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Case Report

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A rare anastomosis between basilic and brachial veins

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Abstract

Variations in the veins of upper extremity are common. Knowing these variations is important for interventions to be carried out in this region. In this case report, a rare anastomosis between basilic vein and brachial vein is presented. During a routine cadaver dissection, a short and thick branch of the basilic vein was noticed to provide anastomosis between the basilic vein and the brachial vein in the right upper extremity of a 54-year-old male cadaver. The diameter of the basilic vein was quite narrow at the proximal part above the anastomosis. In addition, the axillary vein was noticed to be formed as a continuation of brachial vein, not basilic vein. The variation presented in this case report may cause serious complications, such as the rupture of the vessel in venous interventions related with the basilic vein.

Keywords: basilic vein, brachial vein, venous anastomosis, venous catheterization

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Introduction

Basilic vein (BV) is one of the major superficial veins of the upper limb. The BV starts from the medial side of the dorsal venous network of the hand and goes up the ulnar side of the dorsal aspect of the forearm. The BV, which runs superficially along the medial edge of the biceps brachii, gets deeper by piercing the deep fascia slightly below the middle part of the arm and continues as the axillary vein (AV) in the axillary fossa. Brachial vein (BrV) is one of the deep veins of the upper extremity and it is usually a paired vein as lateral and medial BrV. BrV, which is formed by the combination of radial and ulnar veins, drains into the AV in the axillary fossa.[1]

Variations in the veins of the upper extremity are common.[2] Anatomical variations in these veins are important for procedures such as blood sampling, blood transfusion, hemodialysis and venous catheterization.[3,4] It has been reported that the variations of these veins may cause complications such as hematoma.[5]

The aim of this study was to report a rare anastomosis between BV and lateral BrV, which may be significant during venous interventions.

Case Report

During a routine cadaver dissection performed in the laboratory of Gaziantep University Faculty of Medicine, Department of Anatomy, a short and thick branch of BV was noticed to provide an anastomosis between the BV and BrV, at the proximal 1/3 of the right arm of a 54-year-old male cadaver. This branch emerged from the BV after it pierced the deep fascia. This anastomotic branch separated from the BV run proximally and drained to the lateral BrV at an angle of 140 degrees (**Figure 1**). It was observed that the diameter of the BV in the proximal part above the anastomosis (1.5 mm) was narrower when compared to the diameter at the distal part below the anastomosis (4 mm). The diameter of the lateral BrV at the proximal part above the anastomosis (5.5 mm) was larger than the diameter at the distal part below the anastomosis (5 mm). Approximately 2 cm above the anastomosis, the medial BrV and lateral BrV united to each other and drained into the AV. Contrary to the normal configuration, AV was seen to be a continuation of BrV, not BV. The variation was unilateral and the left arm of the cadaver showed a regular pattern in terms of venous drainage.

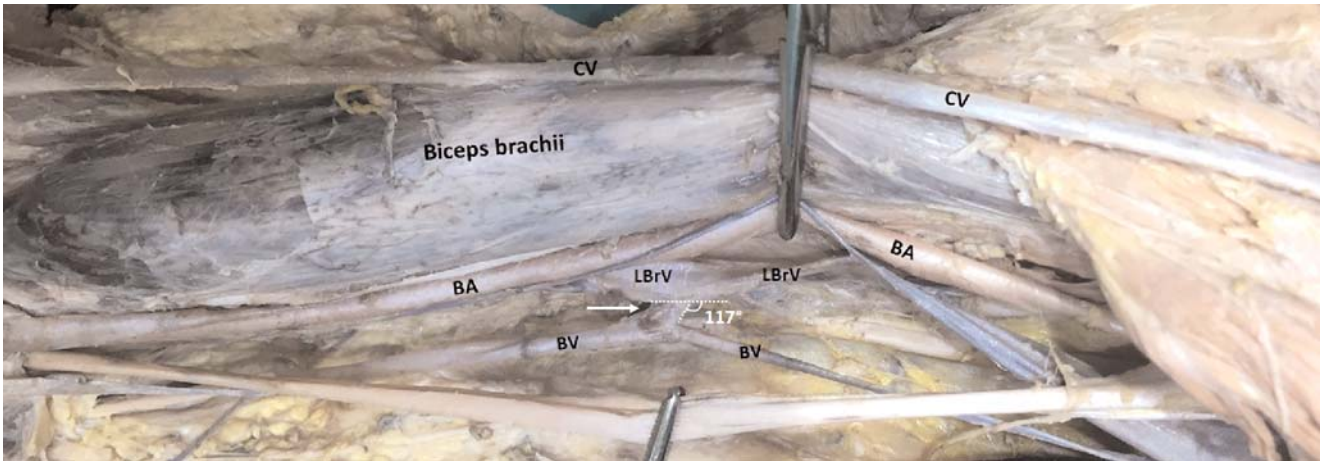

Figure 1. Anterior view of the arm. Anastomotic branch (**white arrow**) that provides anastomosis between the **BV** (basilic vein) and **LBrV** (lateral brachial vein). **BA:** brachial artery; **CV:** cephalic vein.

Discussion

In addition being a suitable vein for venipuncture, the BV can be used as a graft in arteriovenous graft or fistula procedures applied for vascular access in patients with chronic renal failure and in bypass operations when the great saphenous vein is not suitable as a graft.[3,6] BV can also be preferred for peripheral venous catheterization.[4] For this reason, a through information regarding the anatomical course and variations of BV is important in terms of reducing the risk of complications in clinical interventions.

In this case report, BV was observed to make anastomosis with lateral BrV in the proximal arm through a thick and short branch. In a detailed literature review, it was found that there was only one case with an anastomotic connection similar to this case between BV and BrV in the upper arm.[7] In the case reported by Kumar et al.,[7] unlike the present study, it was reported that a single BrV in the middle of the arm combined with the BV without an anastomotic branch, providing an anastomosis in the form of a chiasma. Moreover, BV and BrV were separated from each other after a short course.

Although there are quite a limited number of studies reporting BV agenesis in the upper extremity,[8] there are studies reporting a BV thinner than normal.[2,9] Okamoto[9] reported the presence of two very thin BV in the 200 arms they examined. According to what has been reported in classical anatomy books; BV, which is thicker than cephalic vein (CV), increases in diameter from the arm to the axillary fossa and continues as AV in the axillary fossa.[1] In this case report, it was determined that BV is getting thinner at the proximal part of the anastomosis in the arm. Due to the narrower diameter of BV at the proximal part above the anastomosis and the presence of a thick anastomotic branch, it is predicted that a significant part of the blood in the BV drains into the lateral BrV through this anastomosis.

In this case, there are two ways the catheter can proceed; in the first condition, the catheter may move above the anastomosis through the BV, whose diameter is much narrower than normal. In the second condition, the catheter may enter the anastomotic branch, and then the lateral BrV. Since the vein is narrow in the first, and in the second, there is an angulation between the two veins (BV and lateral BrV), which may cause difficulty in advancing the catheter, furthermore, the vein may rupture.

Conclusion

In this study, a rare anastomosis between BV and lateral BrV via a short and thick branch is reported. Such a variation can create a barrier to the catheter that travels through the vessel during the venous catheterization process using BV. During such a procedure, if the practitioner encounters resistance in the arm area, it should be taken into consideration of the possibility of such a variation. For invasive procedures to be applied in this region, especially venous catheterization, it is important to know the normal anatomy and variations of the vessels of this region.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

Author Contributions

SSA: data collection, data analysis, manuscript writing and editing; MO: data collection, data analysis, manuscript writing and editing.

Ethics Approval

The study was conducted in accordance with the ethical rules of the Declaration of Helsinki and its later amendments. Scientific studies on cadaver in our institution do not require ethical approval.

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