

# Laboratory X. Vein localization

## 1 Introduction

Veins are vessels carrying blood from the tissues to the heart. In majority, they carry deoxygenated blood, received from the tissues. The exception are the pulmonary veins, carrying oxygenated blood.

The largest veins in the body are inferior and superior vena cava (*vena cava inferior*, *vena cava superior*), the azygos vein (*vena azygos*), the portal vein (*vena portae*) and the external/internal jugular vein (*vena iugularis interna/externa*).

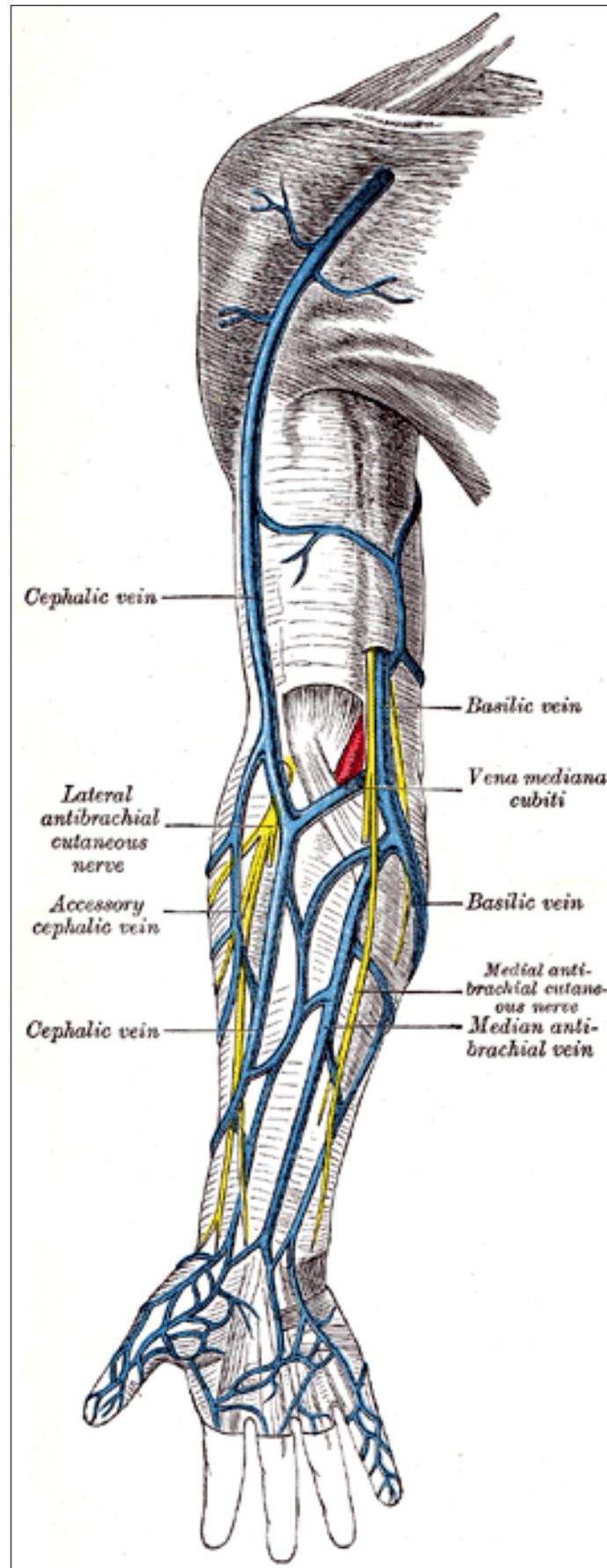
In general, the vein are composed of three layers: the adventitia, smooth muscle layer and the endothelium.

The vein of systemic circulation (LV – organs – RA) are divided into deep veins, running along the arteries, and superficial veins.

The superficial veins are usually not paired with arteries. They carry less blood than deep veins and play a thermoregulatory role. Since they are located near to the body surface, they are observable with a bare eye, and by devices such as vein localizers. The devices of this type ease vein localization for venopuncture purposes, especially in obese patients.

1. Familiarize yourself with the use of Vein Finder VF-520.
2. Practice the use of the vein localizer, observing the veins of your forearm, palm, feet, temple...
3. Using the atlas of anatomy, study the vein system in the upper limb.
4. Using the Vein Finder localize, photograph and label the most important superficial veins of the upper limb.
5. Try to manually draw an anatomical sketch of the superficial veins in your arm and hand. Compare the drawing with the atlas. Are there veins which are not observable?
6. Make a similar sketch in the second limb. How is the vein location different?
7. \*\*\*Read about an exemplary use of a vein localizer in biometrics.  
<http://opticalengineering.spiedigitallibrary.org/article.aspx?articleid=1158305>

\*\*\* optional exercise



Henry Vandyke Carter - Henry Gray (1918)  
*Anatomy of the Human Body*, Bartleby.com: Gray's  
*Anatomy*, Plate 574

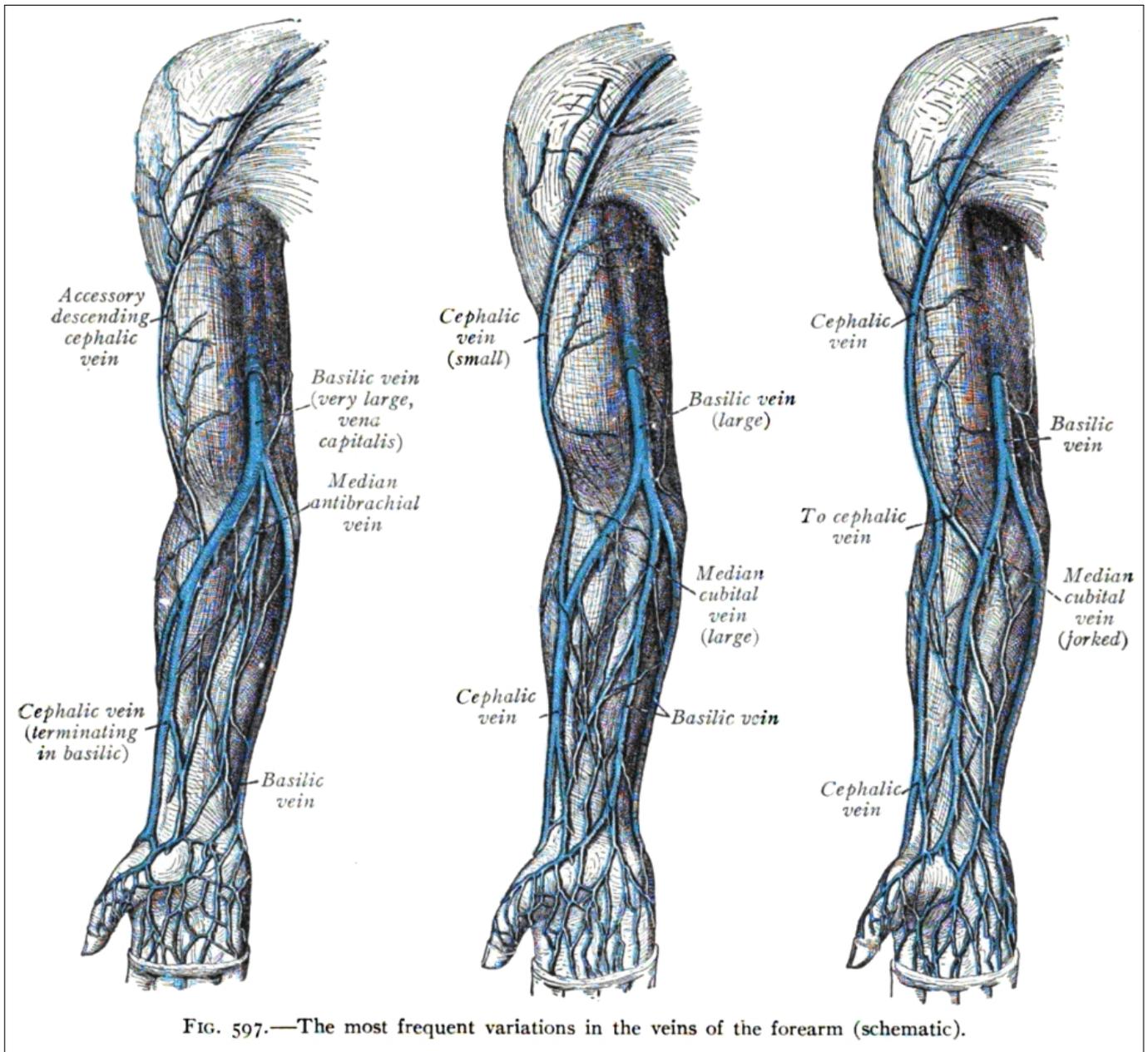
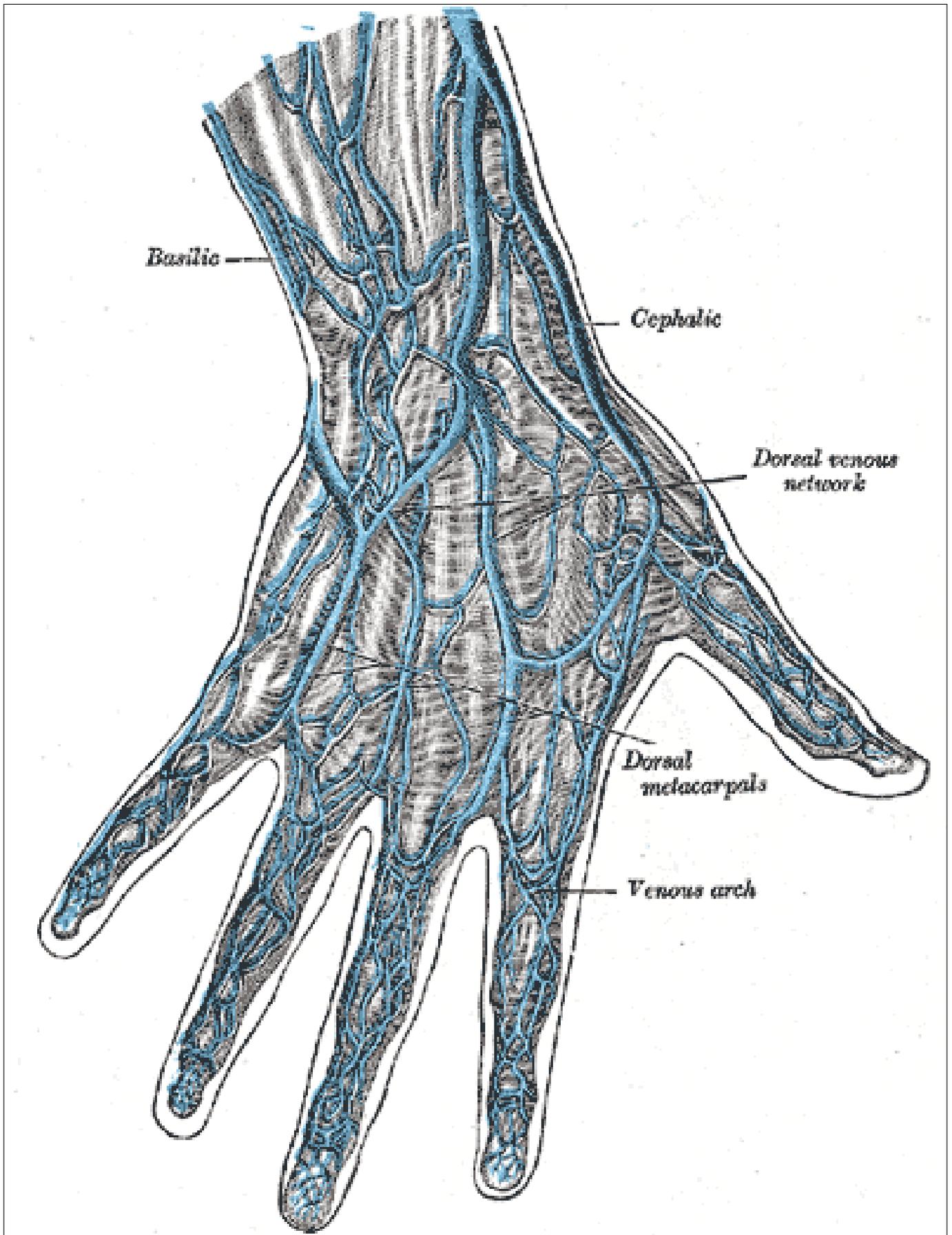


FIG. 597.—The most frequent variations in the veins of the forearm (schematic).

Dr. Johannes Sobotta - Atlas and Text-book of Human Anatomy Volume III Vascular System, Lymphatic system, Nervous system and Sense Organs



Henry Vandyke Carter - Henry Gray (1918) *Anatomy of the Human Body*, Bartleby.com: Gray's Anatomy, Plate 573