THE EFFECT OF CONTINUOUS CRYOTHERAPY ON GLENOHUMERAL JOINT AND SUBACROMIAL SPACE TEMPERATURES IN THE POSTOPERATIVE SHOULDER

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The objective of this investigation was to determine the effect of continuous cryotherapy on glenohumeral joint and subacromial space temperatures in the postoperative shoulder. A randomized controlled trial of 20 patients (10 continuous cryotherapy; 10 controls) with a surgically repaired full-thickness tear of the rotator cuff were monitored with indwelling, temperature sensors in the glenohumeral joint and subacromial space of the shoulder for approximately 23 postoperative hours. Statistics (p < .05) were done using the Mann-Whitney Rank Sum Test. In comparing the temperatures of the cryotherapy and control groups, statistical analysis of the glenohumeral joint and subacromial space revealed a statistical significance at 4, 8, and 23 and 4, 8, 16, and 20 postoperative hours, respectively. These results illustrate that continuous cryotherapy causes a statistically significant reduction of both glenohumeral joint and subacromial space temperatures in the shoulder at variable times during the first 23 postoperative hours.

Prior investigations demonstrate that minor elevations in intra-articular temperature can stimulate proteolytic enzyme activity with a detrimental effect on the articular cartilage. A substantial body of literature has also demonstrated that continuous cryotherapy is an effective nonpharmacological modality for pain control. Yet, the literature has assumed that the effects of continuous cryotherapy are part of the basic analgesia mechanism because of a reduction in joint temperature. Our results affirm that a reduction in glenohumeral joint and subacromial space temperature in the postoperative shoulder does occur leading to potential benefits of continuous cryotherapy as an effective modality for pain control in the postoperative care of patients.