

Evidence Discussion (CMM-602: Cervical Total Disc Arthroplasty)

Risks of cervical disc arthroplasty include but are not limited to infection, dysphagia, dysphonia, bleeding, recurrent laryngeal nerve injury, esophageal or tracheal injury, dural tear, hematoma, nerve root injury, spinal cord injury, paralysis and death. [1, 2] Complications related to the implant (e.g. migration, subsidence) are also possible. Indications for surgery include patients with underlying cervical degenerative disc disease with the clinical presentation of cervical radiculopathy and/or myelopathy. [1, 3] Given the possibility of significant surgical complications, proper patient selection is crucial to minimize the risk benefit ratio. Supportive subjective symptoms and physical exam findings should be present and concordant with imaging findings as abnormal advanced imaging findings are not uncommon in asymptomatic patients. [4-6]

Multiple studies have shown that the vast majority of patients with cervical radiculopathy will improve with a 4-6 week course of non-operative treatment. [7-9]. At least 6 weeks of non-operative management is also noted as a recommendation in the North American Spine Society (NASS) Coverage Policy Recommendations: *Cervical Artificial Disc Replacement* (Revised 2024) [3]. However, for patients with myelopathy or other urgent/emergent conditions (e.g. progressive neurologic deficit), a trial of non-operative treatment would not be necessary.

Contraindications to cervical disc arthroplasty as noted in the North American Spine Society (NASS) Coverage Policy Recommendations: *Cervical Artificial Disc Replacement* (Revised 2024) include infection, osteoporosis/osteopenia, instability, allergy or sensitivity to implant materials, severe spondylosis, severe facet joint arthropathy, rheumatoid arthritis, ankylosing spondylitis, deformity, ossification of the posterior longitudinal ligament and malignancy. [3]

Jackson et al. noted higher rates of postoperative complications and worse functional outcomes in patients with psychological disorders undergoing spinal surgery. [10] It was concluded that proper identification and treatment of these conditions prior to surgery may significantly improve many outcome measures in this population.

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