

# Longitudinal Yarn Compression Textile: An Innovative Treatment for Leg Swelling

Debra Kozeny APRN, MSN, FNP  
Kelli Stott BS, RN, MPH  
University of Nebraska Medical Center

## ABSTRACT

Graduated compression stockings remain the standard treatment for chronic leg swelling and venous stasis disease. Graduated compression stockings are often not utilized secondary to difficulty donning, inability to tolerate compression, and expense. In addition, graduated compression stockings are often contraindicated in the setting of PAD and chronic leg swelling due to fears of ulceration related to arterial compromise.

Longitudinal Yarn Compression (LYC) is a novel textile stockinette that provides unique compressive therapy for control of leg swelling. Initial experience suggests results similar to standard graduated compression stockings.

## CASE STUDY 1



46 year old gentleman with history of traumatic injury to left lower extremity. Presented with pre-tibial wound that had been present intermittently since June, 2005. History of chronic leg swelling, renal failure (on hemodialysis), hypertension, and morbid obesity. Employed as a parking lot attendant, which required sitting in a small booth for 6-8 hours daily, with legs dependent. LYC placed at initial visit, along with Prisma and an adhesive foam dressing which was changed 2x week.

**Total time for wound healing= 3 weeks**

## DISCUSSION

Compression therapy has been used since the 19<sup>th</sup> century to treat leg swelling. However, traditional compression stockings may create a "tourniquet effect" if fit is poor or the garment is incorrectly applied. LYC may represent a physiologic advantage. Latex free yarns go up and down the extremity. Between the yarns, Lycra® spandex elastic links provide compression. There is non-compressed skin between each yarn. Over time, the yarn compresses into the skin, creating a "corn row" furrow. Theoretically, compression is applied with the "corn row" allowing for egress of lymphatic fluid. LYC has been used in over 800 patients since 2003, with no negative events reported.



## CASE STUDY 2

90 year old gentleman with a history of right lower extremity wound which had been present since Fall, 2005. Past medical history of polio, DJD, chronic leg swelling, and newly diagnosed peripheral arterial disease. Wound was caused by brace which patient wore secondary to right leg deformity. Due to age, peripheral arterial disease, and polio deformity, patient was not a candidate for standard compression stockings. PAD was treated with atherectomy. Wounds were then treated with localized wound care and LYC for control of edema.

**Total time for wound healing= 8 months**



FOR FURTHER INFORMATION  
[www.CompressionDynamics.com](http://www.CompressionDynamics.com)

## CONCLUSION

Control of leg swelling, resolution of wounds and prevention of new ulceration is the ultimate goal of compression therapy. LYC is a cost effective option for patients that cannot wear standard compression stockings. LYC offers the potential to provide standard wound care treatments with the application of uniform compression. In contrast, wound care is often altered while using Unna Boots or compression stockings. Compression therapy utilizing ACE wraps is often unsuccessful, given the potential for uneven and erratic compression.

Advantages of LYC include: ease of application, low cost, and ability to purchase without a prescription. We believe these benefits have increased patient compliance, thus achieving treatment goals in a variety of clinical settings.

While positive responses are anecdotal, LYC's novel mechanism of action lends itself to comparative studies to determine it's efficacy to standard compression garments.

## CASE STUDY 3



79 year old, obese female (BMI= 40) with a history of right pre-tibial venous stasis ulcer which had been present for greater than 9 months. Had undergone a right greater saphenous vein stripping in the past to treat venous stasis ulcers. Also present was a history of superficial and deep venous thrombosis affecting the right lower extremity. Patient girth made bending over to pull on standard compression stockings impossible. Patient also has a rheumatologic disorder, making the use of her hands difficult for donning stockings.

**Total time for wound healing= 4 weeks**