

Hip resurfacing arthroplasty in patients with osteoporosis ankylosing spondylitis

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Objective: To study the short-term results of hip resurfacing arthroplasty(HRA) in patients with Osteoporosis ankylosing spondylitis(AS) , exploring the indication and technology in this surgery.

Methods: From February 2006 to April 2010,21 patients (25 hips) with ankylosing spondylitis were treated with the total hip resurfacing arthroplasty. Among them, 19 were male, and 2 were female, with an average age of 33.5 years (range from 16~53 years). The preoperative and postoperative comparative study was conducted on pain, range of motion, correction of deformity and total function evaluation. 20 Patients were followed up for averages were conducted. The clinical results were evaluated by the Harris hip scoring system.

Results: 1 patients were lost. 20 Patients were followed up for an average period of 31.4 months (range,16 to 66 months).There were no heterotopic ossification , no femoral neck fracture, no dislocation, no infection and no revision in all patients. From preoperation to present , the mean flexion angle of hip was improved from 20°(range,0~75°) to 80°(range~35~105°) ,the mean abducting angle of hip was improved from12°(range,0~30°) to 30°(range,15~55°),and the average Harris hip score improved significantly from 32.1(2~47) to 86(46~94), 10 hips were excellent,3 hips were good,1 hip was poor.

Conclusions: The total hip resurfacing arthroplasty is an effective solution for the problems of the younger and active patients with AS, even with osteoporosis. The short-term results are satisfied. It was very significant to analysis the patients in different conditions, to choose proper strategy.

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Putative Col10a1 regulators identified by proteomic methods

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The type X collagen gene (Col10a1) is specifically expressed when chondrocytes undergo hypertrophy during endochondral bone formation. Abnormal Col10a1 expression has been associated with multiple skeletal diseases. We have recently shown that Runx2 contributes to Col10a1 expression through direct interaction with a 150 bp Col10a1 cis-enhancer that contains a tandem-repeat Runx2 site. We have also shown that this interaction is required but not sufficient for Col10a1 promoter activity, suggesting requirement of additional Col10a1 regulators. To identify these factors, we have performed in silico sequence analysis of this cis-enhancer using web-based transcription factor analysis softwares. A variety of putative transcription factors were predicted to bind this Col10a1 cis-enhancer. We have also performed yeast one-hybrid assay using the 150-bp fragment as a bait to screen a cDNA library generated from hypertrophic MCT cells. Multiple factors including Cox family members, Nedd4, and Psmb1 were obtained. Interestingly, we detected upregulated Cox2 expression in hypertrophic MCT cells compared to proliferative MCT cells, suggesting its role in Col10a1 regulation. Meanwhile, we have performed NanoLC-MS/MS experiment with the specific DNA/protein complexes formed by the short cis-enhancer and the MCT cell nuclear extract. We identified multiple factors, including EF1-alpha, Runx3, Nedd4, and some zinc finger proteins. These factors may interact with Runx2 and play a role in cell proliferation, apoptosis, and possibly, chondrocyte/osteoblast differentiation and skeletal development. Our results together suggest that multiple factors may interact with each other, or work with Runx2 to regulate Col10a1 expression and chondrocyte maturation and thus, affect skeletal development and disease progression.

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