

Physiotherapy after surgery in patients with subacromial pain

An evaluation of functional outcome and health-related quality of life in the mid- and long-term perspective

Akademisk avhandling

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av

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Avhandlingen baseras på följande delarbeten:

- I. Hultenheim Klintberg I, Gunnarsson A-C, Svantesson U, Styf J, Karlsson J. Early loading in physiotherapy treatment after full-thickness rotator cuff repair: a prospective randomized pilot study with a two-year follow-up. *Clinical Rehabilitation*, 2009;23:622-638
- II. Hultenheim Klintberg I, Gunnarsson A-C, Svantesson U, Styf J, Karlsson J. Early activation or a more protective regime after arthroscopic subacromial decompression – a description of clinical changes with two different physiotherapy treatment protocols – a prospective, randomized pilot study with a two-year follow-up. *Clinical Rehabilitation*, 2008;22:951-965
- III. Hultenheim Klintberg I, Svantesson U, Karlsson J. Long-term patient satisfaction and functional outcome 8-11 years after arthroscopic subacromial decompression. *Knee Surgery, Sports Traumatology, Arthroscopy*, 2010;18:394-403
- IV. Hultenheim Klintberg I, Karlsson J, Svantesson U. Health-related quality of life, patient satisfaction and physical activity 8-11 years after arthroscopic subacromial decompression. Submitted



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ABSTRACT

Background: No consensus exists regarding physiotherapy treatment after surgery in patients with subacromial pain. There are only a few randomised, controlled studies that evaluate outcome after different physiotherapy treatment protocols. Very few descriptions in terms of work load during exercise or during everyday activities have been presented in the literature. There is a lack of knowledge of patients' clinical course and definitions of attainable goals after surgery and physiotherapy. There is also a lack of knowledge of the long-term results for shoulder function and shoulder-related quality of life. The overall purpose of the thesis was to develop new physiotherapy treatment protocols for patients after surgery for subacromial pain.

Aim: The primary aim was to evaluate if patients after rotator cuff repair or arthroscopic subacromial decompression (ASD) who were treated according to a comprehensive well-defined protocol with a more progressive approach became pain free and attained higher shoulder function at an earlier stage compared with those treated according to a more general approach. The secondary aim was to describe attainable goals in the mid- and long-term perspective.

Patients and methods: In *Study I*, 14 patients were followed until two years after surgery involving full-thickness rotator cuff repair. In *Study II*, 31 patients (32 shoulders) were followed until two years after surgery involving ASD. In both *Study I* and *Study II* physiotherapy treatment protocols with early, specific activation and a more progressive regimen were compared with protocols consisting of a more general, protective regimen. In *Studies III and IV*, 95 patients (105 shoulders) were evaluated 8-11 years after ASD. In the four studies, the patients underwent clinical examinations evaluating pain during activity and at rest, range of motion and muscle strength. Moreover, instruments evaluating shoulder function and quality of life, as well as patient satisfaction, were used.

Results: In *Study I*, the pain intensity was below VAS 30 mm from six months and, from one year postoperatively, the majority of patients were pain free. At one year, the two groups had attained 150° in flexion, $\geq 170^{\circ}$ in abduction and $\geq 70^{\circ}$ in external rotation. At two years, the Constant Score was ≥ 77 points. In the Progressive Group 7/7 and in the Traditional 6/7 reported satisfaction with shoulder function at two years. In *Study II*, the pain intensity was below VAS 30 mm from three months postoperatively. At two years, the majority of the patients were pain free and had attained $\geq 150^{\circ}$ in flexion, $\geq 170^{\circ}$ in abduction and $\geq 75^{\circ}$ in external rotation. The Constant Score was 87 points in the Progressive Group and 67 points in the Traditional Group. In the Progressive Group 7/8 and in the Traditional Group 13/18 reported satisfaction with shoulder function. In *Studies III and IV*, the majority of patients attained similar results in terms of range of motion, muscle strength and physical activity as those attained by individuals without shoulder pathology. High shoulder-related quality of life was reported by the majority of patients. Eighty-four per cent stated that they were satisfied with their present shoulder function. The level of pain during activity was the strongest explanatory variable for patient satisfaction. The range of motion in active external rotation in 90° of abduction was the strongest explanatory variable for having a pain-free shoulder during activity. There were no differences between men and women in quality of life, pain during activity, pain at rest or patient satisfaction 8-11 years after ASD.

Conclusion: The principal finding in the intervention studies was that pain decreased by approximately 50% within three months postoperatively. The patients reported that they were pain free one year after rotator cuff repair and two years after ASD. After rotator cuff repair, the more progressive physiotherapy protocol showed as good results as did the more protective protocol while after ASD the progressive protocol was associated with slightly faster recovery of shoulder function and no adverse effects were noted. Early activation using the comprehensive, well-defined and controlled physiotherapy protocols as presented in this thesis may therefore be recommended after rotator cuff repair and ASD. Active external rotation was associated with pain-free activity. Therefore methods to enhance range of motion in external rotation e.g. stretching of the posterior capsule may be recommended. Favourable long-term results were shown after ASD.

Keywords: shoulder pain, impingement, rotator cuff, repair, physiotherapy, rehabilitation, evaluation, patient satisfaction, quality of life, posterior capsule, strength training, gender

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