

The use of Actico cohesive short stretch (inelastic) bandages in the management of lymphoedema

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Introduction

Lymphoedema affects over 1.33 per 1,000 population (Moffatt et al 2003). Decongestive Lymphatic Therapy combines skin care, manual lymph drainage (MLD), exercises and multi-layer bandages to:

- reduce limb volume
- restore a normal limb shape
- improve the condition of skin and tissues

Lymphoedema bandaging systems combine padding materials under layers of short stretch bandages. A digit bandage is often applied.

Short stretch (inelastic) bandages are widely used in lymphoedema although the evidence base is limited. Preliminary work has indicated similarity between Actico cohesive short stretch and other short stretch bandages in terms of sub-bandage pressures (Table 1).

This poster presents findings from a prospective audit of Actico cohesive short stretch bandages used within a multi-layer bandaging system for lymphoedema.

Methods

Patients suitable for inclusion in the audit were those requiring multi-layer bandaging for treatment of upper or lower limb lymphoedema (BLS 2001).

An audit tool was developed for the project. The audit protocol and tool were subjected to scrutiny by Research and Development units as relevant to the lymphoedema practitioners taking part in the audit.

Outcomes

- Change in excess limb volume, expressed as a percentage of pre-treatment excess volume, in patients with unilateral lymphoedema
- Change in total limb volume in patients with bilateral lymphoedema
- Practitioner evaluation of effectiveness, ease of application, patient comfort, and level of usefulness
- Frequency of bandage application, numbers of bandages and type of padding

The audit took place over a 3-month period. Eight experienced lymphoedema practitioners recruited patients to the audit. All were qualified in the Decongestive Lymphatic Therapy methods including MLD and multi-layer lymphoedema bandaging.

Each patient had an individualised treatment programme. Actico bandages were applied over padding in the multi-layer bandaging system. Seven practitioners used 4cm skin circumferential measurements and a formula based on the volume of a cylinder to calculate limb volume (Kuhnke 1976). One service used the Perometer (an opto-electronic device) to measure limb volume.

Position of sensors

Details of short stretch bandages	B (ankle)	B1 (gaiter)	C (calf)	D (below knee)
Rosidal K: 1 layer of 8cm and 10cm spiral	34	27	22	18
Actico: 1 layer 8cm and 10cm spiral	35	20	19	15
Rosidal K: 2 layers 8cm (2) and 10cm (2) spiral	47	38	32	22
Actico: 2 layers 8cm (2) and 10cm (2) spiral	47	34	30	21

Table 1 Sub-bandage pressures recorded by Borgnis Medial Stocking Tester (MST). Multi-layer system consisting of tubular lining, Cellona undercast padding and short stretch bandages to lower leg in one patient with ankle circumference of 33cm

	Upper limb unilateral	Lower limb unilateral	Lower limb bilateral
Gender			
Women	9 (41%)	3 (14%)	6 (27%)
Men	0	3 (14%)	1 (4%)
Age (years)			
Mean	62	55	62
Range	45-78	39-65	7-85
Cause of lymphoedema			
Cancer-related	9 (41%)	3 (14%)	1 (4%)
Non-cancer	0	3 (14%)	6 (27%)
Excess limb volume prior to treatment (% of unswollen limb)			
Mean	33%	27%	N/A
Range	18-51%	11-36%	N/A

Table 2 Characteristics of patients (n =22)

Results

The treatments

Length of treatment course ranged from 4-19 days with a mean of 10 days. The number of bandage applications ranged from 4-10 (mean = 7). Eleven of the patients had daily bandaging (Monday – Friday) and 11 were bandaged around 3-4 times per week, commonly every second day.

Practitioners selected digit bandages according to clinical need and padding materials such as under cast bandages and soft foam rolls were used. Actico cohesive short stretch bandages

were applied in layers using spiral and figure of eight techniques as required (Table 1). Actico 6cm, 8cm and 10cm widths were used in upper limb bandaging; the 4cm width was found to be useful for hand bandaging. The 8cm, 10cm and 12cm width bandages were used on legs. In two cases, the practitioner combined the use of 100% cotton short stretch as the Actico bandage was not felt to be adequately firm.

Limb volume change

Percentage change in excess volume was 40% for upper limb and 57% for lower limb unilateral lymphoedemas. An average 8% reduction in the total limb volume was recorded in the patients with bilateral swelling (14 limbs).

Patient number	Excess limb volume (mls) at start of treatment	Excess limb volume (mls) at end of treatment	% Change in excess limb volume
Unilateral upper limb lymphoedema			
Patient 1	734	420	43
Patient 2	684	417	39
Patient 3	1578	1244	21
Patient 4	557	279	50
Patient 5	342	309	10
Patient 6	1664	675	59
Patient 7	695	412	41
Patient 8	1525	656	57
Patient 9	1180	681	42
Mean	995	566	40%
Unilateral lower limb lymphoedema			
Patient 1	4447	2967	33
Patient 2	1390	37	97
Patient 3	3286	2018	39
Patient 4	3577	82	102
Patient 5	2274	1840	19
Patient 6	2304	1045	55
Mean	2880	1331	57%

Table 3 Change in excess limb volume

Practitioner evaluation

Table 4 highlights the findings from 18 completed forms as four incomplete forms were also received. Bandages were rated as very effective in 14 patients (78%) and very useful for lymphoedema in 16 patients (89%). In comparison to other short

stretch andages, Actico bandages were found to be more comfortable in 13 patients (72%). Benefits such as reduced bandage slippage and increased limb flexibility were also recorded (Table 5).

Practitioner rating of Actico bandages (n =18)											
effectiveness		%	ease of application		%	patient comfort		%	usefulness for lymphoedema		%
very effective	14	78	very easy to apply	8	44	very comfortable	13	72	very useful	16	89
effective	4	22	easy to apply	10	56	comfortable	5	28	useful	2	11
not effective	0	0	not easy to apply	0	0	not comfortable	0	0	not useful	0	0
very ineffective	0	0	very difficult to apply	0	0	very uncomfortable	0	0	not at all useful	0	0
don't know	0	0	don't know	0	0	don't know	0	0	don't know	0	0
Practitioner rating of Actico bandages in comparison to other short stretch bandages (n =18)											
more effective	10	56	easier than others	10	56	more comfortable	13	72	more useful	14	78
similar to others	8	44	similar to others	4	22	similar to others	5	28	similar to others	4	22
less effective	0	0	less easy than others	4	22	less comfortable	0	0	less useful	0	0
don't know	0	0	don't know	0	0	don't know	0	0	don't know	0	0

Table 4 Practitioner evaluation

Discussion

The findings from this small audit highlight the use of Actico cohesive short stretch bandages in patients with different types of lymphoedema and various age groups. Reduction in limb volume is comparable to other studies of Decongestive Lymphatic Therapy where changes in excess volume of 26% (Johansson et al), 38% (McNeely et al 2004) and 42% (Szuba et al 2000) have previously been reported.

Audit data show that daily bandaging was not always required as Actico bandages remained in place. Choice of non-daily bandaging in this audit was according to need and practitioner availability but suggests that this is a suitable approach that may require fewer resources.

A few practitioners highlighted a resource issue as Actico bandages could not be reused and washed as with other short stretch bandages. Some initial difficulties regarding application of the bandages were also reported and this highlights the need for adequate education and training of practitioners.

The audit has limitations in terms of numbers of patients. Variables such as the use of other treatments such as manual lymphatic drainage therapy are not reported. Further information is required from future research.

Conclusion

Audit data suggest that Actico bandages are comparable to other short stretch bandages and may provide additional benefits including increased patient comfort and mobility and less bandage slippage.

- Patient felt Actico bandages were more effective and more comfortable
- Patient had no cramp as experienced with previous cotton short stretch bandages
- Patient found it fairly easy to mobilise and exercise with the Actico bandage. It is lighter and less bulky than other bandages
- Bandage did not slip between treatments.
- Very useful for lymphovenous disease- bandages hold better so patient has to attend clinic less
- I found them more difficult to apply around the knee and found they cut in on a couple of occasions - resolved with extra padding
- At first I had some difficulty applying it when it wrinkled; seemed to maintain compression better
- Patient found them lighter and more comfortable than previous short stretch.
- Kept arm very mobile and similar volume loss to previous course of treatment
- Lighter for a palliative patient
- Changed to 1 layer of Comprilan and 1 layer of Actico on top after first week with excellent result
- Main problem is one time use - hard on resources

Table 5 Summary of comments from practitioners



Example case studies

Unilateral Lymphoedema of the upper limb

A 78-year old woman with lymphoedema of the left arm and hand, secondary to breast cancer treatment. Prior to treatment the excess limb volume was 46%. The patient received multi-layer bandaging, without MLD. The fingers were bandaged using a 4cm mollelast bandage and cellona undercast padding was applied to the limb. Actico 6cm and 8cm were applied as spiral in 1 layer over a two-week period (a total of 8 bandage applications). A 59% reduction in limb volume was achieved.

Unilateral lymphoedema of the lower limb

A 50-year old woman with non-cancer related lymphoedema of the right leg and foot. Prior to treatment the excess limb volume was 36%. The patient received manual lymphatic drainage and multi-layer bandaging Monday, Wednesday and Friday for 2 weeks. Rosidal soft foam rolls were applied as padding and Actico 6cm, 8cm 10cm and 12 cm bandages were used in 2 layers. A 33% reduction in limb volume was achieved.

Bilateral oedema of the lower limb

A 68-year old obese woman with lymphovenous disease and bilateral below knee swelling. Cellona undercast padding was applied followed by Actico bandages (8cm x1 and 10cm x1).

The patient was bandaged 5 times within a 12-day period. The Actico bandages were found to be very useful as they stayed in place longer than other bandages, reducing the frequency of application. Although excess limb volume could not be calculated in a bilateral oedema, the right ankle circumference reduced from 35-27.5cm and the left ankle circumference reduced from 47.2-40cm.

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References

1. Badger CMA, Peacock JL, Mortimer PS (2000) A randomized, controlled parallel-group clinical trial comparing multilayer bandaging followed by hosiery versus hosiery alone in the treatment of patients with lymphedema of the limb. *Cancer* 88 (12) 2832-2837.
2. British Lymphology Society (2001) Clinical definitions. British Lymphology Society, Caterham, UK.
3. Johansson K, Albertsson M, Ingvar C et al (1999) Effects of compression bandaging with or without manual lymph drainage treatment in patients with post-operative arm lymphedema. *Lymphology* 32 (3): 103-10.
4. Kuhnke E (1976) Volumbestimmung aus umfangmessungen. *Folia Angiologica* 24, 228-232.
5. McNeeley ML, Magee DJ, Lees AW, Bagnall KM, Haykowsky M, Hanson J (2004) The addition of manual lymph drainage to compression therapy for breast cancer-related lymphedema: a randomised controlled trial. *Breast Cancer Research and Treatment* 86; 95-106.
6. Moffatt CJ, Franks PJ, Doherty DC, Williams AF, Badger C, Jeffs E, Bosanquet N, Mortimer PS (2003) Lymphoedema: an underestimated health problem. *Quarterly Journal of Medicine*. 96 (10)731-738.
7. Szuba A, Cooke JP, Yousuf S et al (2000) Decongestive lymphatic therapy for patients with cancer-related or primary lymphoedema. *American Journal of Medicine* 109, 296-300.