



## The Importance of the Anatomical Variations in Practical Medicine

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### Abstract

There are many variations of the structure of the human body that can significantly affect the outcome of medical procedures or they can cause pathological conditions in patients. Anatomical variants often met in anatomy and surgery. Knowledge of variant anatomy is extremely important in modern medical education, since the variations of structures can often change the symptoms and the course of diseases. According to the literature, about 10% of cases of intraoperative complications occur due to ignorance of anatomical variants. The anatomist teacher is obliged to analyze clinically significant variants of the structure of organs and structures with students during practical classes in anatomy.

**Keywords:** Anatomy; Variability; Variation

### Introduction

Quite often, dissecting a corpse in anatomy classes or performing surgical interventions on human organs and tissues, we are faced with an atypical topography of an organ, vessel or nerve. It turns out that in textbooks on anatomy the one thing is written, but in fact you can see a completely different one. All the variations of the anatomic structures have a practical significance. However, it is very important to understand whether we are dealing with an anatomical normal variation or an anomaly, or a malformation. Anatomical variation is based on the fact that it represents a normal variability which usually does not violate the function of organ and does not require therapeutic activities. They can, however, present diagnostic dilemmas or become symptomatic under certain conditions. An anomaly is also a variation in the structure of an organ, which, however, can lead to a violation of its function. Malformation is always accompanied by a violation in the structure and functioning of the organ, which requires therapeutic or, more often, surgical intervention.

### Reasoning

There are many variations of the structure of the human body that can significantly affect the outcome of medical procedures or they can cause pathological conditions in patients. Corona mortis is perhaps the most famous variation that is taught to medical students in anatomy classes as a result of which the severe complications during surgical procedures may happen.

Anatomical variants often met in anatomy and surgery. Despite the fact that the most of them have already been described in detail in the literature, a significant number of new variants are described for the first time. It is not an exaggeration to say that every structure in our body can variate and differ from its classical location or description in the textbook, while not being pathological.

In the literature, it is quite common to find descriptions of individual variability in the structure, origin, attachment or innervation of muscles [1,2], branching and topography of vessels [3,4] and nerves [5,6], as well as other structures. The most variable in the

body are arterial vessels (76%), veins (68%) and internal organs (64%) [7].

Anatomical variants are congenital and necessary to ensure diversity within a species and adapt to changing conditions. Human has a higher degree of variability than most other species, and this variability is due to a combination of environmental and genetic factors [8].

Knowledge of variant anatomy is extremely important in modern medical education, since the variations of structures can often change the symptoms and the course of diseases, as well as themselves can become factors for predisposition to diseases or pathological conditions [9,10]. For example, an extra head of muscle can cause pain syndromes; multiple tendons of the forearm muscle or the presence of a septum can cause stenotic tenosynovitis (de Quervain's disease).

It is extremely important for surgeons to have a complete understanding information about the anatomy of the surgical area. In many cases, detailed knowledge of variant anatomy, the use of appropriate imaging techniques to detect these changes before surgery can be crucial [11,12]. For example, variations in the cervical or brachial plexus may lead to complications during regional anesthesia under ultrasound control [13].

According to the literature, about 10% of cases of intraoperative complications occur due to ignorance of anatomical variants [14].

However, to be fair, some of the anatomical variants are clinically important, and some are not; some of them need correction, and we can live with some of them until a very old age. But in any case, even a slight deviation from the classical structure or topography can cause difficulties in both diagnosis and treatment.

It should be noted that despite numerous examples of clinically significant anatomical variations, medical students get only limited knowledge of them in anatomy classes. Most textbooks mention only some variations, and sometimes some authors cite clinical cases to emphasize their importance, but in the real learning process, most both students and teachers strive to minimize conversations about variant anatomy, focusing only on the typical anatomy from the textbook.

Sure that no one will argue with the fact that the most important goal of studying anatomy at a medical university is not only

to study anatomical and medical terminology, but also to acquire flexible knowledge about the structure of the human body, which can be adapted to the real situation. Each case, each patient has its own individual features of the anatomical structure, which makes it unique.

How can we study variant anatomy ourselves when there is a cadaver material deficient in the Department? First of all, I see two exits of this situation. The first is a constant reading of anatomical journals and specialized sites, where you can constantly find articles about the structure of a particular organ. The second is to constantly consult with doctors of practical and diagnostic medicine. The curriculum should include the most important and relevant anatomical variations for each area or system, and explain and demonstrate them to students whenever possible. Since diagnostic imaging and surgical techniques are rapidly developing, anatomy must also be constantly updated and keep up with the demands of practical medicine.

Thus, it is necessary to constantly realize the importance of anatomical variations, as well as their implementation in the educational process when students study Human Anatomy. Since 2007, the International Journal of Anatomic Variations has published hundreds of variants of the structure of human body structures, which undoubtedly made a huge contribution to updating the anatomical database.

### Conclusion

It should also be noted that variations represent individual characteristics of each person, which must be kept in mind by doctors to reduce the risk of complications in the treatment of the patient. Clinical awareness of known and newly discovered anatomical variants can be achieved by reviewing the relevant literature in specialized journals, which is key to a successful outcome of treatment and diagnosis. The anatomist teacher is obliged to analyze clinically significant variants of the structure of organs and structures with students during practical classes in anatomy.

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