Return to Play After Cervical Disc Surgery

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KEYWORDS

• Cervical disc surgery • Anterior cervical discectomy and fusion • Return to play
• Spinal cord injury • Spinal cord contusion • Spinal stenosis • Cervical disc herniation
• Cervical spondylosis

KEY POINTS

- Criteria for return to play after cervical disc surgery are unclear, with limited literature consisting mostly of case reports and small retrospective series.
- There is strong consensus in the literature, despite a lack of evidence-based data, that athletes after single-level anterior cervical discectomy and fusion (ACDF) may safely return to collision and high-velocity sports.
- Controversy remains regarding return to play after 2- and 3-level ACDF constructs, with most studies recommending relative contraindication for return to collision and high-velocity sports.
- Return to play after other surgical treatment options, such as cervical disc arthroplasty, posterior cervical laminoforaminotomy, and posterior cervical laminaplasty, remains unclear.
- Decision making for return to play remains a challenge and continues to depend on the experience and good judgment of the treating surgeon.

INTRODUCTION

Criteria for return to sports and athletic activities after cervical spine surgery are unclear, and remain a challenging topic given the potential catastrophic consequences. Cervical disc disease can impact significantly the careers of professional or elite

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athletes, particularly those involved in collision or high-velocity sports.[1,2] Although most athletes with acute cervical disc herniation or degenerative disc disease can be treated nonoperatively,[3] those with persistent or progressive symptoms may require operative intervention. The spine surgeon may experience substantial pressure from the patient, family members, and coaching and athletic staff to provide recommendations on the timing, prognosis, and potential recovery after cervical disc surgery.[4] Unfortunately, there is limited literature, consisting mostly of case reports and small retrospective series, regarding the outcomes and optimal return to play criteria after cervical disc surgery. Therefore, recommendations are often arbitrary, based on the good judgment and the experience of the treating surgeon.[4] Although inadequate rehabilitation or imprudent return to play may cause suboptimal outcomes after some orthopedic procedures, the most feared and serious complication after cervical spine surgery is paralysis. Even in athletes without previous surgery, catastrophic spinal cord injury (SCI) from cervical spine fracture or injury remains an inherent risk during collision and high-velocity sports,[4,5] and whether this risk is increased after cervical disc surgery is unknown. Given the lack of evidence-based recommendations for return to play in athletes after cervical disc surgery, this review provides a summary of the reported outcomes and available recommendations. We set out to review the available return to play criteria and guidelines comprehensively, to allow the spine surgeon and athlete to assess the potential risks and make the most informed decision in this unique patient population.

EPIDEMIOLOGY OF CERVICAL SPONDYLOSIS IN THE GENERAL POPULATION

Cervical spondylosis is a common entity that increases with age, and is a common cause of clinic visits, health care resource use, and reduction in quality of life.[6] Up to 10% of the general population will experience neck pain at any given time,[7] and a retrospective population-based review found the average annual incidence of cervical radiculopathy per 100,000 people to be 107.3 for men and 63.5 for women.[3] Cervical disc protrusion was responsible for radiculopathy in 21.9% of these patients, whereas 68.4% was attributed to spondylosis, disc protrusion, or both.[3]

Autopsy studies have shown that cervical disc degeneration has a prevalence of 10% in the third decade of life and approaches 96% by the eighth decade.[8] Similarly, a landmark study by Boden and colleagues[9] found that MRI of asymptomatic individuals demonstrated degenerative changes in 25% of patients younger than 40 years of age and 60% of patients older than 40 years. Other studies have demonstrated that persons older than age 60 have degenerative changes on lateral cervical radiographs in more than 60% to 75% of persons and MRI changes in more than 85% of asymptomatic individuals.[6,10,11] These studies of asymptomatic patients with radiographic or MRI findings of cervical spondylosis demonstrate the relatively poor correlation between the presence of imaging findings and clinical manifestations of foraminal or central stenosis.

EPIDEMIOLOGY OF CERVICAL SPONDYLOSIS IN ATHLETES

Although cervical spondylosis is common in the general population, it follows an age-related curve and is thus a less frequent problem in the younger athletic population.[12] However, sports participation exposes the cervical spine in young athletes to theoretic risk factors not seen in the general population, and specifically long-term participation in collision sports seems to increase the risk of radiographic cervical spondylosis.[1,6,13–16] Cumulative effects of repetitive, high-intensity loading on the spinal column, as occurs during some collision sports, may result in the propagation