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# A belt and suspenders: Suction and a filter to reduce embolic events☆

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We read with interest the study by Sharis et al. [1] regarding their experience with the WIRION EPS filter. We congratulate the authors on their study demonstrating the safety and efficacy of WIRION EPS filter with Jetstream atherectomy. Endovascular interventions for peripheral vascular disease have increased with the advent of new and efficacious devices and therapies. We are now treating more complex pathology and patients than in the past. Distal embolization (DE) is an unfortunate but nonetheless frequent occurrence during lower extremity arterial interventions [2]. Predictors of DE include chronic total occlusions, in-stent restenosis, and thrombotic, calcific, long lesions, and those that also fall under TASC II C and D [3].

There is a message of "leave nothing behind" in peripheral interventions, which has led to an increase in the use of atherectomy and balloon angioplasty only as a treatment strategy. A major disadvantage of percutaneous atherectomy devices is the risk of distal embolization. This occurs with virtually all commercial devices. Therefore, the use of a distal filter protection device is an important consideration. In the PROTECT registry, distal embolic events were examined using peripheral filters in 40 patients. Clinically significant macro debris (diameter > 2 mm) was evident in 90.9% of the atherectomy patients versus 27.6% of the angioplasty/stenting patients [4]. Interestingly, 51% percent of the patients treated have some embolic material within the filter. This is despite the JETSTREAM device having duel functions of both aspiration and atherectomy.

One limitation of the study is the anatomic subset of patients. Among the cohort of patients, 83% had at least 2 or more vessel run off. Also, the lesions were limited to the femoropopliteal distribution. As typical with critical limb ischemia (CLI), these patients usually have multilevel disease and more complex lesions, leading to an increased risk of DE. While DE and no reflow is treatable it can have devastating consequences within the CLI population. At this time, the overall clinical significance of capture of embolic material is not known. The risk of DE has to be weighed against the increased cost per case with use of a distal embolic protection device.

In our clinical experience, we judiciously use embolic filter protection for single vessel runoff in all cases and especially in patients with CLI. In cases where use of a distal embolic protection device is not feasible, we use a catheter suction technique we previously described called "Suck-U-Surge," [5] whereby we reverse blood flow in the guiding catheter by aspirating with a large syringe at the time of balloon and/or stent deployment. We also use this technique in peripheral interventions by aspirating from the sheath during balloon/stent deployment. The reversal of blood flow results in removal of debris so that it cannot embolize distally.

The role on embolic protection for femoropoliteal lesions is not established. Embolic protection should be used in high risk subsets such as single vessel run off, post thrombolytics, and after atherectomy. Further research is needed to determine if embolic protection should be used routinely for all peripheral interventions. Delineation of who would most benefit from embolic protection during peripheral intervention is still a fertile ground for investigation.

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