

Pedicle Screws for Spine Fusion

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The pedicle screw, which is sometimes used as an adjunct to [spinal fusion surgery](#), provides a means of gripping a spinal segment. The screws themselves do not fixate the spinal segment, but act as firm anchor points that can then be connected with a rod.

The screws are placed at two or three consecutive spine segments (e.g. lumbar segment 4 and 5) and then a short rod is used to connect the screws (see [Figure 1](#)). This construct prevents motion at the segments that are being fused (see [Figure 2](#)).

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Fig 1: X-ray A of Pedicle Screws [\(larger view\)](#)



Fig 2: X-ray B of Pedicle Screws [\(larger view\)](#)



Fig 3: Pedicle screw insertion [\(larger view\)](#)



Fig 4: Pedicle screw insertion [\(larger view\)](#)

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After the [bone graft](#) grows, the screws and rods are no longer needed for stability and may be safely removed with a subsequent back surgery. However, most surgeons do not recommend removal unless the pedicle screws cause discomfort for the patient (5% to 10% of cases).

In the [posterolateral gutter fusion](#), use of pedicle screws has improved spinal fusion rates from approximately 60% to 90%. Many surgeons also believe that pedicle screws enhance patient recovery because they provide immediate stability for the spine and early mobilization for the patient.

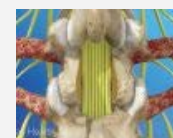
Initially, the safety and effectiveness of pedicle screws was called into question. However, the initial controversy has been favorably resolved and pedicle screws are now approved by the FDA for use in the lower (lumbar) spine for specific conditions.

There is, however, a steep learning curve in the technique for placing the pedicle screws, and only surgeons comfortable and experienced with the technique should use them (see [Figure 3](#) and [Figure 4](#)).

Pedicle Screw Risks and Potential Complications

While there was a rod and screw breakage rate of approximately 10% in the 1980's, with modern pedicle screws the breakage rate has now been reduced to about one in 1,000.

An analysis of 2,500 patients by 350 physicians conducted by the North American Spine Society found



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that the complication rate with using pedicle screws in spinal fusion surgery is low. There is about a one in 1,000 chance of nerve root damage, and a 2% to 3% chance of infection.

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