

Occurrence of discal and non-discal changes after sequestrectomy alone versus sequestrectomy and implantation of an annulus closure device

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Abstract

Sequestrectomy alone represents a procedure for the treatment of lumbar disc herniation. For selected cases, an annulus closure device (ACD) can be implanted which may result in lower reoperation rates. However, comparative magnetic resonance imaging (MRI) changes and their clinical relevance of both procedures are unclear and have not been reported so far. Clinical and MRI data of patients after limited discectomy with ACD implantation (group ACD; N=45) and patients after sequestrectomy alone (group S; N=40) with primary lumbar disc herniation were compared retrospectively. Pain intensity on the visual analogue pain scale (VAS), Oswestry disability index (ODI) or the patient satisfaction index (PSI) were collected. Disc signal intensity, Modic type changes, endplate reactions, annular tears and reherniations were investigated using MRI before and <18 months postoperative. Morphologic changes were correlated with clinical outcome. There was no difference in VAS back, VAS leg or ODI/PSI after the operation although group S showed significantly more reherniations in MRI. The overall rate of repeated surgery at the same level was similar with a trend in favour of the ACD group (P=0.729). Significantly more patients of the ACD group experienced endplate erosions after surgery (P<0.001). Both groups experienced progression of disc signal intensity, Modic type changes, and annular tears with most MRI signs being without clinical relevance. ACD implantation is associated with a significantly lower reherniation rate in MRI but showed a significantly higher rate of endplate erosions. The structural changes do not appear to be clinically relevant.

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Reducing the incidence of reherniation and reoperation in skeletally mature patients with radiculopathy (with or without back pain) attributed to a posterior or posterolateral herniation, and confirmed by history, physical examination and imaging studies which demonstrate neural compression using MRI to treat a large annular defect (between 4-6 mm tall and between 6-10 mm wide) following a primary discectomy procedure (excision of herniated intervertebral disc) at a single level between L4 and S1.

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