



CADUCEUS S

AR spine surgical navigation

- C-arm module
- 3D C-arm module
- ICT module



Copyright © 2024, Taiwan Main Orthopaedic
Biotechnology, Co., Ltd. All Rights Reserved.

CADUCEUS S

Navigating Excellence: CADUCEUS S AR Glasses Reshape Surgical Procedures

Physicians wearing CADUCEUS S – AR surgical glasses undergo a transformative experience in surgery. These innovative glasses project surgical navigation images directly before the surgeon's eyes, enabling immediate responses and reducing procedural complexity. With the elimination of the need to turn around and check screens, there's a remarkable reduction in screen glances, resulting in enhanced focus and minimized distraction. This groundbreaking technology improves surgery accuracy to less than 2mm for precise incisions and introduces an unprecedented sensation – the ability to perceive bones as if gazing directly at them in three-dimensional images during surgery. CADUCEUS S seamlessly integrates cutting edge technology, providing real-time information and delivering heightened performance in the operating room.

SURGICAL GLASSES
©2024 Triad Orthopedic
Biotechnology, Co., Ltd. All Rights Reserved.



	CADUCEUS 5	Other Spine Navigation Systems	Traditional Open Spine Surgery
Look up times	<i>No need</i>	Frequently	Frequently
Setup time for navigation device	<i>About 10 minutes</i>	About 30-40 minutes	Not applicable
Radiation dose	<i>Only need to take about 2 images</i>	Extensive X-rays are required for confirmation	Extensive X-rays are required for confirmation
Preoperative CT	<i>No need</i>	CT before surgery is required	No need
Operation time	About 2-4 hours	About 3-5 hours	About 3-5 hours
The number of days in hospital	About 2-4 days	About 2-4 days	About 7-10 days
Postoperative rehabilitation	Within about a month	Within about a month	About 2-3 months
Wound size	About 2-3 cm (Single segment)	About 2-3 cm (Single segment)	About 5-10 cm (Single segment)

Copyright © 2024, Taiwan Main Orthopaedic Biotechnology Co. Ltd. All Rights Reserved.



Potential Benefits

Reducing exposure to X-rays

*At the start of the procedure, take two shots.
There's no need to keep the device in place to take the shots.*

To minimize radiation exposure for both patients and healthcare workers, the Caduceus S system only needs to capture two accurate images - the AP and Lateral view - at the start of a surgery for the navigation system. This also reduces the time required for the C-arm to capture images and confirm screw insertion angles during the procedure.

Copyright © 2024, Taiwan Main Orthopaedic
Biotechnology, Co., Ltd. All Rights Reserved.

Ultra-precise surgical positioning

Precision positioning with an error margin of less than 2mm.

By using advanced positioning and calibration technology, the navigation positioning device can accurately locate the reflective sphere attached to the surgical instrument. This information is then used to provide precise feedback on the position of the lesion during Augmented Reality (AR) spine surgical navigation. The system can determine the distance, direction, and angle of the lesion with an error margin of less than 2mm.

Real-time projection of augmented reality (AR)

Real-time projection, focusing on the patient.

The surgical navigation screen is projected in real-time through Augmented Reality (AR) directly in front of the surgeon's eyes, providing optimal visualization. Similar to GPS, the line of sight remains focused on the patient, enabling a more concentrated attention without distractions.



Minimally Invasive Surgery

Greatly reduce the wound, reduce unnecessary tissue damage

AR technology enables us to see things that are invisible to the naked eye. In the field of medicine, AR glasses can be used to focus on the affected part of the patient and view the navigation screen simultaneously. This helps us to quickly and accurately confirm the position between the instrument and the lesion. As a result, it can greatly reduce the wound, minimize unnecessary tissue damage, and achieve the effect of minimally invasive surgery and precision medicine. In addition, patients tend to recover faster after surgery when AR technology is used.

Copyright © 2024 Taitai Medical Orthopaedic
Biotechnology, Co., Ltd. All Rights Reserved.

Compatibility

Quick adaptation without too many changes.



CADUCEUS S offers various combinations of commonly used surgical instruments that physicians can use to position different instruments effectively during surgeries. Additionally, it provides different attachments to enhance surgical convenience and adaptability to varying surgical environments and equipment. The navigation system can be registered on the C-arm machine without requiring any additional locator. The navigation view primarily relies on familiar 2D images, ensuring a smooth transition and user-friendly experience.

Minimally Invasive Spinal Surgery Instrument

Provides positioning functions for various instruments during surgery.

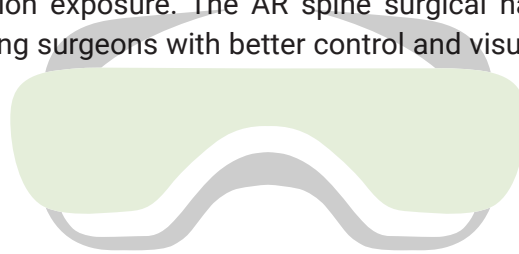
The Minimally Invasive Spine Surgery Instruments are used to navigate surgery with external instruments required for the surgical process. Fix the Pilot Hole Drill to the Bone Drill and then pass it through the channel above the Pedicle Access. The Pedicle Access Awl/Pilot Hole Drill has a special mechanism design to stop the sharp point of the Pilot Hole Drill at the specified depth, which are 25mm, 30mm, and 35mm respectively. The Quick Release Bar (for TAP or Screwdriver) can connect the Tap and Release Handle, transforming the standard Tap into a Navigated Tap for use in navigational surgery.

How the AR Spine Navigation System Works



Providing a smoother and more pleasant surgical experience.

The AR spine surgical navigation system seamlessly combines AP and lateral views, eliminating the need for 3D imaging or extensive workflow changes. After capturing initial images, the C-arm is swiftly removed, reducing hindrance for the physician. This innovative approach minimizes positioning shots, lowering radiation exposure. The AR spine surgical navigation system fundamentally changes surgeries, providing surgeons with better control and visualization in a simpler, faster, and safer manner.



SURGLASSES



C-arm module

Insert the positioning jig.

Place the intraoperative registration tool above the patient and take an AP image.

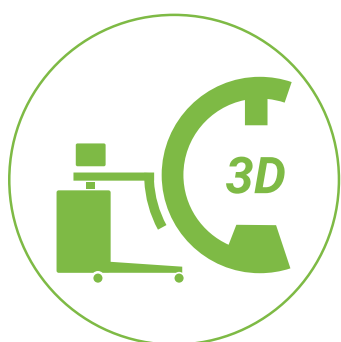
Place the intraoperative registration tool beside the patient and take an LT image

Register the surgical tools.

Go

Begin the surgery. You can focus on your patient throughout the entire surgical procedure while simultaneously viewing the navigational spinal images projected right in front of your eyes. That's the essence of Augmented Reality (AR).

Copyright © 2024, Taiwan Main Orthopaedic Biotechnology, Co., Ltd. All Rights Reserved.



3D C-arm module

Insert the positioning jig.

Place the intraoperative registration tool on the patient, have the patient hold their breath for about 30 seconds, the system will save the registration point (located in the intraoperative registration tool), then proceed with the 3D C-arm scan.

Register the surgical tools.

Go

Begin the surgery. You can focus on your patient throughout the entire surgical procedure while simultaneously viewing the navigational spinal images projected right in front of your eyes. That's the essence of Augmented Reality (AR).

Copyright © 2024, Taiwan Main Orthopaedic
Biotechnology, Co., Ltd. All Rights Reserved.



ICT module

Insert the positioning jig.

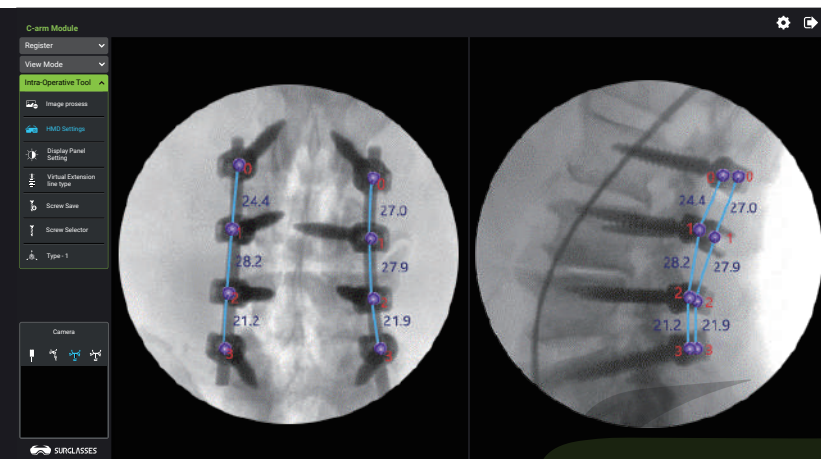
Place the intraoperative registration tool on the patient, have the patient hold their breath for about 30 seconds, the system will save the registration point (located in the intraoperative registration tool), then proceed with the CT scan.

Register the surgical tools.

Go

Begin the surgery. You can focus on your patient throughout the entire surgical procedure while simultaneously viewing the navigational spinal images projected right in front of your eyes. That's the essence of Augmented Reality (AR).

Software Characteristic

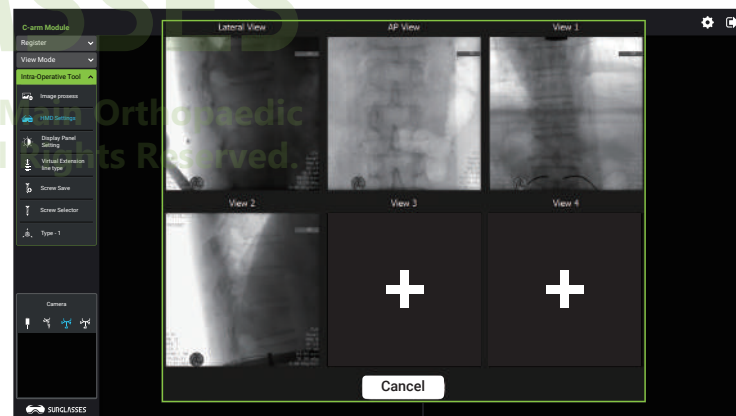


Rod angle planning

After completing screw implantation, the AR spine surgical navigation system can assist the physician in performing rod implantation planning based on the screws' position. This helps to quickly confirm the rod's length, saving surgical time and reducing the risk of bacterial infection.

Multiple true AP and lateral views can be registered

During long-range procedures, it is possible to capture true AP and lateral view for different segments in one session to registration, facilitating intraoperative switching without the need to interrupt the screw implantation process for re-registering images.



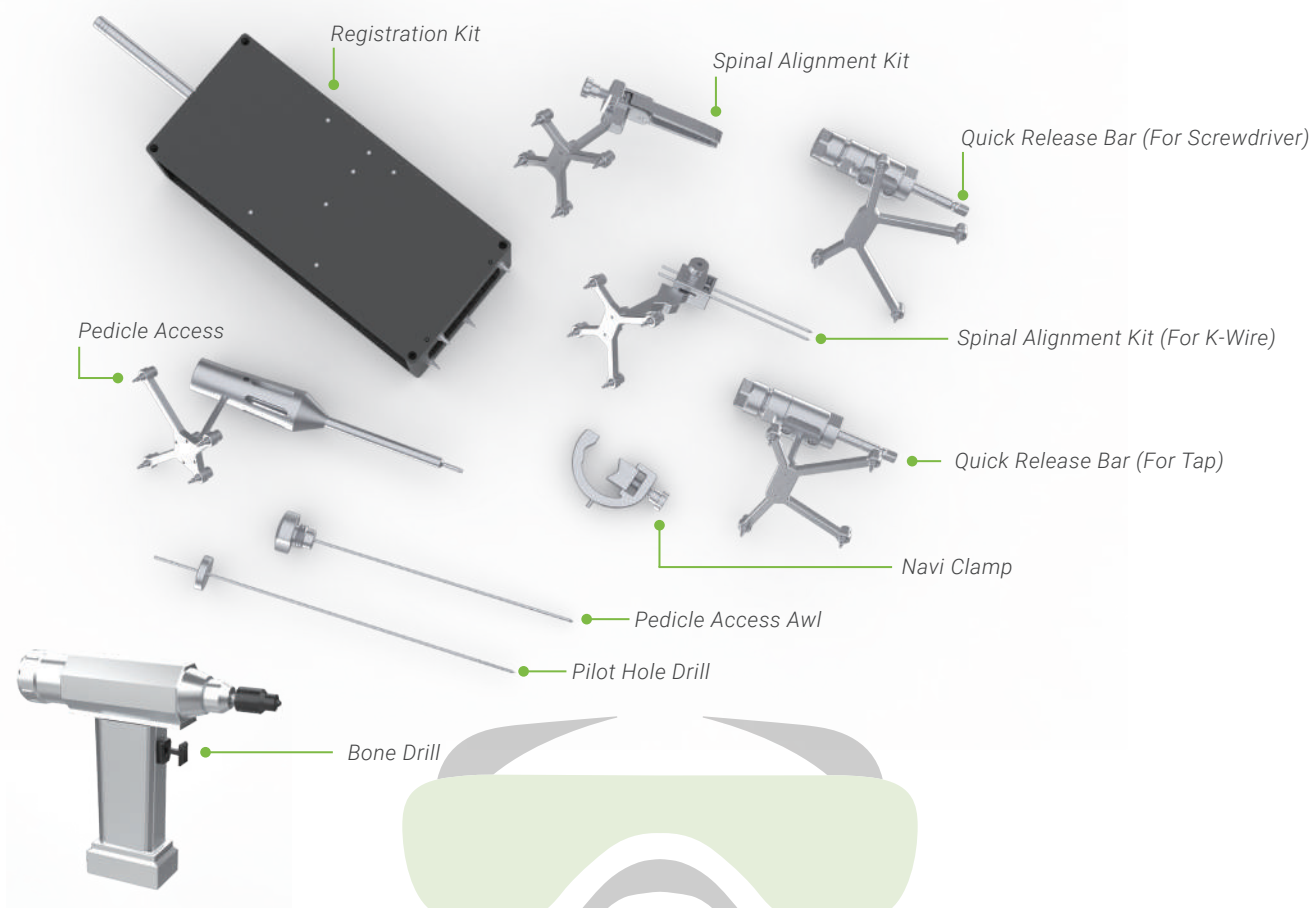
Pedicle screw trajectory planning

Screw planning can be performed preoperatively. After completing patient positioning, the physician can utilize the navigational images obtained during the positioning process for screw planning. Virtual screws can be placed in the most suitable positions, facilitating the quick implantation of screws during the surgical procedure.

Better surgical experience

- This solution offers the advantage of streamlined bootstrapping with minimal workflow modifications, making it convenient and easy to implement.
- Minimize equipment constraints by reducing the need for instrument setup and table elevation to accommodate the instrument.
- Reduced setups and reshoots, thus increasing the smoothness of surgery.
- Can help improve precision for better clinical outcomes.
- Brighten, rotate, zoom or adjust contrast with ease through the intuitive touch screen.





Spine Implant Surgery

Such as Scoliosis, Spondylolisthesis, Vertebral fracture, Spinal fixation.

Accurately guide the implant into the spine to reach the ideal depth and position. The diameter and length of the screw can also be analyzed by the preoperative simulation function.

Minimally Invasive Spine Surgery

In minimally invasive surgery, because the incision is small, the doctor cannot see the skin tissue directly through the naked eye. A navigation system is needed to guide the doctor to operate.



Minimally Invasive Spinal Surgery Instrument Set

The reusable metal instrument set is designed for navigation and positioning purposes. It can be used with a navigation equipment set to provide positioning functions for various instruments during surgery.

MSI-ITH-01	Instrument holder
MSI-SAK-02	Spinal Alignment Kit
MSI-SAK-03	Spinal Alignment Kit(For K-Wire)
MSI-RSK-01	Registration Kit
MSI-NCP-01	Navi Clamp

MSI-PAK-02	Pedicle Access
MSI-PAA-02	Pedicle Access Awl
MSI-PHD-08	Pilot Hole Drill
MSI-QRB-03	Quick Release Bar(For Tap)
MSI-QRB-04	Quick Release Bar(For Screwdriver)
MSI-PDL-01	Bone Drill

Caduceus S Include

Product number Description

AR Headset

CDS-SSG-02	Headset
CDS-CNS-02	Connection System
CDS-RTR-02	Router

Navigation Platform

CDS-NGC-03	Navigation Cart
CDS-NTR-02	Navi Tracker
CDS-NTR-04	

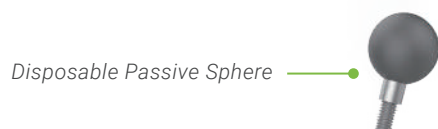
Minimally Invasive Spine Surgery Instruments

Various disposal tool to assist navigation system during positioning.

Disposable Passive Sphere

CDS-DPS-04	Disposable Passive Sphere
------------	---------------------------

Please call our Sales Representative or Original Manufacturer for the full list of Caduceus S - AR Spine surgical navigation system related instruments and accessories.





Copyright © 2014 Quettil Solutions, Ltd. All Rights Reserved.

CADUCEUS S

AR spine surgical navigation

