



Original Article

Interaction of demographic factors with the results of the surgery for degenerative disease of the cervical spine: a retrospective evaluation[☆]



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ABSTRACT

Objective: Degenerative disease of the cervical spine is a frequent source of intermittent neck pain, where the predominant symptom is axial neck pain. The indications for surgical treatment are reserved for the cases where the conservative treatment has not relieved the symptoms or the patient presents progressive neurological impairment. The objective of this study was to evaluate the prognostic factors involved in patients submitted to surgical treatment of the cervical spine.

Methods: The study analyzed data from patients submitted to cervical spine surgery between July 2011 and November 2015 ($n = 58$). The evaluated data included smoking habits, hypertension, diabetes, overweight, surgical technique, and number of levels of fusion. The primary outcome was defined as pain and the secondary outcomes were quality of life and disability. **Results:** A statistically significant difference was found between baseline and the 12-month post-operative results regarding pain in favor of non-hypertensive patients ($p = 0.009$) and discectomy plus instrumentation ($p = 0.004$). There was also significant difference between the results of neck disability in favor of non-hypertensive patients ($p = 0.028$) and patients with body mass index lower than 25 kg/m^2 ($p = 0.005$). There was no significant interaction between any analyzed data and the quality of life score results.

Conclusions: Non-hypertensive patients, those with body mass index lower than 25 kg/m^2 , and those submitted to discectomy combined with arthrodesis of the cervical spine are the most benefited by cervical degenerative disease surgery.

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Interação dos dados demográficos com os resultados da cirurgia da doença degenerativa da coluna cervical: uma avaliação retrospectiva

R E S U M O

Palavras-chave:

Vértebras cervicais/cirurgia
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Objetivo: A doença degenerativa da coluna cervical é uma fonte frequente de dor cervical intermitente, na qual os sintomas predominantes são dor axial cervical. As indicações para cirurgia são reservadas para os casos de falha do tratamento conservador ou com sintomas neurológicos progressivos. O objetivo deste estudo foi avaliar os fatores prognósticos dos pacientes submetidos ao tratamento cirúrgico da coluna cervical.

Métodos: O estudo avaliou os pacientes submetidos à cirurgia da coluna cervical entre julho de 2011 e novembro de 2015 (n = 58). As variáveis de comparação avaliadas foram tabagismo, hipertensão, diabetes, sobrepeso, técnica cirúrgica aplicada e número de níveis de artrodese. O desfecho primário foi definido como dor e os desfechos secundários foram qualidade de vida e disfunção.

Resultados: Encontramos diferença estatisticamente significativa entre os escores de dor de base e aos 12 meses após a cirurgia, favorável aos pacientes sem hipertensão arterial sistêmica (p=0,009) e aos submetidos à discectomia com instrumentação (p=0,004). Também houve diferença estatisticamente significativa na avaliação da disfunção da coluna cervical: o resultado foi mais favorável para os pacientes sem diagnóstico prévio de hipertensão (p=0,028) e para os pacientes com IMC menor do que 25 kg/m² (p=0,005). Não se observou evidência de interação significativa entre os dados avaliados e os resultados do questionário de qualidade de vida.

Conclusões: Os pacientes não hipertensos, com índice de massa corpórea menor do que 25 kg/cm² e submetidos à artrodese combinada à discectomia, são os mais beneficiados com o procedimento cirúrgico da doença degenerativa da coluna cervical.

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Introduction

The degenerative changes of the spine are anatomical adjustments to the continuous stress of compression and distraction on the spine structures.¹⁻³ During this adaptation process, some tissue changes are remarkable, such as calcification of ligaments and formation of osteophytes. In the cervical spine, osteophytes formed in the end plates and joint faces represent the bone elements that cause compression, whereas disc protrusion, yellow ligament or hypertrophic joint capsules may aggravate or initiate the compression by soft tissues.³ The prevalence of patients with a degenerative disc disease is uncertain, as in an asymptomatic population the presence of radiographic signs of degeneration of the cervical spine can reach 80%.⁴⁻⁶ When symptoms are present, its progression to more severe cases is highly variable and poorly defined.⁷

Degenerative diseases of the cervical spine are frequent causes of intermittent cervical pain in adult and elderly patients, with the predominant symptom being axial cervical pain, which originates from the degeneration of the discs, vertebral plateaus, facet joints or the growth of osteophytes.¹⁻³ Frequently, there is an association with neurological symptoms. Magnetic resonance imaging is indicated for these patients.^{2,8} Most cases of degenerative cervical spine disease, or cervical radiculopathy respond to conservative treatment, which consists of postural advice, changes in daily life activities, cervical immobilizations, isometric exercises and

medication.^{1,2,8} Indications for surgical treatment are reserved for cases in which pain has not been solved with conservative treatment, or when there is progression of neurological deficits.^{1,2,8,9}

Depending on the disease presented by the patient, two principles are sought after through surgical treatment: decompression and fusion (also known as arthrodesis).^{1,2,7,10} Decompression is indicated in cases in which degenerative changes cause direct neural compression. The fusion, on the other hand, is indicated in cases that present instability or loss of mechanical integrity of the cervical spine. This procedure may also have beneficial effects on compressive symptoms, through appropriate distraction applied in the segment, especially in cases where there is foraminal stenosis.^{1,10}

There are questionnaires and scales for the evaluation of pain, dysfunction and quality of life, specific and non-specific, which can be used to evaluate the effectiveness of the treatment. One study evaluated the Visual Analog Scale for Pain (VAS), the Neck Disability Index (NDI), the 12-item Short-Form Health Survey (SF-12) and the EuroQol Health Survey (EQ-5D) for the evaluation of 61 patients with cervical radiculopathy submitted to discectomy and anterior arthrodesis.¹¹ In this study, Parker et al. defined the minimum variations necessary for an important clinical difference between the evaluations.¹¹

Regarding the selection of the appropriate patient for a certain surgical procedure, some predictors of good and poor outcomes are described, including: age, presence of comorbidities, results prior to indication of surgery on quality of

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