Trends In Utilization For Thoracic And Lumbar Three-Column Versus Posterior Column Osteotomy In The Medicare Population (2008-2018)

Poster ID # 38547

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Disclosures: none.
Introduction

Three-column osteotomy (TCO) and posterior column osteotomy (PCO) can improve sagittal alignment in the elderly. TCO can correct sagittal misalignment but may be associated with higher morbidity than more modest techniques. It has been suggested that full correction may be unnecessary in the elderly, and alternative techniques can be employed to improve sagittal alignment. Trends in frequency in the elderly (Medicare) population can illustrate the direction of current practices.
Methods

A Medicare database was queried from 2008-2018 for frequency of CPT codes 22206 (TCO thoracic, 1-level), 22207 (TCO lumbar, 1-level), and 22208 (TCO, additional level). 22212 (PCO thoracic, 1-level), 22214 (PCO lumbar, 1-level) and 22216 (PCO, additional level) were evaluated for comparison.
Results

For 1-level thoracic TCO, utilization increased from 71 in 2008 to 219 in 2018 (+208%). The largest annual increases occurred in 2010 (+39%) and 2014 (+26%). From 2015 onward the annual change in utilization ranged from -7% to +2%. For 1-level lumbar TCO, utilization increased from 248 in 2008 to 817 in 2018 (+229%). The highest frequency was in 2016 (828), and the largest annual increases occurred in 2009 (+45%) and 2010 (+44%). For additional level TCO, utilization was 167 in 2008, peaked at 428 in 2012, and declined to 214 in 2018. For single-level thoracic and lumbar PCO, utilization increased steadily from 368 in 2008 to 1,403 in 2018 (+281%) and from 1,842 in 2008 to 6,698 in 2018 (+264%), respectively. For additional level PCO, utilization increased steadily from 2,734 in 2008 to 11,186 in 2018 (+309%).

![Figure 1. Three-column osteotomy, frequency by CPT code for 1-level lumbar, 1-level thoracic, and additional level, 2008-2018.](image1)

![Figure 2. Posterior/posterolateral osteotomy, frequency by CPT code for 1-level lumbar, 1-level thoracic, and additional level, 2008-2018.](image2)
Conclusion

In the Medicare population, utilization of 1-level thoracic and lumbar TCO has risen since 2008 but plateaued since 2014. Utilization of additional level TCO rose between 2008 and 2012 but declined since then. Utilization of 1-level thoracic, 1-level lumbar, and additional level PCO all increased steadily since 2008. The decline in additional level TCO since 2012 against continued rise in additional level PCO may reflect recent strategies to minimize morbidity, alternative techniques for sagittal re-alignment, or trends toward partial sagittal correction in the elderly.
Summary Points

- Three-Column Osteotomy (TCO) has risen in frequency in the Medicare population since 2008 but plateaued since 2012, while additional level TCO has declined since 2012.
- Posterior-Column Osteotomy (PCO), and especially additional level PCO, continues to rise dramatically since 2008 in the Medicare population.
- Increased morbidity of TCO, the rise of alternative surgical techniques for deformity correction, and clinically satisfactory results with partial sagittal alignment correction in the elderly may explain these trends.