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Lateral interbody fusion with anterior column realignment and short segment posterior constructs for sagittal deformity correction: Retrospective review of radiographic and clinical outcomes

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Background & Aim: Management of Adult Spinal Deformity (ADS) continues to be challenging for surgeons. Lateral interbody fusion with Anterior Column Realignment (ACR) is a minimally invasive technique used for sagittal deformity correction. ACR consists of releasing the anterior longitudinal ligament and placement of a hyperlordotic cage. Small cohort series with short term follow-up have demonstrated favorable results. Here, we present 2-year radiographic and clinical outcomes of ACR with short segment fixation construction in ADS patients.

Method: All ADS patients undergoing one level ACR with short segment fixation at our institution during 2013-2017 were retrospectively reviewed. Preoperative and postoperative radiographic spinopelvic parameters, VAS, ODI and complications were collected.

Result: 26 patients with mean follow up of 24 months (range 12-48 months) were included. Mean age was 67 years. Average posterior segment construct length was 4.3 levels (range 2-8). 12 patients (46%) had prior spinal fusions. 6 patients (23%) had supplemental SPOs. 20° cages were used in 21 patients (81%) and 30° in 5 patients (19%). Mean lumbar lordosis (LL) improved 24.1°, Segmental lordosis improved 17.6° and PI-LL mismatch improved from 25.7° to 10.1°. VAS improved 3.6 (51%) and ODI improved 17.3 (34%). All improvements were statistically significant. 8 patients (30.8%) suffered major complications. Reoperation rate was 15.4% at 2 years, 23% at 3 years and 24.6% at 4 years. Performing posterior decompression either before or after ACR, results in similar radiographic correction and clinical outcome scores.

Conclusion: LLIF and ACR with the use of short segment fixation constructs achieved favorable sagittal deformity correction and improvement in clinical outcome with acceptable rates of revision, particularly at 2 years postoperatively. Initial posterior decompression can be performed prior to ACR with equivalent outcomes. The use of short segment fixation constructs with ACR for sagittal deformity correction may be considered to reduce perioperative morbidity and cost.

Biography

Dr. Allen has extensive experience and expertise in complex adult reconstruction procedures for deformity/scoliosis and tumors. He specializes in complex disorders of the upper cervical spine, including tumors and degenerative or post-traumatic conditions. He also performs minimally invasive surgical procedures for vertebral fractures, as well as XLIF or DLIF, which are lateral minimally invasive approaches for anterior lumbar interbody fusions for degenerative conditions, scoliosis and trauma. He has contributed to numerous peer-reviewed books and medical journals. He recently completed a book chapter for the American Academy of Orthopedic Surgeons (AAOS) regarding minimally invasive treatment of vertebral fractures via kyphoplasty and vertebroplasty.

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