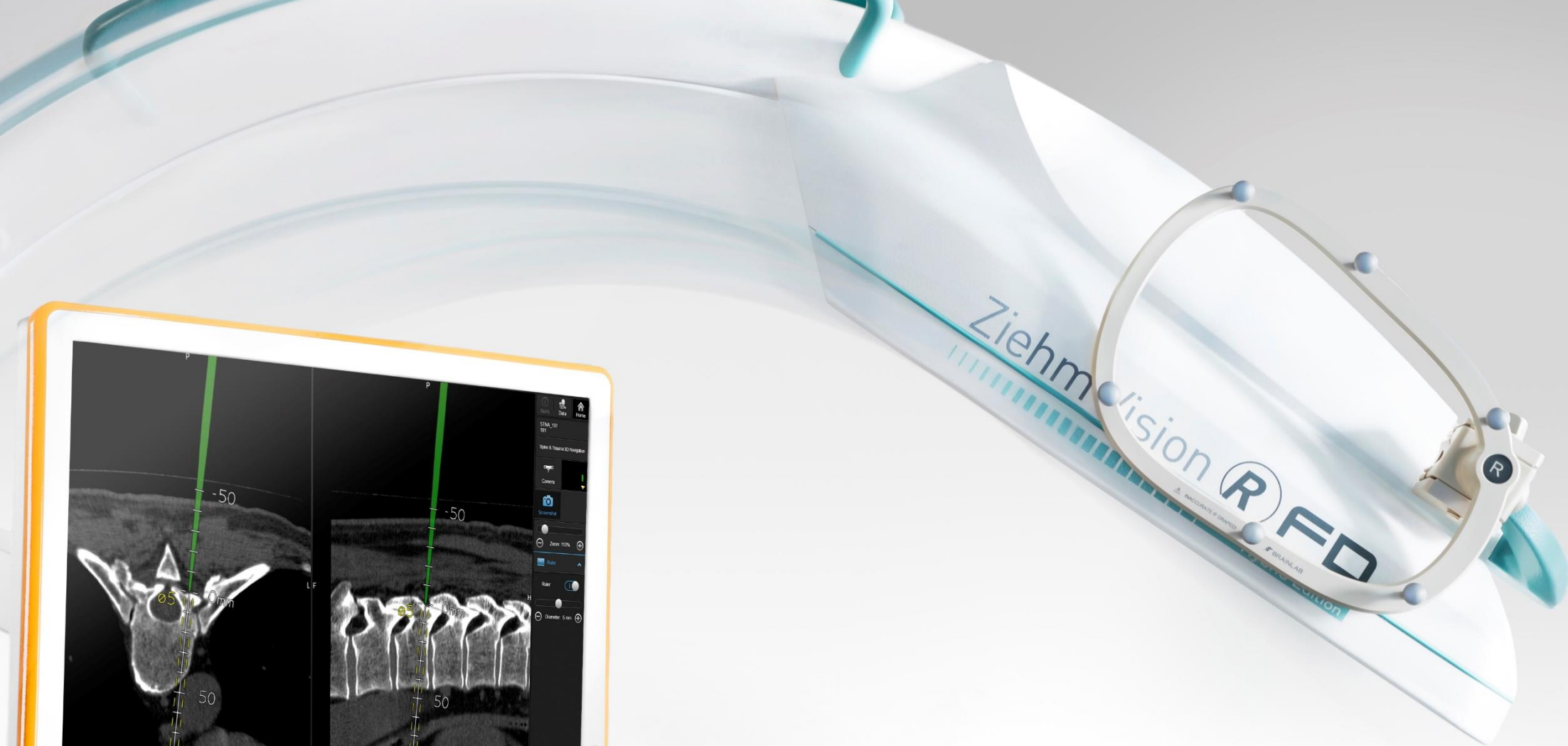
With Fluoro 3D Registration, 3D C-arm scans are registered automatically and less invasively within minutes.

For open surgeries, registration can be performed manually on the bone surface. Surface Matching is a fast manual registration method with an auto-correcting algorithm. Paired Point Matching is done with pre- or intraoperative planning of surface points and registration of other anatomical structures. This applies especially to deteriorated bony conditions and non-spinal regions.
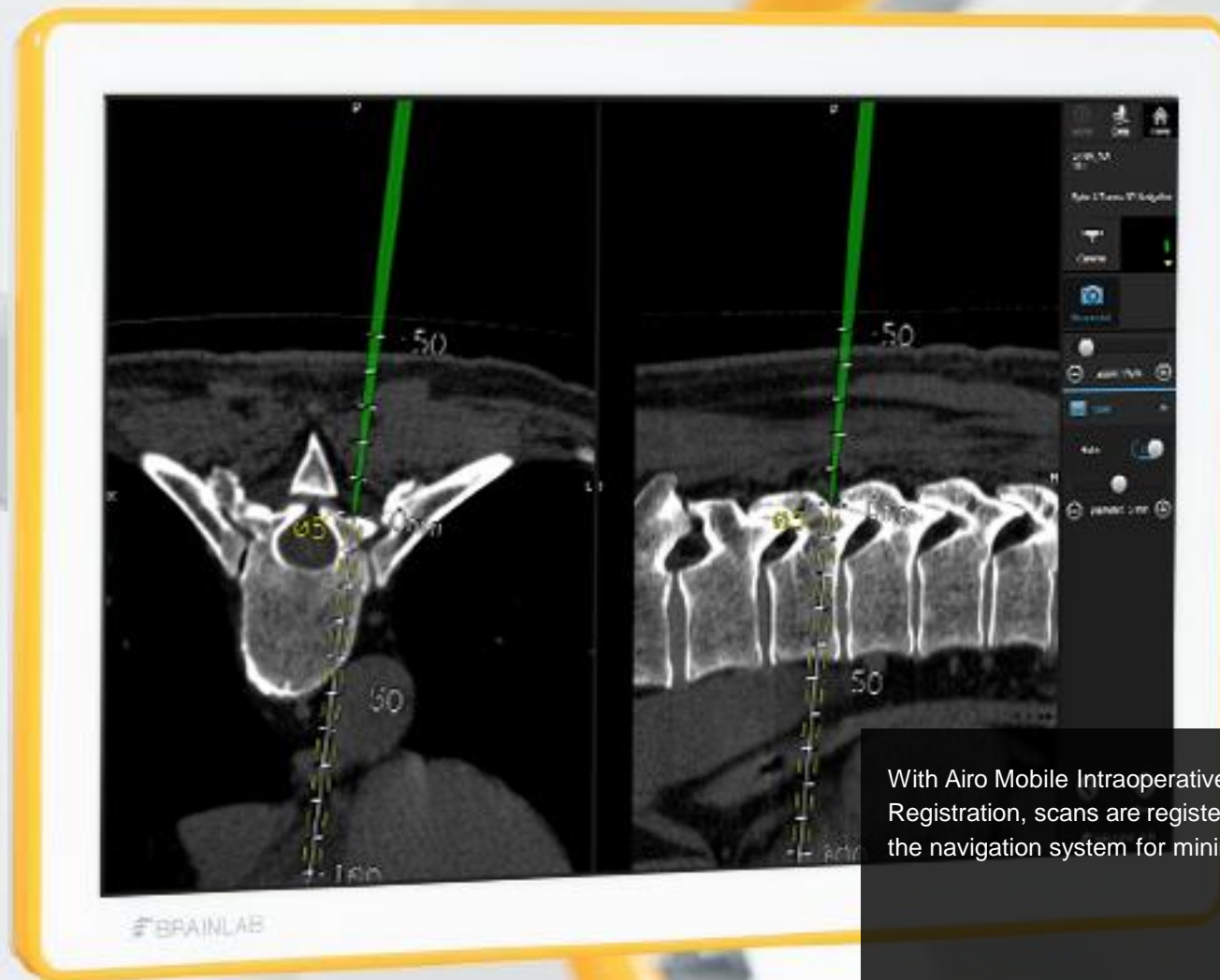
With Airo Mobile Intraoperative CT and Automatic Image Registration, scans are registered and transferred automatically to the navigation system for minimally invasive and open procedures.

DePuy Synthes VIPER PRIME™ Instrument compatible with Brainlab Navigation and fully integrated in the instrument selection tool in the Navigation Software Spine and Trauma 3D.
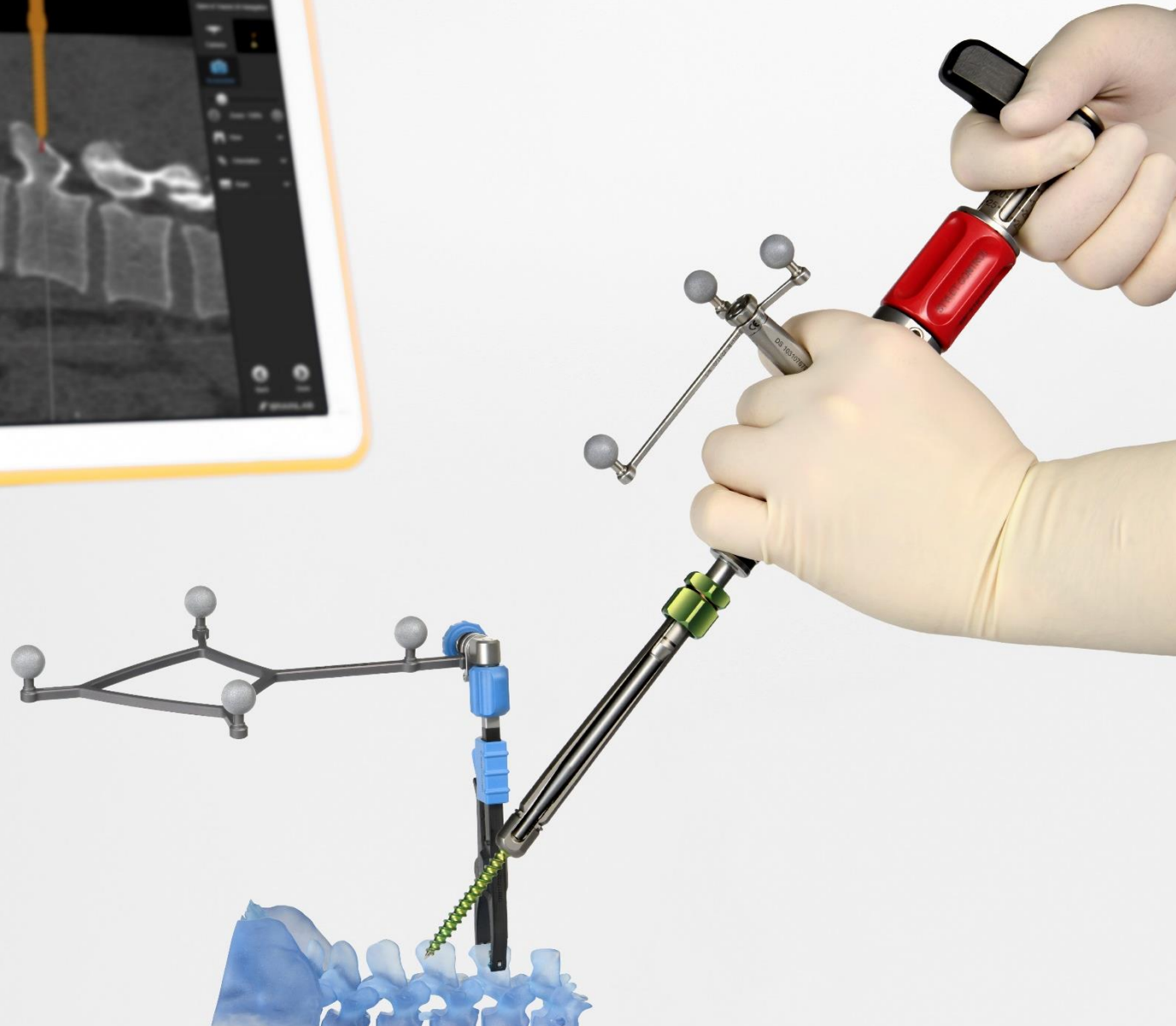
FUSION AND CO-REGISTRATION

IMAGE UNITY

To gain even more insight for individual cases, Brainlab Spine Navigation offers additional features.

CT-Fluoro Matching allows for the registration of preoperative CT scans with two conventional C-arm images for minimally invasive procedures.

To drastically enhance image quality, **Co-Registration** allows co-registering of preoperative CT scans with automatically registered Fluoro 3D data, for example, in cases involving obese patients.

For additional soft tissue information, for instance, in tumor treatment, **Fusion** brings full preoperative MR information together with a registered CT scan.
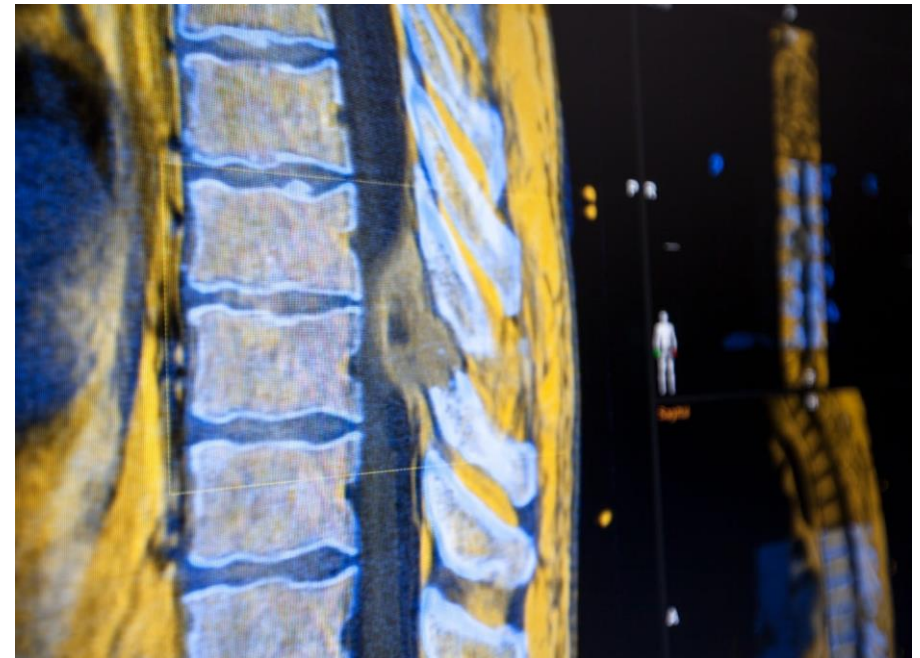
CT/MR-Fusion

INSTRUMENT INTEGRATION

SEAMLESS WORKFLOWS

In addition to a range of Brainlab instruments, cooperations with DePuy Synthes and other selected 3rd party manufacturers also provide navigation-ready integrated instruments.

Moreover, the open platform principle of Brainlab Spine Navigation enables any instrument to be manually calibrated for navigation by attaching adapter clamps.

Pre- or manually calibrated instruments can be integrated into Navigation for smooth and seamless workflows.

→ Follow standard clinical workflow

→ Visualize pre-calibrated instruments in 3D geometry

→ Integrate any instrument and implant system with universal adapter clamps

INSTRUMENT INTEGRATION

DEPUY SYNTHES

→ Integrated Viper2 // Expedium instruments

→ Thoraco-lumbar posterior stabilization

→ Pre-calibrated cannulated and non-cannulated awls, probes, taps

→ Manually calibrated cannulated and non-cannulated screwdrivers

DePuy Synthes - Viper2 // Expedium

INSTRUMENT INTEGRATION

BRAINLAB

→ Integrated universal spinal instruments

→ Pre-calibrated awls and probes for thoraco-lumbar posterior stabilization

→ Pre-calibrated guide tubes and drill bits for navigated drilling

→ Manually calibrated chisels for navigated osteotomies

Brainlab — Spinal Instruments

INTELLIGENT PLATFORMS

TOUCH-BASED COMMAND AND CONTROL

brainlab.com