

Finite element analysis of pelvis after modular hemipelvic endoprosthesis reconstruction

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Objectives: The aim of this study was to investigate the biomechanics of the pelvis reconstructed by modular hemipelvic prosthesis using finite element (FE) method.

Methods: A three-dimensional FE model of the postoperative pelvis was developed and inputted into the Abaqus 6.7.1. Then mesh refinement tests were performed and a force of 500 N was applied at fifth lumbar vertebra lamina terminalis along the pelvic longitudinal axis respectively to the normal pelvis and the postoperative pelvis in three positions: sitting, standing on two feet and standing on foot of affected side. Stress distribution analysis was performed between normal pelvis and postoperative pelvis at these three static positions.

Results: In the normal pelvis, stress distribution is concentrated upon the superior of the acetabulum, arcuate line, sacroiliac joint, upside of the sacrum mesion and especially superior of greater sciatic notch. In the affected side pelvis, stress distribution is concentrated upon the proximal of pubic plate, upside of acetabular cup, connection between CS-fixator and acetabular cup and the fixation between prosthesis and sacroiliac joint.

Conclusions: Stress distribution of the postoperative pelvis was similar to the normal pelvis at different static positions. Reconstructed with modular hemipelvic prosthesis obtained good biomechanical characteristics.

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Hyaluronic acid in the treatment of TMJ disorders: A systematic review of literature

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Objective: Hyaluronate acid (HA) injections are gaining a growing attention as a treatment option to manage symptoms of temporomandibular joint (TMJ) disorders, but updated evidence-based data on their effectiveness are actually lacking. The present paper aims to summarize and review systematically the clinical studies on the use of hyaluronic acid injections to treat TMJ disorders performed over the last decade.

Materials and methods: A systematic search in the National Library of Medicine's PubMed Database was performed by means of a combined MeSH and words terms to identify all peer-reviewed papers published in the English literature dealing with the hyaluronic acid infiltration in patients affected by TMJ disorders. The selected papers were assessed according to a structured reading of articles format, which provided that the study design was methodologically evaluated in relation to four main issues, viz., population, intervention, comparison, and outcome.

Results: Nineteen (N=19) papers were selected for inclusion in the review, twelve (N=12) of which dealt with the use of hylauronic acid in TMJ disc displacements and seven (N=7) of which dealt with inflammatory-degenerative disorders. Only nine groups of researchers were involved in the investigations, and less than half studies (8/19) were randomized and controlled trials (RCTs). All studies reported a decrease in pain levels independently by the patients' disorder and by the adopted injection protocol. Positive outcomes were maintained over the follow up period, which was much variable among studies, ranging between 15 days and 24 months. The superiority of HA injections was shown only against placebo saline injections, but outcomes are comparable with those achieved with corticosteroids injections or oral appliances.

Conclusions: The available literature seems to be inconclusive as for the effectiveness of HA injections with respect to other therapeutic modalities in treating TMJ disorders. Studies with a better methodological design are needed to gain a better insight into this issue and to draw clinically useful information on the most suitable protocols for each different TMJ disorder.

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