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Limiting Elastic Compression to One-Fifth of the Skin Surface Area Improves Clearance of Edema: Longitudinal Fuzzy Wale Compression Speeds Healing of Chronic Leg Ulcers

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Problem:

Sir Robert Jones popularized the compression dressing that bears his name on the battlefields of France in WWI. Wrapping rolled cotton flannel around fuzzy cotton batting in contact with the skin stabilized fractures, stopped hemorrhage and down regulated pain and swelling. Modern elastic compression therapy, ACE wraps, Jobst type stockings and three layer dressings evolved from the Jones' dressing (1). Kozeny reported first human use of a novel textile that limits compression to one-fifth of the limb surface delivered via fuzzy Longitudinal Wales (LWC) * that creates furrows in the subcutaneous fat.(2)

A lymphangion is the functional unit of the lymphatic system, comprised of a thin walled vessel with intramural smooth muscle and a tissue valve that function as a lymphatic fluid pump. Elastic compression therapy for Chronic Leg Ulcers (CLU) enhance lymphangion function in the subcutaneous fat.(3,4) For the pump to function effectively, lymphangion effluent requires a low pressure outflow zone. Standard compression textiles act, in part, as a lymphatic tourniquet for effluent run off. LWC textile maintains

noncompressed fat between longitudinal wales that provide an abundant low pressure lymphatic outflow that speeds clearance of edema fluid.

Methods:

Four patients with complex CLUs refractory to >3 months of therapy were treated with elastic compression delivered by LWC textile.

Results:

Treatment technique and healing is documented in photos. All wounds healed. Pain control is discussed.

Conclusion:

Delivering elastic compression to one-fifth of the skin surface with fuzzy wales is highly effective in controlling edema, reversing stasis dermatitis, healing CLUs and controlling pain.

References:

1. Brodell, J, "The Robert Jones Bandage", Journal of Bone and Joint Surgery 1986; 68,776-779.
2. D. Kozeny, K. Stott , Longitudinal yarn compression textile: An innovative treatment for leg swelling; Journal of Vascular Nursing, Volume 25, Issue 3, Pages 62-62D.
3. Nicky Cullum, Trevor A Sheldon. A systematic review of compression treatment for venous leg ulcers. BMJ 1997;315:576-580.
4. E. A. Nelson, C. P. Iglesias, N. Cullum, D. J. Torgerson. Randomized clinical trial of four-layer and short-stretch compression bandages for venous leg ulcer. BMJ 1997;315:576-580.

*EdemaWear®, Compression Dynamics LLC, Omaha NE