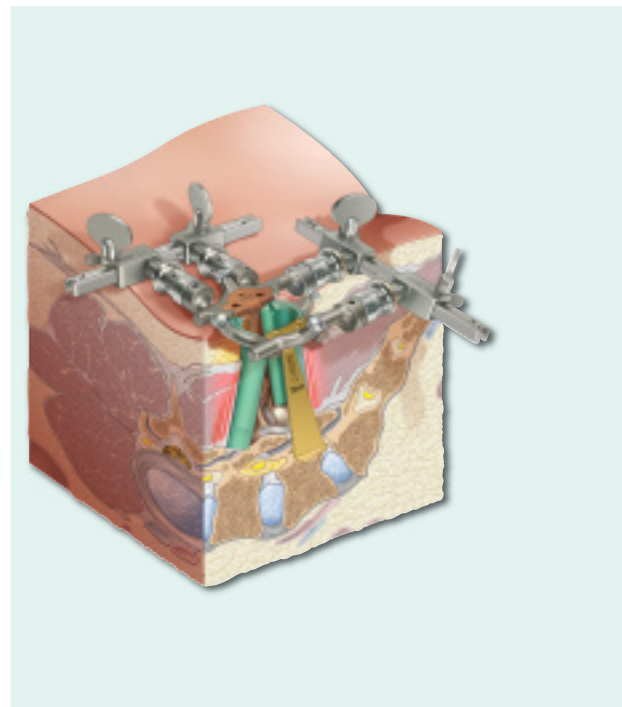


Spyder™/S4® Mini-Open Retractor

Surgical Technique



Aesculap Spine



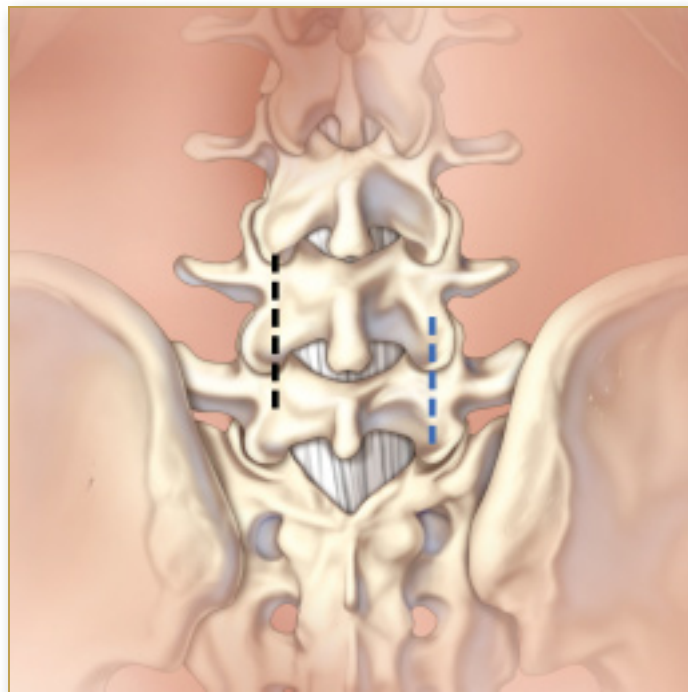
AESCULAP
Implant Systems

*A member of the **B|BRAUN** group of companies.*

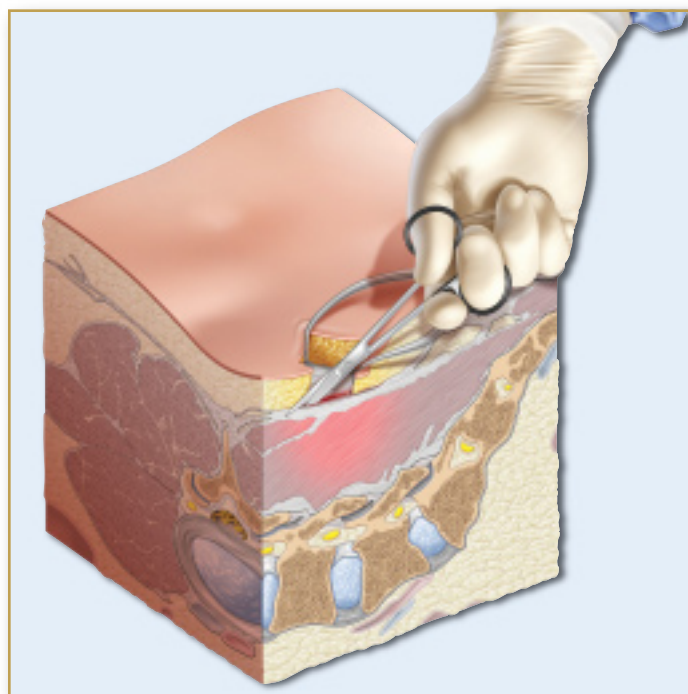
Spyder™/S4® Mini-Open Retractor

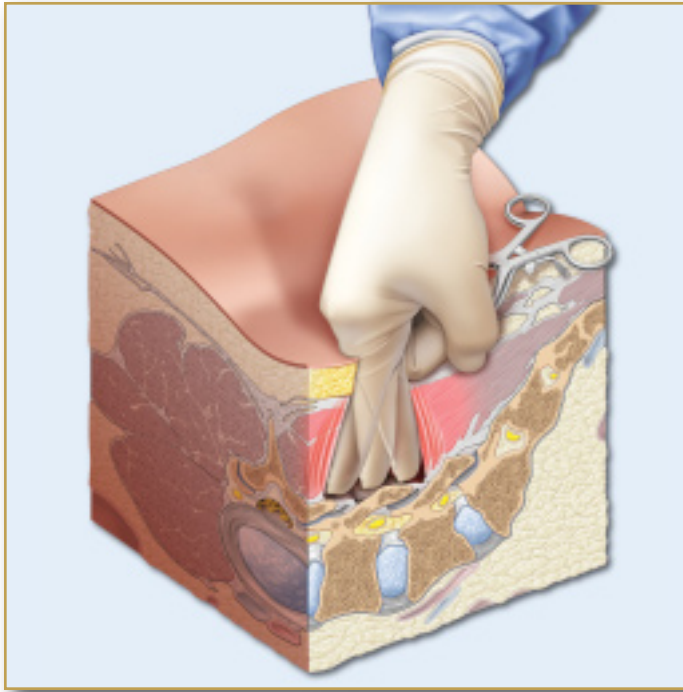
Mini-Open Approach

- Use AP and lateral fluoroscopy to mark the locations of the pedicles of interest on the patient's skin.
- L4-5 and above: Plan a paramedian incision in the sagittal plane of the pedicles, extending precisely from one pedicle to another.
- L5-S1: Plan a paramedian incision, extending from 1 cm cranial to the S1 pedicle to 1 cm cranial to the L5 pedicle.



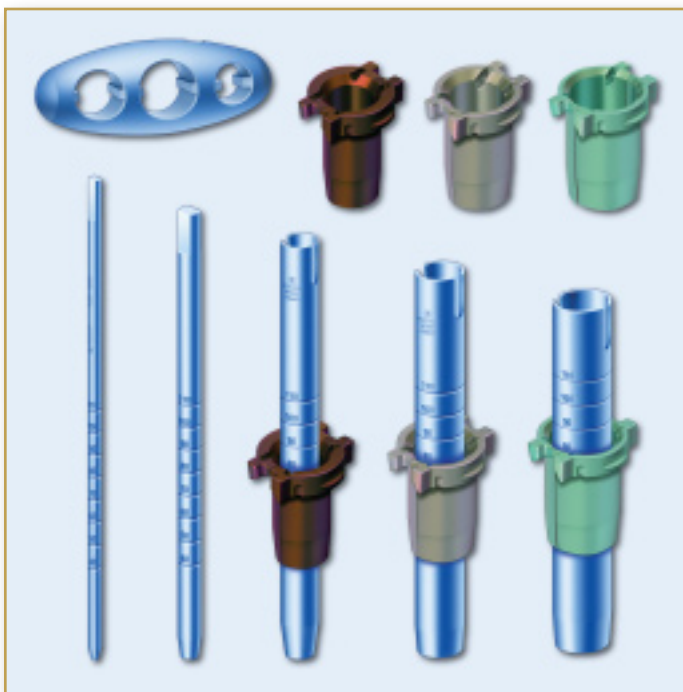
- The length of the skin incision is determined by the distance between adjacent pedicles and by the diameter of tubular retractor blades. A 3.0 - 3.5 cm incision is generally sufficient for a 1 level exposure with the smallest (16.5 mm) cranial-caudal (C/C) blades. A larger incision is recommended for the 20 mm and 24 mm C/C blades.
- The fascial incision must extend well above and below the skin incision for a total length of about 5 to 6 cm.





Mini-Open Approach

- Insert a finger through the paraspinal muscles to palpate the underlying facet joint.
- Sweep the finger up and down in the parasagittal plane to create a dissection plane between the muscle fibers.
- At the caudal end of the exposure, palpate the base of the facet joint.
- At the cranial end of the exposure, palpate the base of the adjacent facet joint.

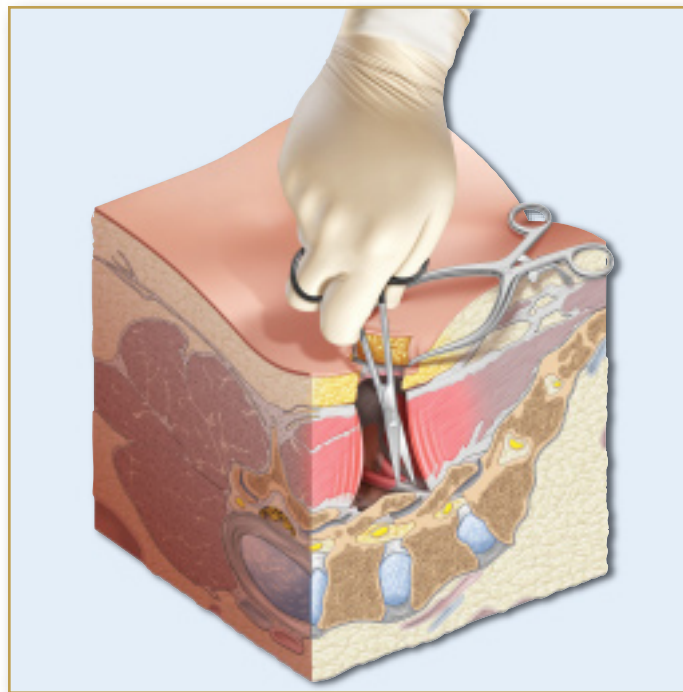


- Dilate the paraspinal muscles starting with the smallest diameter dilator and work up to the diameter of the cranial-caudal (C/C) retractor blades you intend to use.
- The C/C blades have a tubular profile and come in 16.5 mm, 20 mm, and 24 mm diameters.
- The dilator handle may be attached to each dilator if desired.

Spyder™/S4® Mini-Open Retractor

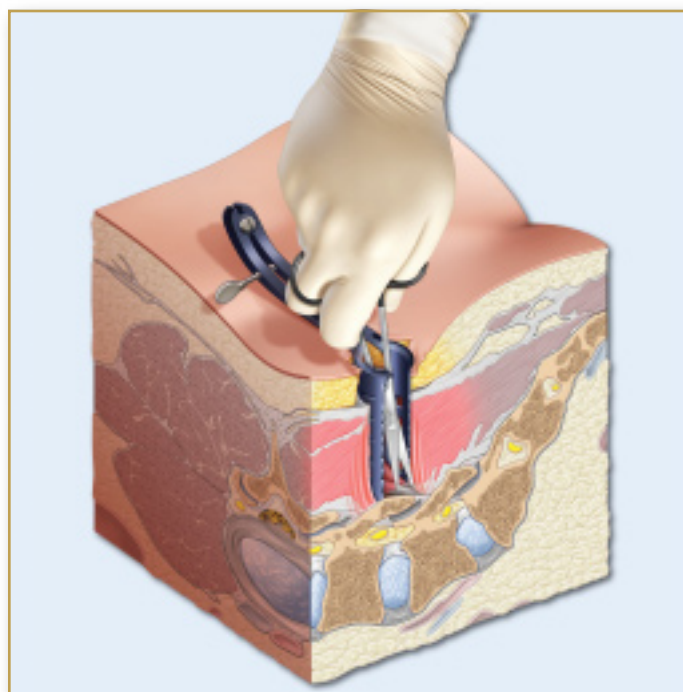
Mini-Open Approach

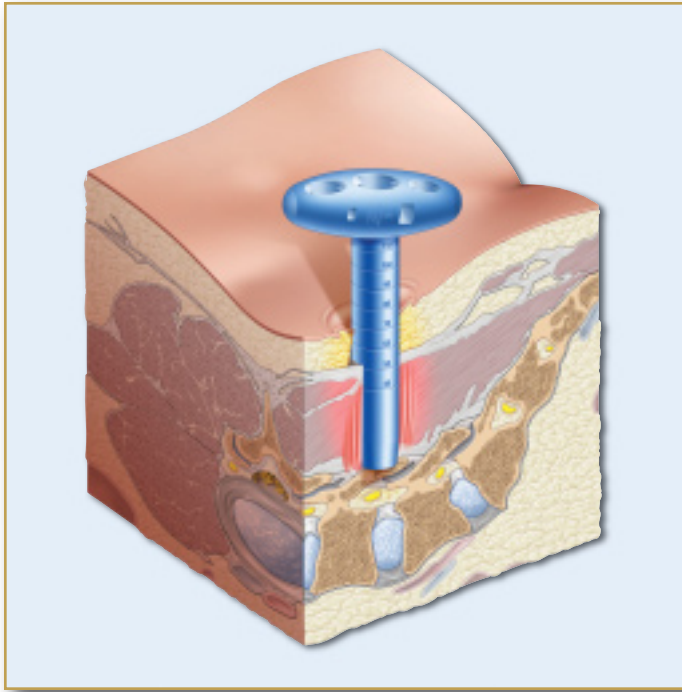
- If you intend to use the larger retractor blades (20 or 24 mm), consider manually detaching the musculo-tendinous attachments to the facet joints, laminae, and transverse processes prior to insertion of dilators. This can be accomplished by using scissors or a Cobb elevator. Cautery may be required for hemostasis.



Mini-Open Approach (Optional Speculum Method)

- In the Speculum Method, a temporary speculum retractor with a 65 mm blade configuration (BV804R) may be used to simplify this task.
- The speculum is first inserted with the closed blades over a small dilator.
- The blades are then slightly opened in the cranio-caudal orientation to expose a small portion of the underlying bone.
- After the muscle-bone attachments in this region are divided, the speculum is opened to allow for further dissection.
- The sequence is repeated until sufficient bony exposure is obtained, exposing the entire facet joint of interest.
- The speculum retractor is then removed.

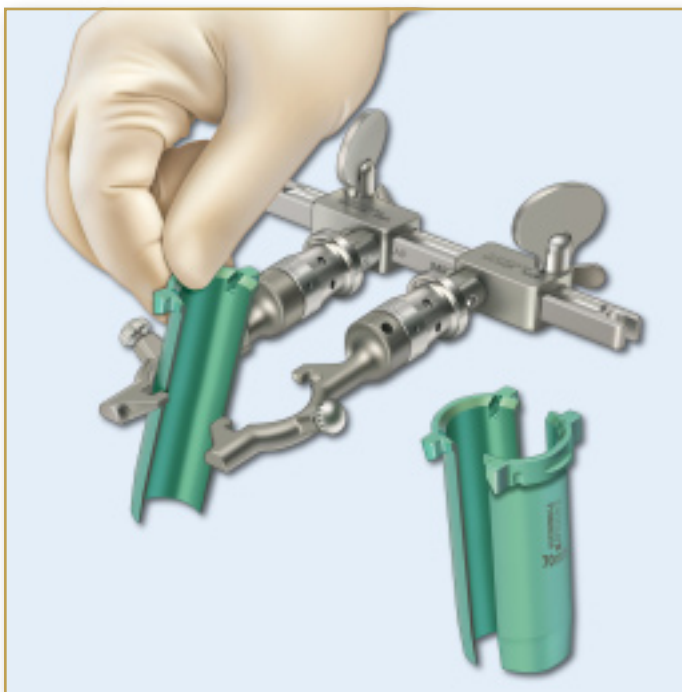




Mini-Open Approach

- Dilators are marked with depth indicators
- After inserting the final dilation diameter, based on the desired C/C blade size, reference for blade length.

← Blade Depth References
40 - 110 mm, 10 mm increments.

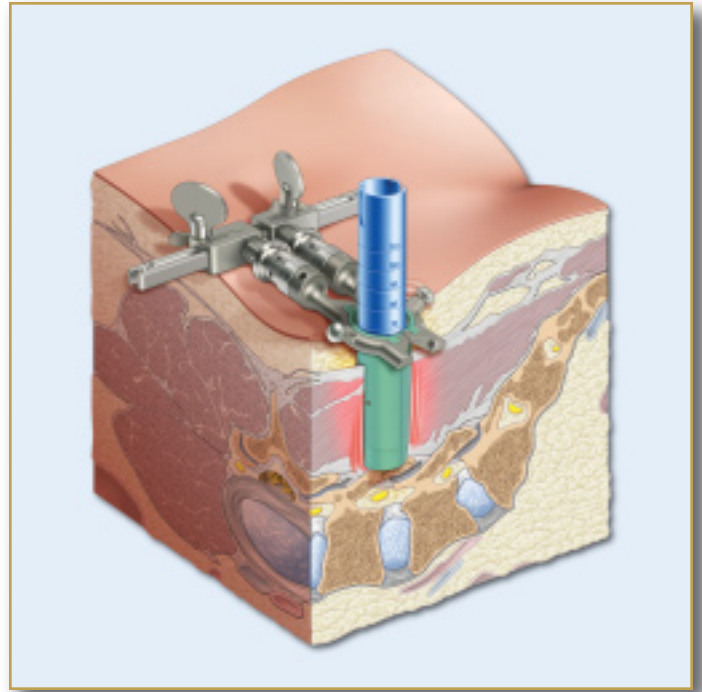


- Cranial Caudal (C/C) Blade Selection
 - Choose the correct blade length and desired diameter from the reference depth of the dilator.
 - Select the "lower" frame (ME302R, ME303R, ME304R).
 - The C/C blades have a 16.5 mm, 20 mm or 24 mm inner diameter.
 - Insert the C/C blades by loosening the grub screw, engaging the blades into the frame and then tightening the grub screw.

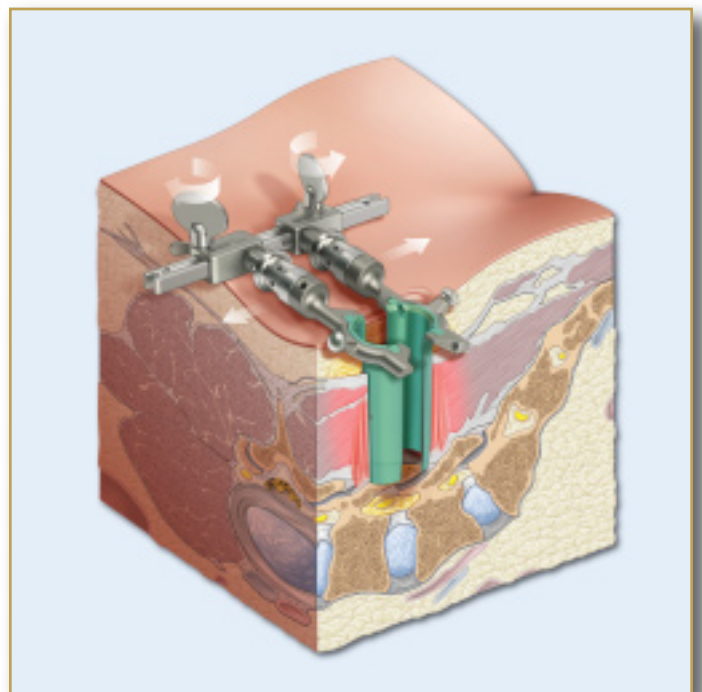
Spyder™/S4® Mini-Open Retractor

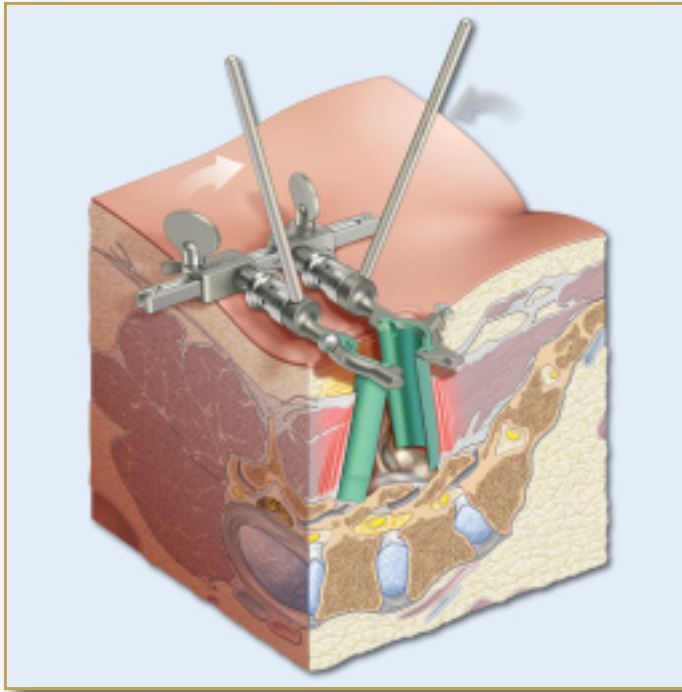
Mini-Open Approach

- Close retractor, creating a tube.
- Slide over the final dilator.
- Remove the tissue dilator.



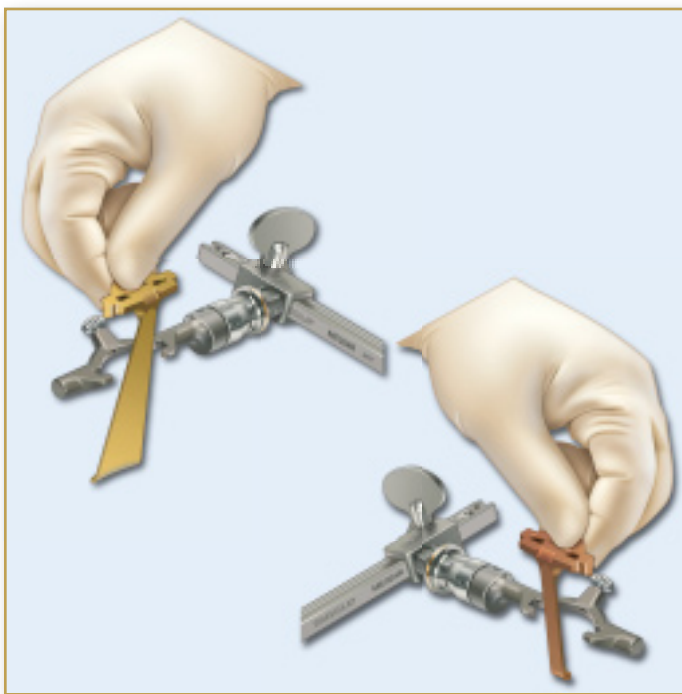
- Expand the lower arm of the retractor by rotating the keys of the retractor.





Mini-Open Approach

- The blades of the lower retractor may be flared using the retractor rotator arms, (ME380R).
- Insert the rotator arms into the retractor and rotate the arms toward each other in an inward direction.

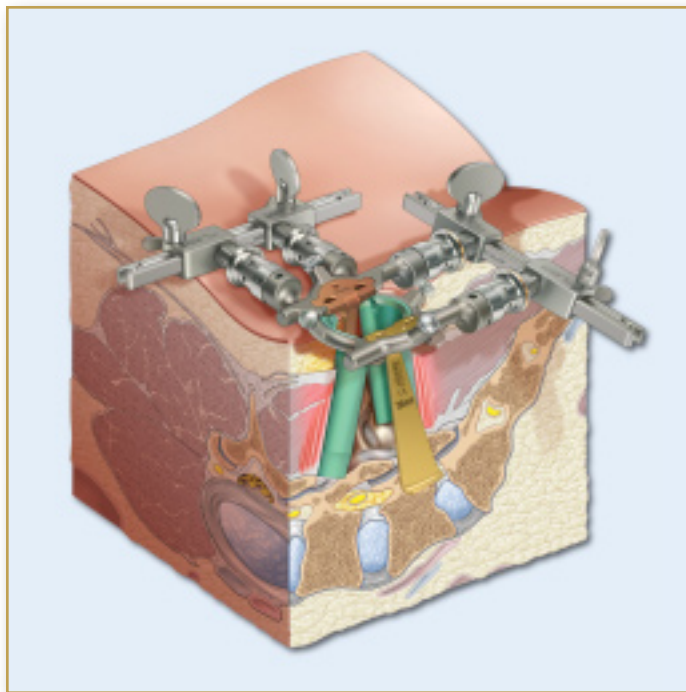


- The M/L blades of the upper retractor may be inserted in a similar fashion using the upper frame of the retractor. The upper retractor frame has gold anodization on the collar for easy identification.

Spyder™/S4® Mini-Open Retractor

Mini-Open Approach

- Place the upper retractor arm over the lower retractor arm and expand and flare the upper retractor in a similar fashion if desired.





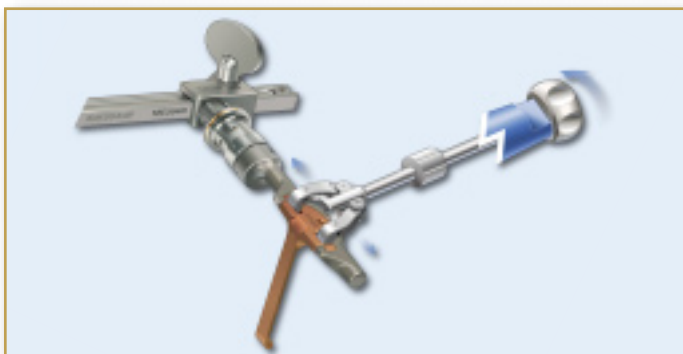
Mini-Open Approach

- Blade lengths and shapes may be changed in situ through the use of the blade holding instrument (ME381R).
- To remove a blade, insert the blade removal tool into the blade notches and rotate the knob counter-clockwise.
- Loosen the "grub screw" and remove the blade.
- To insert a new blade, place the new blade in the retractor arm, tighten the grub screw and rotate the blade removal knob clockwise to disengage the tool.



Note:

If necessary, to release the force of the soft tissue on the retractor blades, insert the rotator arm into the retractor and pull back on the collar and rotate the arm to the "0" position. Re-inserting the final dilator will hold the soft tissue while the retractor blade is exchanged.



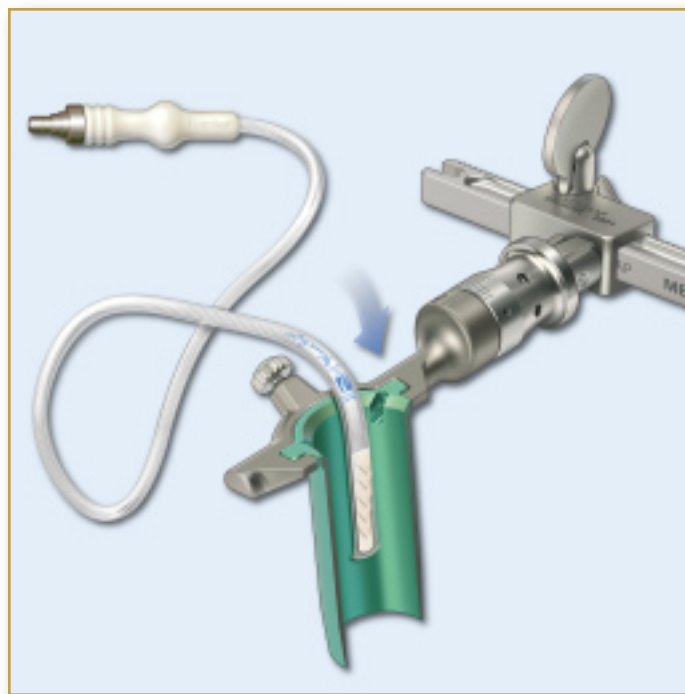
Spyder™/S⁴® Mini-Open Retractor

Mini-Open Approach

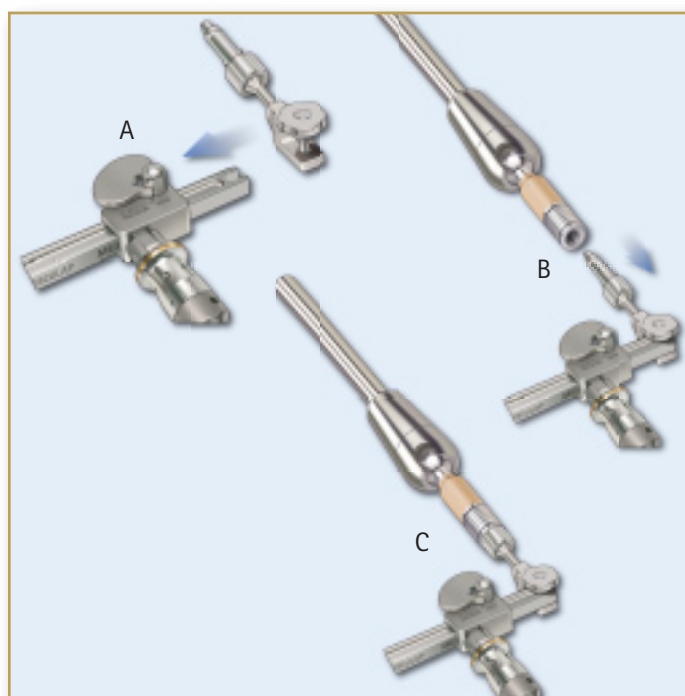
- If desired for additional surgical visibility, an optional single use light rod (ME423SU) can be attached to the C/C or M/L blade. Adhesive strips are included in the sterile package.
- The Aesculap Illuminator has a malleable strip to allow for insertion into the surgical site.
- Attach the Aesculap Illuminator to the flexible light cable (ME422R).
- It is recommended whenever possible to use Aesculap Light Source (OP930) or similar light source rated at 300 watts or less.

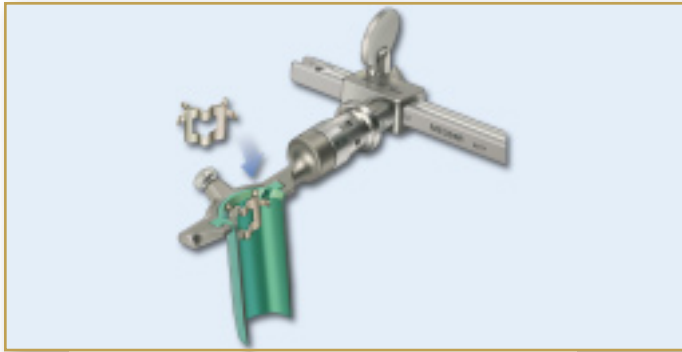
Precaution:

Using a Light Source greater than 300 watts will lead to excessive heating of the light cable and connector.



- If desired, the lower arms of the retractor can be attached to the table arm.
- (A) Attach the table arm connection block (ME382R) to the retractor arm (ME304R).
- (B) Attach table arm connection block (ME382R) to the table arm (FF280R) by sliding the (ME382R) into the collar and tighten the knob.
- (C) The Spyder Retractor is now attached to the table arm assembly.



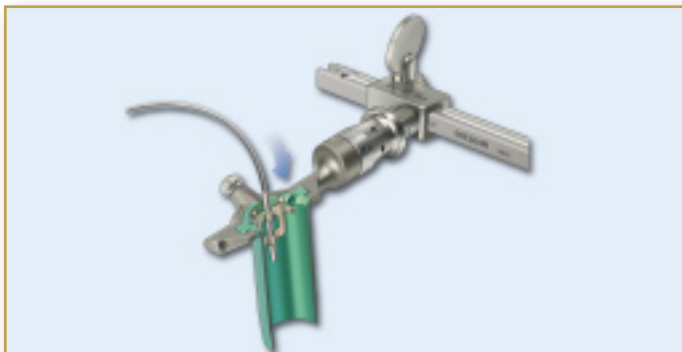


Mini-Open Approach

- If desired for additional surgical visibility, the re-sterilizable light rod (ME421R) can be attached to the 24 mm C/C or M/L blade using a light clip.
- Attach the (ME421R) to the flexible light cable (ME422R).
- For additional visibility, the medial blade and M/L light clip will provide the best visibility.
- It is recommended whenever possible to use Aesculap Light Source (OP930) or similar light source rated at 300 watts or less.

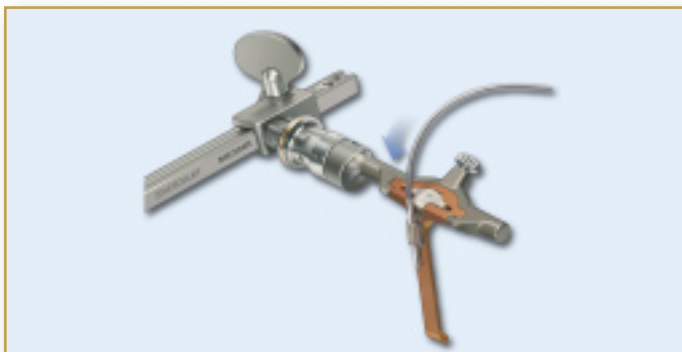
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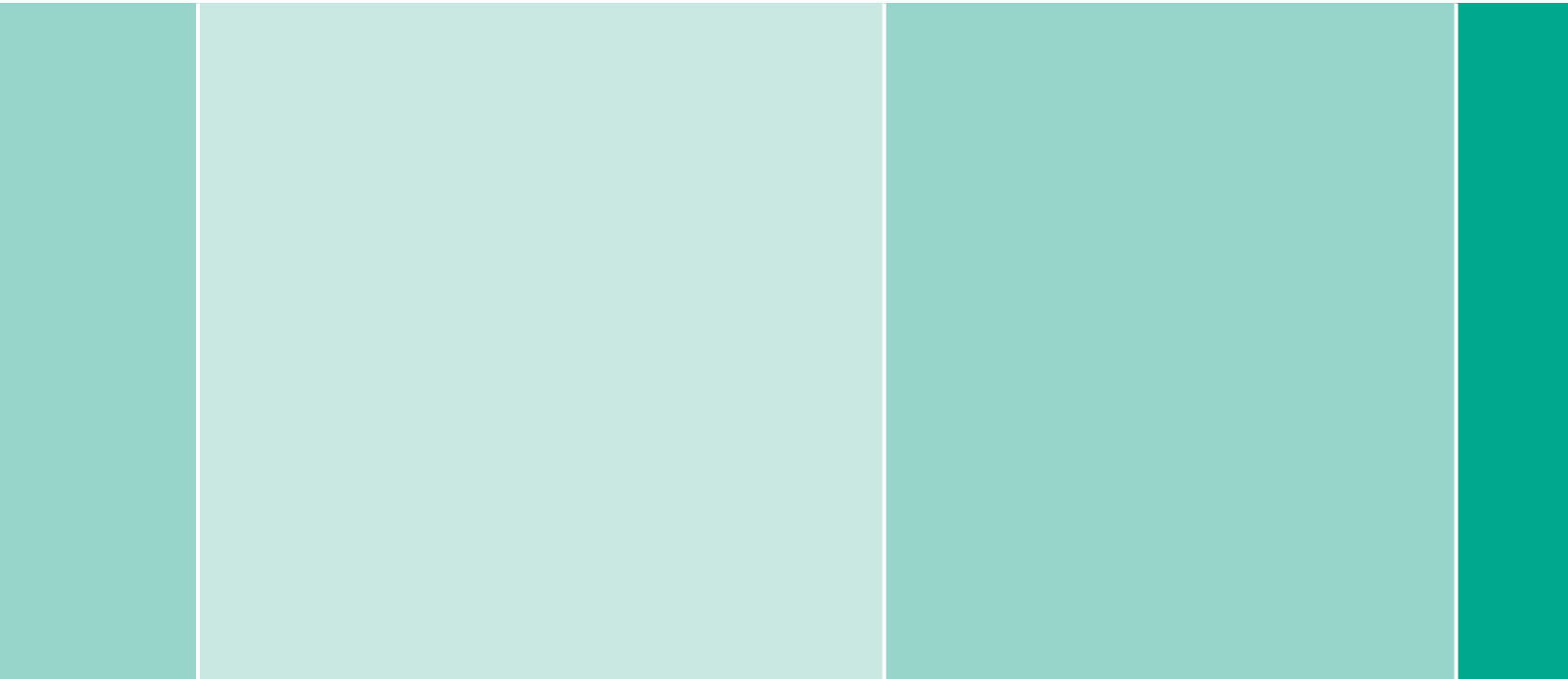
Using a Light Source greater than 300 watts will lead to excessive heating of the light cable and connector.



Additional Information

- For placement and insertion of pedicle screws or interbody implants, please refer to the following Surgical Technique Guides:
 - S4 Solid Pedicle Screws
 - S4 Surgical Technique Guide
 - S4 Element Surgical Technique Guide
- Lumbar Interbody Fusion
 - ProSpace PLIF Surgical Technique Guide
 - ProSpace TLIF Surgical Technique Guide





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