Rwanda Medical Journal RMJ

SECOND ANATOMY CONGRESS PROCEEDINGS: FULL PAPER Open Access

Anatomical variation of anterior accessory great saphenous vein: a case report

Authors: V. Archibong[1,*]; A. Omodan[1]; A. Ofudun[1]; A. Mohammed[1]; S. Olurunnado[1]; J. Gashegu[1]

Affiliations: *[1]Department of Human Anatomy, School of Medicine and Pharmacy, College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda*

ABSTRACT

An anterior accessory great saphenous vein (AAGSV) is a major cause of varicose disease recurrence and shares the saphenofemoral junction in 10% of patients where it is a primary reflux pattern. Reflux in AAGSV presents the same symptoms and severity as great saphenous vein (GSV) reflux with a higher incidence of superficial thrombophlebitis. The case report is a 37-year-old male cadaver with bilateral anterior accessory great saphenous veins (AAGSV), originating from the marginal veins anterior to the GSV, and terminated by joining the GSV at the sapheno-femoral junction. The case was documented during a routine gross dissection at the anatomy laboratory at the University of Rwanda. The case emphasizes the need for Vascular radiologists and surgeons to pay proper attention during saphenofemoral junction and saphenopopliteal junction ultrasound to identify the AAGSV when targeting the treatment of varicose diseases.

Keywords: Accessory Vein, Reflux, Clinical Significance, Anatomical Variation, Case Report

INTRODUCTION

The anterior accessory great saphenous vein (AAGSV) can be defined as any vein that accompanies the great saphenous vein (GSV), lies superficial to GSV on the anterior surface of the thigh, and is not surrounded by the saphenous fascial sheath [1].

An anterior accessory of the great saphenous vein (AAGSV) originates from the marginal veins anterior to the GSV and travels anteriorly to the main trunk in the leg to drain either into the great saphenous vein (in the leg, thigh, or groin) or to drain into the posterior accessory saphenous vein in the leg or thigh [2]. The AAGSV is a primary source of varicose veins, and this makes it clinically important [3]. Cavezzi et al. examined the anatomy of the AAGSV using ultrasound and reported that this vein typically lies within a fascial compartment and has an 'eye sign' similar to the GSV when viewed on ultrasound [4].

The AAGSV is documented to have important clinical implications because of its anatomic variation [5], and due its ability to communicate with the GSV and the common femoral vein. These communications are a potential route of reflux down the AAGSV [6,7]. Therefore, an understanding of the vascular supply and drainage is clinically important to surgeons and ultrasonographers in order to reduce risk of iatrogenic vascular injuries [8,9].

***Corresponding author:** V. Archibong Department of Human Anatomy, School of Medicine and Pharmacy, College of Medicine and Health Sciences, University of Rwanda. Email: victorarchibong3@gmail.com; **Potential Conflicts of Interest (CoI):** All authors: no potential conflicts of interest disclosed; **Funding:** This study was conducted as a part of the second anatomy annual congress in Rwanda, October 15, 2023 sponsored by the UR, Operation Smile, and MMI; **Academic Integrity.** All authors confirm that they have made substantial academic contributions to this manuscript as defined by the ICMJE; **Originality:** All authors: this manuscript is original has not been published elsewhere; **Review:** This manuscript was peer-reviewed by two reviewers of the S-CAR committee

Received: 24th October 2023; **Accepted:** 17th February 2024.

 Publisher: Rwanda Biomedical Centre (RBC)/Rwanda Health Communication Center, P. O. Box 4586, Kigali. ISSN: 2079-097X (print); 2410-8626 (online)

Citation for this article: V. Archibong; A. Omodan; A. Ofudun et al. Anatomical variation of anterior accessory great saphenous vein: a case report. Rwanda Medical Journal, Vol. 81, no. 1, p. 93-95, 2024. https://dx.doi.org/10.4314/rmj.v81i1.7

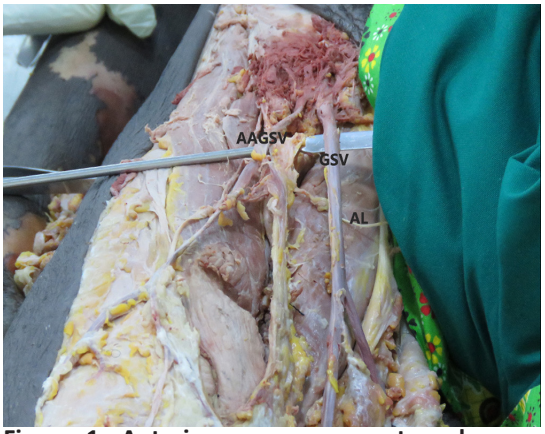

Figure 1: Anterior accessory great saphenous vein (AAGSV), great saphenous vein (GSV), and adductor longus muscle (AL) on the anterior surface of the right thigh

CASE PRESENTATION

The thigh region of a 37-year-old male cadaver was dissected following the steps outlined in the Grant dissector handbook of Sauerland [10] during a routine dissection at the anatomy laboratory, University of Rwanda. The case study presented bilateral anterior accessory great saphenous veins (AAGSV), which originated from the marginal veins anterior to the GSV, and terminated by joining the GSV at the sapheno-femoral junction. This variation was documented with the aid of a Canon SX60HS camera. The relationships to AAGSV registered were the great saphenous vein (GSV), and adductor longus (AL) (Figures 1 and 2).

DISCUSSION

AAGSV reflux is common in patients with both primary and recurrent disease and presents similar disease severity when compared with GSV reflux, which has a higher incidence of superficial thrombophlebitis [11]. The AAGSV should be considered equivalent to the GSV and small saphenous vein when planning for intervention and reimbursement [11]. Baccellieri et al. examined the anatomical role of the AAGSV at the saphenofemoral junction reflux as a risk for recurrent varicose veins. Their study reported a higher rate of recurrent varicose veins in patients who had saphenofemoral junctional, and GSV reflux on ultrasound, and a direct confluence of the AAGSV at the saphenofemoral junction was found to be a negative predictor for recurre varicos veins [12]. Yriji et al. [1] reported that the frequency of isolated reflux in the AAGSV was much higher than described in previous literature [13,14,15].

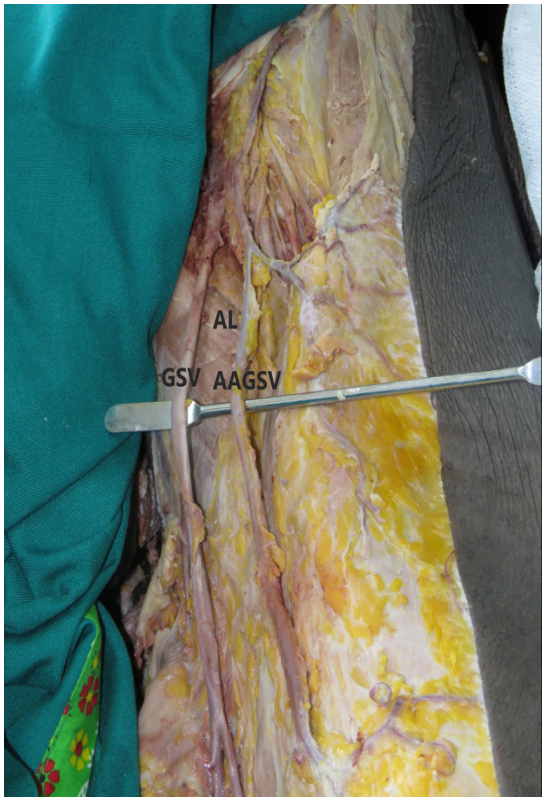

Figure 2: Anterior accessory great saphenous vein (AAGSV), great saphenous vein (GSV), and adductor longus muscle (AL) on the anterior surface of the left thigh

They also documented that the recurrence of the incompetent AAGSV was one of the major causes of varicose disease recurrence in 11.7% of patients after the radiofrequency ablation of GSV in the late postoperative period.

It is important that proper attention must be given to every patient during saphenofemoral junction and saphenopopliteal junction ultrasound to identify the individual anatomical features [16,6,17]. Therefore, a good knowledge of the possible variants in vascular supply and drainage of the lower limb is important in clinical practice to reduce complications during surgery or other interventions.

CONCLUSION

The case study provides additional knowledge for

vascular radiologists and surgeons in Rwanda. This information may help reduce the complications associated with lower limb surgery and, hopefully, increase the clinician's awareness of the AAGSV, thus preventing iatrogenic varicose veins.

REFERENCES

1. Yrij S.; Volodymyr G.; Bogdan M.; Liudmyla M.; Oleg P. Anterior Accessory Great Saphenous Vein as a cause of postoperative recurrence of veins after radiofrequency ablation. Journal of medicine and life 2022, 15, 4.
2. Phlebologia.com Long and Accessory Saphenous Veins. https://www.phlebologia.com/long-saphenous-territory/long-and-accessory-saphenous-veins/ accessed on 17/04/2023.
3. Caggiati A.; Bergan J. J.; Gloviczki P.; et al. Nomenclature of the Veins of the Lower Limb: Extensions, Refinements, and Clinical Application. J Vasc Surg 2005, 41, 719–24.
4. Cavezzi A.; Labropoulos N.; Partsch H.; et al. Duplex Ultrasound Investigation of the Veins in Chronic Venous Disease of the Lower Limbs: UIP consensus document. Part II. Anatomy. Eur J Vasc Endovasc Surg 2006, 31, 288–99.
5. Welch HJ. Combined Treatment of Anterior Accessory Saphenous Vein and the Great Saphenous Vein. Vascular & Endovascular Review 2022, 5, e01. DOI: https://doi.org/10.15420/ver.2021.07
6. Mühlberger D.; Morandini L.; Brenner E. Venous Valves and Major Superficial Tributary Veins near the Saphenofemoral Junction. J Vasc Surg 2009, 49, (6), 1562-1569. doi: 10.1016/j.jvs.2009.02.241.
7. Chun MH.; Han SH.; Chung JW.; et al. Anatomical Observation on Draining Patterns of Saphenous Tributaries in Korean Adults. J Korean Med Sci 1992, 7, 25–33.
8. Archibong V.; Omodan A.; Gashegu J. A Rare Anatomical Origin of the Inferior Thyroid Artery from the Common Carotid Artery: A Case Report. Rwanda Medical Journal 2023, 80, 1, 35-37. https://dx.doi.org/10.4314/rmj.v80i1.6
9. Mariolis-Sapsakos T.; Kalles V.; Papapanagiotou I.; et al. Bilateral aberrant origin of the inferior thyroid artery from the common carotid artery. Surg Radiol Anat 2014, 36, (3), 295-7, doi: 10.1007/s00276-013-1153-x.
10. Sauerland Eberhardt K. Grant Dissector. 12th edition. Lippincott Williams and Wilkins 1999, 254-260.
11. Schul MW.; Vayuvegula S.; Keaton TJ. The Clinical Relevance of Anterior Accessory Great Saphenous Vein Reflux. J Vasc Surg Venous Lymphat Disord 2020, 8, 1014–20.
12. Baccellieri D.; Ardita V.; Carta N.; et al. Anterior Accessory Saphenous Vein Confluence Anatomy at The Sapheno-Femoral Junction as Risk Factor for Varicose Veins Recurrence After Great Saphenous Vein radiofrequency thermal ablation. Int Angiol 2020, 39, 105–11.
13. Spiliopoulos S.; Theodosiadou V.; Sotiriadi A. Endovenous Ablation of Incompetent Truncal Veins and Their Perforators with A New Radiofrequency System. Mid-term Outcomes. Vascular 2015, 23, (6), 592-598, doi: 10.1177/1708538114564462.
14. Krnic A.; Sucic Z. Bipolar Radiofrequency Induced Thermotherapy and 1064 nm Nd: Yag laser in endovenous occlusion of insufficient veins: short term follow up results. Vasa 2011, 40, (3), 235-240, doi: 10.1024/0301-1526/a000098.
15. Theivacumar NS.; Darwood RJ.; Gough MJ. Endovenous Laser Ablation (EVLA) of the Anterior Accessory Great Saphenous Vein (AAGSV): Abolition of Sapheno-Femoral Reflux with Preservation of the Great Saphenous Vein. Eur J Vasc Endovasc Surg 2009, 37, (4), 477-481, doi: 10.1016/j.ejvs.2008.11.035.
16. Meissner MH. Lower Extremity Venous Anatomy. Semin Intervent Radiol 2005, 22, (3), 147-156, doi: 10.1055/s-2005-921948.
17. Carl M.; Black CM. Anatomy and Physiology of the Lower-Extremity Deep and Superficial Veins. Tech Vasc Interv Radiol 2014, 17, (2), 68-73, doi: 10.1053/j.tvir.2014.02.002.