METHODS: All patients with standing whole spine radiographs were included. Any patients with thoracic spine operation were excluded. Thirty-seven patients (56% of total patients) had preoperative global sagittal imbalance >5cm. Twenty-four patients (36% of total patients) had preoperative lumbar scoliosis. Five patients (8% of total patients) had segmental kyphosis preoperatively. The optimal sagittal balance was defined as the distance from C7 plumb to superior posterior end plate of S1 2.0 cm or less.

RESULTS: The preoperative lumbar lordosis angle of 32°±19.5° between T12 and S1 increased to 50°±15.5° at postoperative 6 weeks, and then to 48°±16.0° at final follow-up. The preoperative thoracic sagittal Cobb angle of 27°±17.7° between T5 and T12 increased to 37°±16.7° at final follow-up (Average; 10°±10.8° increase). Factors such as preoperative sagittal imbalance (p=0.34), fusion to L5 or S1 (p=0.98), and uppermost instrumented vertebrae (T9/10 vs. T11/12 vs. L1/2; p=0.29) did not demonstrate any significant differences to regional sagittal alignment. The optimal sagittal balance group demonstrated the larger average angle differences between lumbar lordosis and thoracic kyphosis (Lumbar lordosis minus thoracic kyphosis) as of 20°±13.5° (sagittal imbalance group; −3°±18.0°. p<0.0001), larger average lumbar lordosis angle of −51°±14.8° (sagittal imbalance group; −38°±19.8°. p<0.0001), and smaller average thoracic kyphosis angle of 30°±14.5° (sagittal imbalance group; 36°±18.3°. p=0.023). The more positive sagittal global balance, the smaller differences between lumbar lordosis and thoracic kyphosis (Lumbar lordosis minus thoracic kyphosis, r=0.557 and p<0.0001).

CONCLUSIONS: The average increase of thoracic kyphosis following adult long lumbar/lumbosacral instrumentation and fusions to S1 until final follow-up was 10°. The ideal average angle differences between lumbar lordosis (T12-S1) and thoracic kyphosis (T5-T12) for optimal sagittal balance was 20°. Thus, the angle of lumbar lordosis during operation should be at least 30° larger than that of thoracic kyphosis for optimal sagittal balance at final follow-up.

DISCLOSURES: No disclosures.

CONFLICT OF INTEREST: No conflicts.

doi: 10.1016/j.spinee.2005.05.317

P104. A long-term clinical outcome analysis of minimally invasive cervical foraminotomy for the treatment of cervical radiculopathy

Larry Khoo, MD1, Andrew Cunnestra, MD, PhD2, Langston Holly, MD3, Arya Shemie, MD4, Jeff Wang, MD5, Richard Fessler, MD, PhD6, 1University of California, Los Angeles, CA, USA; 2Rush-Presbyterian-St. Luke’s Medical Center, Chicago, IL, USA

BACKGROUND CONTEXT: Published series of minimally invasive cervical foraminotomy (MICF) have shown excellent short-term relief of cervical radiculopathy (85-98%) with minimal surgical morbidity and blood loss. As reports of this technique have been relatively recent, long-term clinical series documenting the stability of these early results over time is the first reported long-term follow-up of MICF patients.

PURPOSE: This study examines the long-term clinical outcomes of MICF patients requiring additional cervical spinal surgery.

STUDY DESIGN/SETTING: Postoperative retrospective analysis of cervical radiculopathy patients over a 4-year period.

PATIENT SAMPLE: N=73.

OUTCOME MEASURES: Clinical records, phone call surveys, repeat operative records.

METHODS: We conducted a multi-center retrospective chart review of 73 patients who had a MICF. Clinical outcome measures were assessed from clinic records, new operative records, and phone surveys were done to assess results.

RESULTS: Initially at 3 months, 96% reported relief of radicular pain compared with preop. With regards to cervical radiculopathy, 15 had recurrent symptoms with onset in 3% at 1 year, 10% at 2 years, 13% at 3 years, and 17% at 40 months. Of these, 8 had symptoms attributable to the same radicular pattern as preop. Recurrent disc herniations were noted in only 2 of the 15 cases with progressive osteophytes or foraminal narrowing being the most common MRI finding. Of the remaining 7 with symptoms at other levels, 6 had evidence of radiographic abnormality preoperatively at that level. Whereas patients selected for MICF had minimal preoperative neck pain, significant neck pain was subsequently seen in 8 patients with symptoms in 2% at 1 year, 5% at 2 years, 9% at 3 years, and 11% at 40 months. Overall, 15 patients (20%) of these 23 symptomatic patients underwent an additional cervical surgery after MICF. 4% of patients underwent a repeat MICF at the same level as before at an average of 12 mos postoperatively with a positive response in all 3 cases. An additional 2 patients had significant improvements in VAS and Oswestry scores for both neck and arm pain, and Oswestry disability questionnaires. The follow-up was up to 24 months postoperatively.

CONCLUSIONS: Our long-term results suggest that cervical disc replacement is a viable alternative for preservation of motion at affected vertebral levels without compromising clinical outcomes, and with the additional upside of possible prevention of adjacent segment degeneration. This is one of the first clinical trials in the US for this prosthetic cervical disc. Longer term safety and efficacy studies are in progress.


CONFLICT OF INTEREST: Author (RBD) Grant Research Support: Synthes.

doi: 10.1016/j.spinee.2005.05.318