Percutaneous Lumbar Transfacet Screw Fixation

- Comparative study of percutaneous transfacet screw and pedicle screw in oblique lumbar interbody fusion for the treatment of single-level lumbar spinal stenosis
- Comparison of transfacet and pedicle screws in oblique lateral interbody fusion for single-level degenerative lumbar spine diseases: a retrospective propensity score-matched analysis
- Clinical study on real-time three-dimensional CT navigation-guided full-endoscopic lumbar interbody fusion
- Mini-invasive bilateral transfacet screw fixation with reconstruction of the neural arch for lumbar stenosis: A two centre case series
- Percutaneous CT-guided lumbar trans-facet pedicle screw fixation in lumbar microinstability syndrome: feasibility of a novel approach
- Robot-assisted Percutaneous Transfacet Screw Fixation Supplementing Oblique Lateral Interbody Fusion Procedure: Accuracy and Safety Evaluation of This Novel Minimally Invasive Technique
- Percutaneous Lumbar Transfacet Screw Fixation: A Technique Analysis of 176 Screws in 83 Patients With Assessment of Radiographic Accuracy, Hardware Failure, and Complications
- Clinical efficacy of unilateral percutaneous transfacet screws combined with contralateral pedicle screw versus bilateral pedicle screws fixation in the treatment of the degenerative lumbar disease

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Lumbar interbody fusion is commonly performed for the treatment of degenerative disc disease with associated radiculopathy due to foraminal stenosis or disc protrusion. Minimally invasive techniques, such as the lateral interbody fusion, have been developed to achieve this while reducing operative morbidity. Subsequent vertebral fixation is best achieved with a pedicle screw and rod construct in the prone position. Transfacet screw placement has been shown to have near biomechanical equivalence and may reduce operative time and morbidity if placed while the patient remains in the lateral decubitus position.

Both percutaneous transfacet screws (TFS) and percutaneous bilateral pedicle screws (BPS) techniques for OLIF surgery relieve back pain caused by degenerative lumbar spine diseases. The TFS technique exhibits less blood loss compared with the BPS. Moderate cage subsidence is present in TFS but no complication is reported [1)]

Percutaneous lumbar transfacet screw placement with the Facet-Link ® system is feasible and safe but with a relatively high rate of poor articular fusion. This technique can reduce the morbidity of single-level lumbar spinal stenosis and mild instability and improve patient outcome scores. Comparative studies, including randomized controlled trials, are needed to confirm these findings [2)]

Ten patients with back pain and radicular pain due to single-level degenerative disk disease at L3-L4 or L4-L5 underwent minimally invasive lateral interbody arthrodesis with placement of bilateral percutaneous transfacet screws in the lateral decubitus position. Patients had close perioperative follow-up including recordings of intraoperative blood loss, operative time, and hospital length of stay. Clinical outcome measures including visual analog scores (VAS) were assessed preoperatively and at last follow-up with a minimum of 6 months. Dynamic radiographs were obtained at last follow-up to evaluate the instrumentation and fusion rate.

The procedure was well tolerated by all patients. Mean operative time was 2 hours and 42 minutes. Mean blood loss was 26.5 mL. Mean hospital length of stay was 46.5 hours. Nine of 10 patients had good-to-excellent relief of their preoperative back pain and leg pain. Mean preoperative VAS score for back pain was 8.9 and for leg pain was 8. At a mean follow-up of 8.2 months, mean postoperative VAS score for back pain was 0.9 and for leg pain was 0.9. There were no complications. One patient suffered persistent mild leg dysesthesias. There were no instances of graft or screw dislodgement on follow-up imaging.

Minimally invasive percutaneous transfacet screw fixation can be performed safely and effectively in the lateral decubitus position. This is an attractive option for posterior percutaneous fixation that can lead to a reduction of operative time and surgical morbidity in select cases [3].

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