
BRAINLAB
Spine & Trauma 3D
Digital Spine Surgery

1. Navigation Platforms
2. Multiple Indications
3. Spinal Planning
4. Simple Image Registration
5. Fusion
6. Instrument Integration
7. Spine Navigation
8. Interbody Navigation
9. Robotics
10. Microscope Integration

Spine Workflow

Count on Brainlab from planning to follow-up

With Brainlab spine navigation, key components of advanced technology come together to create a convenient surgical workflow experience.

- Procedure planning
- Intraoperative imaging and registration
- Instrument integration
- Surgical navigation
- Interbody navigation
- Robotic assistance
- Microscope navigation

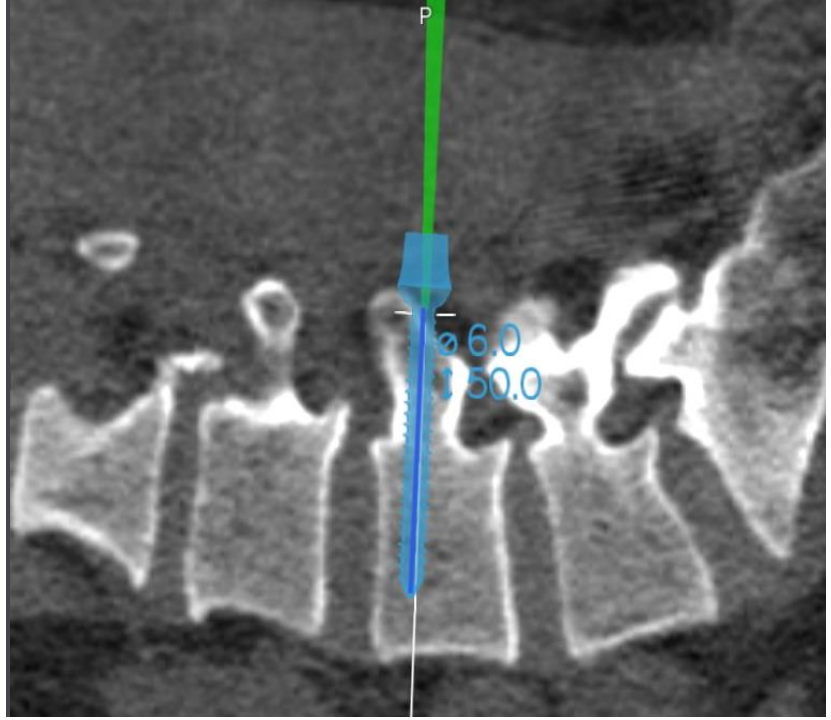
Navigation Platforms

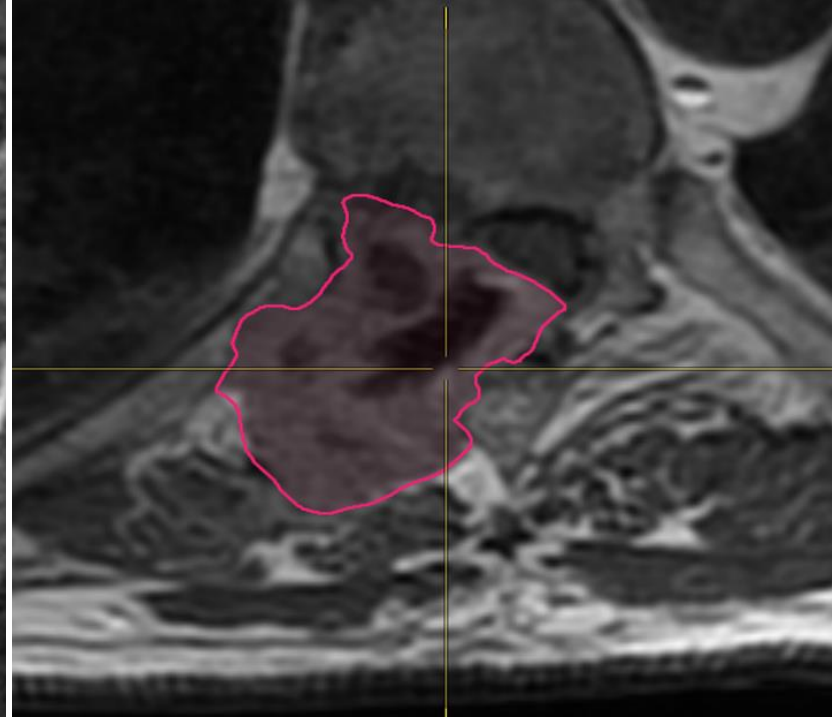
- State-of-the-art touchscreen based control
- Multiple registration methods
- Fully open platform ready for third party integration

Multiple Indications

Spine & Trauma 3D Navigation covers a wide variety of spinal indications treated in several patient positions.

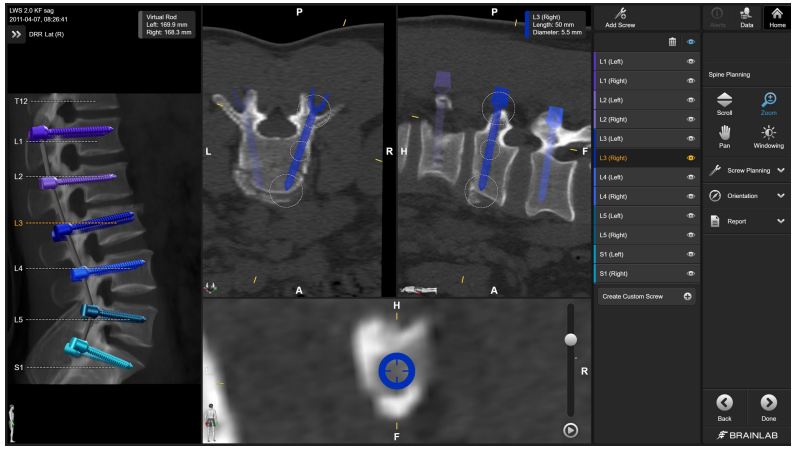
- Thoracolumbar fusion
- Cervical fusion
- Complex deformity correction
- Tumor removal
- Trauma

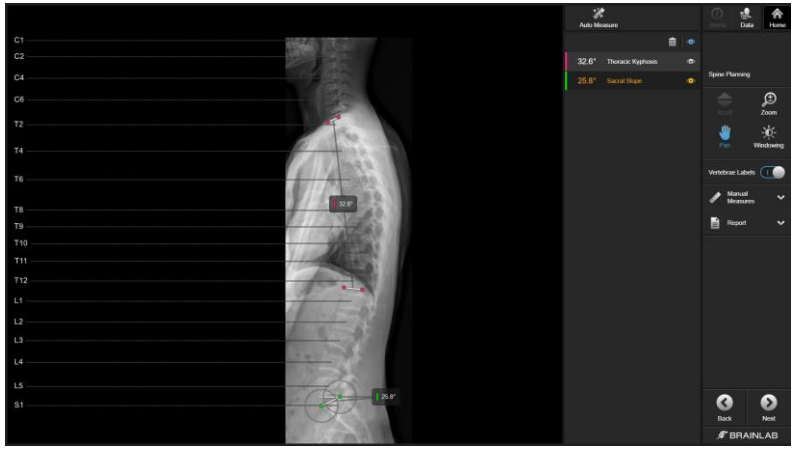




Spinal Planning*

Create a plan anywhere

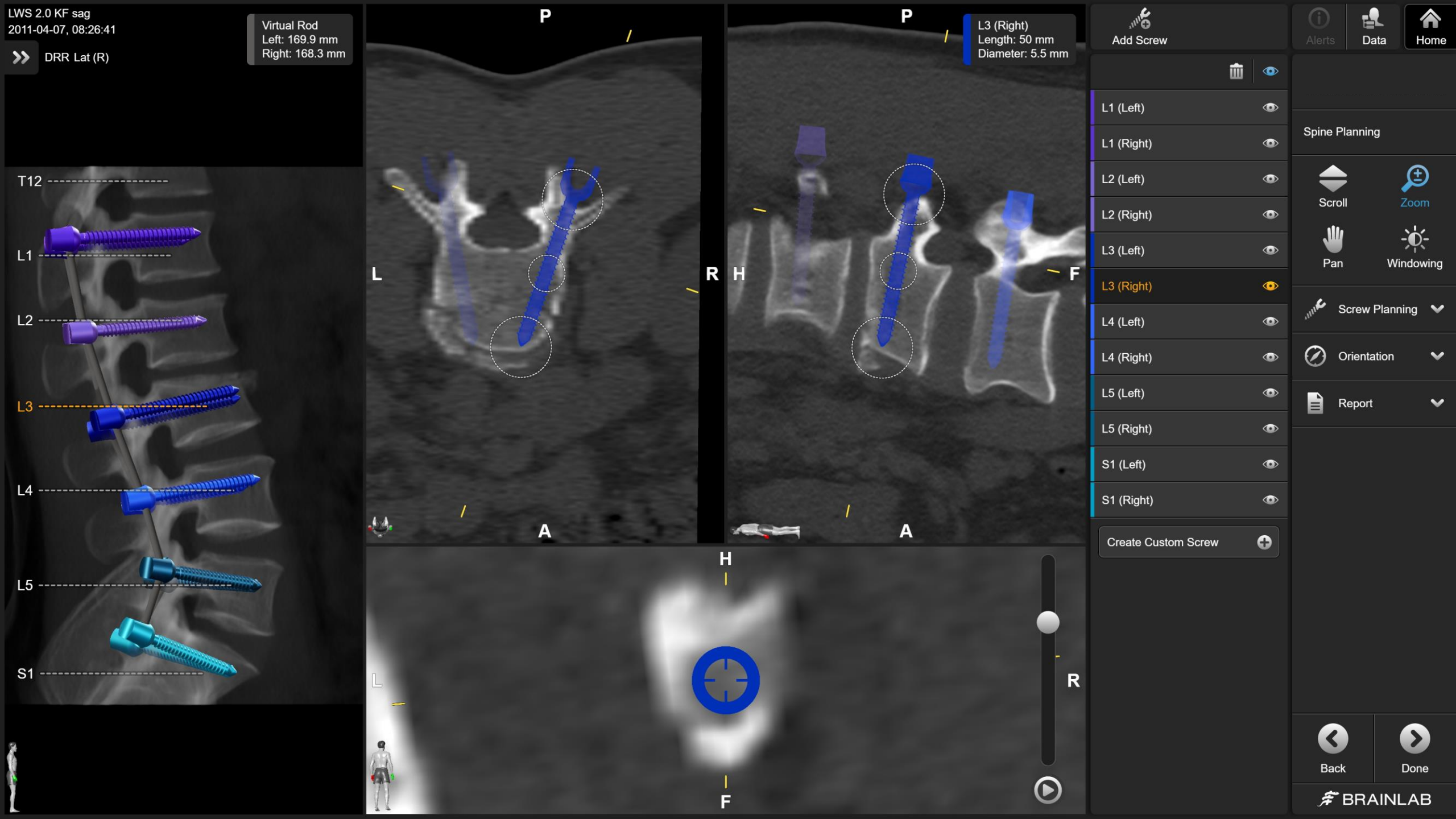


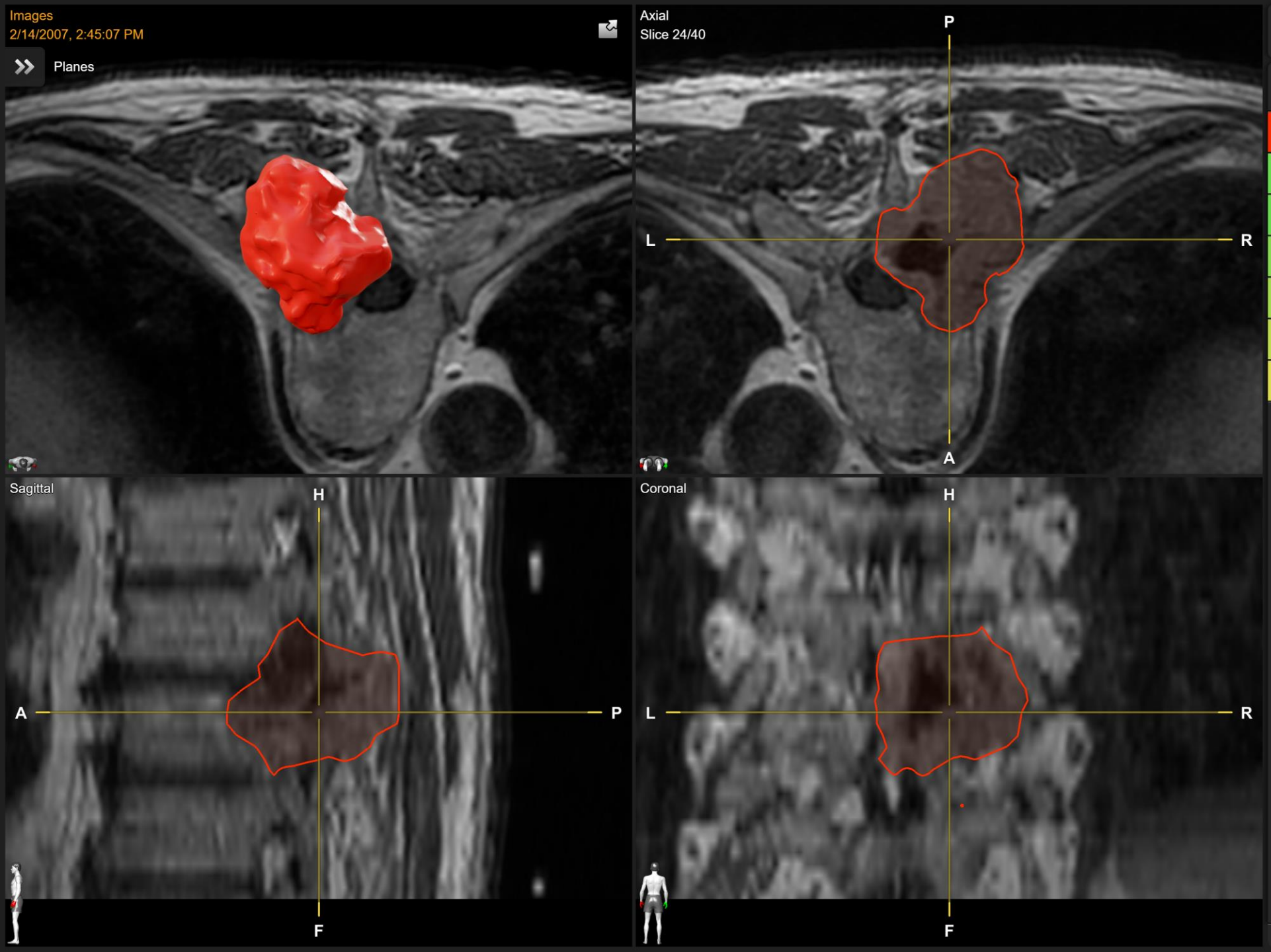


Surgical planning can be done in the office the day before or in the O.R. the day of the procedure.

- Screws can be planned with confidence and efficiency for navigation and robotics
- Plan screw trajectories or outline tumors and other anatomical structures
- Automation based on anatomical information enables a simplified workflow
- Automatic labelling of vertebrae, intelligent measurements and proposal of screws from cervical to sacrum, including SI and Ilium screws
- Seamless export to Spine & Trauma 3D Navigation

*not yet commercially available


LWS 2.0 KF sag
2011-04-07, 08:26:41
DRR Lat (R)
Virtual Rod
Left: 169.9 mm
Right: 168.3 mm
T12
L1
L2
L3
L4
L5
S1
P
L
R
A
H
F
L3 (Right)
Length: 50 mm
Diameter: 5.5 mm
Add Screw
Alerts
Data
Home
L1 (Left)
L1 (Right)
L2 (Left)
L2 (Right)
L3 (Left)
L3 (Right)
L4 (Left)
L4 (Right)
L5 (Left)
L5 (Right)
S1 (Left)
S1 (Right)
Create Custom Screw
Spine Planning
Scroll
Zoom
Pan
Windowing
Screw Planning
Orientation
Report
Back
Done
BRAINLAB



Add Anatomy

Alerts | Data | Home

Tumor
23.6 cm³

Vertebra T04

Vertebra T04, smoothed

Vertebra T05

Vertebra T06

Vertebra T07

Vertebra T08

Create Object

SmartBrush

Scroll | Zoom

Pan | Windowing

Smart Brush

Brush | Erase

Brush Size

Threshold | Undo

Point | Multiline

Report

Back | Done

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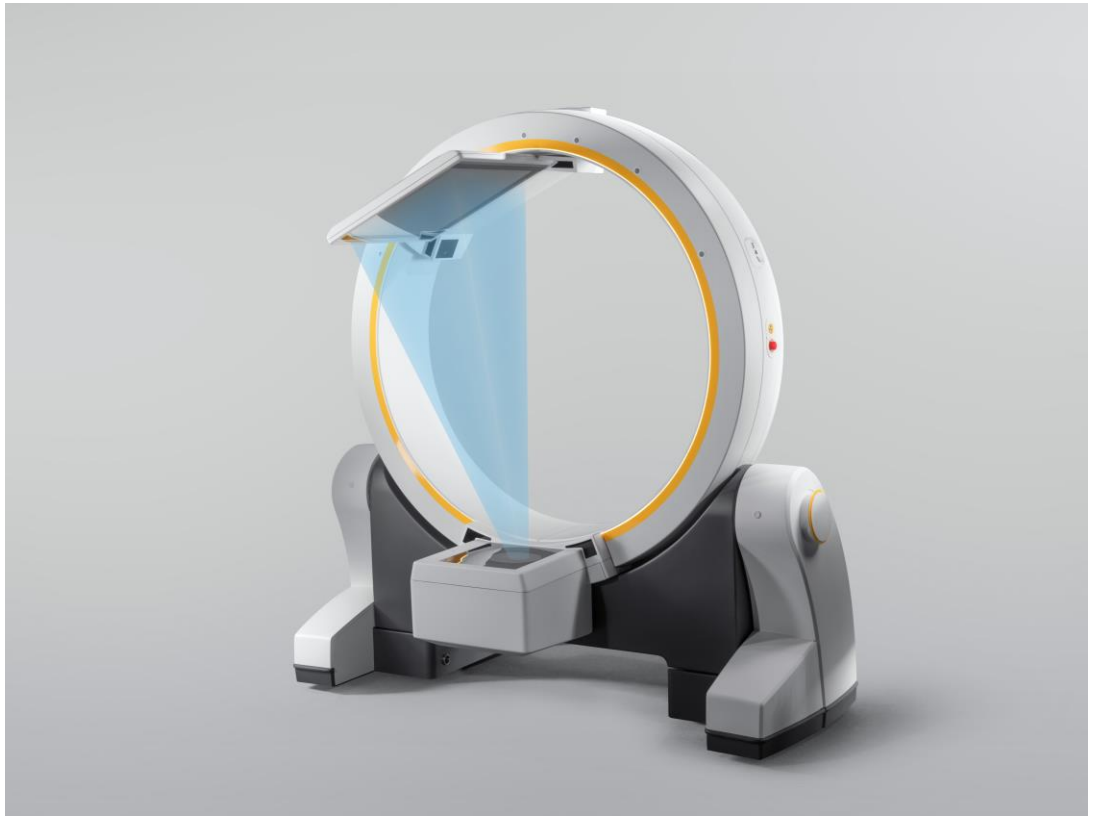
Simple Image Registration

Choose a manual or automatic option

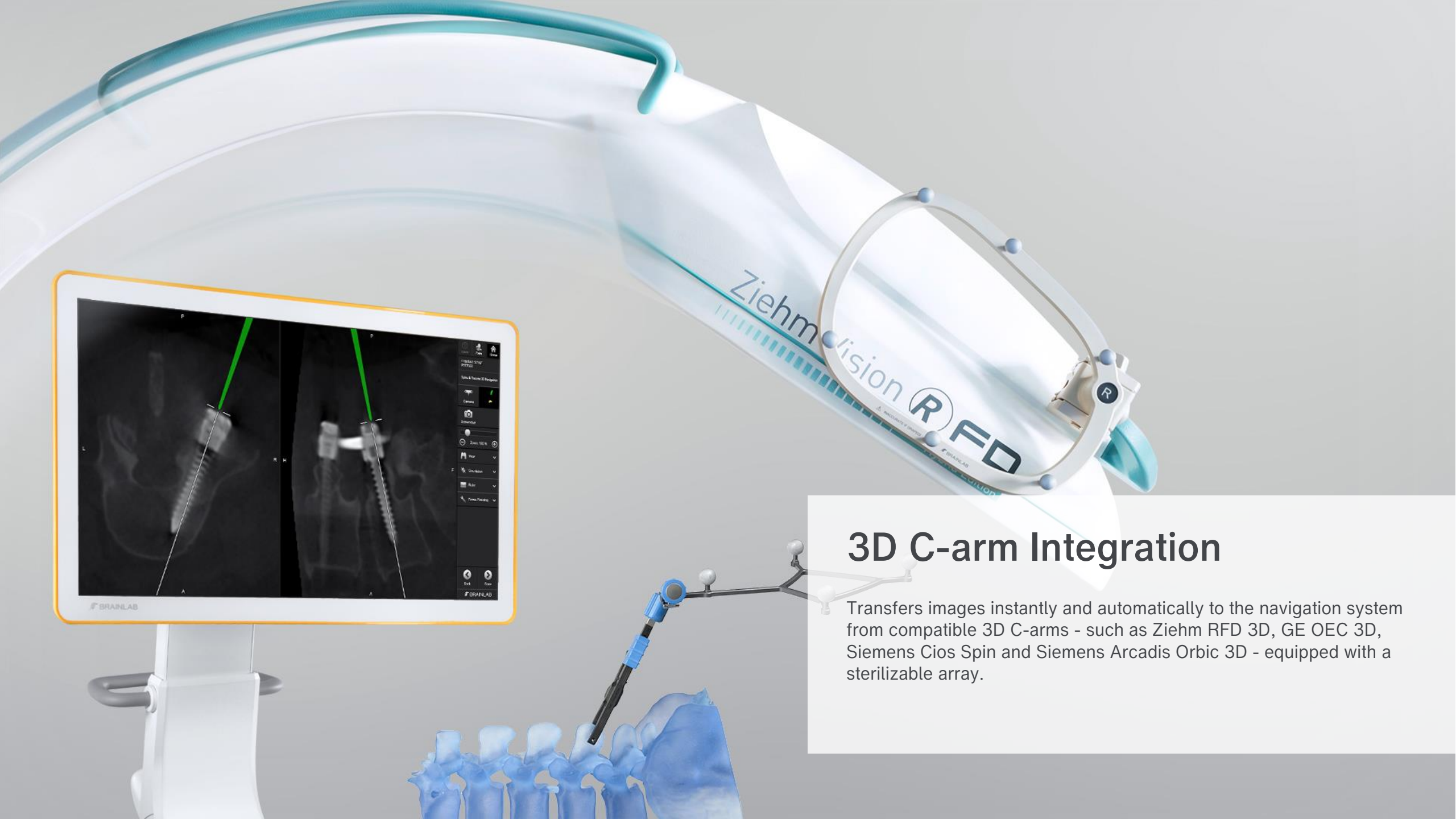


- Automatic registration of Loop-X acquired images
- Automatic registration of 3rd party devices like 3D C-arms and iCT
- Manual registration of preoperative CT
- Image Fusion enables the addition of data such as preoperative MR or preoperatively planned screws and therefore also allows for enhanced planning capabilities available with Elements Curvature Correction Spine

Loop-X Mobile Imaging Robot

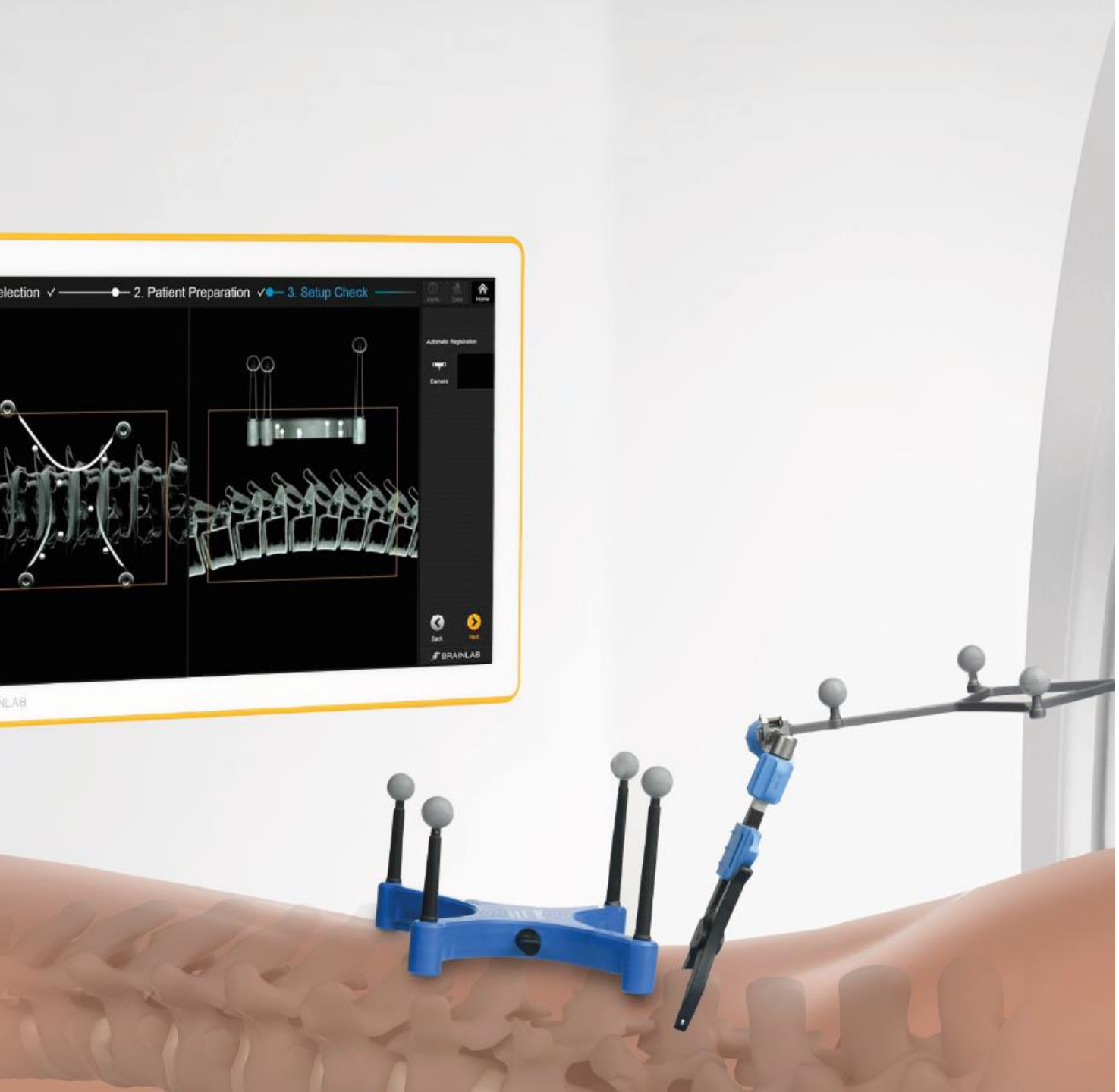
Automatic Image Registration of intraoperatively acquired images for high-precision navigation. Loop-X capabilities allow navigation on 2D* and 3D images during the surgery.

*2D not yet commercially available in the US



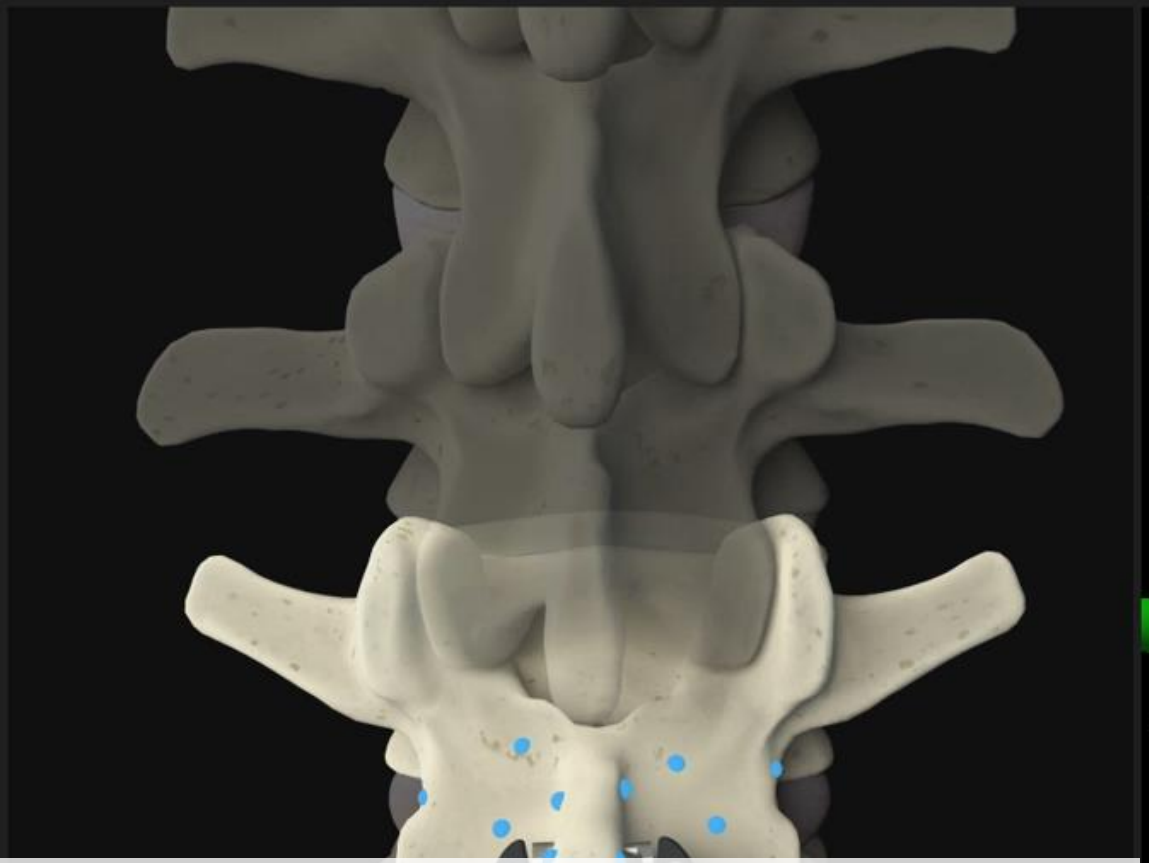
3D C-arm Integration

Transfers images instantly and automatically to the navigation system from compatible 3D C-arms - such as Ziehm RFD 3D, GE OEC 3D, Siemens Cios Spin and Siemens Arcadis Orbic 3D - equipped with a sterilizable array.



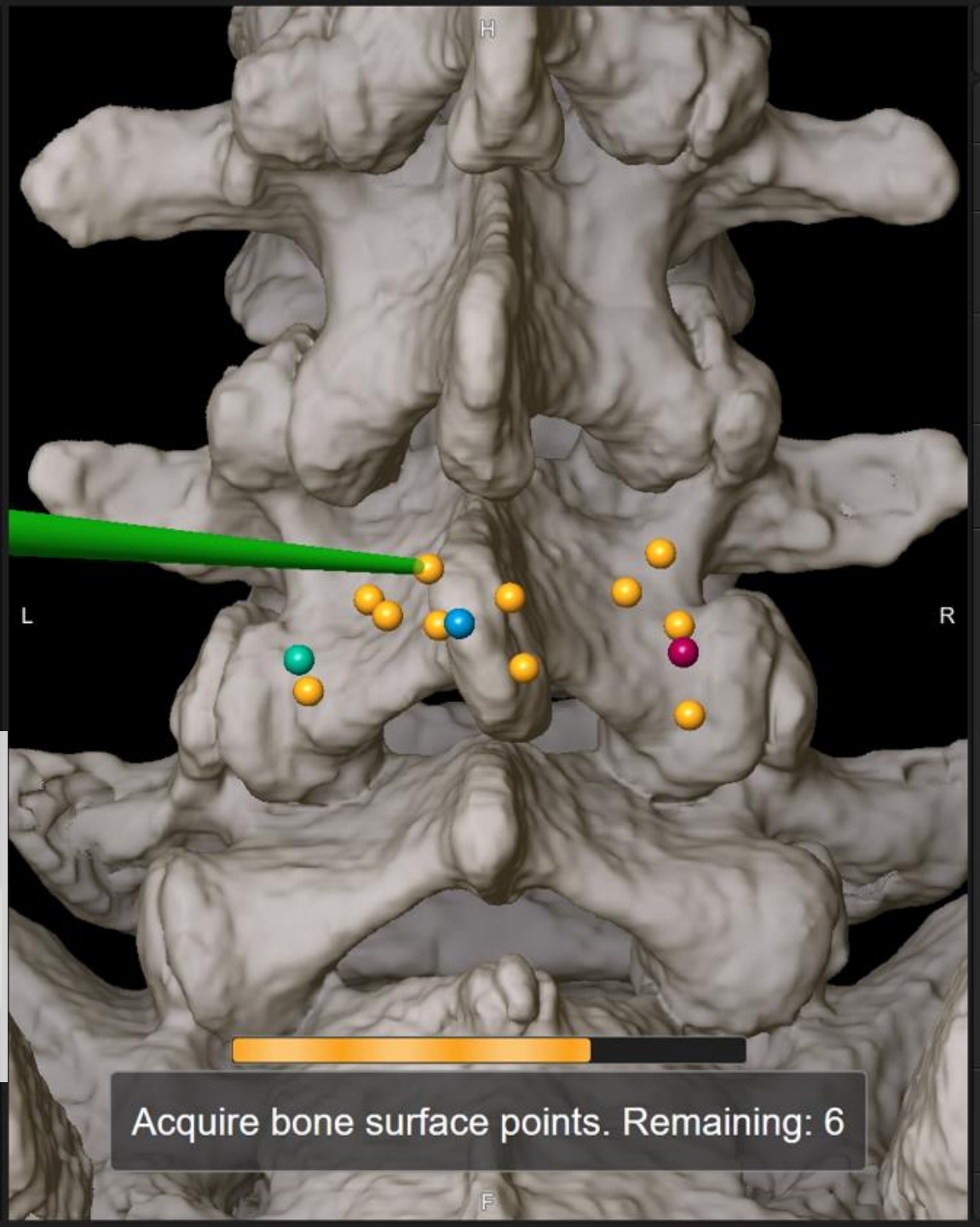
Universal Automatic Image Registration

Seamless image registration, regardless of the imaging device, for navigation on intraoperative patient datasets

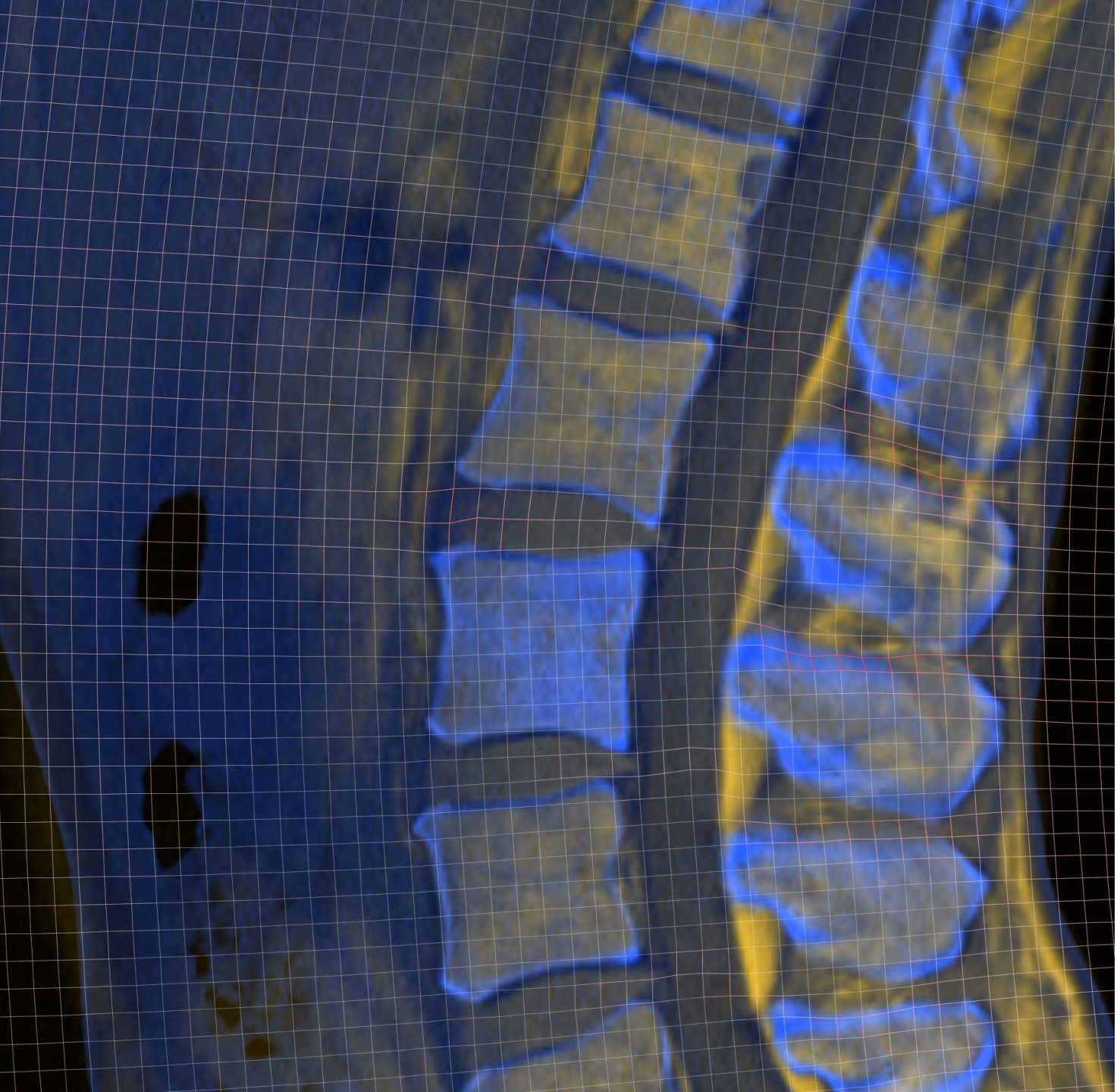


Surface Matching

Surface Matching is a fast registration method based on a preoperative CT scan designed for open surgeries.
Registration is performed with the pointer on the bone surface.



Alerts
Data
Home
Surface Matching
Camera
Screenshot
Zoom: 220 %
Undo
Start Over
Back
Calculate
BRAINLAB



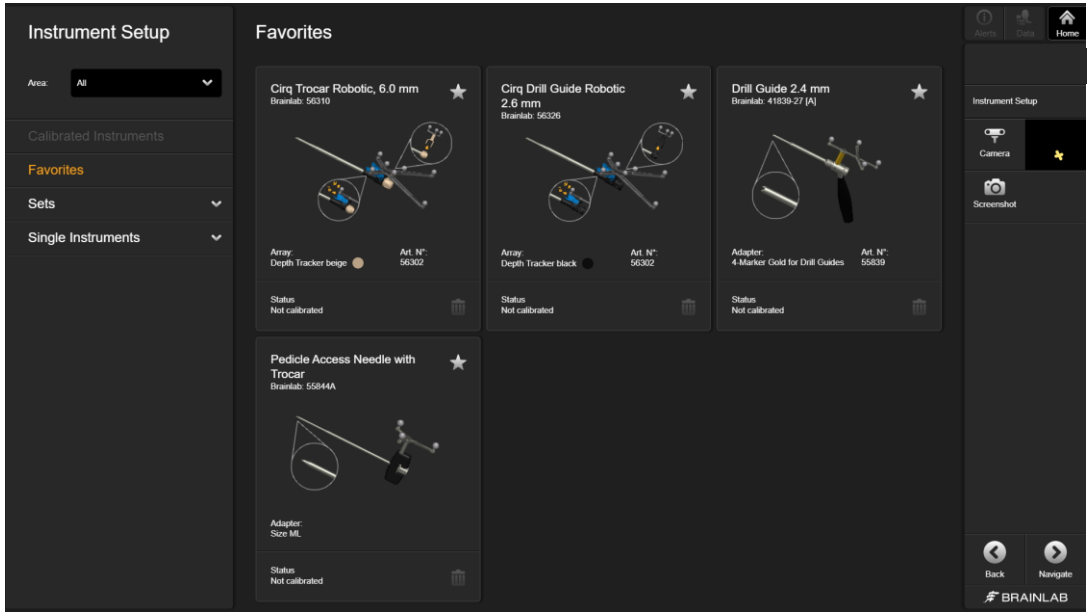
Brainlab Elements Image Fusion

Bring preoperative planning data into an intraoperative scenario with simple fusion of multiple image formats

Smart Co-registration of 3D datasets including MR to iCT and CT to iCT

Instrument Integration

Experience seamless workflows



- Fully integrated navigation instruments available from Brainlab, Depuy Synthes and Aesculap
- Integrate most common spine instruments with navigation adapters and a calibration step
- Predefined instrument sets and customizable “favorites” are available with instrument assembly support instructions for streamlined integration

Reference Arrays

Carbon based spinous process clamp reduces instrument radio-opacity during intraoperative imaging. Iliac crest 2-pin fixation is close to the situs in lower lumbar procedures.

Drill Guide

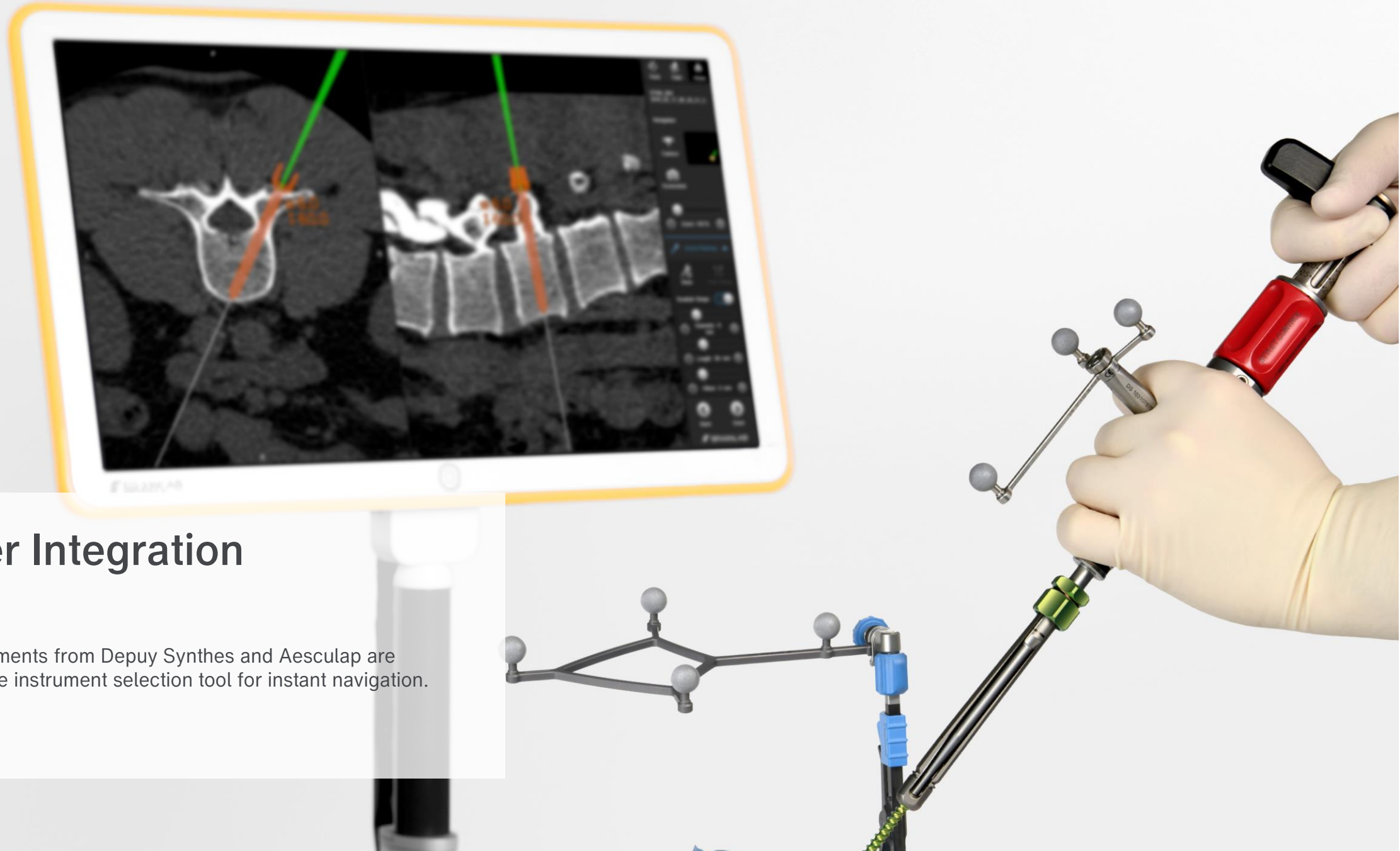
Maintain high accuracy and reduce pressure on the spine while drilling an entry point for screw placement. The adjustable depth control safely stops at the intended depth.

Pedicle Access Needle

Perform minimally invasive pedicle screw placement with high accuracy with this robust and integrated tracking array for instant use with navigation.

Partner Integration

Partner instruments from Depuy Synthes and Aesculap are available in the instrument selection tool for instant navigation.



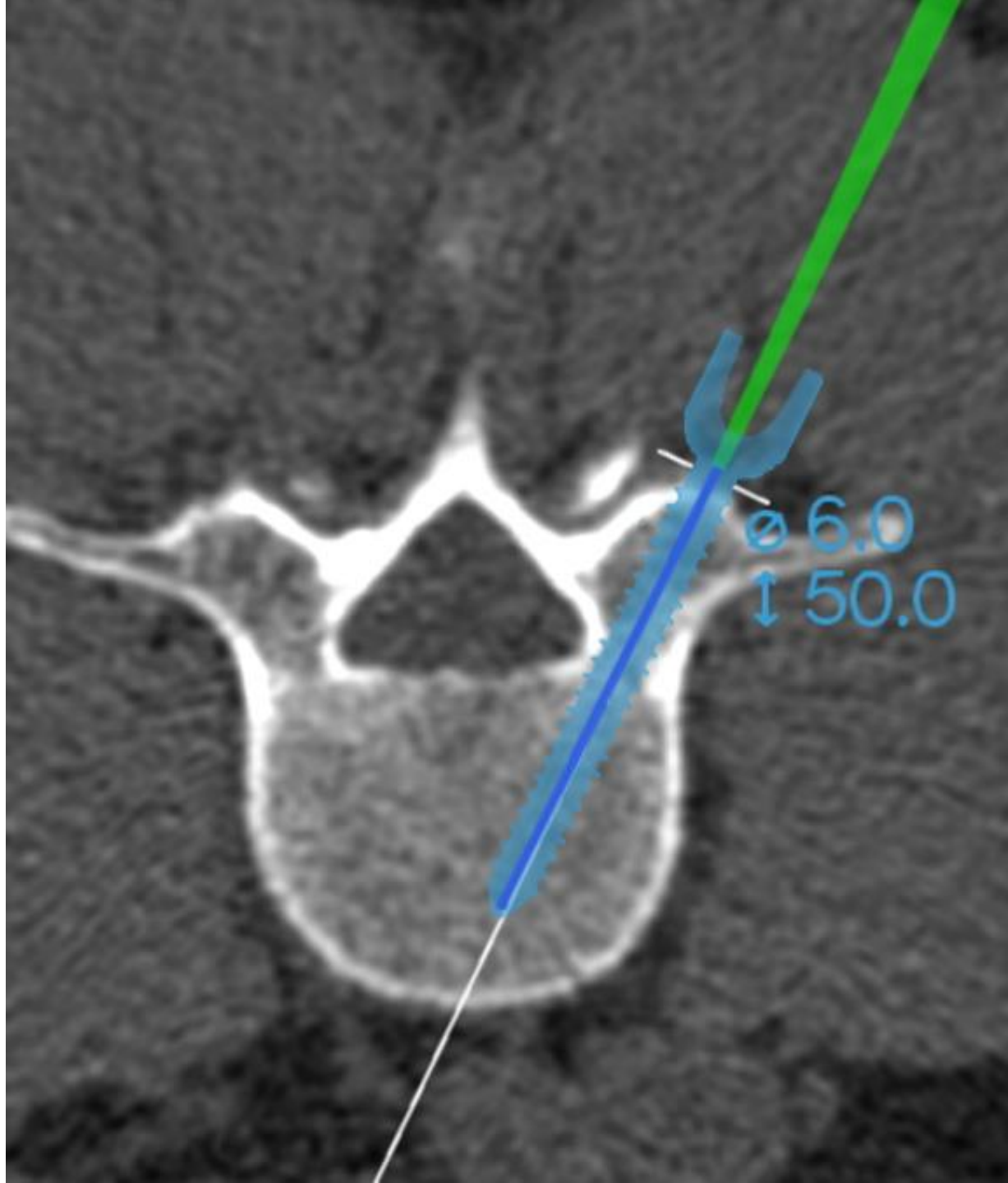
Open Platform

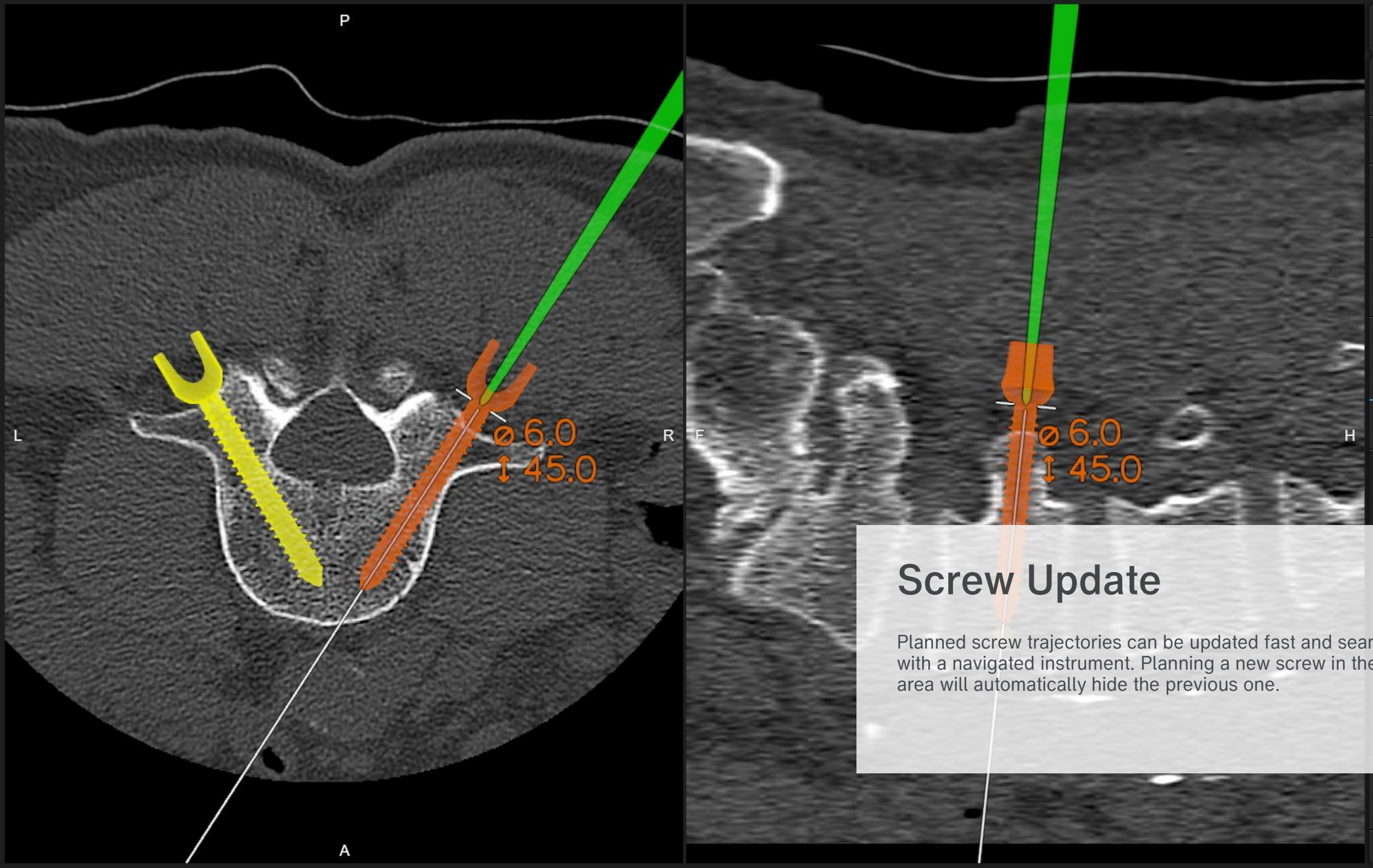
Compatible third-party instruments can be integrated, calibrated and navigated with Brainlab Spine & Trauma 3D Navigation.

Spine Navigation

Guide the procedure

- Streamlined user interface and automatic functionalities for ease of use
- Navigate on any CT, XT and MR images and planning data
- Offers inline, 3D, DRR, probe’s eye and autopilot views for additional anatomical context
- Instrument based screw visualization for planning of entry points and trajectories
- Automatic anatomy detection enables centered views of the anatomy for minimally invasive surgery

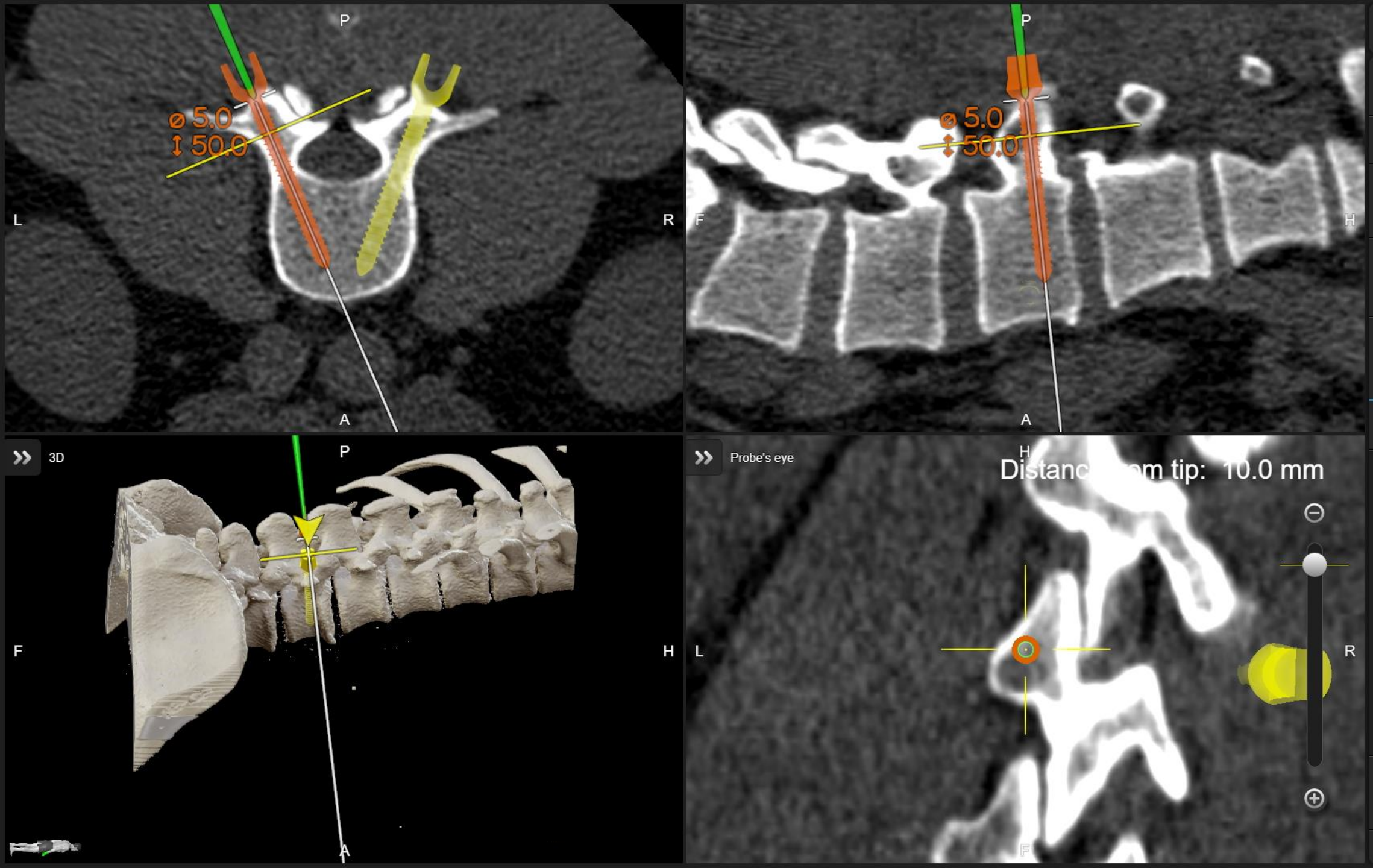




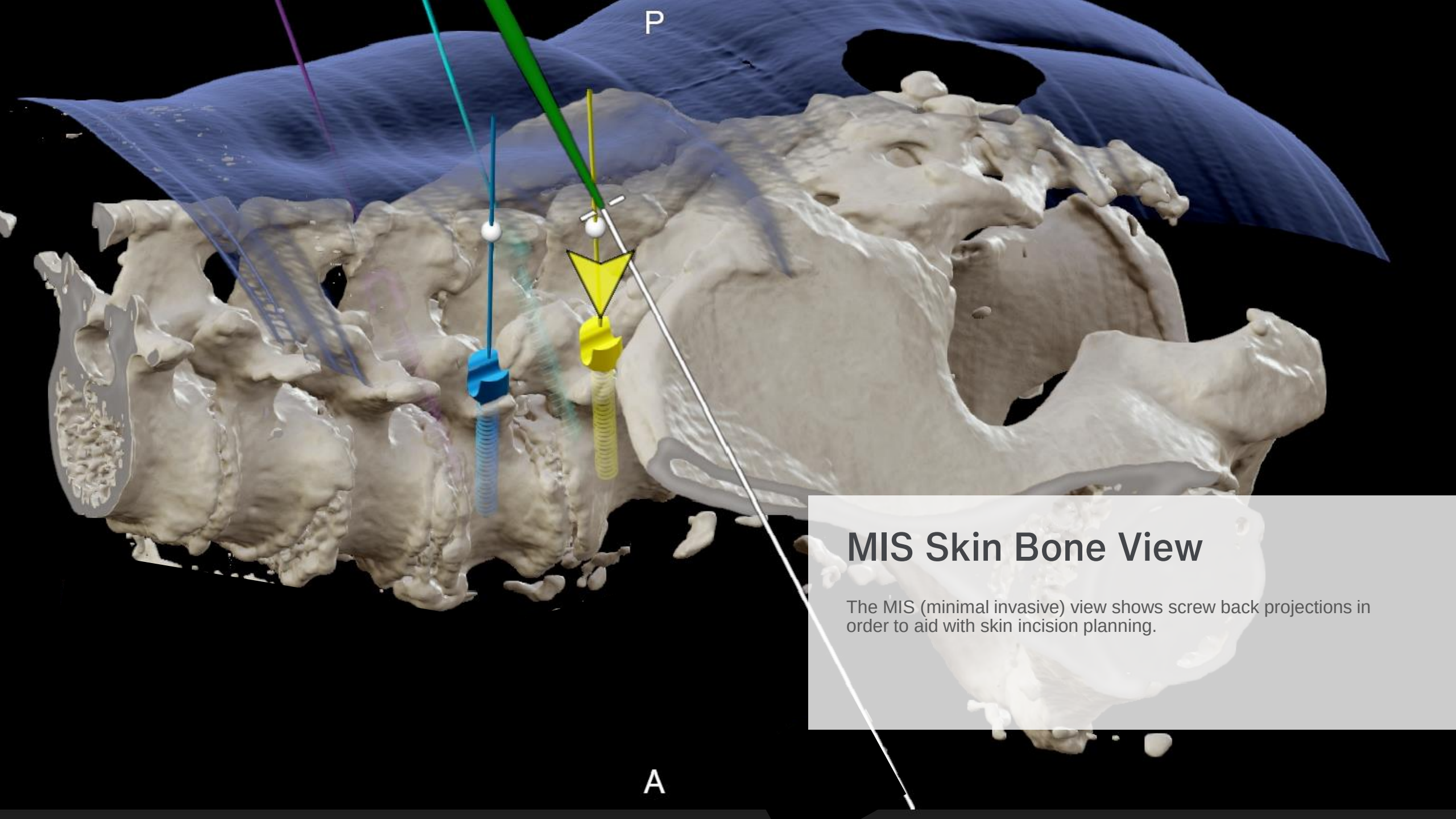
Screw Update

Planned screw trajectories can be updated fast and seamlessly with a navigated instrument. Planning a new screw in the current area will automatically hide the previous one.

Tools
Data
Home
Navigation
Camera
Screenshot
Zoom: 100 %
Screw Planning
Store
Fine Tuning
Realistic Shape
Diameter: 6 mm
Length: 45 mm
Offset: 0 mm
Back
Done
BRAINLAB

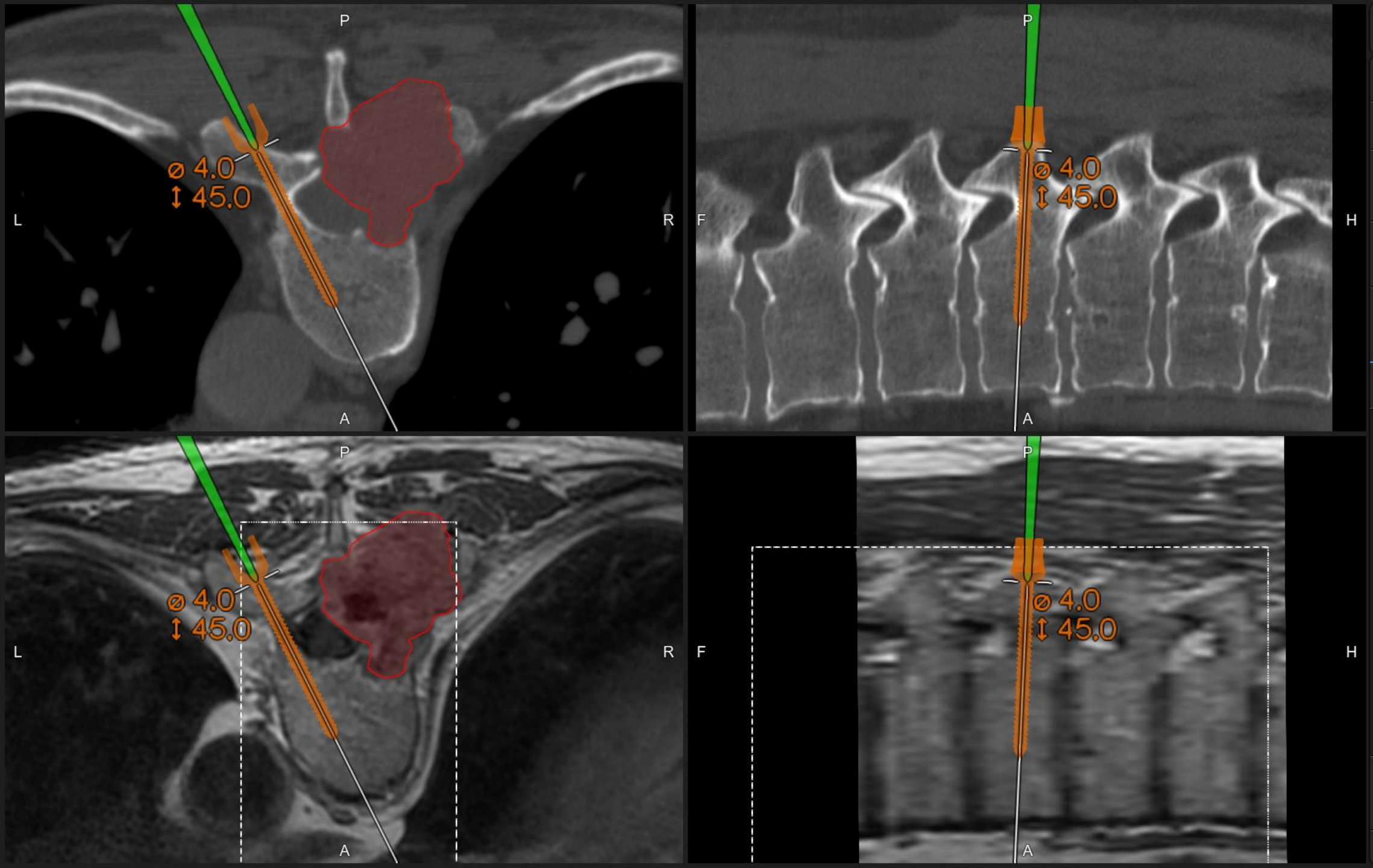


Tools
Data
Home
Navigation
Camera
Screenshot
Zoom: 220 %
Screw Planning
Store
Fine Tuning
Realistic Shape
Diameter: 5 mm
Length: 50 mm
Offset: 0 mm
Back
Done
BRAINLAB



MIS Skin Bone View

The MIS (minimal invasive) view shows screw back projections in order to aid with skin incision planning.



Alerts | Data | Home

Spine & Trauma 3D Navigation

Camera

Screenshot

Zoom: 220 %

Screw Planning

Store | Fine Tuning

Realistic Shape

Diameter: 4.0 mm

Length: 45.0 mm

Offset: 0.0 mm

Back | Done

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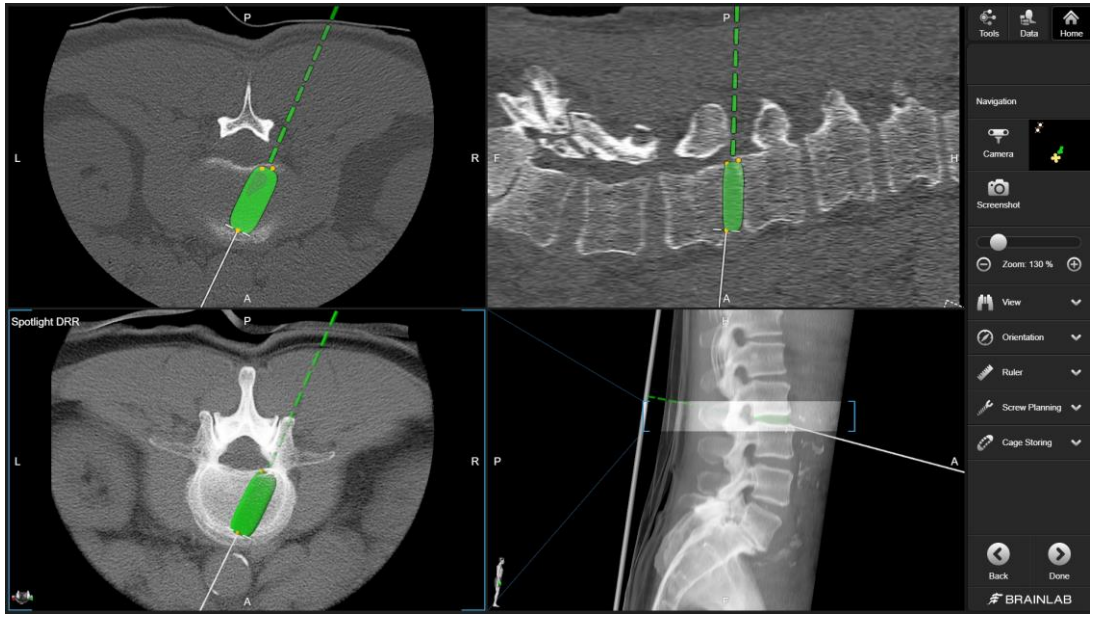
Interbody Navigation

Experience enhanced navigation features



- Support of navigated interbody instruments and various rectangular and kidney shape cages enabled through fast and generic calibration
- Navigated trials and cage placement for desired cage positioning
- Teligen instruments from DePuy Synthes are integrated and can be navigated*
- Control disk space preparation for cage placement

*Availability depending on FDA and CE Release of DePuy Teligen

Cirq Robotic Surgical Assistance

Modular robot that is scalable and future-proof. Cirq is fully integrated with spine planning and navigation.

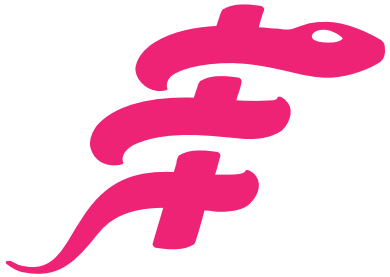
Cirq Robotic Alignment

Automatically aligns to pre-planned trajectories and ideal for thoracolumbar pedicle screw placement.

Microscope Integration

Navigate using augmented reality

- Navigate the microscope during spine tumor resection, microdiscectomy or microdecompression
- Augmented reality visualization provides a clear overview of complex anatomies overlaid onto the microscope image
- 3D objects visible below the surface enhance precise approach planning and spatial awareness



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