

The Different Termination Patterns Of The Facial Vein - A Cadaveric Study

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ABSTRACT

Anatomic and morphologic variations of the facial vein are of immense importance for surgeons doing reconstructive surgery. In view of this surgical significance, 52 adult cadavers (104 sides) were dissected to study the drainage pattern of the facial vein. Eight out of 104 sides (7.7%) showed an anomalous coursing of the facial vein to drain into the external jugular vein. One among these eight variants had a differed anatomical presentation. The embryological basis and clinical relevance are discussed. ©2008, Fırat University, Medical Faculty

Key words: Facial vein, retromandibular vein, external jugular vein, common facial vein, internal jugular vein.

ÖZET

Vena Facialis'in Farklı Sonlanma Şekilleri-Bir Kadavra Çalışması

Vena facialis'in anatomik ve morfolojik varyasyonları, rekonstrüktif cerrahi yapan cerrahlar için çok büyük bir öneme sahiptir. Bu cerrahi önemden dolayı, 52 yetişkin kadavra (104 yüz) vena facialis'in drenajını tespit etmek amacıyla disseke edildi. 104 adet yüzün 8 tanesinde (%7.7) vena facialis'in vena jugularis externa'ya akımında anormal seyir vardı. Bu sekiz varyasyondan bir tanesi farklı anatomik görünümdeydi. Embriyolojik temel ve klinik ilişki tartışıldı. ©2008, Fırat Üniversitesi, Tıp Fakültesi

Anahtar kelimeler: Vena facialis, vena retromandibularis, vena jugularis externa, vena facialis comminis, vena jugularis interna.

Standard anatomical description of the veins state that, the FV unites with the anterior division of RMV to form the CFV that drains into the internal jugular vein. The posterior division of RMV joins with the posterior auricular vein to form the EJV. The complicated embryological development of tissues in general and vascular system in particular results in a variety of clinically significant anomalies. Cerebral developmental venous anomalies are uncommon trajectories, a finding much more frequent in patients with head and neck venous malformations, than in general population (1). Most of the superficial veins are used for various diagnostic and therapeutic procedures. Facial vein (FV) finds favor with the plastic surgeons for grafting procedures. Therefore, the present study was conducted to identify the patterns of termination of the FV.

MATERIALS AND METHODS

52 adult cadavers were dissected bilaterally (104 sides) in the head and neck region and the FV were traced carefully to its termination.

RESULTS

In 96 sides (92.3%) of the cases the FV terminated into the internal jugular vein via the common facial vein (CFV) as per standard anatomic description. The FV on eight sides (7.7%) was found to drain into the external jugular vein with different degrees of angulations. Seven out of the eight sides showed a similar pattern (Figure 1) where the FV joined the anterior division of retromandibular vein (RMV) to form the common

facial vein (CFV) that drained into the external jugular vein (EJV). On the right side of a 50 year old male cadaver, it was observed that the RMV failed to divide. This undivided RMV was posteriorly joined by the posterior auricular vein to form the EJV, which received the FV on its anterior aspect (Figure 2).

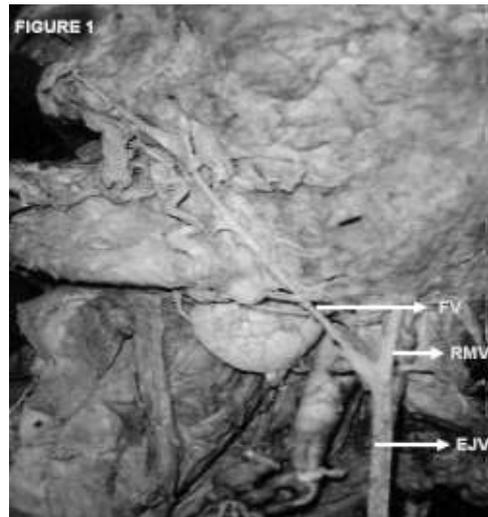
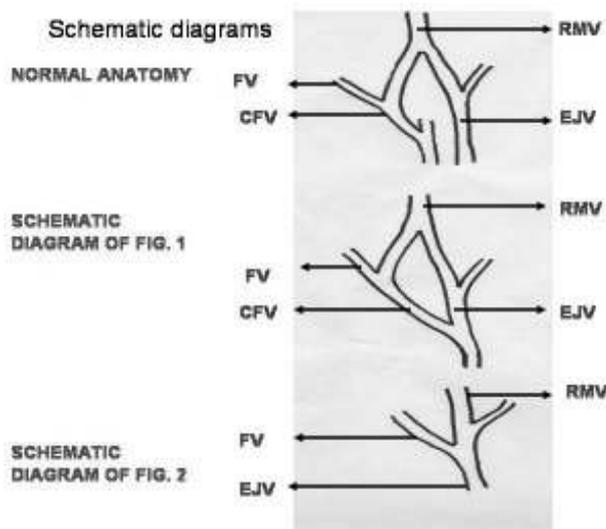


Figure 1. Left side of the face is seen. Facial vein (FV) is joining the anterior division of retromandibular vein (RMV) forming the common facial vein (CFV) and is then draining into external jugular vein (EJV).

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Figure 2. Right side of the face is shown. Retromandibular vein (RMV) is undivided; facial vein (FV) is draining into the external jugular vein (EJV).



Schematic diagrams: Schematic representations of normal anatomy, figure 1 and figure 2 are shown. RMV- Retromandibular vein, FV- facial vein, CFV- common facial vein, EJV- External jugular vein.

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DISCUSSION

Different patterns of variations in the venous drainage have been observed in the past. A case of FV uniting with the RMV at a higher level in the right parotid gland was observed by Kopuz C et al, 1995 (2). FV draining into the superficial temporal vein, with an undivided RMV was also reported (3). CFV draining into EJV, an incidence of 5% was noted in the study done by Choudhry R et al, 1997 (4). In another study conducted by Gupta V et al, 2003 (5), the incidence of this particular variation was 9%. Therefore, the incidence of 7.7% in the present study is at par with the reported incidence which ranges between 5-9% (4,5). However, the co-existence of undivided RMV and the FV terminating into EJV is not previously reported in literature.

The ventral pharyngeal vein (VPV) which drains the mandibular and hyoid arches is the first identifiable vein (6). This VPV receives the tributaries from the face and the tongue to be known as linguofacial vein (7). A strong tributary draining the temporal region termed the RMV drains into the linguofacial vein (18mm stage of the embryo) to form a common trunk named the common facial vein. At about 22mm stage of embryo, from the tissues of neck, appears the EJV which has anterior communication with the FV, and a posterior communication with the RMV. The posterior auricular vein drains into the posterior communication (8,9). The FV draining into EJV represents a persistent anterior anastomotic channel to the facial vein. This anomalous pattern could be the phylogenetic retention of the drainage pattern found in horse, ox and dog, where the veins draining the face terminated into the external jugular vein (5). In the other variation there is the persistence of the anterior anastomotic channel and also the failure of the RMV to drain into the linguofacial trunk. This causes the undivided appearance of the RMV and also the FV will drain into the EJV.

Knowledge of varying venous pattern is important for surgeons performing head and neck micro vascular surgeries (9), to avoid unnecessary bleeding during intra operative trial and error procedures (10). Ultrasound guided venous puncture is a viable possibility in cases of variations and their knowledge is important for surgeons doing reconstructive surgery (5). The FV and EJV, both are used as autogenous patch, grafted into the carotid during endarterectomy (11).

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