KEY PROCEDURES

INTRALAMINAR SCREW FIXATION OF SPONDYLOLYSIS

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Published outcomes of this procedure can be found at: *Spine (Phila Pa 1976)*. 2014 Feb 1; 39(3):E153-8.

Investigation performed at Johns Hopkins University, Baltimore, Maryland

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Abstract

Spondylolysis, defined as injury to the pars interarticularis, is the most common identifiable cause of back pain in children. Historically, treatment has primarily been nonoperative, including physical therapy, activity modification, and occasionally bracing¹. In instances in which the condition is refractory to nonoperative management, however, surgical treatment may be an efficacious alternative. Persistent pain following nonoperative management is described as occurring in 6% of the general population, but is reported to be as high as 15% to 47% in the pediatric population who participate in sports^{2,3}. There have been several proposed methods of surgical intervention, such as screws, hooks, wires, and combinations of the aforementioned, none of which have garnered unanimous support as being most effective. The report by Buck³ served to popularize the use of intralaminar screwing for fixation, and the 93% success rate reported in that study has since been corroborated, with several studies reporting rates from 82% to 100%^{1,3,4}. This technique offers a low-profile solution that is motion-sparing with demonstrable stability and mechanical advantage compared with other techniques⁵ and has been shown to be a more stable method of fixation that can correct relatively large defects, showing efficacy with defects 4 mm and larger⁵. This procedure is performed by (1) placing the patient in a prone position with minimization of lordosis on the operating table and use of fluoroscopy to localize the defect. (2) A midline incision (approximately 5 cm) is made just lateral to the corresponding spinous process in order to expose the lamina and the defect. (3) A curet is used to clean the defect. (4) Under fluoroscopy, and alternating between anteroposterior and lateral views, a percutaneous stab is made if needed using a 4.5-mm cannulated screw guidewire, and the wire is drilled through the caudal laminar surface, bisecting the pedicle to the superior cortex of the pedicle. (5) A 3.2-mm cannulated drill is then used to drill over the guidewire. (6) The wire is removed, and a ball-tip probe is used to feel the cortices. The screw length is measured and tapped. (7) The lamina is distally overdrilled if it is large enough. (8) A solid (rather than cannulated) screw of appropriate size (usually 4.5-mm diameter) is inserted

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with compression as needed. (9) If necessary, autologous posterior iliac crest bone graft is obtained from the same incision, and cancellous graft is placed in the defect. (10) A corticocancellous strip is overlaid from the lamina to the transverse process.

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