



Clampless Repair Technique for Suprasternal Transcatheter Aortic Valve Replacement

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Background

In patients undergoing transcatheter aortic valve replacement (TAVR), those with unsuitable femoral arteries are considered for an alternative approach. Suprasternal transcarotid access is a commonly used alternative approach. We have developed a clampless technique to avoid vascular occlusion and primary repair of the carotid artery after valve deployment. **Objective:** Summarize our experience with our clampless repair technique for Suprasternal TAVR.

Methods

From January 2020 to December 2024, there were 690 TAVRs with **51 patients undergoing a suprasternal carotid/innominate artery access**. Our unique approach involves placing two concentric purse strings at the site for needle/wire access and sheath insertion. Standard vessel loops are used for hemostasis during valve deployment. After valve deployment and sheath removal, the access site is controlled with the two purse strings sutures avoiding the need for partial clamping and vascular repair. The TVT registry was retrospectively reviewed for patient outcomes and adverse events.

References/Acknowledgements

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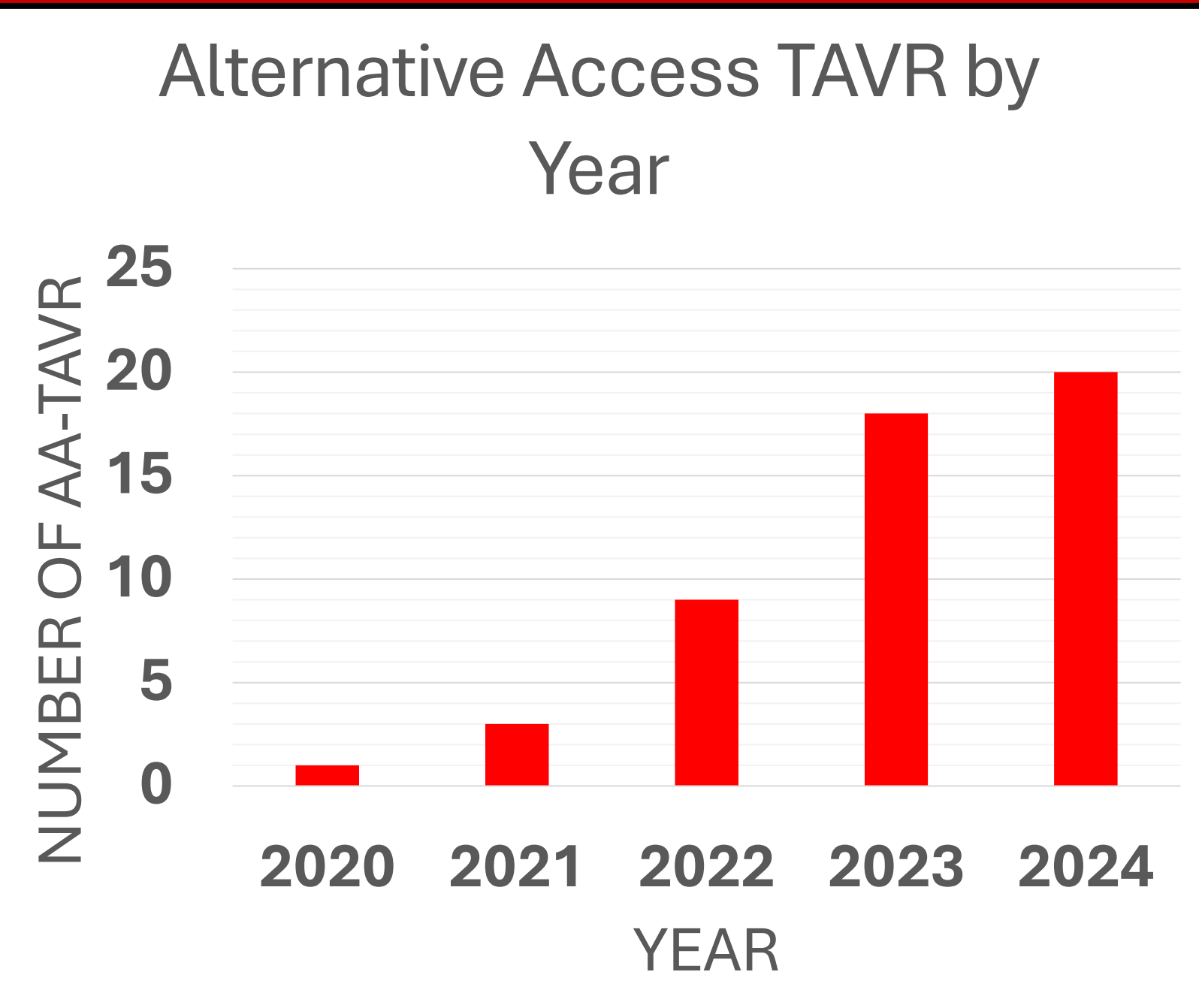
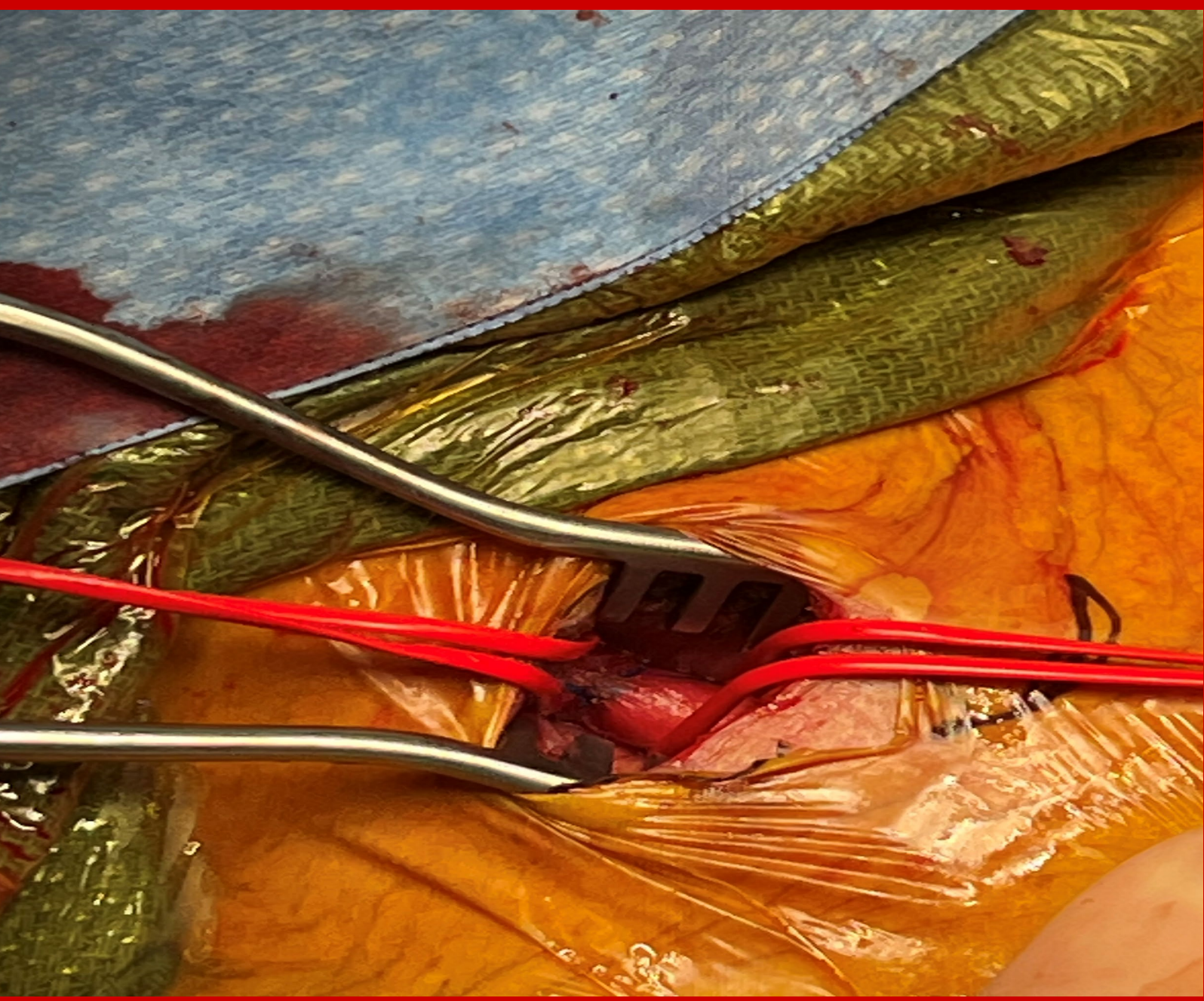
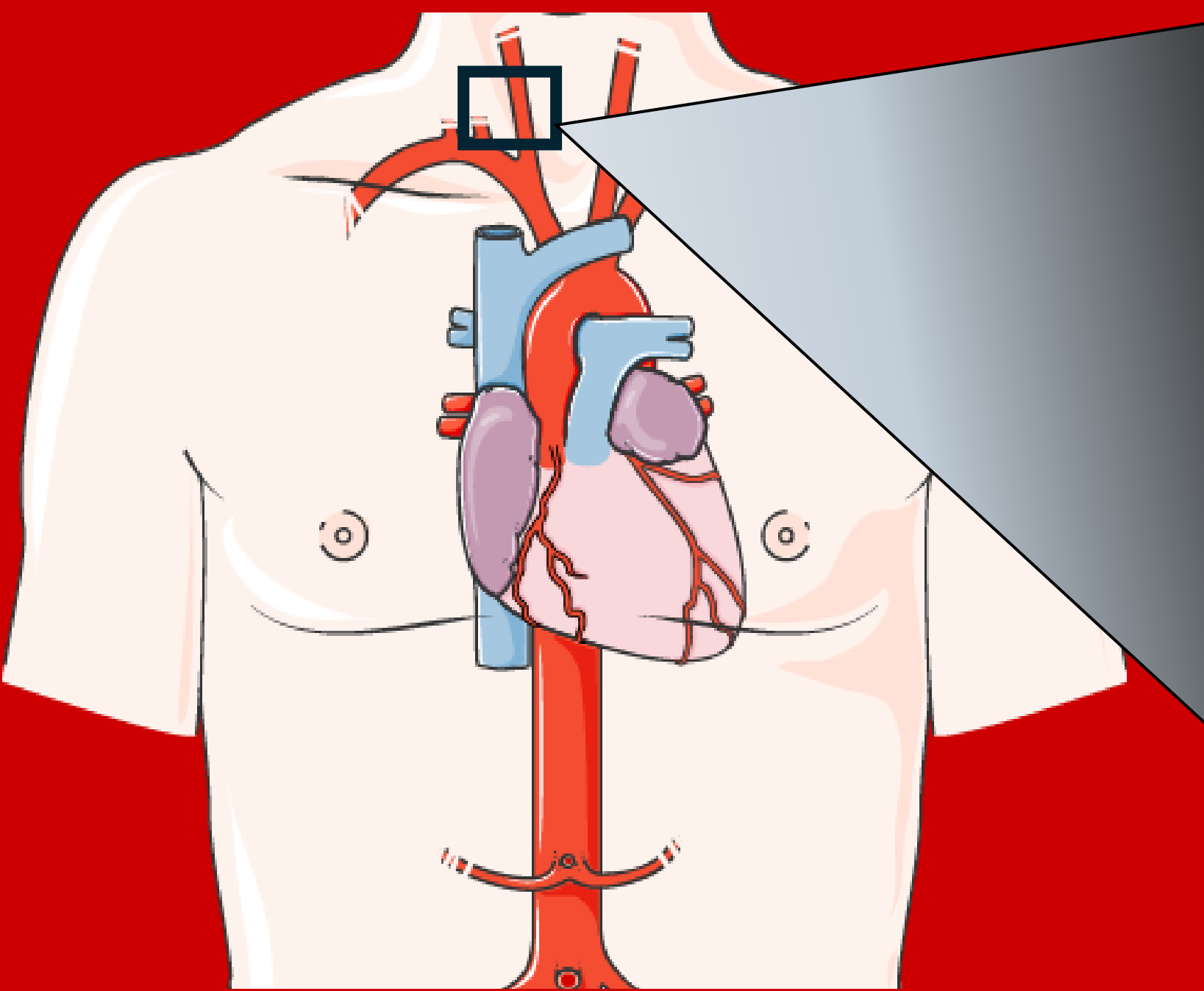


Table 1	n=51
Age (Years)	76 (71-81)
BMI (kg/m ²)	27.2 (25.5-31.1)
Preop LVEF (%)	57 (51.5-61.5)
Preop AV Gradient (mmHg)	58.4 (50.2-64)
Preop AV Area (cm ²)	0.76 (0.6-0.9)
Carotid Artery Stenosis	45% (n=23)
STS Risk Score (%)	4.3 (2.6-7.0)
Aortic Valve Type	
Self-Expanding	96% (n=49)
Balloon Expanding	4% (n=2)
Postop AV Gradient (mmHg)	6 (4-8)
Postop AI (Trace/Trivial)	13.7% (n=7)
In-Hospital Mortality	0% (n=0)
Discharged POD1	78.4% (n=40)
Conversion to Clamp and Sew	0% (n=0)
Surgical Site Bleed	
Major	0% (n=0)
Minor	1.9% (n=1)
Stroke	1.9% (n=1)

Results

51 patients (Table 1) underwent a suprasternal carotid/innominate purse string access TAVR (7.3%): 1 in 2020 (2%), 3 in 2021 (6%), 9 in 2022 (18%), 18 in 2023 (36%), and 20 in 2024 (40%). 32 were male (63%) and 48 were white (94%). Median age was 76 year (71-81years) and median BMI was 27.2 kg/m² (25.5-31.1 kg/m²). Preoperative median LVEF was 57% (51.5-61.5%), aortic valve peak gradient was 58.4 mmHg (50.2-64 mmHg), and aortic valve area was 0.76 cm² (0.6-0.9 cm²). Carotid artery stenosis was present in 45% of patients (n=23). The STS risk score of the suprasternal access TAVR population was 4.3% (2.6-7.0%). 49 patients underwent self-expanding TAVR (96%) and 2 underwent balloon expanded TAVR (4%). Postoperative median AV gradient was 6 mmHg (4-8mmHg) and 13.7% of patients (n=7) had trace or trivial AR. All patients were discharged alive and 78.4% of patients (n=40) were discharged on postoperative day one. No patient required conversion to clamp/sew and there was one minor surgical site bleed (1.9%, hematoma). **One (1.9%) postoperative stroke occurred.**

Conclusion

Suprasternal access TAVR is a reliable and efficient alternative approach for patients with suitable carotid and innominate artery anatomy. The clampless method is safe, even for patients that suffer from carotid artery stenotic disease. Our initial experience using a **clampless carotid repair technique was safe, reliable, and reproducible.**

