Numerous surgical techniques exist for the treatment of first carpometacarpal joint osteoarthritis, however it is unclear if outcomes differ between the available techniques. Our feasibility study aimed to determine the practicality of recruiting patients for, and performing, a larger-scale health-related quality of life and functional outcomes study comparing two surgical techniques: complete trapeziectomy with ligament reconstruction and tendon interposition (T+LRTI) and partial trapeziectomy and tendon interposition (PT) arthroplasty.

Sixty patients with advanced stage arthritis (Eaton stages II-IV) of the thumb, were invited to undergo either T+LRTI or PT at one of two hand surgery practices. Feasibility outcomes included: 1) Process: recruitment rate, 2) Resources: eligibility rate and sufficiency of eligibility criteria, retention and compliance rates (completion of HRQOL questionnaires, DASH, EQ-5D, and SF-36, and functional measurements, grip, key pinch, and tip pinch strength, at 1-week pre-operatively and 1, 3, 6, and 12 months post-operatively), 3) Management: determining the practices’ commitment to the study, and 4) Scientific: calculation of the variance and effect size (ES) of differences between procedures.

Of 60 patients screened, 34 (57%) were eligible for surgery. Of the 26 ineligible patients, 21 (81%) met exclusion criteria for previous/imminent surgery on same hand, particularly carpal tunnel release (n=17). Of those who participated in the study, 14 (41%) attended at least one of the four follow-up visits, 24% and 89% from the T+LRTI and PT group, respectively. Attrition rate was 59%. The highest compliance rate was at 6 months. Large differences in loss to follow-up were seen between the two practices (16/25 vs 1/9); three different research assistants participated in the study. The estimate of treatment effect is large for some outcomes (SF-36 Mental Score =1.044, DASH disability score = 0.83, EQ-5D anxiety/depression = 1.106, and EQ-5D state of health = 0.84 and) and minimal to none for others (SF-36 Physical Score = 0.21, EQ-5D mobility, self-care, and pain/discomfort = 0, EQ-5D usual activities = 0.26).

The authors concluded that a large-scale study is feasible; however, the following changes are recommended: 1) increase sample size to account for attrition 2) remove exclusion of participants with carpal tunnel syndrome, 3) ensure rapport between office personnel and study patients, and 4) main stability with research assistants during the study period or ensure overlap in the transition period.
RESULTS: At three months, all ADM sheets were incorporated. Meshed ADM showed fewer giant cells and less foreign body reaction, demonstrated fewer inflammatory cells, deeper fibroblasts penetration and more remodeling with mature native porcine collagen.

CONCLUSION: Meshing ADM allows cells to populate fenestrations, promoting vascularization and production of neo-collagen. This leads to faster incorporation and remodeling in all ADM types. Our study sets the histological basis for further clinical investigations which may demonstrate lower surgical costs and lower complication rate with meshed ADM, in particular, seroma formation.

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Far-Infrared Radiation Thermotherapy Improves Tissue Fibrosis in Chronic Extremity Lymphedema

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INTRODUCTION: Fibrosis can enhance the exacerbation of lymphedema, which becomes obvious in Late Stage II – Stage III lymphedema. However, whether the far-infrared radiation thermotherapy (FIRT) can cure lymphedema fibrosis is still lack of research. This research was to investigate the therapeutic effect of FIRT on tissue fibrosis in the treatment of Late Stage II to III lymphedema by evaluating clinical and laboratory evidence.

METHODS: Patients accepted only FIRT for 4 weeks (5 working days per week) for a total of 20 sessions. The treatment session duration was 2 hours and a stable machine temperature of 42°C was maintained throughout treatments. Clinical evaluation and laboratory evaluation were conducted to assess the enrolled patients before and after FIRT. Clinical outcome measures included circumference of affected extremity, skin elasticity, ultrasound, patients’subjective assessment and quality of life. Laboratory outcome measures included serum and local lymphedema tissue fluid concentrations of fibrosis associated cytokines TGF-β1, IL-1β, IL-4, IL-18 and Caspase-1.

RESULTS: Between 2015 and 2016, clinical evaluation of 64 patients with Late Stage II to III lymphedema was conducted before and after FIRT. From this group, 12 cases (18.75%) underwent simultaneous laboratory evaluation. Circumferences of affected extremities improved significantly following treatment (p=0.000). Skin elasticity parameters R0, R2, R5, and Q0 for the affected extremity improved significantly following treatment (p=0.001, 0.031, 0.005 and 0.001 respectively). Ultrasound investigation showed reduced fibre and dense material in the affected tissue (increased grey level 6.322 ± 7.624%, p=0.000). Patients reported a subjective improvement of their symptoms: decreased tightness, heaviness, solidity, pain, discomfort and numbness (p=0.000, 0.000, 0.000, 0.000, 0.000, 0.032 respectively), and improved quality of life (p=0.000). Laboratory results revealed a significant decrease in local tissue fluid concentrations of TGF-β1 (p=0.041) and IL-18 (p=0.049) after course completion.

CONCLUSION: FIRT provides an effective treatment for lymphedema tissue fibrosis; it reduces the concentration of fibrosis cytokines in local lymphedema tissues. Consequently, this treatment can reduce the density of fibrosed tissue in the affected extremity, increase skin elasticity, significantly improve clinical symptoms and improve the quality of life of patients.

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