

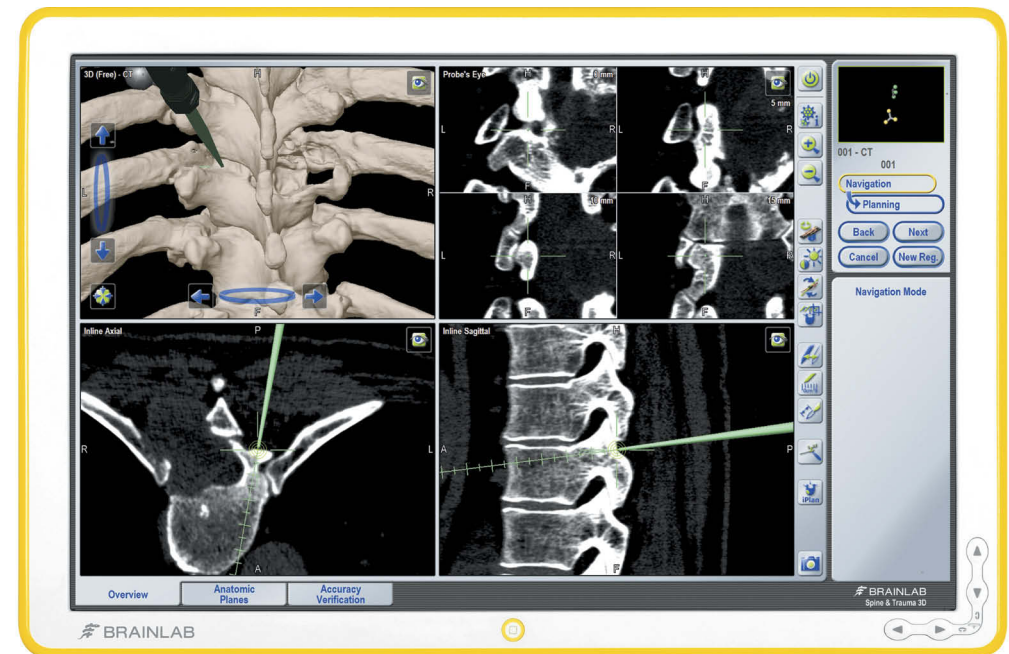
SPINE NAVIGATION

IMAGE-GUIDED SPINE SURGERY

CONFIDENCE AND ACCURACY

Brainlab Spinal 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 Spinal 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 in 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.



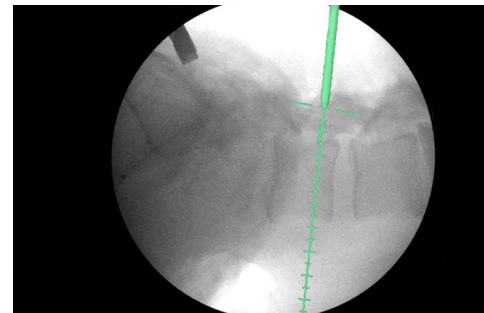
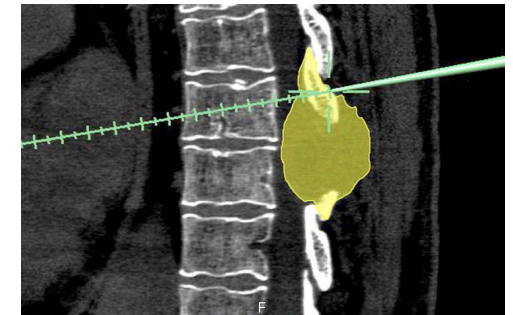
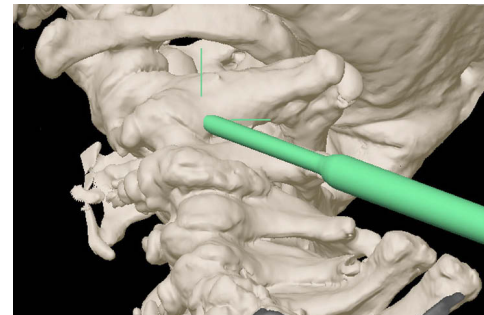
MULTIPLE INDICATIONS

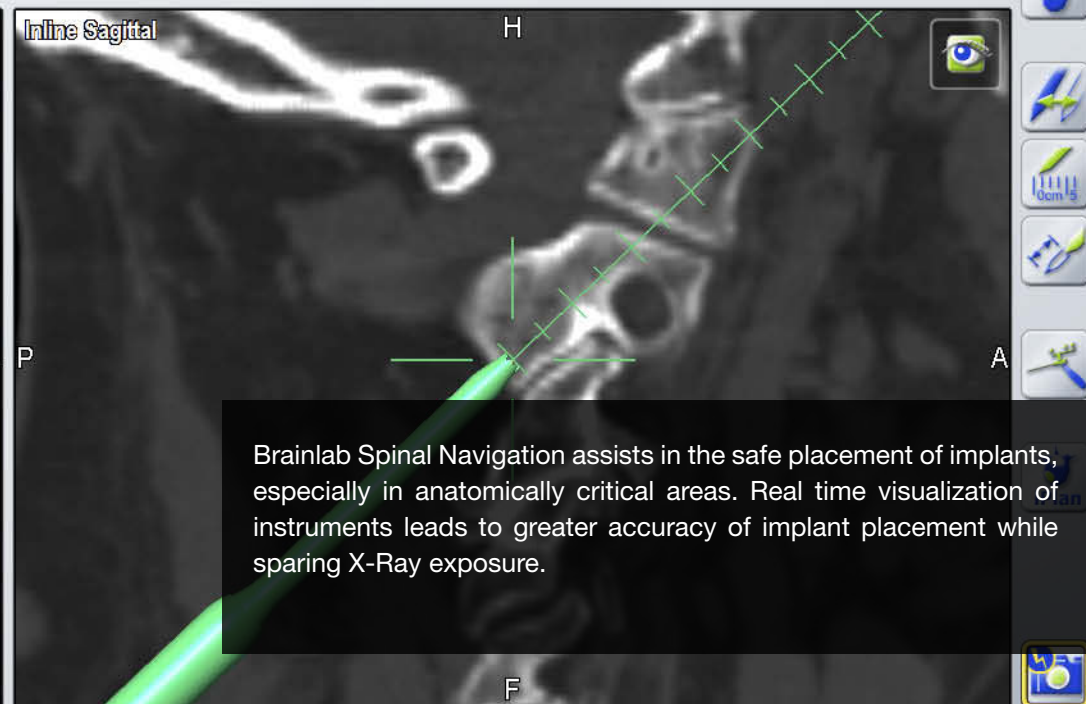
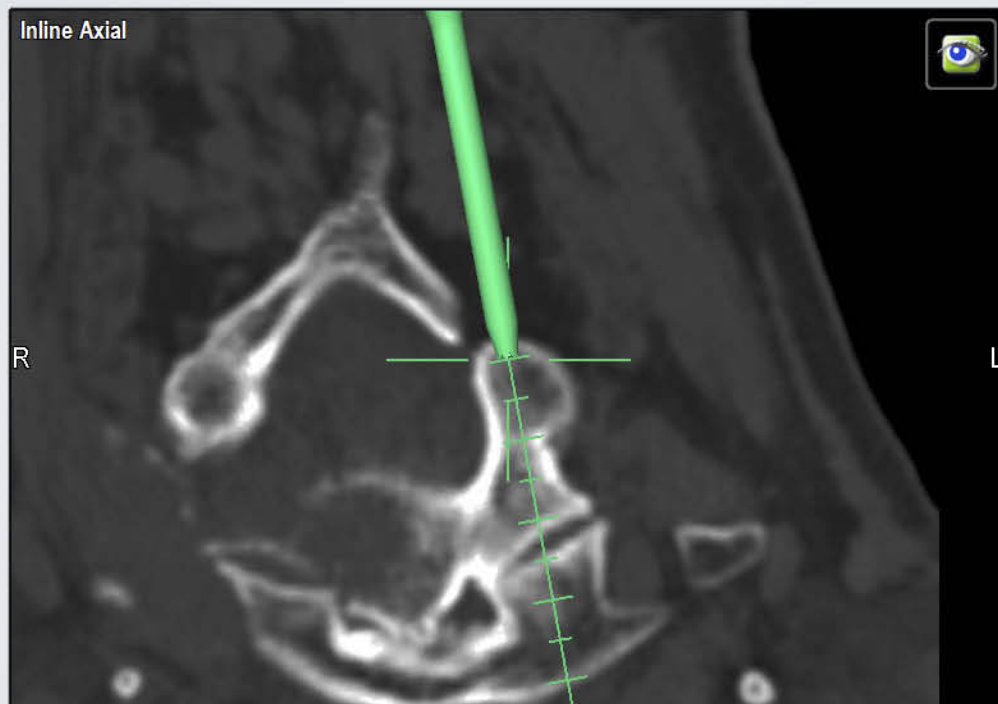
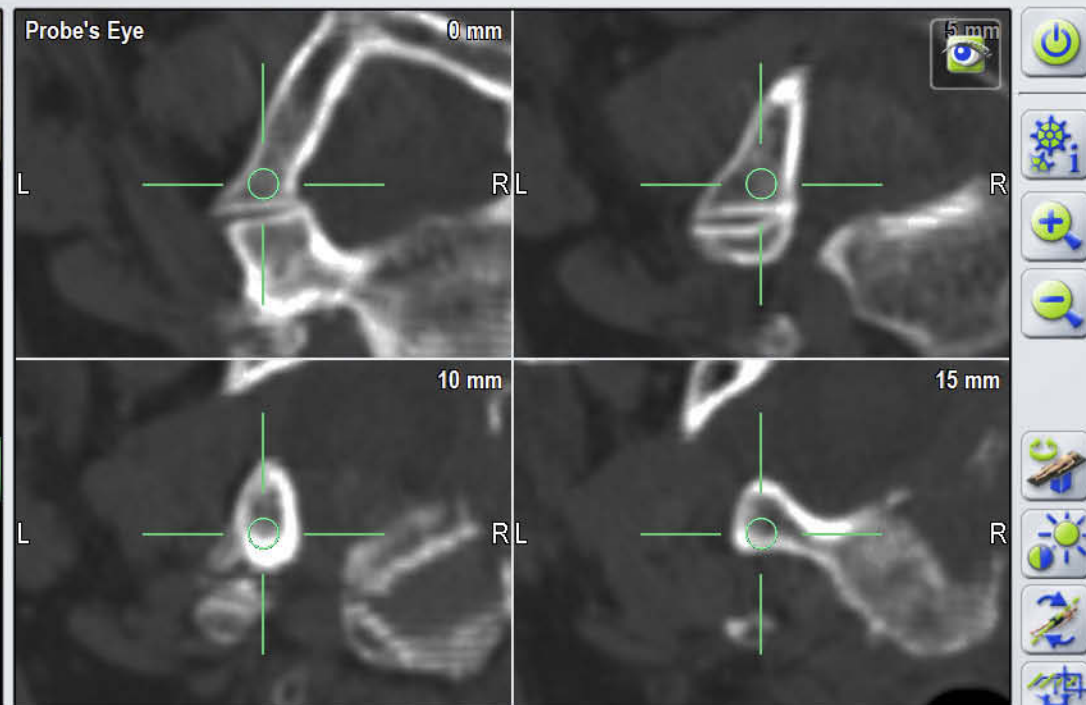
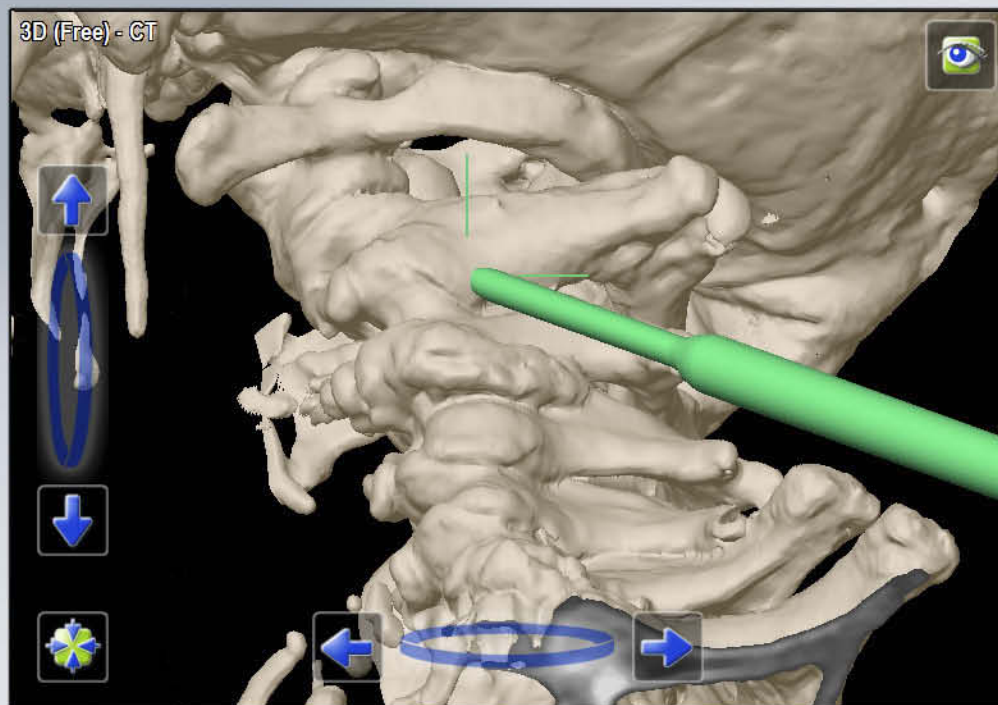
GREATER VISUALIZATION

The indication range of Brainlab Spinal 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.



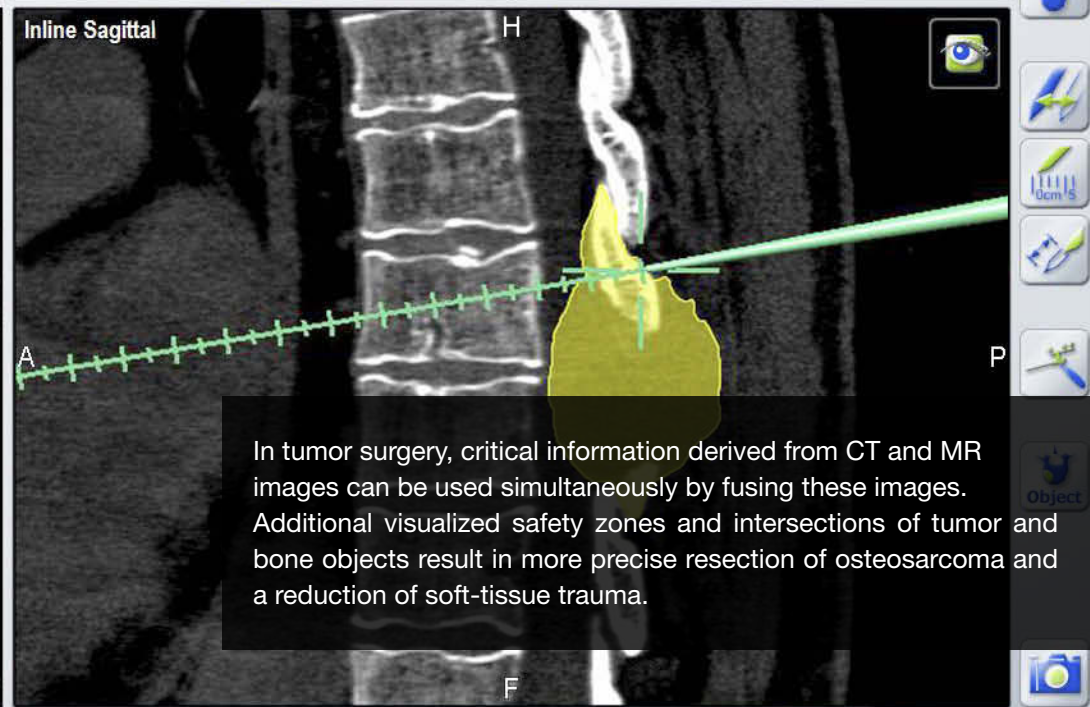
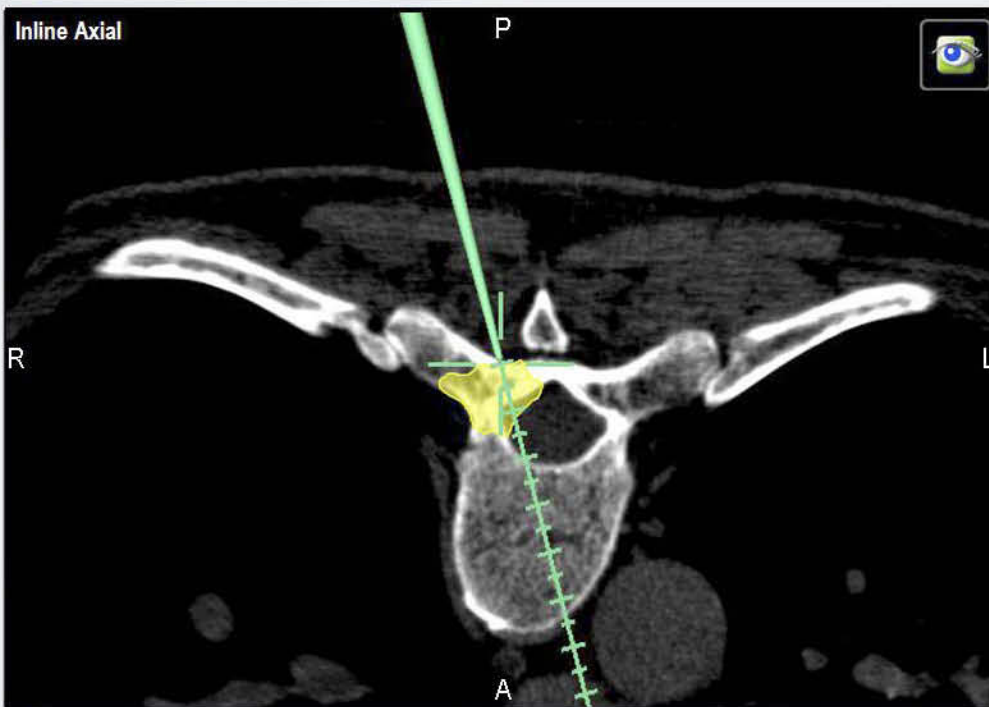
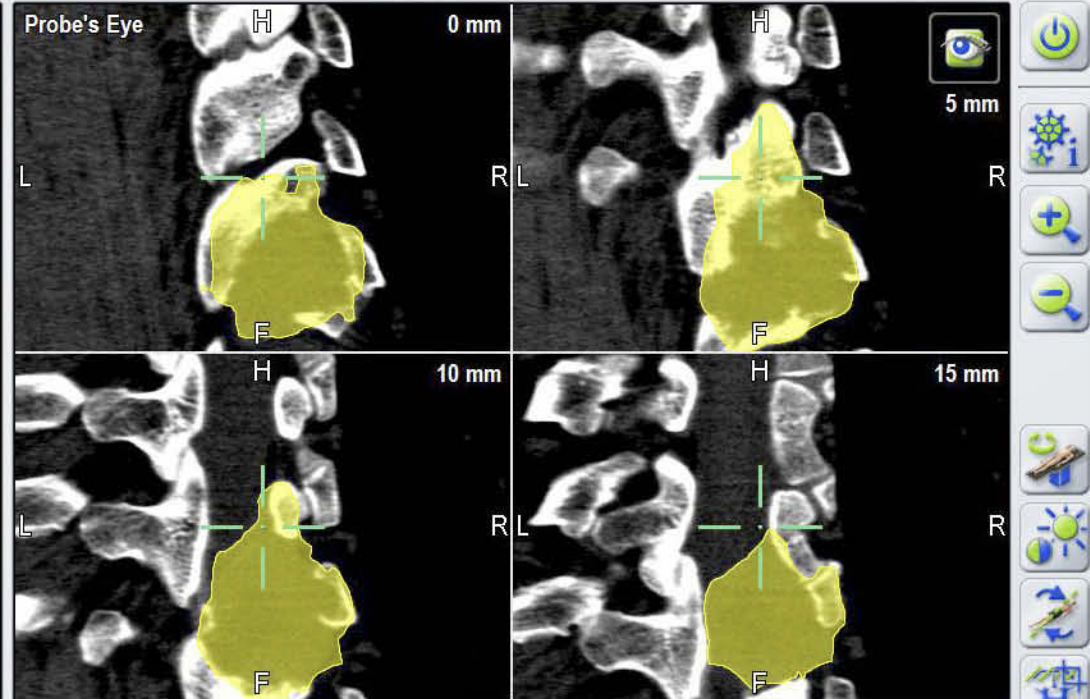
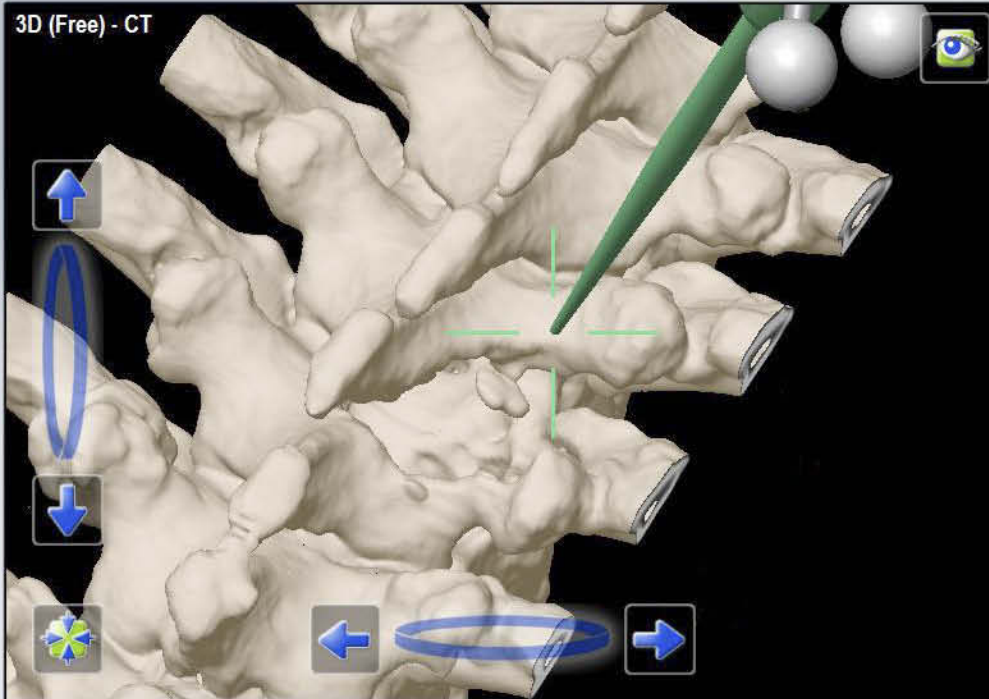


Brainlab Spinal Navigation assists in the safe placement of implants, especially in anatomically critical areas. Real time visualization of instruments leads to greater accuracy of implant placement while sparing X-Ray exposure.

Overview

Anatomic
Planes

Accuracy
Verification



In tumor surgery, critical information derived from CT and MR images can be used simultaneously by fusing these images. Additional visualized safety zones and intersections of tumor and bone objects result in more precise resection of osteosarcoma and a reduction of soft-tissue trauma.

Overview

Anatomic
Planes

Fusion
Inline

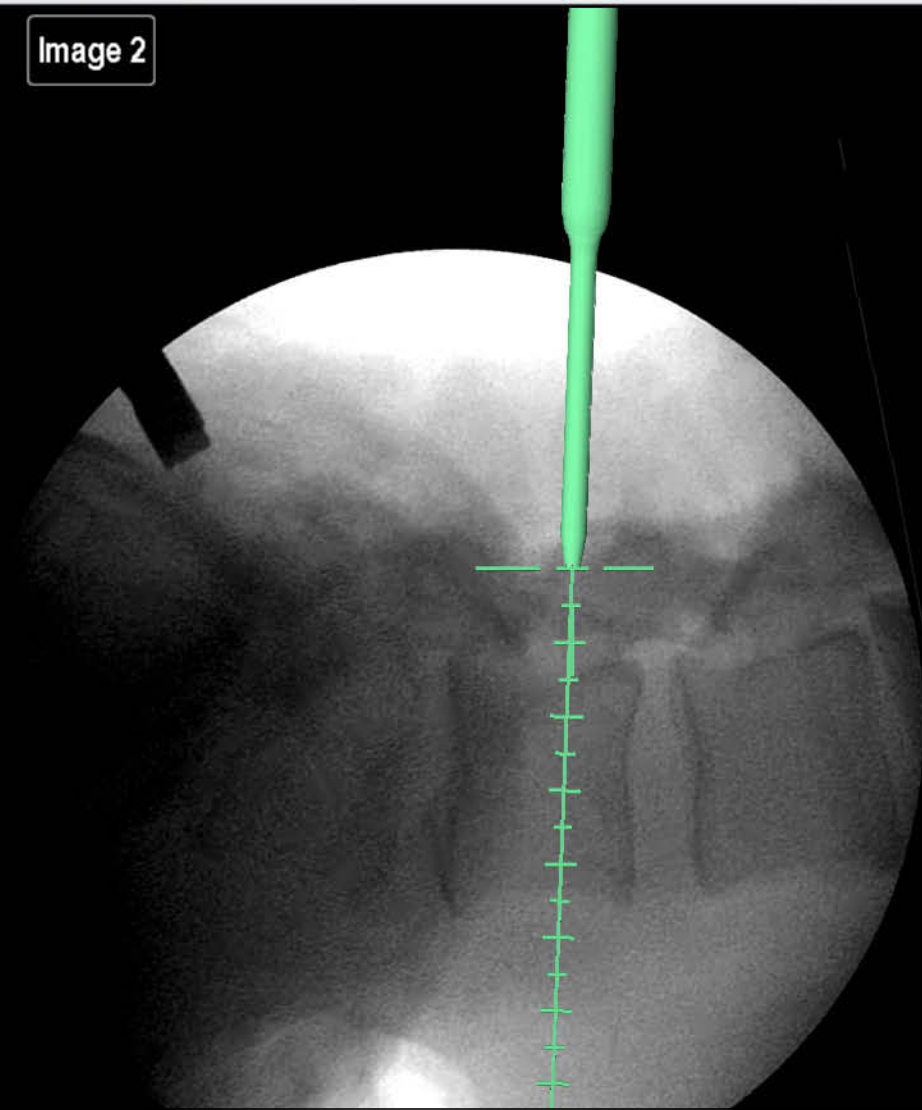
Fusion
Planes

Accuracy
Verification

Image 1 - Mandatory



Image 2

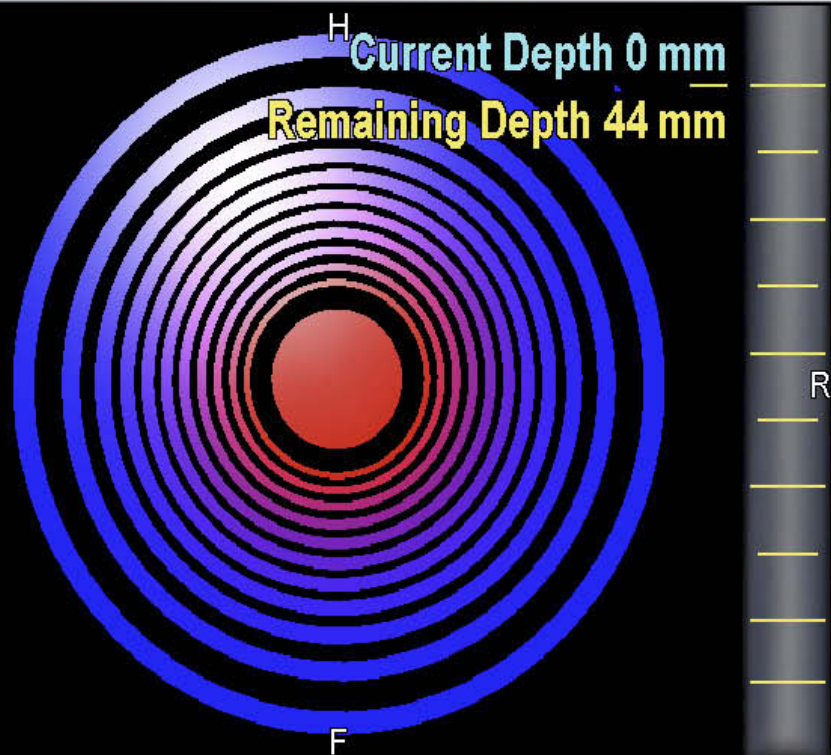


For easy, confident pedicle screw placement in minimally invasive cases, 2D fluoroscopic images can be registered automatically with xSpot; 3D C-arm scans even without additional imaging. Incisions and trajectories can be planned accurately with any instrument at skin level.

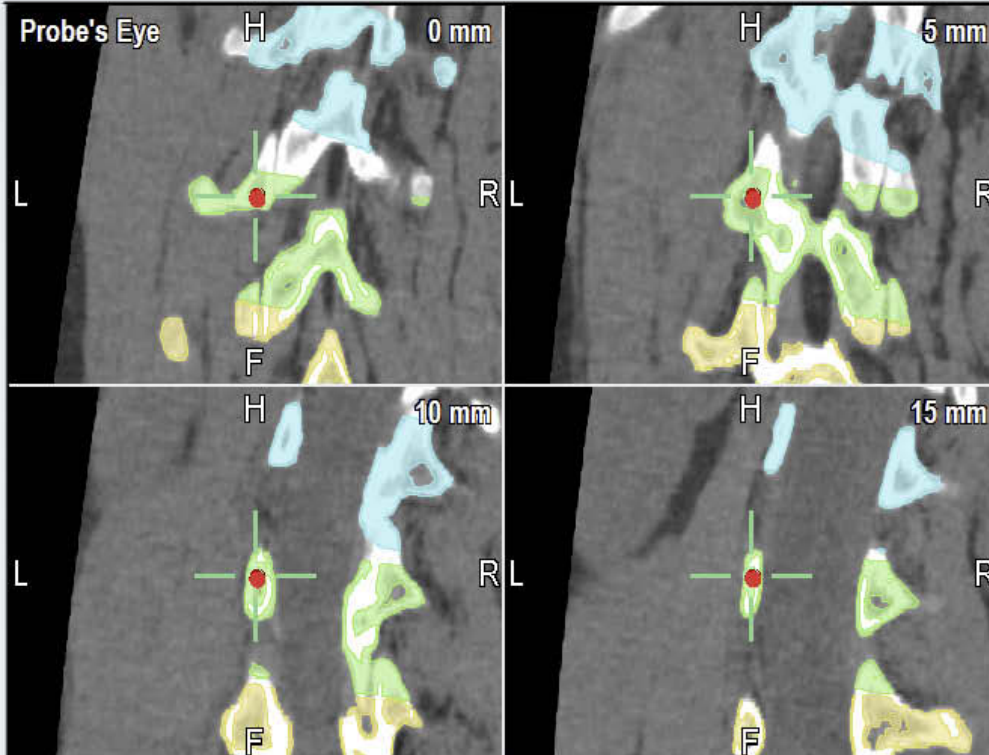
4 views

2 views

Autopilot



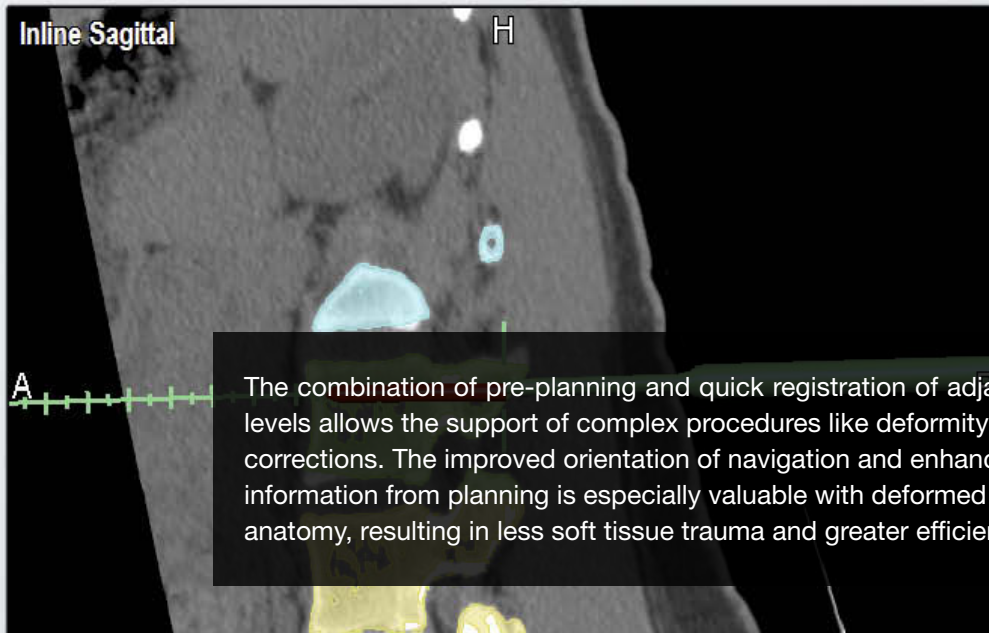
Probe's Eye



Inline Axial



Inline Sagittal



The combination of pre-planning and quick registration of adjacent levels allows the support of complex procedures like deformity corrections. The improved orientation of navigation and enhanced information from planning is especially valuable with deformed anatomy, resulting in less soft tissue trauma and greater efficiency.

Overview

Accuracy
Verification

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 Spinal 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
- Navigate up to eight instruments simultaneously without the need for re-selection
- Visualize pre-calibrated instruments in 3D geometry
- Integrate any instrument and implant system with universal adapter clamps



INSTRUMENT INTEGRATION

DEPUY SYNTHES

- Integrated Viper2 // Expedium system 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 spinal universal 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

INSTRUMENT INTEGRATION

ULRICH MEDICAL

- Integrated tangoRS // neon system instruments
- Cervical and thoraco-lumbar posterior stabilization
- tangoRS: pre-calibrated instrumentation for open thoraco-lumbar posterior stabilization
- neon: pre-calibrated instruments for cervical posterior stabilization



ulrich medical - tangoRS // neon

INSTRUMENT INTEGRATION

AESCULAP

- Integrated S⁴ Cervical system instruments
- Cervical-thoracic posterior stabilization
- Pre-calibrated guide sleeves, drill guide & tap
- Manually calibrated screwdriver



Aesculap — S⁴ Cervical

SIMPLE REGISTRATION

PRACTICAL SIMPLICITY

Navigation can be performed in any common image format from 2D and 3D images to MR, CT and Angio 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.



xSpot cArc



Minimally invasive 2D Fluoro Registration is performed more easily than ever with xSpot.



With Fluoro 3D Registration, 3D C-arm scans are registered automatically and less invasively within seconds.



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.

FUSION AND CO-REGISTRATION

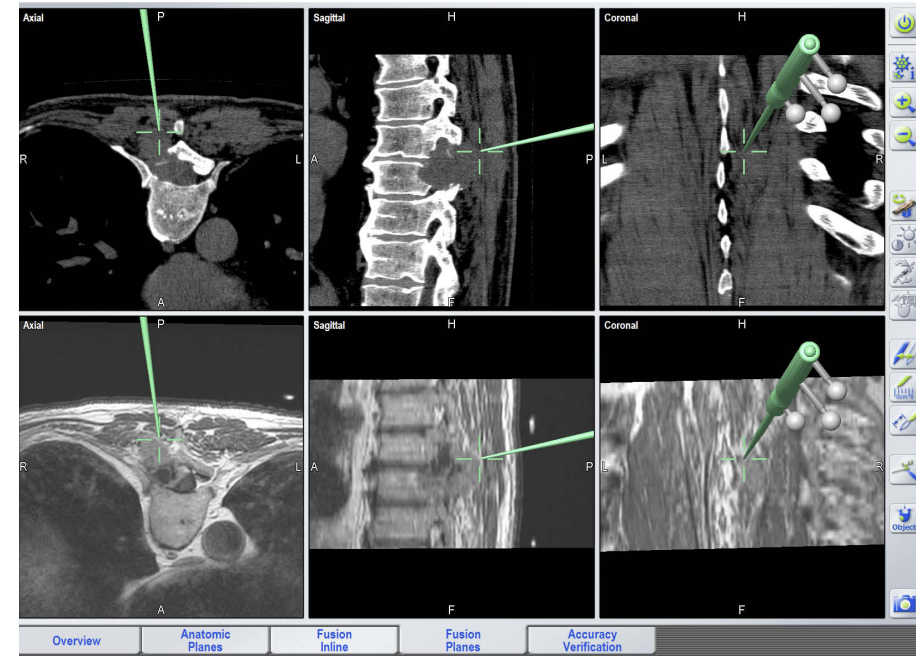
IMAGE UNITY

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

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

To drastically enhance image quality, **Co-Registration** allows co-registering of pre-op 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 pre-operative MR information together with a registered CT scan.



CT/MR-Fusion

INTELLIGENT PLATFORMS

TOUCH-BASED COMMAND AND CONTROL



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