

USE OF A TISSUE MOBILISING COMPRESSION SYSTEM

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The standard treatment for lymphoedema is complete or complex decongestive therapy (CDT) that combines manual lymphatic drainage (MLD), skin care, multilayer, multi-component bandaging, exercises and patient education (Cheville et al, 2003; International Lymphoedema Framework, 2006). Intermittent pneumatic compression (IPC) therapy can also be used in conjunction with CDT (Mayrovitz, 2007). Although CDT is well established as the cornerstone of care for breast cancer-related lymphoedema (BCRL), there is limited evidence as to best practice for compression use to guide clinicians in making appropriate treatment decisions (Partsch et al, 2010). Partsch et al (2010) noted that questions of pressure gradient, type of material, frequency of application and many others need further investigation. Active patient involvement and concordance in care is also necessary to achieve better long-term results (Chardon-Bras et al, 2007).

Bandage kits, materials and compression garments vary from country to country, and new products are continuously becoming available.

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While there are many accounts of compression therapy in the literature, few refer to components used to soften hardened (fibrotic) tissue (Cheville, et al, 2003; Vignes et al, 2007; Hopkins, 2008; Chardon-Bras and Coupé, 2009).

This paper reports the use of a product available in France but new to North America, Mobiderm® (Thusane), to treat a patient with BCRL and associated lymphostatic fibrosis. The Mobiderm system comprises adhesive and compression bandages, and the Mobiderm product itself which is composed of small squares of foam separated one from another encased in soft adherent webbing (*Figure 1*) (Chardon-Bras and Coupé, 2009).

The difference in pressure between the firm squares and the adjacent space creates uneven pressure on the subcutaneous tissue that results in small depressions in the skin, with a softening effect on indurated areas (*Figure 3*). Its use is contraindicated over inflammation of the skin, fragile or sensitive skin, eczema, or acute infection (Chardon-Bras and Coupé, 2009). Mobiderm is available in 10cm wide bands of three metres length that can be cut to fit any body part, or in ready-made arm, foot or leg garments for nighttime use. Smaller dimension Mobiderm is available to cover digits and can be used over body parts that are difficult to bandage. Mobiderm is soft, washable and light, so that bandages once applied are less heavy, more supple and thus more easily tolerated by patients. Chardon-Bras and Coupé (2009) describe three variations of applying the complete system for upper and lower extremities according to need. The intensive phase is normally

one or two weeks of five treatments per week. After lymphoedema has stabilised, bandages are kept for several days between sessions and self-bandaging (along with skin care, active mobilisation and self-care measures) is taught for maintenance (Chardon-Bras et al, 2007).

Case report

This case reports on the use of the Mobiderm system to soften lymphostatic fibrosis and continue volume reduction after lymphoedema stabilisation had been achieved with conventional short-stretch bandaging. Due to two years between initial assessment and onset of lymphoedema, and maternity leave absences in the clinic, the patient was assessed by one therapist and received treatment from two others. Circumferential measurements were recorded and taken at the same distance along the arms, measuring from the nail base of the middle finger. The patient provided written informed consent for anonymous presentation of her case, including the use of photographs, and the surgeon permitted review of the patient's surgical files.



Figure 1. Mobiderm.

Medical history

Mrs JK was 40 years old with two young children when she was diagnosed with infiltrating ductal carcinoma of the right breast in 2005. Chemotherapy treatment was followed by total mastectomy and axillary node dissection that same year. She healed without complications and was scheduled to receive tamoxifen and radiotherapy, but refused both. In the following year Mrs JK experienced significant social, personal, and vocational changes including a divorce and bankruptcy of her business, forcing her to seek social assistance. In 2008, two months after a TRAM flap reconstruction of the right breast, Mrs JK noticed fullness in the right axilla. She underwent a second right-sided axillary node dissection to treat recurrent cancer. Mrs JK was referred to a new programme in the breast clinic of the hospital where she was being treated.

Initial assessment

The initial lymphoedema assessment at the lymphoedema prevention and treatment clinic in October 2008 consisted of baseline measurements, skin care instruction, exercise and risk reduction education. Circumferential measurements taken at metacarpals, wrist and every 10cm thereafter showed a 3% volume difference between the two arms (Figure 4). Shoulder range of motion (ROM) (abduction, flexion, lateral and medial rotation) was within normal limits and grip strength was similar bilaterally. Mrs JK was scheduled for radiotherapy and was asked to return in six weeks. However, only when lymphoedema developed two years later, did she return.

Onset of lymphoedema

In April 2010, Mrs JK fell on her affected side, hitting her right elbow which resulted in arm swelling. In May 2010 she underwent plastic surgery to reduce both the earlier TRAM flap reconstruction and her unaffected left breast. In June 2010, Mrs JK returned to the lymphoedema prevention and treatment clinic for assessment of the swelling of her affected arm.

Measurements had increased with the oedematous arm being 39% greater than the unaffected arm (Figure 4). At that time, Mrs JK was being treated with IPC in the hospital physiotherapy department. She noticed some reduction in discomfort in the arm and decided to continue with IPC.

Treatment programme

In September 2010, Mrs JK returned to the lymphoedema prevention treatment clinic for reassessment. After 15 sessions with IPC over the intervening three months, she felt that there was no more improvement. Effectively, her arm measurements showed a significant increase of lymphoedema, with the affected arm 81% greater than the unaffected arm (Figure 4). Furthermore, fibrotic tissue was now noted in the forearm (Figure 2). Shoulder ROM and grip strength had not changed.

Treatment was begun in September 2010, but due to the number of patients in the clinic and additional breast reconstruction surgery for Mrs JK, she did not receive consistent intensive therapy until mid-December 2010. Treatment recommenced in mid-January 2011 with two sessions one week, alternating with three sessions the next week of lymphatic drainage, followed by conventional multilayer bandaging (Mollelast, Cellona and Rosidal K short-stretch bandages), and education in self-bandaging. Bandages were applied in crosswise and also



Figure 2. Photograph of patient before treatment, September 2010.



Figure 3. Photograph of patient after Mobiderm removed, March 2011. Angular impressions on the right arm of Mrs JK after Mobiderm® was removed. Compare volume with Figure 2. Note reduced lymphostatic fibrosis and softer, less tight tissue.

circular 50% overlap from the hand to the axilla. Mrs JK was instructed and regularly reassessed in self-bandaging, which she performed as needed. In early February, after 15 treatments of conventional multilayer bandaging from September 2010 and self-bandaging, measurements had stabilised with the volume difference at 62%, and Mrs JK was due to be fitted for a sleeve (Figure 4).

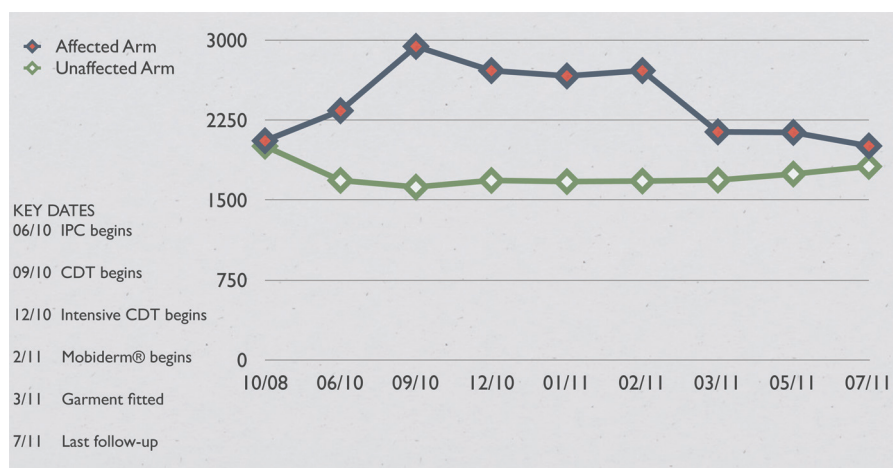


Figure 4. Graph of volume differences between arms based on circumferential measurements.

The Mobiderm system of bandaging was started because Mrs JK was not satisfied with the effects of inelastic bandaging and wanted a better reduction before being fitted for a sleeve. The Mobiderm system begins with an anti-oedema cotton band applied in spiral next to the skin, then the Mobiderm band with no overlap is laid in spiral the length of the arm, covered by Flexideal, compressive short stretch bandages in two layers. After 10 treatments and self-bandaging at home, the lymphostatic fibrosis had softened and measurements had again decreased and stabilised to a volume difference of 27% (Figure 4). Mrs JK was satisfied with her lymphoedema outcome and, in mid-March 2011 she was measured for a compression sleeve. Four months later, the volume had further reduced to a 11% volume difference, with no fibrotic tissue palpable in her forearm. Her hand and wrist appeared normal. She has continued self-bandaging at night and wearing her garment during the day.

Discussion

Many patients find it difficult to conform to the regimen of multilayer bandaging and to learn how to self-bandage effectively (Vignes et al, 2007). When lymphostatic fibrosis develops, it can pose another obstacle to successful treatment and if patients are emotionally volatile or highly responsive to stress, persevering with lymphoedema self-care can be difficult. In this case, IPC and conventional multilayer bandaging failed to produce satisfactory results. Fifteen sessions with IPC spread over three months may not be a fair trial, but IPC was used without any compression between sessions which is not recommended (International Lymphoedema Framework, 2006). Conventional bandaging in 15 sessions, with self-bandaging, was also spread over several months, which is again not optimal. The Mobiderm system was applied with self-bandaging more regularly, 11 treatments with self-bandaging over six weeks. The authors do not know whether continuing conventional multilayer bandaging for an additional six weeks, or whether using another system of fibrosis-reducing materials would have brought about

the same results. Clearly for Mrs JK, Mobiderm has been and continues to be effective. Her compliance with self-bandaging through transition into the maintenance phase is excellent, as the results show. A trial using solely Mobiderm to treat patients with fibrosis would be informative.

Patient involvement is a key element in treatment success. Adherence to bandaging during both the intensive and the initial maintenance, or transition phase is a key predictive factor to positive outcomes (Forner-Cordero et al, 2010).

Patient involvement is a key element in treatment success. Adherence to bandaging during both the intensive and the initial maintenance, or transition phase is a key predictive factor to positive outcomes (Forner-Cordero et al, 2010). Patient reasons for non-compliance are not well reported, although Forner-Cordero (2010) found a correlation between non-compliance and hot weather. For Mrs JK, compliance increased with her recognition that the proper application of bandages on a consistent basis helped her to achieve her goal of attaining and maintaining reduction in the volume of her arm. The lighter and more compact Mobiderm bandaging system may be easier for patients to apply themselves, and more tolerable to keep on. Indeed, Mrs JK has said that she prefers Mobiderm to her compression sleeve and often keeps it on during the day when she is at home. Mobiderm also successfully addressed the fibrotic tissue that was a concern, increasing patient satisfaction.

Conclusion

This case reports on the impact of a new compression system (Mobiderm®) to reduce lymphostatic fibrosis and achieve further volume reduction in a patient with BCRL. Given the limitations of this case report, the authors conclude that longitudinal studies

and randomised controlled trials are needed to investigate specific products and components of CDT that may affect lymphostatic fibrosis and adipose tissue. Also, factors affecting patient involvement and satisfaction need to be included in clinical assessments and research reports.

The authors declare no competing interest in Thusane and its compression products, Mobiderm®. The Mobiderm® kit was donated by the Canadian distributor, ERP. JL

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