

S⁴ Element[®] MIS

Visualize MIS. Minimize Doubt.



Aesculap Spine

AESCULAP[®]
Implant Systems

S⁴ Element[®] MIS

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As patient demand and industry influence continues to drive the growth of Minimally Invasive Spine Surgery, Aesculap is poised to respond to that need. The S⁴ Element MIS system's unique design and complementary endoscope technology is designed to increase direct surgical site visibility during minimally invasive procedures and minimize your exposure to risk.

Whatever your MIS need,

- Increased visibility for greater accuracy
- Simple approach to MIS procedures
- Easy transition to MIS surgery

S⁴ Element takes you there.

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DESIGN ADVANTAGES:

The design advantages of the S⁴ Element MIS are the result of proven success with the S⁴ Element pedicle screw technology, offering maximum construct stability in an ultra-slim profile, and over 30 years of innovation in spine technology.

■ **Direct Visualization:**

S⁴ Element MIS provides a direct view of the surgical site through the use of endoscope technology, providing the ability to troubleshoot and minimize guesswork associated with MIS spine surgery while reducing exposure to radiation.

- **Minimal Surgical Conversion Risk:** Industry leading rescue technique and instrumentation minimizes risk of converting MIS to an open procedure.

■ **Operational Simplicity:**

S⁴ Element MIS offers intuitive, streamlined instrumentation to facilitate efficiency in the OR workflow.

■ **Ultra-Slim Profile Technology:**

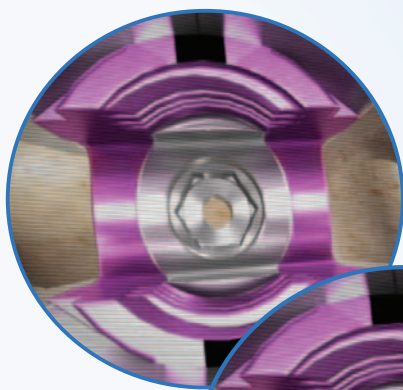
Slim profile of instruments allows for a smaller incision and easy instrument manipulation in tight anatomical spaces, while the ultra low profile screw minimizes anatomical impingement.



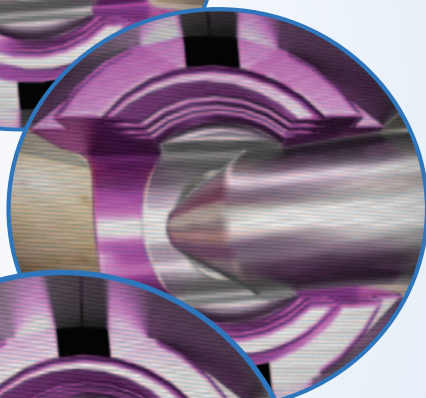
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Surgical Precision You Can See.

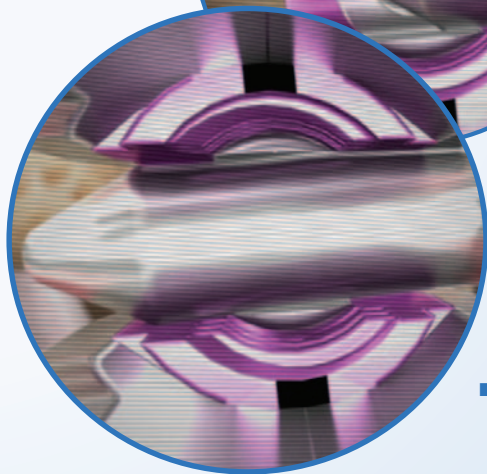
The S⁴ Element[®] MIS is the only posterior lumbar pedicle screw fixation system to utilize endoscope technology to gain a direct view of the surgical site, providing the advantages of MIS with the comparable visualization of an open procedure.



- Direct visualization through endoscope



- Confirmation of rod delivery, position, and length



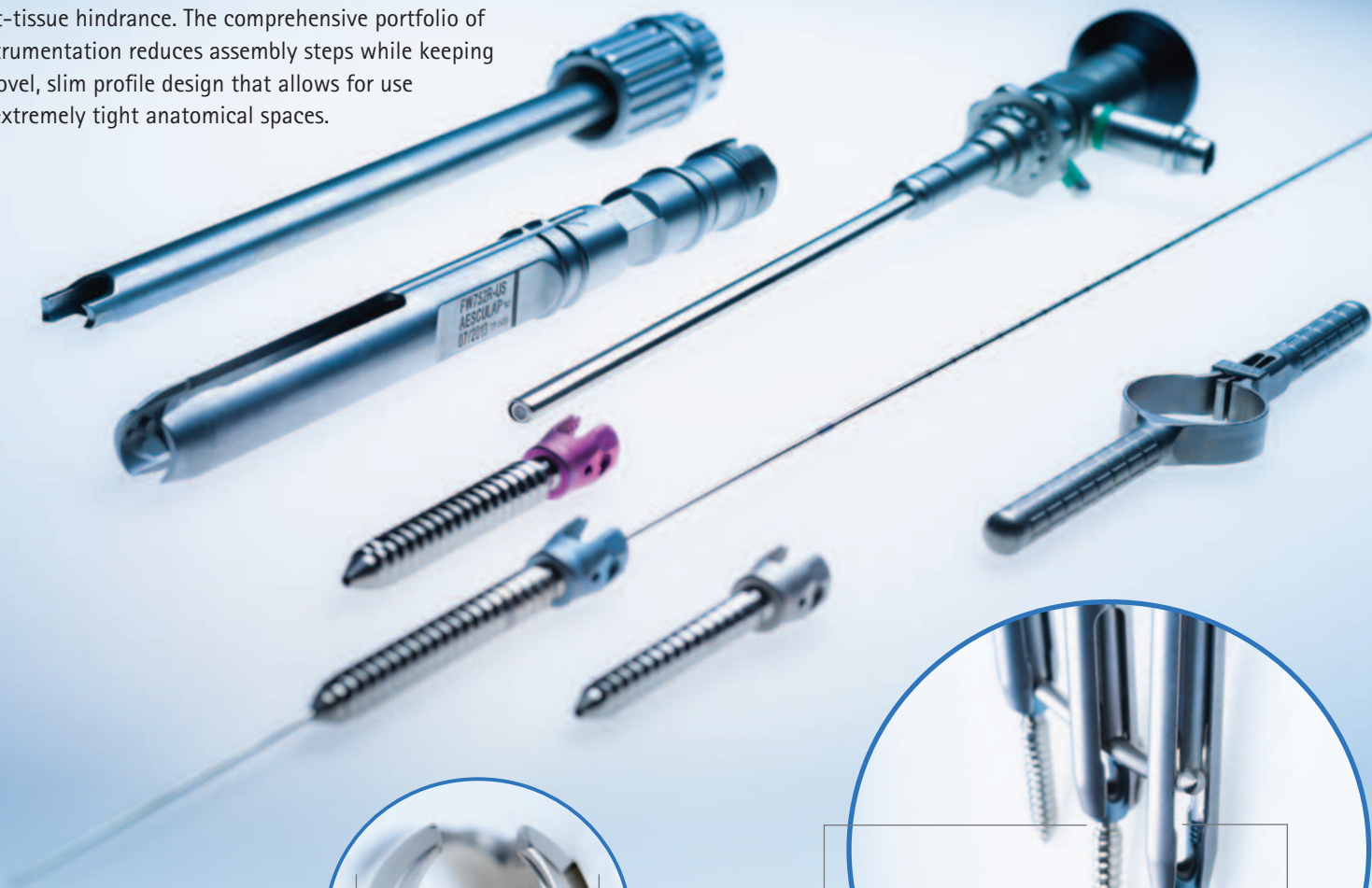
- Minimizes exposure to radiation
- Real-time troubleshooting capabilities, to avoid complications before they arise.



S⁴ Element[®] MIS

Easy to Operate

S⁴ Element MIS offers intuitive, streamlined instrumentation to facilitate efficiency in the operating room and minimize soft-tissue hindrance. The comprehensive portfolio of instrumentation reduces assembly steps while keeping a novel, slim profile design that allows for use in extremely tight anatomical spaces.



DOWNTUBE TECHNOLOGY

The S⁴ Element MIS Downtube Technology allows for instrumentation to be introduced through the slim diameter to limit incision size.

- Slim profile (16.5mm) reduces bulk at surgical site.
- Single-piece downtube design does not require assembly.

- Clamp on screw to downtube interface eases attachment and detachment of the screw.
- Large window allows for easy rod passage through multiple levels.

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INTERNAL ROD PERSUADER

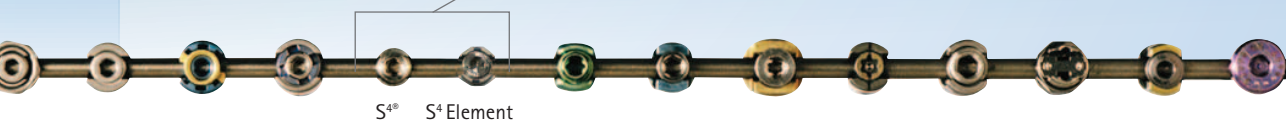
Internal Rod Persuader is introduced through the downtube to eliminate the need to lengthen the incision.

- 2.5cm rod persuasion distance allows up to Grade II spondylolisthesis reduction.
- Ratcheting design of the slim rod persuader handle allows for persuasion in extremely tight persuader distances.

IMPLANT STABILITY

S⁴ Element[®] implants are design engineered to maximize stability of the construct with an ultra-low profile.

- The small screw diameter and polaxicity maximize the range of screw head motion to ease rod insertion.
- External geometry provides a self-registering engagement for instrumentation.
- Patented interlocking thread design minimizes splaying of screw body.
- S⁴ Element offers an ultra-low profile and 12.5mm diameter to minimize anatomical impingement.



S⁴ S⁴ Element

S⁴ Element[®] MIS

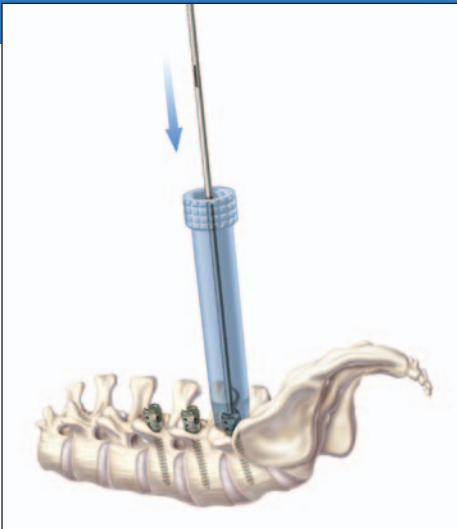
Reduced Conversion Risk

The risk of converting to an open procedure can lengthen procedure time and in some cases lead to re-operation. The S⁴ Element MIS system offers an industry leading rescue technique and instrumentation designed to minimize risk of open conversion during minimally invasive surgery.

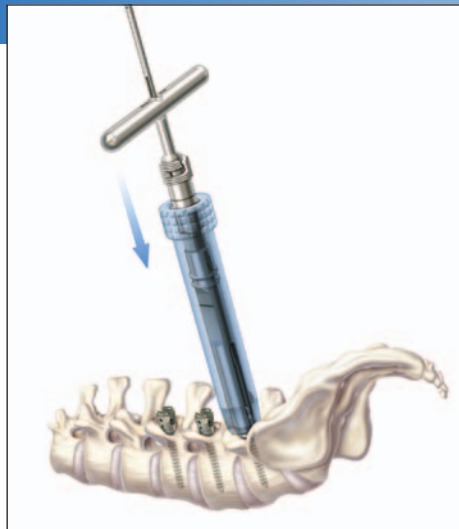
- Ease of reattaching downtube to screw in-situ
- Minimum instrumentation required for reattachment
- Visual markers to assist reattachment
- Easy confirmation of reattachment



IN-SITU DOWN TUBE REATTACHMENT



Control pedicle screw orientation with alignment tool



Align pedicle screw to dock downtube



Reattached downtube

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Ease Your Transition

Aesculap Implant Systems is committed to easing your transition to minimally invasive surgery techniques with products and training that provide benefits to you as well as your patients. Through cutting-edge products and world-class education, we offer an innovative approach to accommodate MIS techniques.

Aesculap S⁴ Element[®] MIS can help you achieve the known patient benefits of MIS as well as:

- Reduced radiographic exposure
- Provide a field of view similar to that of open procedures through Aesculap endoscope technology
- Streamlined instrumentation that is easy to use to minimize the learning curve
- Award-winning training through the Aesculap Academy, customized to your need



See the S⁴ Element MIS in action today.

Visit aesculapimplantsystems.com/spineMIS



Indications and Contraindications:

INDICATIONS

S⁴ Element is intended for anterior/anterolateral and posterior, non-cervical pedicle and non-pedicle fixation. Fixation is limited to skeletally mature patients and is intended to be used as an adjunct to fusion using autograft or allograft. The device is indicated for treatment of the following acute and chronic instabilities or deformities:

1. Degenerative disc disease (defined as discogenic back pain with degeneration of the disc confirmed by history and radiographic studies)
2. Spondylolisthesis
3. Trauma (i.e., fracture or dislocation)
4. Spinal stenosis
5. Deformities or curvatures (i.e., scoliosis, kyphosis, and/or lordosis)
6. Tumor
7. Pseudoarthrosis
8. Failed previous fusion

CONTRAINDICATIONS

Contraindications of the S⁴ Element are similar to other commercially available posterior spinal fixation systems of similar design and material. Contraindications include but are not limited to the following:

1. Use in the cervical spine
2. Active systemic or local infection
3. Obesity
4. Pregnancy
5. Mental illness
6. Severe osteoporosis or osteopenia
7. Metal sensitivity/allergies to the implant material
8. Alcohol or drug abuse
9. Patients are unwilling or unable to follow postoperative instructions
10. Neuromuscular diseases/disorders
11. Soft tissue deficit not allowing wound closure
12. Any medical or physical condition that would preclude the potential benefit of spinal implant surgery
13. Congenital abnormalities, tumors or other conditions that would prevent secure component fixation that has the potential to decrease the useful life of the device
14. Any medical or mental condition which would exclude the patient or put the patient at high risk from surgery of this severity
15. For pedicle screw cases, inadequate pedicles of the fifth lumbar (L5) vertebrae

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