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Balloon Angioplasty in Takayasu Arteritis Induced Subclavian Artery Stenosis in a Young Patient

Amanpreet Singh Wasir[1]*; Ravi Kalra[2]; John D'Souza[3]

[1]Undergraduate Student, Phase III Part-I MBBS, Bharati Vidyapeeth (Deemed to be University) Medical College, Pune, Maharashtra, India.

[2]Professor and Head, Department of Cardiology, Bharati Vidyapeeth (Deemed to be University) Medical College, Hospital and Research Centre, Pune, Maharashtra, India.

[3]Professor and Head, Department of Interventional Radiology (Radiodiagnosis), Bharati Vidyapeeth (Deemed to be University) Medical College, Hospital and Research Centre, Pune, Maharashtra, India.

***Corresponding Author(s): Amanpreet Singh Wasir**
Undergraduate Student, Phase III Part-I MBBS, Bharati Vidyapeeth (Deemed to be University) Medical College, Pune, Maharashtra, India.
Tel: +91-9811686560;
Email: amanpreet.wasir@gmail.com

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Case report

Takayasu Arteritis (TA) is a rare chronic inflammatory vascular disorder, which is prevalent in the Asian population. TA is predominantly seen to affect large arteries of the body, of which subclavian arteries also commonly bear this insult. In this distinctive case, a young patient, presented with gradually progressive pain in the left upper limb. Arterial doppler showed 90% stenosis of Right Subclavian Artery (RSA) with triphasic flow of the mid-RSA. A long segment occlusion of Left Subclavian Artery (LSA) was visualized for around 6-8cms (triphasic flow in proximal part with occlusion of the distal LSA and collaterals). Distal run off with satisfactory blood flow was noted on either side (right side>left side). Also, biphasic flow was noted in axillary, brachial, radial, and ulnar arteries in both sides. Furthermore, angiography showed that there was short segment- 70% stenosis of the RSA after the origin of the right vertebral artery, and occlusion of the LSA 2cms after the origin, with reformation of the brachial artery via costo-cervical and costo-thoracic collaterals **(Figure 1).**

In view of the above clinical scenario, Plain Old Balloon Angioplasty (POBA) was done for RSA. Herein, 5F H1 catheter was used to cannulate the RSA over the 35x150 cm *Terumo*™ *guide wire*, and later the *Amplatz Stiff*™ *wire* was used to cross the lesion, and balloon dilatation was done with 5.0x40 mm balloon at 8atm thrice, which showed excellent results **(Figure 2).** Stent implantation was not done in view of high rates of restenosis in TA.

However, three attempts were made to cross LSA with a 0.035”x150cm guide wire supported by a 7F long sheath and 4F H1 catheter but failed due to chronic total occlusion, hence angioplasty to LSA had to be abandoned despite multiple attempts **(Figure 3).** The patient was later stabilized with medical line of treatment, also, network of collaterals that had formed for the left brachial artery kept her relatively symptom free.

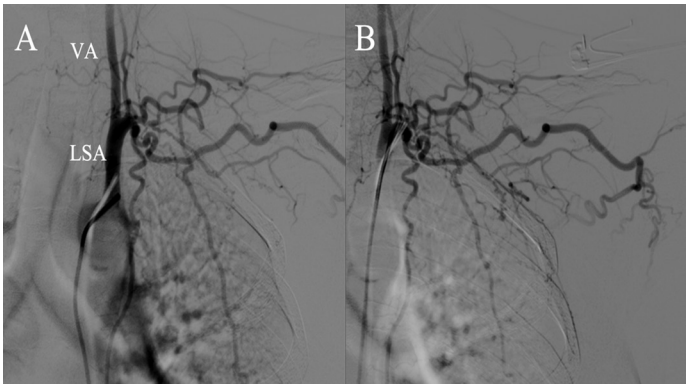

Figure 1: Subclavian Artery Angiogram: **(A)** and **(B):** Showing long segment occlusion of LSA after its origin with a wide network of collaterals reforming the LBA. (LSA: Left Subclavian Artery; VA: Vertebral Artery; LBA: Left Brachial Artery).

Conclusion

It becomes crucial for clinicians to diagnose and be aware of such intra-procedural difficulties that may arise in cases of TA, and to also look for other alternative modalities of endovascular interventions to combat technical problems. Future advancements in minimally invasive endovascular technology aimed at reperfusion and long term patency, might prove to be a success in such cases with better outcomes.

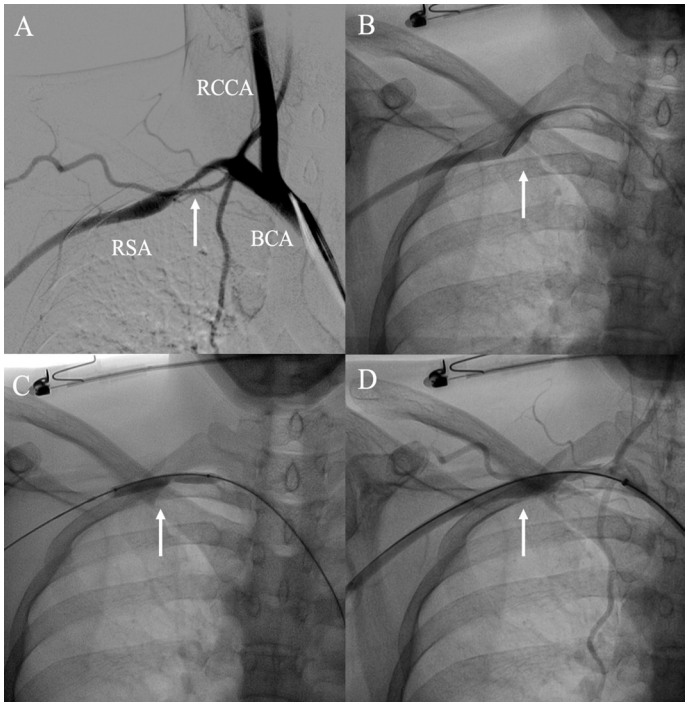

Figure 2: Subclavian Artery Angiogram: **(A):** Showing stenosis of RSA. **(B)** and **(C):** Depicting POBA of the RSA- guide wire insertion, catheter maneuvering and subsequent balloon inflation, **(D)** Depicting post-angioplasty patency of now normal RSA with restored blood flow. (POBA: Plain Old Balloon Angioplasty; RSA: Right Subclavian Artery; RCCA: Right Common Carotid Artery; BCA: Brachiocephalic Artery).

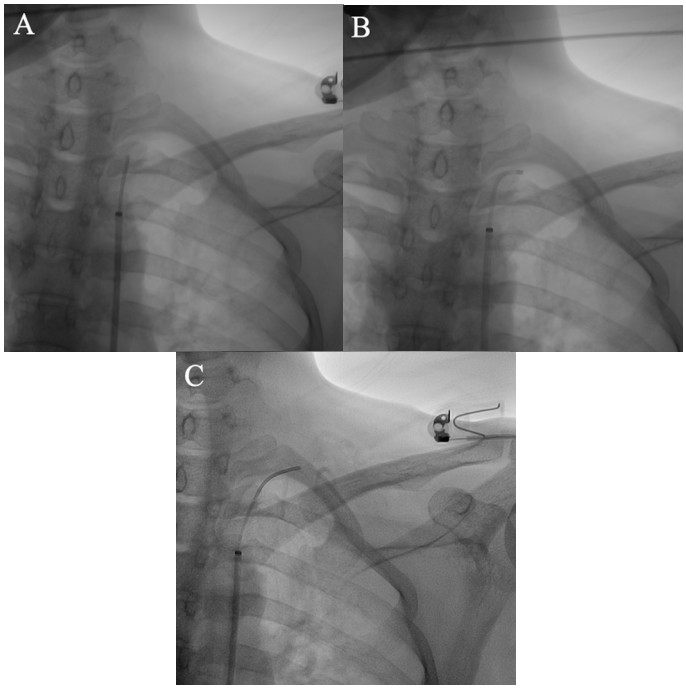

Figure 3: Subclavian Artery Angiogram: **(A)**, **(B)** and **(C):** Depicting inability of guide wire insertion for POBA in LSA because of occlusion and irregular pattern of LSA. (POBA: Plain Old Balloon Angioplasty; LSA: Left Subclavian Artery).