

## Summary

The thumb is absolutely essential for the flawless function of the hand, and the loss of the structure or function of the thumb almost always means a partial or total invalidation of the patient. Thus, salvage and reconstruction of the thumb is one of the foremost topics in hand surgery. Modern conservation and reconstructive procedures of hand surgery require a completely new insight into the knowledge of vascular anatomy. In order for the information to be comprehensible and well communicated, it is necessary to have a sufficiently detailed, clear and, above all, uniform nomenclature. When taking a closer look at the anatomy of the vessels of the hand, it turns out that authors often do not use generally accepted terms or do not agree on the interpretation of the correctly used ones.

The above stated facts led us to the conclusion that, although the anatomy of the hand arteries seems to have been well studied and described in the past, there is still considerable room for sorting out the previously described data, revising the nomenclature, completing the missing detailed description of some anatomical variations and assessing the significance and usefulness of individual structures in relation to trauma and reconstructive hand surgery.

This work describes in detail the systemic and topographical anatomy of the arteries of the hand, focusing on the thumb and the first web space, including variations and the nomenclature used. It correlates the anatomical facts with knowledge from clinical practice, provides a description of the most common injuries to the thumb and the first web space, describes in detail the possibilities of hand reconstruction through tissue transfer with its own vascular supply and outlines the possibilities of using less common variations to expand the spectrum of procedures. The actual research is then based on a thorough search and meta analysis of available historical and recent works, from which valuable data are extracted, unified as far as possible and translated into modern anatomical nomenclature. In the case of hitherto insufficiently described anatomical variants, we present our own results obtained by anatomical dissection of 503 limbs. We then confirm the cadaveric results with a study obtained by sonographic examination of 126 healthy volunteers.