Intravascular Lithotripsy Vessel Preparation for Calcified Aorto-Iliac Arterial Disease

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Objective:

Atherosclerotic aorto-iliac lesions often have significant calcifications. Stenting is used for endovascular management in this area, but specific characteristics can challenge proper stent expansion. Intravascular lithotripsy (IVL) has been effective in femoral-popliteal disease, addressing medial and intimal calcium while minimizing vessel wall damage. This study presents our experience with IVL vessel preparation in calcified aorto-iliac segments to facilitate stent deployment and improve durability.

Methods:

A retrospective analysis was conducted from June 2023 to March 2024, including patients with calcific aorto-iliac peripheral arterial disease who underwent IVL vessel preparation. The indication for vessel preparation was the presence of mild or significant calcification in combination with intraluminal lesion crossing. Both stenotic and occlusive lesions were included as part of the study. The outcomes analyzed were technical success and major adverse events.

Results:

A total of 13 patients participated in the study, achieving technical success in all instances without any reported major complications. The choice of the segment to be subjected to IVL depended on the extent of the calcifications and the hemodynamics of the lesions. In five cases involving the abdominal aorta and eight cases concerning the iliac arteries, IVL was utilized addressing both the common iliac artery and the external iliac artery. In every instance of common iliac artery preparation, a stent was deployed. Notably, in five cases, it was possible to refrain from extending the stent into the external iliac artery due to favorable angiographic outcomes observed following IVL, which were further validated by direct flow assessment using Doppler ultrasound. Over an average follow-up period of nine months, there were no complications related to the treatment.

Conclusion:

IVL promote vascular remodeling representing a significant opportunity to expand the indications for endovascular treatment improving the quality of revascularization and enhancing long-term patency.