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A CLINICAL EVALUATION OF INTERMITTENT COMPRESSION CRYOTHERAPY, MICROCURRENT STIMULATION, AND BIOFEEDBACK TRAINING IN POST-OPERATIVE TOTAL KNEE ARTHROPLASTY PATIENTS.

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ABSTRACT

OBJECTIVE: Determine the effectiveness of using a post-operative rehabilitation protocol that includes Intermittent Compression Cryotherapy, Microcurrent Stimulation And Biofeedback Training on Range of Motion, Pain and functional gait in Post-Operative Total Knee Arthroplasty Patients.

DESIGN: Our cohort of 40 TKA patients were randomly assigned to one of the following groups. Control Group: Traditional TKA protocol exercises and ice only . X Group: Traditional TKA Protocol exercises and Intermittent Compression Cryotherapy. Y Group : Traditional TKA Protocol exercises , Intermittent Compression Cryotherapy and Microcurrent Stimulation . Z Group :Traditional TKA Protocol exercises ,Intermittent compression Cryotherapy , Microcurrent Stimulation and Biofeedback . All subjects were given 6 post - operative tests starting at day 6 weekly to day 37.Each subject was also given seven post-operative tests at day 90 .All tests were designed to measure one of the following :ROM ,pain , gait function ,gait distance, oral analgesic intake , and amount of assistance required to ambulate.

SUBJECTS: Our cohort of 40 subjects included 25 females , 15 males with an average of age of 62 . The average weight was 197 lbs . All patients were non smokers. 35 subjects had hypertension with 5 having a history of NIDDM .None of the subjects had any significant joint disease or pain in the non surgical knee .All subjects were implanted with a Zimmer Prosthesis using traditional surgical methods.

METHODS: After each subject was treated starting at post-operative day 6 thru 37 3 times a week for 4 weeks with the specific protocol assigned to their particular group; all subjects were given a total of 13 post-operative tests designed to test the amount of assistance required to ambulate ,gait safety ,gait distance, oral analgesic intake , pain and ROM .6 of the 13 tests were given weekly starting on post - operative day 6 ending on day 37 . The seven remaining tests were given on post-operative day 90. Inferential statistical analyses, Tukey's HSD (Honestly Statistically Different) post-hoc tests (or multiple comparison tests) were used to determine the significant difference between the group means. Inferential Confidence intervals were also assessed comparing the Control Group to Z Group for each category tested.

RESULTS: The data collected and analyses revealed that Group Z required significantly less assistance to ambulate , had less pain and therefore required less oral analgesics than the other Groups in this study. The data analyses also demonstrates Group Z had significantly greater gait safety and ROM measurements than the Control Group.

CONCLUSIONS: A post-operative rehabilitation protocol which includes Intermittent Compression Cryotherapy , Microcurrent Stimulation , and Biofeedback Training can significantly decrease the amount of time assistance is needed to ambulate with a assistive device , pain and oral analgesic intake while also significantly increasing gait safety and R.O.M. in post-operative TKA patients.

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