DOES THE USE OF A SHOULDER CONTINUOUS PASSIVE MOTION DEVICE IMPROVE RANGE OF MOTION, LEVEL OF PAIN, AND SELF-REPORT OF FUNCTION IN THE EARLY STAGE OF REHABILITATION FOLLOWING ROTATOR CUFF REPAIR?

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Background: The use of passive range of motion (PROM) following rotator cuff repair is advocated to prevent postoperative stiffness, which can limit functional overhead activities. The use of continuous passive motion (CPM) devices to prevent postoperative stiffness has been extensively examined following knee surgery, but there is limited evidence regarding the effectiveness of a CPM following rotator cuff repair.

Purpose: To examine a shoulder CPM (Kinex KS2) device to improve range of motion (ROM), pain, and self-report of function following rotator cuff repair.

Design: Retrospective analysis

Setting: Outpatient physical therapy clinic

Patients: A retrospective analysis was conducted of 2 groups (N=175) of patients referred to physical therapy following arthroscopic rotator cuff repair. Fifty-one patients (M=24, F=27, age 60.3±10.2) met the inclusion criteria. N=23 consecutive patients (CPM Group) used a CPM device at home following surgery, whereas N=28 consecutive patients (Non-CPM Group) did not.

Methods: All patients participated in a standardized postoperative rehabilitation program. Additionally, the CPM Group used a shoulder CPM device at home for passive forward elevation (PFE) stretching for 20 minutes, 3 times a day, for 8.2±3.1 weeks. PFE and passive external rotation (PER) ROM were collected at baseline, 3-, 6-, 9-, and 12-weeks post-op. Active forward elevation (AFE) ROM was assessed at 6-, 9-, and 12-weeks post-op. Pain rating 0 to 10 (0=no pain) and self-report function 0 to 60 (60=full function) were collected at baseline, 6- and 12-weeks. Separate 2-way mixed-model analysis of variance (ANOVA) or covariance (ANCOVA) were performed to determine the effects of the CPM (CPM; Non-CPM) on each variable over time.

Results: Adjusting for baseline differences, the CPM Group demonstrated significantly greater PFE ROM than the Non-CPM Group (p<0.003) at 3-weeks (mean diff=14.7°; 95%CI=5.4, 24.1), 6-weeks (mean diff=13.6°; 95%CI=5.6, 21.7), and 9-weeks (mean diff=10.3°; 95%CI=2.8, 17.7) and pain reduction at 12-weeks (mean diff=1.6; 95%CI=0.8, 2.5). With PER, there was a significant interaction (p=0.001) with no significant difference between groups at baseline, but greater PER in the CPM Group at 6-weeks (mean diff=7.4°; 95%CI=2.1, 12.7), and 9-weeks (mean diff=8.3°; 95%CI=3.0, 13.6). Both groups demonstrated significant improvements in function (p=0.005) by 16.5 points (95%CI=5.3, 27.8) and AFE ROM (p<0.001) from 6 weeks (mean=88.5°±32.9) to 12 weeks (mean=127.3°±24.9) by a mean=39.3° (95%CI=23.0, 55.7).

Conclusions: The use of a shoulder CPM device in addition to a standardized postoperative rotator cuff repair program results in significant increases in ROM and lower levels of pain in the early phase of rehabilitation compared to a standardized rehabilitation program alone.

Clinical Relevance: Rehabilitation providers should consider the use of a shoulder CPM to facilitate improved ROM and decreased levels of pain during the early phase of rehabilitation following rotator cuff repair.