"Does the use of massage in the treatment of traumatic hand injury improve range of movement, grip strength, function, swelling and return to work when compared with usual care?"

Clinical Bottom Line

From the two papers reviewed, it would appear reasonable to use manual massage techniques to assist with control of swelling and improve AROM. However, the evidence is insufficient to draw any conclusions due to limitations of the studies, and further research is required with larger study sizes, valid and reliable assessment tools and longer follow-up.

Criteria for Critically Appraised Topic

Population:
Adult humans, 18 yrs plus

***Intervention*:**
Use of massage techniques for the wrist and/or hand to reduce swelling, improve ROM, function, grip strength and return to work following post-traumatic hand injury

Comparison:
Usual care, routine care, any other treatment

Outcomes:
Reduction in swelling, increase in function, ROM, grip strength, improvement in skin mobility and return to work

Primary Outcomes: pain

Secondary outcomes: disability, function

Inclusions:
Adults (18 plus) presenting with swelling following post-traumatic injury and surgery following trauma

Exclusions:
RA, OA, inflammatory arthritis, inflammation, infection

Search Terms used

Databases Searched:

Cochrane	Pedro	PsychINFO	Medline
Clinical Evidence	Bandolier	NELH	Professional Websites (CSP)
Clinical Guidelines	NICE	HTA	Embase
Rehab Data	CINAHL		

Types of study included:

Randomised controlled trials
Systematic reviews

Key words searched:

Population	Intervention	Comparison	Outcomes
Human adults Post surgical /post surgery Post- surgical oedema Post-surgical swelling Dupuytren release Tendon repairs Nerve repairs Fractures Amputation Trauma Traumatic Amputation Digit Hand finger Thumb wrist	Massage Manual Mechanical Swedish effleurage Soft tissue manipulation	Routine care Usual care Any other treatment	Range of movement (ROM) Grip strength Return to work Swelling Function

Time Frame:

1998-2008

Available Evidence

Database Searched (Specific to CAT)	Number of abstracts	Number of Relevant Abstracts
Cochrane	0	
Pedro	1	
Medline	21	
CINAHL	16	1
Embase	21	1
Clinical Evidence	0	
PyschINFO	0	
Amed	3	
Total	61	2

Results:

61 abstracts were initially reviewed. Two articles were identified that could potentially answer the clinical question:

"Effect of manual lymph drainage as described by Vodder on oedema of the hand after fracture of the distal radius: a prospective clinical study" (2000) Haren et al, Scandinavian Journal of Reconstructive Hand Surgery, 34:376-372

The paper seems to answer the CAT question and looks at use of a specific lymphatic drainage technique for patients with distal radial fracture managed with exfix – nb the results only applicable to very specific patient group

Study design
Type of study appears as an RCT
Population group is clear – distal radial fracture with exfix - XENIX remained on for 37-39 days
Final population total = 26 – (small sample size)

Randomisation
2 groups - satisfactory randomisation procedure
– control (n=14) and treatment (n=12) – unclear why not equal in both groups
Baseline information limited – no statistical analysis to look at any difference

Intervention
All patients received conventional care starting 11 days (mean) after exfix in place – consisted of elevation, exercises and compression bandage during the exfix, then gloves after the exfix. A percentage in each group had an extra Isotoner glove – unclear whether this made a greater difference in oedema management

Treatment group had 10 sessions of 45 minutes of manual lymph drainage (MLD) treatment – this is a specific type of massage technique based on work by an author called Voder and previously used for lymph problems following breast surgery – unclear if used before for post trauma.
These sessions started 18 days (mean) after exfix in place and continued for up to 6 weeks
Both groups attended regularly during this time – control 12, treatment 15
(not sure why the control group attended so many times as they didn't seem to be having hands on treatment – however this could balance out the white coat input)

Outcome measure
Measurement of volume only taken after exfix removed -no functional or quality measure
Unable to take baseline reading prior to intervention due to exfix being in place
Measurement of affected and unaffected hands to compare difference
Measured by a "volumeter" – Description of technique was clear and reproducible. Measurement of expended water volume as a representation of amount of oedema
No mention of validity or reliability of the piece of equipment

Measurements taken after treatment session at 3, 17, 33 and 68 days post exfix removal - unclear why these time points
Measurements taken by therapist different to treatment therapist which is good – however doesn't explicitly state that they were blinded to intervention
They state that patients had approx 6 sessions of massage before the first measurement and then 3 more before the second measurement, and then continued with the conventional treatment until the last measurement. This total only makes 9 sessions, but they stated patients had 10 sessions at the beginning of the paper.

Stats
Compared median difference in volume of both hands – Mann u Whitney test used – ok

Results
They stated that there was a "significant" reduction in volume measurements for the first 2 time points in the treatment group – however, p values stated were not significantly different.
There was no difference between the groups at the last two measurements. – however the MLD treatment had stopped by this stage, but they don't discuss this

They do not report any methodological issues in their discussion

They summarise that this technique could be used as an adjunct to conventional treatment but do not propose the MLD for oedema in all wrist fracture patients

Summary
An RCT to look at a specific intervention for hand treatment in a specific trauma patient
Small sample size in each group
Outcome measurement is suspect due to limited info about the tool and blinding of therapists
Only one outcome measure looked at
The results between the groups were not statistically significant

"The effect of massage to scars on active range of motion and skin mobility" (2002) Donnelly C & Wilton J, British Journal of Hand Therapy Vol 7 No 1

The paper appears to answer the question in terms of AROM, but it was a small short-term study of private patients, with potential researcher bias.

Study design
A RCT looking at the effects of scar massage in combination with standard conjunctive therapies, (including splints, CPM, heat, pressure gloves) on AROM and skin mobility following injuries involving surgical or traumatic scars around the wrist. It attempts to answer whether scar massage over 4 weeks accelerates recovery of AROM of the wrist and recovery of skin mobility.

Study included 12 males and 10 females (from a private hand therapy clinic) with a wide range of diagnoses either elective or traumatic in origin but all had an incision or laceration in the wrist area. Subjects randomly allocated to treatment by systematic sampling.

Inclusion criteria
Liner scar, clinically healed, between 3 – 12 weeks old with soft tissue restriction on palpation and reduced AROM in either/both wrist flexion/extension and ulnar/radial deviation

Exclusion criteria
Active inflammatory wrist joint conditions

Intervention
Intervention group had massage with individualised treatment programme (therefore variety of interventions and not consistent across group). They were taught how to complete self-scar massage, given an illustrated handout and required to record daily frequency and duration of massage. Therapist treatment included 10 minutes of massage.
The control group received individualised treatment programme without massage.
The study period was for 4 weeks
Nb all subjects had commenced an individualised hand rehab programme prior to inclusion in the study

Outcomes
AROM was measured using a half circle 15 cm goniometer and skin mobility was measured using a modified slide grade scale (Silverberg, 1996,? if this is valid and reliable), at the start and end of the four-week study. No long term follow-up.
The researcher was blinded to initial measurements during follow-up but was not blinded to which group subjects were allocated to at either initial or follow-up assessments which could potentially lead to researcher bias.

Stats
Used the Wilcoxon signed ranks procedure to analyse the difference in mean percentage AROM and skin slide grade scores for individuals in each group, and the Mann-Whitney test to compare between the two groups. Used scatter plots to look at impact of variables of age, number of post-injury days when joined study, frequency of attendance and duration of massage.

Results
Pre and post treatment results showed there were statistically significant increases in AROM in both groups, those in massage group consistently gained more ROM than control group.
Pre/post scores of skin grade slide scale showed significant improvements in skin mobility in both groups, but no significant difference between the intervention and control group (nb massage duration varied from 155 minutes to 910 minutes).
From the study results, they suggest that scar massage for scars with soft tissue restriction does accelerate recovery of AROM in the wrist in the short term but does not accelerate the recovery of skin mobility (this may have been due to the small sample size)
Study limitations were acknowledged: study setting, design and assessment tools. These included the small sample size, mixed diagnosis, disparity in frequency of attendance, lack of blinding of the researcher and subjectivity of the skin grade slide scale reported.

Summary
A small RCT looking at effects of massage on AROM and skin mobility. Potential researcher bias due to lack of blinding and one of outcome tools not tested for validity and reliability. Results showed statistically significant increases in AROM, but improvements in skin mobility were not statistically different between the intervention and control group

Implications for practice

The lack of available good quality evidence to answer the question means that no change in current practice is warranted at this time. It is not possible to draw any conclusions from the evidence available.

References

"The effect of massage to scars on active range of motion and skin mobility" (2002) Donnelly C & Wilton J, British Journal of Hand Therapy Vol 7 No 1

"Effect of manual lymph drainage as described by Vodder on oedema of the hand after fracture of the distal radius: a prospective clinical study" (2000) Haren et al, Scandinavian Journal of Reconstructive Hand Surgery, 34:376-372

Future Research Questions:

"Does the addition of hand massage to usual care improve function, AROM, swelling, skin mobility and return to work following traumatic hand injury?"

"Does the addition of hand massage to usual care improve function, AROM, swelling, skin mobility and return to work following surgical procedures to the hand/wrist?"