Background: Iliac vein stenting is an increasingly utilized treatment option for chronic venous insufficiency due to non-thrombotic iliac vein lesions (NIVL). Most commonly, the self-expanding Wallstent® (Boston Scientific, MA) is used to correct these iliac vein stenoses. Because of its ability to continuously exert radial force on venous walls, we seek to investigate the in-vivo behavior of these stents after initial deployment.

Method: A retrospective study was conducted to analyze venograms of patients who received stent placement for NIVLs. Patients were selected if they underwent a second procedure for stenting of the contralateral limb. This allowed us to visualize the initial stent and assess for any changes in diameter on the subsequent venogram.

Measurement of diameters of the stents using high resolution imaging were performed in three locations: proximal, middle and distal ends. These measurements were obtained in pixel units and converted to millimeters. Measurements of the stent were repeated on the subsequent venogram in the same three locations. Averages were calculated from the three locations to compute an average diameter of the primary stent.

Results: Venograms from 100 patients (39 male, 61 female) were analyzed. Average age was 66.89 (range 22-96, SD ± 14). Wallstents were used in 55 right and 45 left limbs. These stents were placed for lesions involving the common iliac (28 proximal, 22 middle, 9 distal), external iliac (15 proximal, 19 middle, 5 distal), or common femoral (1 proximal, 1 middle). Average time between procedures was 28.48 days (range 3-237, SD ± 39.89). Average stent diameter following the first procedure was 16.38mm (range 10.95-21.45, SD ± 2.24). Average stent diameter measured on the subsequent venogram was 17.58mm (range 12.84-24.11, SD ± 2.38, p=0.0003). There was statistically significant increase in diameter regardless of gender or laterality (p<0.05). However, no significant increase was identified in stents deployed in the distal vein segments (distal common iliac, external iliacs, and femoral veins) (p>0.05).

Conclusion: Our study shows that self-expanding Wallstents can continue to expand days to weeks in vivo following initial deployment. These changes were more significant in stents placed in the proximal and middle segments of the common iliac vein.