

R2P: Precision, Performance, Possibility

A pioneer's perspective on the rise of radial-to-peripheral in PAD and the role of dedicated tools and training.

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Approximately 200 million people worldwide are affected by peripheral artery disease (PAD). As endovascular technology and operator experience have advanced, lower extremity PAD is increasingly treated with minimally invasive approaches, particularly for infrainguinal disease. Despite this

evolution, common femoral artery access remains the default strategy for most infrainguinal interventions due to familiarity, device compatibility, and historically reliable support for complex lesion treatment. Over the past decade, transradial access has become the preferred access site for percutaneous coronary intervention, largely because it is associated with lower access site complications and improved patient comfort and satisfaction. Building on this experience, radial-to-peripheral (R2P) access has gained increasing momentum in peripheral interventions, particularly since 2019, when longer, dedicated radial sheaths and platforms became commercially available and enabled more consistent reach to lower extremity targets. Early adoption of R2P was limited by inadequate guide support, restricted availability of long-shaft devices, and uncertainty regarding feasibility for complex multilevel disease. However, early clinical experience demonstrated that R2P interventions could be performed safely and effectively, establishing a foundation for broader use.

More recent multicenter experience has reinforced that a dedicated R2P device ecosystem—including long-shaft balloons, self-expanding stents, specialty guidewires, and

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atherectomy technologies—can facilitate treatment of complex and multilevel PAD with high technical success and frequent same-day discharge. Importantly, ongoing advancements in R2P technology have expanded the scope of lesions that can be addressed, allowing operators to treat challenging aortoiliac, femoropopliteal, and tibial disease in selected patients. The availability of R2P-specific microcatheters has improved support and trackability for crossing long chronic total occlusions, while dedicated atherectomy platforms, including orbital and laser technologies, have enhanced lesion modification and facilitated more predictable vessel preparation. These advances have been further strengthened by the emergence of drug-coated balloon therapy and dedicated R2P-compatible stents, enabling durable definitive treatment after successful lesion crossing and preparation.

Although progress has been rapid, the next phase of growth in R2P for infrainguinal PAD will benefit from a stronger comparative evidence base. To date, much of the published experience has come from single-center experiences, operator series, and nonrandomized registries, with relatively limited randomized data. Future work should help clarify optimal patient selection, procedural efficiency, device strategy, and durable outcomes across the spectrum of infrainguinal disease. ■