Bibliographic Cite	Literature Type	Level of Evidence	Purpose	Population	Intervention and Outcome Measures	Results/ Recommendations	Study Limitiations
Rhee J, Chapman J, Norvell D, et al. Radiological determination of postoperative cervical fusion. Spine. 2015; 40(13):974-991.	Systematic review	moderate	To determine best criteria for radiological determination of postoperative subaxial cervical fusion to be applied to current clinical practice and ongoing future research assessing fusion to standardize assessment and improve comparability.	Included studies assessed C2 to C7 via anterior or posterior approach, at 12 weeks or more postoperative, with any graft or implant. An initial 50 relevant citations were identified. A total of 12 studies met all criteria for inclusion.	Overall body of evidence with respect to 6 posited key questions was determined using Grading of Recommendations Assessment, Development and Evaluation and Agency for Healthcare Research and Quality precepts.	Of plain radiographical modalities, there is moderate evidence that the interspinous process motion method (<1 mm) is more accurate than the Cobb angle method for assessing anterior cervical fusion. Of the advanced imaging modalities, there is moderate evidence that CT is more accurate and reliable than MRI in assessing anterior cervical fusion. There is insufficient evidence regarding the optimal modality and criteria for assessing posterior cervical fusions and insufficient evidence to support a single time point after surgery as being optimal for determining fusion, although some evidence suggest that reliability of radiography and CT improves with increasing time postoperatively.	Per the authors, a major limitation is the lack of an absolute reference standard. In reporting fusion, it would seem that greater attention to identifying the type of grafts used, as well as a more consistent application of methodology would allow for improved comparability of results across studies.
Tetreault LA, Dettori JR, Wilson JR, Singh A, Nouri A, Fehlings MG, Brodt ED, Jacobs WB. Systematic review of magnetic resonance imaging haracteristics that affect treatment decision making and predict clinical outcome in patients with cervical spondylotic myelopathy. Spine (Phila Pa 1976). 2013 Oct 15;38(22 Suppl 1):S89-110.	Systematic review	moderate	To conduct a thorough systematic review to address 3 key questions. In adult patients diagnosed with CSM, are there characteristics of the MRI that 1. can be used to direct treatment (surgery or conservative care) to improve outcomes? 2. predict postsurgical patient outcome? 3. predict adverse events?	Patients with cervical myelopathy secondary to spondylosis, disc herniation, OPLL, congenital stenosis, and subluxation (degenerative cervical myelopathy) (KQs 1, 2, 3) Patients with thoracic spinal cord injury, thoracic myelopathy, tumor, infection, radiculopathy, or other nondegenerative myelopathy (KQs 1, 2, 3) Age range - 45 to 70	A systematic search was conducted using PubMed and the Cochrane Collaboration Library for articles published between January 1, 1956, and November 20, 2012. The overall body of evidence with respect to each clinical question was determined on the basis of precepts outlined by the Grading of Recommendation Assessment, Development and Evaluation Working Group and recommendations made by the Agency for Healthcare Research and Quality. Only studies on humans, written in English and containing abstracts were considered for inclusion, but no limits were placed on the search. We limited study selection to those that used multivariate analyses that controlled for at least 2 of the following 3 covariates: age, duration of symptoms, and severity of myelopathy. We also limited our search to cohort studies with at least 10 patients in each comparison group. Case reports, meeting abstracts/proceedings, white papers, and editorials were also excluded.	On the basis of this review and on low-quality evidence, The authors have identified 3 important negative predictors of surgical outcome: number of high SI segments on T2WI, combined T1/T2 signal change, and SI ratio. Evidence-Based Clinical Recommendations. Recommendation 1. The authors suggest that when clinically feasible, surgeons rely on MRI to confi rm the diagnosis of CSM and rely on clinical history and examination to determine progression and severity of disease. Overall Strength of Evidence. Low Strength of Recommendation. Weak Recommendation 2. T2 signal may be a useful prognostic indicator when used in combination with low SI change on T1WI, or as a ratio comparing compressed with noncompressed segments, or as a ratio of T2 compared with T1WI. The authors suggest that if surgeons use MRI signal intensity to estimate the risk of a poor outcome after surgery, they use high SI change on T2WI in combination with other signal intensity parameters, and not in isolation.	Incompletness and inconsistency of data (example poor reporting of odds ratio) Lack of evidence in the form of high-quality prospective studies using validated outcome measures. The scale of SI changes has not been universally quantified or agreed upon.
Vedantam AR, V. Does the type of T2-weighted hyperintensity influence surgical outcome in patients with cervical spondylotic myelopathy? A review. Eur Spine J. 2013;22(1):96-106.	Systematic review	moderate	Review of the literature on different classifications of T2-weighted (T2W) increased signal intensity (ISI) on preoperative magnetic resonance (MR) images of patients with cervical spondylotic myelopathy (CSM).	Twenty-two studies fulfilled the search criteria. There were 11 prospective studies and a total of 1,508 patients were studied. In all studies, the majority of the patients were males (n = 1,100, 72.9 %). The mean age based on 20 studies where the mean agewas provided was 57.4 ± 1.0 years.	The authors searched the databases of PubMed and Cochrane for articles published (electronically or in print) until October 2011 with the following keywords—'magnetic resonance imaging and cervical spondylotic myelopathy' (283 results) and 'magnetic resonance imaging and cervical spine surgery' (3,030 results). All English language articles, which used a classification of T2W ISI in CSM patients to predict outcome after decompressive surgery, were selected for review. The modified Japanese Orthopedic Association score (JOA) was the commonest scale used to record the neurological status, while the JOA recovery rate was the commonest outcome measure used.	Five reports concluded that multisegmental T2W ISI was associated with worse functional outcomes. In six studies that used the qualitative classification (Q1–3) of T2W ISI, the sharp, intense, well-circumscribed ISI was associated with poorer functional status at follow-up. It is difficult to identify which type of ISI classification is best able to predict surgical outcomes in patients with CSM. Identifying the type of T2W ISI on preoperative MR imaging is gaining importance in terms of predicting surgical outcome in patients with CSM. Methodological variations in previous studies with regard to ISI classifications, surgical procedures, outcome measures, follow-up intervals and statistical analyses meant that it was difficult to compare studies and results. Preoperative MR images that show multisegmental T2W ISI or 'sharp' T2W ISI indicate a poorer prognosis in patients with CSM (Class II evidence). The regression of T2W ISI postoperatively correlates with better functional outcomes (Class II).	Inconsistency of index test interpretation prevents meta - analysis of data unexplained heterogeneity due to limited subgroup analysis / multivariate control of potential clinical confounders