EXTERNAL ROTATION STRENGTH DEFICIT AFTER HIP RESURFACING SURGERY

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Objective: Resurfacing hip arthroplasty has gained growing acceptance because it is bone conserving, disturbs femoral loading less than conventional total hip arthroplasty (tha), and avoids stress hielding of the upper femoral shaft. However, there is no data available how resurfacing surgery with posterior approach effects on muscular performance and function of the hip. Thus the aim of our study was to assess the effect of the muscular reconstruction on muscle function in patients with resurfacing operation of the hip using the posterior approach. The unoperated side was used as a control.

Methods: Thirty three consecutive patients (mean age 55 years, 73% males) were operated using the method of McMinn. Main outcome measures were isometric muscle strength of external and internal rotators and extensors of the hip and hip pain. Pain was assessed by visual analog scale (VAS).

Results: External rotation strength of the hip was 26% (p<0.001) and leg extension strength 31% (p<0.001) lower on the operated side than on the contralateral extremity prior to the surgery, while internal rotation strength did not differ between the sides. On the operated side external rotation strength decreased by 29% (p>0.0001) and internal rotation strength increased by 28% (p<0.001) 3 months post-operatively. The changes of 12% in leg extension strength of the operated side and the changes of 3-10% in all strength measurements in the un-operated side were not significant. Three months after the operation the external rotation strength and leg extension strength values were 50% and 26% lower (p<0.001) on the operated side compared to those in the un-operated side. Internal/external rotation strength ratio changed from the preoperative level of 1/1.13 to 1/0.59 postoperatively. There was a strong correlation between preoperative external rotation strength and the decrease of external rotation strength from preoperative level to 3 months postoperatively on the operated side (r = -0.61, 95%CI -0.79 to -0.33).

Mean (SD) hip pain values during the rest and loading were 47(30) mm and 70 (25) mm on the operated side, and 13 (25) and 12 (26) on the unoperated side, respectively. Three months postoperatively pain during the rest was 0(0) mm and during the loading 8(9)mm on the operated hip, while in the unoperated hip pain levels remained unchanged.

Conclusion: Hip resurfacing surgery gives excellent relief of pain. However, muscle strength was not restored 3 months postoperatively. Further, imbalance of the internal/external rotation strength ratio of the operated side increased postoperatively. As the changes in hip muscle strength were minor on the unoperated side, the surgical procedure may be one reason behind this severe loss of muscle strength and muscular imbalance on the operated side. Postoperatively, habitual physical activity, like walking, did not restore the hip function, and thus there is a need for intensive strength training protocol to normalize the hip function.

Keywords: Pain, Surgery, Muscle Force

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