Cath Lab Digest

A product, news & clinical update for the cardiac catheterization laboratory specialist

CATH LAB SPOTLIGHT

Peconic Bay Medical Center, Northwell Health

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Tell us about your cath lab. Is it part of a cardiovascular service line?

Peconic Bay Medical Center is part of Northwell Health and reports to The Eastern Region Cardiac Service Line.

What is the size of your cath lab facility and number of staff members?

We have 1 cath lab and 1 cath/electrophysiology (EP) lab with a 10-bed holding area, and our department has a total of 21,000 square feet. Constructed as the third floor of the Corey Critical Care Pavilion, our new facility opened on January 10, 2020.

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In This Issue

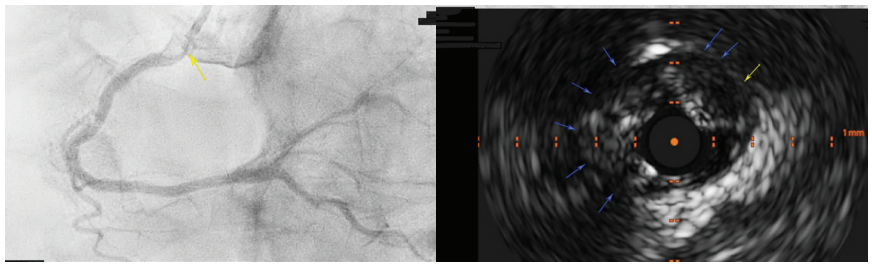
CALCIUM CORNER

Safe and Effective Calcium Modification in Severe Ostial Right Coronary Artery Stenosis

Srini Potluri, MD, FACC, FSCAI

CASE

The patient is an 86-year-old male with known coronary artery disease (CAD). Three years ago, he had robotic left internal mammary artery (LIMA) graft to the left anterior descending (LAD) and percutaneous coronary intervention (PCI) of the proximal right coronary artery (RCA). He now has dyspnea on minimal exertion and recent angiography showed a severe, heavily calcified, ostial RCA stenosis. Distal to the stenosis, he had a previous stent that was patent. He was referred to our facility for possible atherectomy and intervention on his ostial RCA.



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CASE SERIES

Tough Times: Radial Interventions to Combat the Ongoing Damage to the Healthcare System Inflicted by COVID-19

Richard Markiewicz, MD; Saleh El Dassouki, MD; Nicholas McKay, RN

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Tough Times: Radial Interventions to Combat the Ongoing Damage to the Healthcare System Inflicted by COVID-19

Richard Markiewicz, MD; Saleh El Dassouki, MD; Nicholas McKay, RN

SARS-CoV-2 has put tremendous pressure on healthcare systems. Various efforts have been made to provide a safe work environment for healthcare personnel and safe patient care. This has led to both a shortage of beds and of staffing personnel. However, cardiovascular patients with complex medical disease continue to require urgent access to cardiac catheterization labs in the hospital. Under this mounting pressure and whenever possible, our team at Great Plains Heart Health Institute in North Platte, Nebraska, has made the effort to use radial access with same-day discharge. The R2P™ DESTINATION SLENDER™ Guiding Sheath (Terumo), R2P™ METACROSS® RX PTA Balloon Dilatation Catheter and R2P™ MISAGO® RX Self-Expanding Peripheral Stent (both Terumo), as well as radial atherectomy devices (CSI), are all products well suited to the times.

Prior to COVID, we would convert most complex coronary lesions (atherectomy, chronic total occlusion work, bifurcation stenting) to large sheath femoral access percutaneous coronary intervention (PCI). The patients would usually be kept overnight. With the addition of 7 French (Fr) sheath capability and the extra-support R2P Destination Slender, currently about 95% of our coronary interventions are radial. Despite the increase we are seeing in lesion complexity during this pandemic, we are doing more, not less, radial. Furthermore, patients (including complex patients) go home the same day due to a lack of beds or staff. We cannot afford possible femoral vascular interventions that likely will require hospitalization. The assistance of the R2P sheaths and R2P Destination Slender for peripheral vascular procedures has allowed us to perform 60% of our peripheral vascular procedures from the radial access. Previously, all of our peripheral vascular procedures were done via femoral access.

Studies have also demonstrated the safety of complex transradial PCI interventions compared to the transfemoral approach.[1] Furthermore, radial artery access for peripheral endovascular procedures appears to be safe and effective in numerous studies, and its use should be considered more frequently.[2,3] The following cases highlight how we have changed our practice in order to respond to the shortage of beds and staff resulting from the COVID-19 pandemic.

Case #1

A male in his seventies with hypertension and dyslipidemia presented for preoperative cardiovascular examination and evaluation of progressive claudication of the right leg after walking several yards with an abnormal right ankle-brachial index (ABI). A right lower extremity arterial Doppler showed severe proximal superficial femoral artery (SFA) stenosis with monophasic flow. In addition, the patient had reversible ischemia, demonstrated by a pharmacologic nuclear stress test.

Technique

Vascular access was obtained at the right radial artery using a 5 Fr GLIDESHEATH SLENDER® Introducer Sheath (Terumo), inserted using the original Seldinger technique. After injection of 2.5 mg verapamil and 200 mg nitroglycerin into the radial artery and full anticoagulation with heparin, a 5 Fr TIG OPTITORQUE® (Terumo) was used to perform diagnostic coronary angiography. The coronary angiogram, however, showed no occlusive disease.

Members of the Cath Lab Team at Great Plains Heart Health Institute in North Platte, Nebraska.

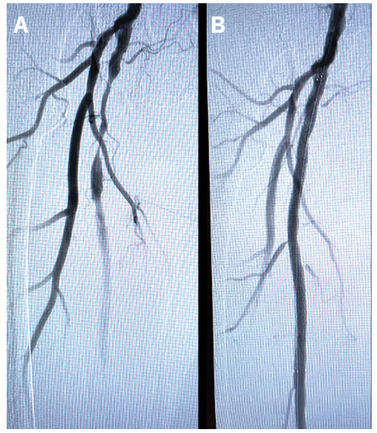

Figure 1A-B. Case #1.
(A) 95% proximal superficial femoral artery (SFA) stenosis. (B) Post-intervention angiography revealed excellent results with no residual stenosis and brisk distal flow through the SFA.

Given the shortage of time slots due to staffing issues during the COVID pandemic, we elected to proceed with the right lower extremity angiography instead of finding another peripheral cath lab schedule opening. A 5 Fr pigtail was advanced to the distal aorta and angiography demonstrated a 95% proximal SFA stenosis (Figure 1A). We decided to exchange the 5 Fr radial sheath with a 6 Fr, 119 cm R2P DESTINATION SLENDER, advanced over an .035-inch GLIDEWIRE ADVANTAGE® to the right common femoral artery. An .018-inch GLIDEWIRE ADVANTAGE TRACK™ Guidewire (Terumo) was successfully advanced across the lesion and a 6 mm x 120 mm R2P METACROSS Balloon was used to predilate the lesion. A 7 mm x 150 mm R2P MISAGO RX Self-Expanding Peripheral Stent was advanced over the wire and deployed at the lesion. Post dilation was performed with the same balloon.

Post-intervention angiography revealed excellent results with no residual stenosis and brisk distal flow through the SFA (Figure 1B). The sheath was removed and a TR Band® (Terumo) was applied. The patient tolerated the procedure extremely well. The total added time was about 10 minutes and the patient was able to be discharged home in two hours. Radial access allowed us the flexibility of using the same access site for angiography of both the coronary and peripheral arteries, as well as peripheral intervention. The use of radial access also permitted rapid, safe discharge with a low risk of bleeding and complications.

Case #2

A male in his seventies with a history of hypertension, dyslipidemia, and calcific peripheral vascular disease presented with increasing shortness of breath limiting his mobility. The patient had a nuclear stress test showing severe inferior and inferolateral ischemia, and was referred for cardiac catheterization.

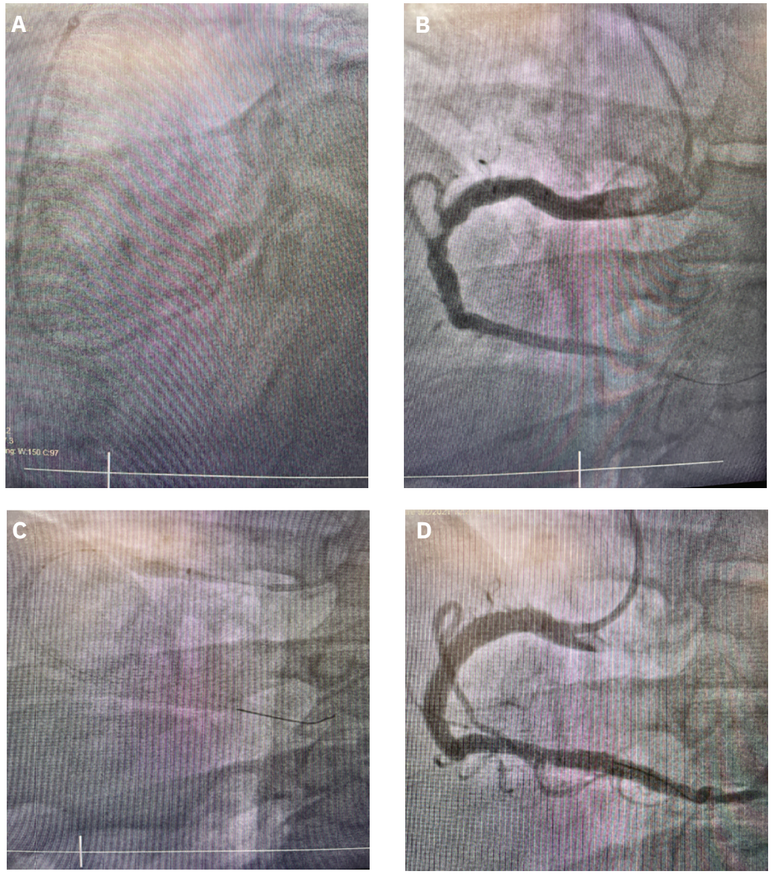

Figure 2A-D. Case #2.
(A) A 6 Fr, 75 cm R2P DESTINATION SLENDER (Terumo) was advanced over an .035-inch wire and successful cannulation with a 5 Fr OPTITORQUE® Diagnostic Catheter Tiger (Terumo) was achieved. (B) An 85% eccentric, calcified stenosis in a 5 mm mid right coronary artery. (C) Delivery of a 4.0 mm x 12 mm Shockwave Intravascular Lithotripsy balloon (Shockwave Medical) was attempted, but it would not advance across the lesion, despite 3.0 mm balloon pre-dilation and the usage of a 6 Fr Telescope™ guide extension (Medtronic) (D) Final angiography revealed good results with 0% residual stenosis.

Technique

Vascular access was obtained at the right radial artery and a 5 Fr short GLIDESHEATH SLENDER was inserted using the original Seldinger technique. After injection of 2.5 mg verapamil and 200 mg nitroglycerin into the radial artery and full anticoagulation with heparin, the use of multiple coronary catheters was attempted, but we were unable to cannulate the coronaries due to severe tortuosity of the subclavian and innominate arteries. An alternative would normally have been switching to femoral access, but with limited hospital beds and short staffing due to COVID-19, we elected to avoid femoral access in order to limit the risks of complications and possible need of an overnight bed. Thus, a 6 Fr, 75 cm R2P DESTINATION SLENDER was advanced over an .035-inch wire and successful cannulation with a 5 Fr OPTITORQUE® Diagnostic Catheter Tiger was performed (Figure 2A). Angiography demonstrated an 85% eccentric, calcified stenosis in a 5 mm mid right coronary artery (RCA) (Figure 2B). The RCA came off low on the right coronary cusp, so an Amplatz left (AL)1 guide was chosen for extra backup, and we were able to cannulate the vessel successfully. A Runthrough® NS wire (Terumo) was advanced to cross the lesion. Delivery of a 4.0 mm x 12 mm Shockwave Intravascular Lithotripsy balloon (Shockwave Medical) was attempted, but would not advance across the lesion, despite 3.0 mm balloon pre-dilation and the usage of a 6 Fr Telescope™ guide extension (Medtronic) (Figure 2C). We decided to proceed with orbital atherectomy, performed with a 1.25 mm Diamondback 360® crown (CSI). The Shockwave balloon was too kinked to be readvanced, so we advanced a 5.5 mm x 26 mm Onyx™ stent (Medtronic) that crossed the lesion and was deployed successfully. Post dilation was performed with a 5.5 mm noncompliant Emerge™ balloon (Boston Scientific). Final angiography revealed good results with 0% residual stenosis (Figure 2D). The patient was discharged home after 4 hours. A safe and efficient radial technique with the use of a long R2P Destination Slender allowed us to perform a complex radial intervention, despite difficult upper extremity anatomy and tortuosity.

Conclusion

Same-day discharge decreases costs, improves efficiency, increases patient satisfaction, and allays potential patient fears of admission in a setting of a high COVID patient census.[4] Radial intervention represents the best vehicle for our practice, as outlined above, to achieve same-day discharge for patients undergoing coronary and vascular procedures. Radial-specific sheaths and equipment allow us to provide patients with state-of-the-art care without jeopardizing safety. ■

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References

1. Khan AA, Panchal HB, Zaidi SIM, et al. Safety and efficacy of radial versus femoral access for rotational Atherectomy: a systematic review and meta-analysis. *Cardiovasc Revasc Med*. 2019 Mar; 20(3): 241-247.
2. Ansaarie I, Goldfaden RF, Niman S, et al. A retrospective cohort study to evaluate the efficacy and safety of minimal arterial access lower-extremity intervention via peripheral orbital atherectomy. *Vascular Disease Management*. 2021; 8(6): E89-E94.
3. Kumar AJ, Jones LE, Kollmeyer KR, et al. Radial artery access for peripheral endovascular procedures. *J Vasc Surg*. 2017; 66: 820-825.
4. Martinelli MJ, Caputo RP, Mamas MA, Wohns D, Osborne M. Same-day discharge: if not now, when? *Cath Lab Digest*. 2020 Nov; 28(11): 14-16. Accessed October 7, 2021. Available online at https://www.hmpglobal-learningnetwork.com/site/cathlab/content/same-day-discharge-if-not-now-when

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