Novel Indication for Posterior Dynamic Stabilization Device: Correction of Rotational Instability after Total Disc Replacement

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Background: The increase in total disc replacement (TDR) procedures performed over the last five years has yielded more postoperative presentations of rotational instability anteriorly or laterally. The proposed treatment for this complication has been TDR device retrieval followed by ALIF versus posterior fusion. In the present technical note, we propose a novel approach for the correction of rotational instability after TDR using the Dynesys posterior dynamic stabilization (PDS) system (Zimmer Spine, Minneapolis, MN).

Methods: Operative Technique. Pedicle screws are inserted using standard techniques under fluoroscopic guidance with electrodagnostic positional confirmation. We address the collapsed side of the TDR device first. We proceed with Dynesys installation by placing the pedicle distance gauge between screw heads and applying sufficient distraction force to create parallel endplates. Spacers are placed, with the spacer on the contralateral side being shorter by 2-3 mm. The spacers are threaded and pulled into place with the tensioning instrument. The collapsed side is distracted with the spacer and the contralateral side is compressed with tension from the cord. The fascia and skin are closed using standard techniques.

Results: Two patients with tilted TDR devices (Figures 1 and 2) underwent corrective procedures with the Dynesys PDS system. Radiographs confirmed correction of deformity in both cases.

Conclusions/level of evidence: This technical note presents a novel indication for PDS and describes how a PDS device could be used for the correction of rotational instability after TDR.

[Figure 1]
Keywords: Total Disc Replacement, Dynesys, Posterior Dynamic Stabilization, Disc Tilt, Disc Collapse.

Figure legends.
Figure 1: Case 1 anterior-posterior standing radiographs showing the TDR device in its original position (A), the collapsed/tilted TDR device (B), and the TDR device after Dynesys correction of rotational instability (C).
Figure 2: Case 2 anterior-posterior standing radiographs showing the TDR device in its original position (A), the collapsed/tilted TDR device (B), and the TDR device after Dynesys correction of rotational instability (C).