

Degenerative changes on adjacent segments levels (ASD) with and without interbody fusion – 10 year MRI follow up on a RCT.

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Kristian Høy, Lin Ding, Thomas Borbjerg Andersen, Niels E Gund

Department of Orthopedics, Spine Section , Aarhus University Hospital, Denmark; Department of Orthopedics, The Rizhao Hospital of traditional Chinese medicine, Rizhao, China ; Spine Unit, Department of Orthopedics, University Hospital of Copenhagen, Rigshospitalet, Denmark; Department of Radiology, Aarhus University Hospital, Denmark

Background: Due to the high number of spinal procedures, performed worldwide adjacent degenerative disease (ASD) has become a new challenge. Whether ASD is a matter of normal degenerative development in the disc over time or a result of increased stiffness and stress, is still debated. TLIF is the most widely used interbody method. Interbody fusion is thought to reduce the degenerative changes in the free disc due to better sagittal balance and restoration of lumbar lordosis.

Purpose / Aim of Study: Comparison of degenerative MR findings in a RCT, 10 years after surgery.

Materials and Methods: 100 pat. included in a prospective RCT between interbody fusion (TLIF) and Instrumented posterolateral fusion (PLF) was offered a MRI at long-term follow up. MRIs were classified according to Modic, Pfirrmanns, Schizas, Fardon and Milette in order to estimate degeneration of the discs above and below fusion. Grading was done by two independent observers without any contact to the patient. In patients who underwent secondary surgery, the MR prior to that was used.

Findings / Results: 79 pat. were available for MR. The groups were equal regarding sex, age, diagnosis and number of operated levels. The follow up length was 9.6 years. The Modic change found at the first upper disc was none in (85% TLIF/68% PLF), if present mostly grade 2 Modic change (12% TLIF/26% PLF) was found. There were no significant difference between the two groups $p=0.274$. Most patients did not show any sign of treatment needs regarding spinal stenosis according to Schizas A&B, 92% (TLIF)/92% (PLF) only 8 % (TLIF)/8% (PLF) had type C and D at first upper level. No difference between groups could be detected $p = 0.930$. Pfirrmann grading at the first proximal level was type 1: 0%(TLIF)/0%(PLF), type 2: 17%(TLIF)/16%(PLF), type 3: 54%(TLIF)/43%(PLF), type 4: 27%(TLIF)/35%(PLF), type 5: 2%(TLIF)/5% (PLF). No difference between groups $p = 0.952$. Degenerative disc protrusion posterior according to Fardon and Milette was none: 61%(TLIF)/63%(PLF), and bulge: 39% (TLIF)/32%(PLF), protusion: 0%(TLIF)/5% (PLF), extrusion 0%(TLIF)/0%(PLF), $p= =0.289$.

Conclusions: In a RCT, the use of interbody fusion (TLIF), do not reduce degenerative changes (ASD) in MRI, in the upper or lower disc next to the fusion.