Which therapeutic option do you most often use to treat in-stent restenosis in the SFA and why?

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There is no single technology that adequately addresses the vexing problem of SFA restenosis. As a result, our practice is to rely on multiple, different strategies in an attempt to optimize each individual outcome. We also handle restenosis differently depending on what form of therapy was applied in the initial treatment.

For restenosis after angioplasty, we either perform excisional atherectomy with adjunctive cryoplasty (cut and chill) (Boston Scientific Corporation, Natick, MA) or proceed with stenting. In the case of in-stent restenosis, we perform angioplasty for focal lesions (rare), cryoplasty for diffuse lesions, and a combination of laser with adjunct cryoplasty for in-stent occlusions. In cases where the restenosis has occurred later than 1 year from the initial treatment, we sometimes find orbital atherectomy to be of use (but not for younger lesions).

Restenosis that follows atherectomy as the initial treatment is typically stented. For patients who are unfortunate enough to have suffered two consecutive restenoses, we prefer a salvage treatment of debulking, endograft placement, and high-pressure postdilatation. Through the course of any of these interventions, we are always mindful to preserve the option of femoropopliteal bypass, which remains an important therapy for dense claudicants with recurrent or progressive disease.

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In-stent restenosis is still a major drawback in all territories (especially the SFA and to a lesser extent below the knee). We know from several studies that percutaneous transluminal angioplasty (PTA) alone will not work (because of the sponge-like behavior of neointimal hyperplasia). Since we made an endovascular commitment to the patient at the time of the initial procedure, and the patient will be older and therefore oftentimes a worse candidate for surgery, I still offer a secondary endovascular procedure. In all patients with in-stent restenosis, I have been using laser debulking followed by balloon angioplasty over the last 2 years. Given the good results using drug-eluting balloons in primary lesions in the SFA, I am now combining the debulking therapy with drug-eluting balloons. Preliminary results look very promising, and we are thus able to increase our secondary patency rates, including in TASC D lesions.

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I perform approximately 20 to 40 SFA interventions per month. I almost always treat a first instance of in-stent restenosis in the SFA with simple balloon angioplasty. This

will be effective in a significant proportion of cases. Although this can often be achieved with a standard compliant balloon, I often prefer to use a cutting or scoring balloon for these particular lesions. Latest-generation cutting/scoring balloons are available in much longer lengths now, expanding the lesion lengths that can be treated easily. I have had very good results with the AngioSculpt balloon (AngioScore, Inc., Fremont, CA).

My second-line intervention after failed PTA, or first-line intervention for a recurrent in-stent restenosis, is relining with a Viabahn covered stent. Covered stents address the issue of hyperplasia or plaque progression through the interstices of bare-metal stents that lead to ISR. Ultimately, the type of intervention must be assessed on a case-by-case basis and depends on specific lesion characteristics. For example, I have a lower threshold to reline previous stents if the lesions are long segments involving the entire stent length. Poor runoff or sub par proximal and distal landing zone quality of the native vessel, on the other hand, might negatively influence my use of a covered stent. Finally, surgical bypass generally remains the most durable treatment for SFA lesions and should always be considered, especially when endoluminal therapies fail.

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We perform approximately 20 to 25 SFA interventions per month at our institution. As in most programs, and largely based on the existing evidence, we liberally deploy stents for SFA lesions exceeding 10 cm in length. Approximately 30% to 40% of these stents develop in-stent restenosis within 1 year, and management can be challenging. Our initial approach for diffuse ISR is laser atherectomy using the Spectranetics 2.3-mm cool-tip laser (Spectranetics Corporation, Colorado Springs, CO), followed by repeat dilation and placement of heparin-bonded Viabahn stent grafts (Gore & Associates, Flagstaff, AZ). Somewhat atypically, we are comfortable extending stent grafts across the midpopliteal segment if the anatomic situation demands this and have only experienced rare "catastrophic" thrombotic events in follow-up. Stent grafts have been reported to provide excellent durability for long-segment and complex patterns of disease. For more focal in-stent restenosis, we initially deploy atherectomy with the TurboHawk device (Covidien, Mansfield, MA). In these cases, we limit placement of additional stents or stent grafts depending on the final angiographic and hemodynamic result after atherectomy and low-pressure balloon dilation. All patients are then placed into a surveillance program to identify early failures that might jeopardize the limb.

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I perform three to five leg cases (claudicants and critical limb ischemia) per week. My preference is to use debulking devices followed by angioplasty to treat in-stent restenosis. Although the outcome of atherectomy in such cases appears to be inferior to de novo lesions, PTA alone and/or restenting is also less advantageous than in de novo lesions. I am not sure if the addition of PTA after debulking improves patency, but acute angiographic appearance of the treated segment is always better using both modalities. Speaking of uncertainties in outcome, I confess that I have not seen convincing data supporting my approach, either. It is entirely based on my own experience and scant anecdotal reports.

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I perform approximately 20 to 30 SFA interventions per month. In dealing with in-stent restenosis in the SFA, I try to refocus my original strategy to maintain patency. With long-segment moderate restenosis, I tend to use either a fixed-diameter noncompliant balloon or a compliant one such as the VascuTrak (Bard Peripheral Vascular) to remodel the plaque and improve luminal diameter. This will help optimize luminal diameter for more effective angioplasty. For severe restenosis, I prefer to employ debulking techniques such as laser atherectomy followed by repeat angioplasty. In these cases, we're dealing with more significant plaque burden, and atherectomy will assist in regaining the lost luminal diameter and improve flow. ■

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