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**Coding Committee Update**

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**Posterior Column Osteotomies**

Posterior spinal osteotomy was initially described in an ankylosed spinal column in 1945 by Smith-Petersen et al. 1 Prior to 2008, the traditional CPT codes used to describe posterior spinal osteotomies were: 22210(Cervical), 22212(Thoracic), 22214(Lumbar), and 22216(additional level).  These codes were used to describe any type of posterior spinal osteotomy whether performing a posterior column osteotomy alone or a three-column osteotomy.

In 2008, new CPT codes for three column osteotomies, i.e. pedicle subtraction osteotomy (PSO), 22206(Thoracic), 22207(Lumbar) and 22208(additional level) were added to reflect the additional work involved when performing a three-column osteotomy compared to a single column posterior osteotomy. The additional work involved in a three column osteotomy includes the removal of the entire lamina of the involved vertebrae, ligamentum flavum and partial laminae of the adjacent intervertebral interspaces, resection of the both pedicles, partial resection of the lateral vertebral wall, as well as, the posterior vertebral wall anterior to the cauda equina completely exposing the cauda equina and bilateral nerve roots. 2 The additional work and risk is reflected in a higher RVU value assigned to the three column osteotomy codes.  RVU values equate to the surgical procedure, length of surgery, preoperative discussion, risk involved, postoperative inpatient hospital care and the 90-day global postoperative period.  Prior to the development of the newer codes being formulated, a surgeon performing a L3 PSO would have had to code his/her procedure as an unlisted code or use the posterior spinal osteotomy code twice (22214 and 22216) to reflect the posterior spinal column resection above and below the pedicle, and add a 22 modifier to describe the additional work to perform a three column osteotomy.  Currently, a single 22207 would be used for a L3 PSO.

Despite clarifying and differentiating a PSO from a posterior column osteotomy, there still remains a misunderstanding with the standard posterior spinal column osteotomy.  Posterior column osteotomy CPT codes, 22210(Thoracic), 22212 (Thoracic), 22214 (Lumbar), and 22216(additional level) are still used for single column posterior osteotomies. The CPT book describes these codes as being used when a portion(s) of a vertebral segment is cut and removed in preparation for re-aligning the spine as part of a spinal deformity correction. A vertebral segment is described as a complete vertebral bone and its associated articular processes. But, there is more to an osteotomy than simply removing a “portion(s) of a vertebral segment”.

A Smith-Petersen type of osteotomy is described as an “opening wedge osteotomy ”. The procedure and its corresponding code is clearly meant to describe a procedure that develops a gap in the posterior spinal column to allow closure enough to shorten the posterior spinal column and lengthen the anterior spinal column through its disc. Confusion comes from a surgeon performing facetectomies of the inferior facets alone and compressing across the pedicle screws to obtain correction of a spinal deformity. Facetectomies using an osteotome, debridement or burring of the facet joints are considered to be a standard portion of a posterior arthrodesis but it is not consider to be an osteotomy. An osteotomy requires a significant more amount of work then simply removing the inferior facet including the removal of the ligamentum flavum and superior facets bilaterally.

The standard Smith-Petersen Osteotomy (SPO) is most easily understood when the spinal deformity surgeon is performing a posterior column osteotomy in a previously fused or ankylosed spine when the anterior spinal column has not been fused. In this case, the posterior aspect of the spinal column has been fused and must be cut in order to mobilize the spine.  A trough is cut through the fusion mass typically starting from the central aspect of the spinal canal and removing bone laterally until a complete gap has been created across the previously fused spine. Ponte described a posterior spinal column osteotomy for thoracic kyphotic deformities. 3 Ponte osteotomies are considered a typical posterior spinal column osteotomy similar to a SPO in the non-fused spine.  Ponte described his osteotomy as removing the ligamentum flavum beginning from the midline and proceeding laterally to the facet joints and “continued laterally through the superior articular process of the inferior vertebrae” leaving a gap in the posterior column exposing the neuroforamen bilaterally 3.

Further confusion comes when both decompression and an osteotomy are necessary at the same level. Anatomically, a certain amount of decompression is required when performing an osteotomy and this is reflected within the osteotomy code - the laminectomy is an integral part of a posterior column osteotomy and it is necessary to protect the nerves while correcting the deformity.  Thus, a surgeon cannot code for both a decompressive laminectomy and an osteotomy at the same site. If laminectomies are performed at other vertebral segments or levels they are separately reportable requiring a -59  modifier.

Today, Smith-Petersen and Ponte osteotomies are synonymous and used interchangeably. They are usually used to correct a deformity across an unfused interspace/disc space. It is reported to provide 10-15 degrees of correction per interspace/osteotomy performed.

Thus, in coding an adult scoliosis spinal fusion case from T11-S1 with bilateral iliac screws where inferior facetectomies were performed, the proper codes used would be:

1. 22802 (multiple level posterior arthrodesis for deformity, 7-12 segments),
2. 22843 (posterior segmental spinal instrumentation, 7-12 vertebrae, 8 vertebrae),
3. 22848 (Instrumentation into the ilium),
4. 20937 (posterior iliac crest bone graft via a separate fascial incision).

Whereas, a degenerative adult hypolordotic scoliosis with limited flexibility with a planned posterior fusion from T11-S1 with iliac screws that requires multiple posterior osteotomies from L1-L5 to obtain lordosis is coded with the posterior osteotomy codes. The posterior column osteotomies, Smith-Petersen or Ponte types, require the complete removal of the intervening ligamentum flavum, and both the inferior and superior facets bilaterally at each osteotomy site. This case example would be coded:

1. 22214 (osteotomy of spine, Lumbar), L1-2,
2. 22216 x3 (Additional osteotomy level) L2-3, L3-4, L4-5,
3. 22802 (multiple level posterior arthrodesis for deformity, 7-12 segments, T11-S1 (7 segments),
4. 22843 (posterior segmental spinal instrumentation, 7-12 vertebrae, 8 vertebrae),
5. 22848 - (Instrumentation into the ilium),
6. 20936- (local bone remove during the same incision from the posterior elements including the spinous processes and bone remaining following the posterior osteotomies).
7. **Smith-Petersen MN, Larson CB, Aufranc OE.** Osteotomy of the spine for correction of flexion deformity in rheumatoid arthritis. J Bone Joint Surg,1945;27: 1-11.
8. **Bridwell KH, Lewis SJ, Lenke LG, Baldus C, Blanke K.** Pedicle subtraction osteotomy for the treatment of fixed sagittal imbalance. JBJS A 2003: 85(3):454-463.
9. **Geck MJ, Macagno A, Ponte A, Shufflebarger HL.** The Ponte Procedure: Posterior only treatment of Scheuermann’s kyphosis using segmental posterior shortening and pedicle screw instrumentation. J Spin Dis 2007: 20: 586-593.

**Chair:** Christopher J. DeWald, MD **Committee:** R. Dale Blasier, MD; Benjamin R. Cohen, MME; Michael P. Chapman, MD; Mathew D Hepler, MD; Nigel J. Price, MD; Shay Bess, MD; Richard J. Haynes, MD