INTERFACE PRESSURE PATTERNS PRODUCED BY TWO DIFFERENT TYPES OF LYMPHEDEMA THERAPY DEVICES

BACKGROUND AND PURPOSE
Sequential compression has been reported to provide benefit in lymphedema treatment. A common feature among devices is their ability to deliver intermittent sequential pressures to assist lymphatic drainage. However, the magnitude, pattern and timing of delivered pressures may be different. Thus, our purpose was to compare the interfacial surface pressure profiles produced by two different types of automated compression devices used to treat lymphedema, a traditional sequential compression pump (Lympha Press®, LP) and a device designed to simulate manual lymphatic drainage (Flexitouch®, FT).

METHODS
Pressures along the forearm were measured in 10 adults using a 256 sensor array. Devices were tested in random order with the LP set to 45 mmHg and the FT set to standard. To determine the forearm pressure profile, five separate regions were monitored by a group of 36 sensors. Pressures of each group were obtained every 0.1 sec for at least two complete drainage cycles.

RESULTS
Pressure patterns differed between the two devices. The FT pattern had a short duration pressure pulse that rose to a peak in 1.5-2 seconds and returned to near zero in 4-8 seconds. This wave-like pattern moved up the arm from wrist toward axilla at about 3 cm/sec. The LP pressure pattern also rose rapidly, but rather than decreasing rapidly, it further increased and was sustained at a higher value for the cycle length of about 20 sec before declining. Pressures experienced by the forearm were significantly greater with LP device with the average pressure among sites being 52.5+/-6.8 versus the significantly lower FT average pressure of 28.6+/-8.7 mmHg, p<0.001.

CONCLUSIONS
Depending on the device chosen, major differences in the pattern, timing and magnitude of pressures experienced by patient limbs being treated for lymphedema can be expected. The differences herein described should be considered in when choosing and using a given device on any specific patient.