

# Reverse “Bell-Bottom” Technique for Custom Tube Aortic and Iliac Endografts

NOTES

*Neal S. Cayne, MD, New York, NY; Peter L. Faries, MD, New York, NY; Stephanie S. Saltzberg, MD, New York, NY; Frank J. Veith, MD, New York, NY; Evan C. Lipsitz, MD, New York, NY; Patrick J. Lamparello, MD, New York, NY; Thomas S. Riles, MD, New York, NY*

## Purpose

Endografts are frequently oversized 10 to 20% larger than the native vessel diameter. Excessive undersizing or oversizing can lead to an increased incidence of endoleaks, graft migration, or possible graft occlusion. We describe a reverse bell-bottom technique that allows for a better endograft size match in cases where the diameter of the distal neck is significantly smaller than that of the proximal.

## Methods

We reviewed nine cases of custom made tube endografts placed for aortic and iliac artery aneurysms in eight patients where the distal neck diameter was significantly smaller (? 5 mm) than the proximal neck diameter. Hypogastric artery origins and outflow branches were coiled prior to endograft placement for common iliac and hypogastric artery aneurysms respectively. All nine arteries were repaired using a reverse bell-bottom technique, placing a smaller diameter distal endograft, and then placing the larger diameter graft(s) inside the distal graft, thus creating a proximal or reverse “bell-bottom” configuration.

## Results

All aneurysms were excluded at completion of the case. There were two non-aneurysm-related deaths at 2 weeks and 8 months postprocedure. The seven aneurysms in the other six patients remain excluded an average of 20 months (range 7 to 46 months). Results are presented in Table 1.

Table 1. Study Results

Aneurysm Age/Sex	Neck Location(cm)	Neck Diameter (mm)	Distal Diameter (mm)	Middle Graft	Proximal Graft
73/F Aorta	5.0	11	18	AneuRx 16x115	None 20x 37.5
77/F Aorta (rupture)	5.5	16	23	Zenith 20x 55	24x55 26x 36
93/M Hypogastric	4.5	EIA 11	CIA 17	Excluder/ 14.5 x70	20x 37.5 20x 37.5
AneuRx (16 mm proximal)					
79/M CIA	4.5	EIA 12	CIA 18	Zenith 14x55	18x55 22x 55
Hypogastric 4.5 EIA 11 CIA 16 Zenith 14x 55 None 18x55					
72/M CIA	4.2	EIA 10	CIA 16	AneuRx 12x 85	None 20x 37.5
80/M CIA	3.8	EIA 9	CIA 15	AneuRx 12x 85	None 20x 37.5
75/M CIA	3.5	CIA 14	CIA 20	AneuRx 16x 55	None 22x 37.5
78/M CIA	4.0	EIA 11	CIA 18	AneuRx 14x 85	None 20x 37.5

CIA = common iliac artery; EIA = external iliac artery; F = female; M = male.

## Conclusions

The described reverse bell-bottom technique can allow for more appropriate sizing of custom made tube endografts when the distal neck diameter is significantly smaller than the proximal neck diameter. This technique may help to decrease the incidence of endoleaks, graft migration, and occlusion caused by inappropriate graft sizing in patients with this type of challenging anatomy.