Journal of Cardiothoracic and Vascular Anesthesia 000 (2022) 1–2

Contents lists available at ScienceDirect

Journal of Cardiothoracic and Vascular Anesthesia

journal homepage: www.jcvaonline.com

Letter to the Editor

Supraclavicular Nerve Block Sympathectomy for Refractory Arterial Vasospasm During Subclavian Stenting Procedure and Entrapped Arterial Catheter

To the Editor;

Angiography commonly is performed using the radial artery.[1] Arterial vasospasm during catheterization may occur between 4%-to-20% of cases, with 97.3% being mild and transient.[2,3] Catheter entrapment is rare (<1%).[3] General anesthesia or a peripheral nerve block may reverse refractory vasospasm, but data are limited to a small number of case reports.[4-6] We report a case of severe radial artery vasospasm and catheter entrapment during ipsilateral subclavian artery stenting that was refractory to all treatment. A supraclavicular nerve block resulted in vasodilation and release of the catheter, facilitating its removal.

A 64-year-old woman with critical left subclavian stenosis (>95%) presented for a cerebral angiogram, angioplasty with intravascular lithotripsy, and subsequent stenting. During general anesthesia, a 7F left radial artery sheath was placed and a stent was deployed. The sheath could not be removed after the procedure. Angiography revealed radial artery vasospasm, entrapping the catheter, with complete obliteration of distal blood flow to the level of the brachial artery (Fig 1). Warm compresses, topical, subcutaneous, and intraarterial nitroglycerin, verapamil, and catheter lubricant injectate failed to reverse the vasospasm. Reactive hyperemia also was attempted by inflating a blood pressure cuff on the affected arm for 2 minutes followed by release of the cuff. Despite all these measures, catheter entrapment and restoration of distal blood flow could not be corrected. The regional anesthesia team was consulted to attempt a sympathetic nerve block. An ultrasound-guided supraclavicular block with 1% lidocaine (30 mL) was performed. The catheter was then successfully removed from the left upper extremity with the restoration of blood flow. (Fig 1)

Catheter entrapment from arterial vasospasm during an endovascular procedure is a rare but serious complication that may require vascular surgery for removal and

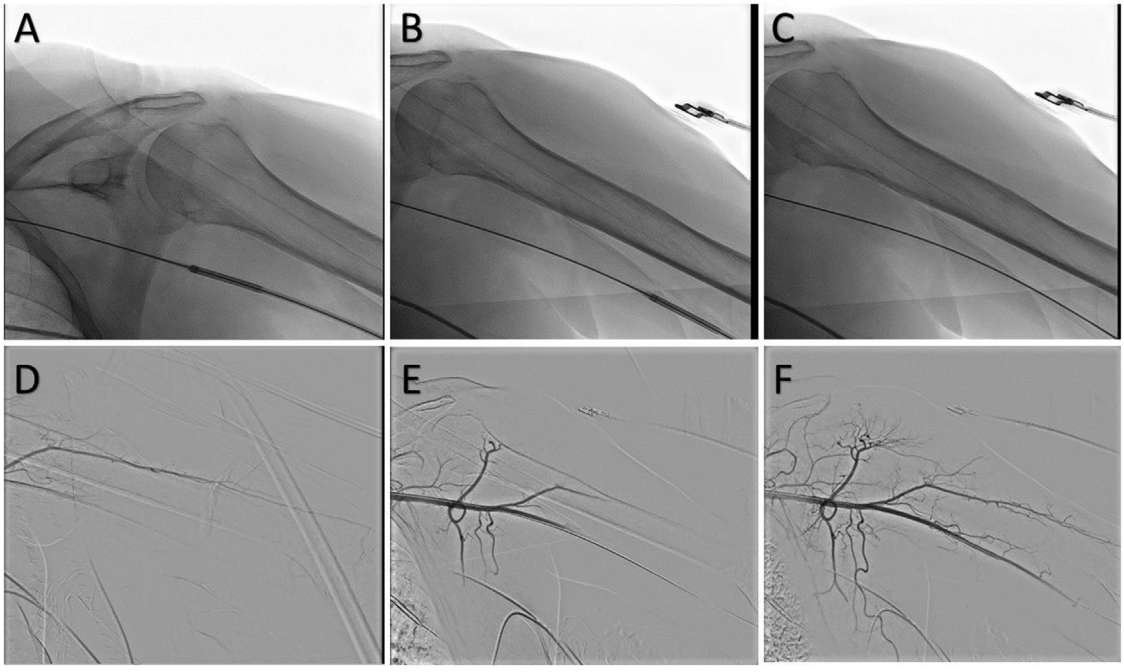

Fig 1. After the supraclavicular block, the first 3 images represent movement of the catheter and sheath through the left upper extremity (A-C). (D) reflects the pre-block arterial blood flow and € and (F) depict restoration of blood flow at approximately 3 and 5 minutes after the block was administered.

revascularization if not corrected by other means. The use of a brachial plexus nerve block for the management of catheter entrapment is limited, but this technique is recommended as a third-line treatment when other therapies have failed .[4-7] Theoretically, stellate ganglion block also may achieve similar results; but, to our knowledge, has not been attempted.

Conflict of Interest

Dr. Ajit S Puri has the following conflicts of interest: he is a consultant for Medtronic Neurovascular, Stryker Neurovascular, Balt, Q'Apel Medical, Cerenovus, Microvention, Imperative Care, Agile, Merit, CereVasc and Arsenal Medical; has received research grants from National Institues of Health, Microvention, Cerenovus, Medtronic Neurovascular and Stryker Neurovascular; and is a stock holder in InNeuroCo, Agile, Perfuze, Galaxy, and NTI.

References

1 Anjum I, Hashmi A. Transradial vs. transfemoral Approach in cardiac catheterization: A literature review. Cerues 2017;9:e1309.
2 Ho HH, Jafary FH, Ong PJ. Radial artery spasm during transradial cardiac catheterization and percutaneous coronary intervention: Incidence, predisposing factors, prevention, and management. Cardiovasc Revasc Med 2012;13:193–5.
3 Pancholy SB, Karuparthi PR, Gulati R. A novel nonpharmacologic technique to remove entrapped radial sheath. Catheter Cardiovasc Interv 2015;85:E35–8.
4 Fitzgerald BM, Babbel LA, Bacomo FK, Dhanjal ST. Regional to the rescue! Axillary brachial plexus nerve block facilitates removal of entrapped transradial catheter placed for cardiac catheterization. Reg Anesth Pain Med 2017;42:475–7.
5 Satti SR, Sivapatham T, Eden T. Radial artery neuro guide catheter entrapment during mechanical thrombectomy for acute ischemic stroke: Rescue brachial plexus block. Interv Neuroradiol 2020;26:681–5.
6 Amitani K, Tanioka S, Ishiyama M, et al. Treatment of transradial angiogram catheter entrapment by axillary artery spasm with supraclavicular brachial plexus block: A case report. A A Pract 2018;11:131–3.
7 Sandoval Y, Bell MR, Gulati R. Transradial artery access complications. Circ Cardiovasc Interv 2019;12:e007386.

Raghav Mohan, MBBS*
Jessica Cox, MD*
Ajit S. Puri, MD†
Marwa Elnazeir, MD†
Jasmeet Singh, MD†
Samantha Mayo, CRNA*
Brian R Gebhardt, MD, MPH, FASE[1,*]
*Department of Anesthesiology and Perioperative Medicine, University of Massachusetts Medical Centerm Worcester, MA
†Department of Neurointerventional Radiology, University of Massachusetts Medical Center, Worcester, MA

https://doi.org/10.1053/j.jvca.2022.10.015