CHAPTER 5

The Musculocutaneous Elements of the Head and Mouth

General

To study the supply of the musculocutaneous elements of the head and mouth, it is necessary to divide this region into three very different areas: the scalp, the temporomandibular region and the face proper.

For the scalp, certain hemodynamic balances between the posterior auricular artery and the musculocutaneous branches of the occipital artery must be considered. However, the supply to this region depends essentially on the superficial temporal and occipital arteries. There is no great difference between the vessels distributed to scalp tissues and those of the cutaneous elements of the rest of the head (Fig. 5.2). The only special morphologic features are those presented by the vessels distributed to the noncutaneous muscles of this region, namely the muscles of mastication.

The temporomandibular region is supplied by three different arterial systems. First there is the deep temporal arterial system, whose relative importance is balanced among its components. Usually three in number, these arteries are distributed to the temporal muscle, molding themselves to its distinctive shape and hence easily identifiable. Secondly, the masseteric arteries are distributed to the most superficial elements at the ramus of the mandible. They seem to correspond to a functional unit, and obey the same laws of hemodynamic balances discussed in other regions. Lastly is the zygomatico-orbital system that does not always exist as such; it does not have its own distribution, and it exists when the frontal branch of the superficial temporal artery is more parietal than orbital.

The blood supply of the face must consider first of the transverse facial artery, whose key role in the supply of the zygomatic region will be the basis for different variants of the facial artery. Finally, the supply of the floor of the mouth and tongue is discussed.

The Arteries of the Scalp

These arteries have several morphologic features in common: their winding course, the frequency of topographic variants of the principal trunks, the ease with which they fill and anastomose with contralateral scalp arteries and, on occasion, their very closely spaced origin.

Diagrammatically, if the vault of the skull is considered to correspond to a semicircle whose center is in the external auditory canal, five vessels can be said to radiate from it and supply the scalp, one every 35 degrees. From back to front, they are: a branch of the occipital artery, a branch of the posterior auricular artery, two branches of the superficial temporal artery and the zygomatico-orbital artery (Fig. 5.1).
The Superficial Temporal Artery

This artery is one of the terminal branches of the external carotid artery. It presents a very distinctive appearance. After coursing around the zygomatic bone, it rapidly divides into two branches, frontal and parietal (Figs. 5.2–5.4, 5.6). It gives off a posterior (anterior auricular) branch which runs toward the pina anteriorly and anastomoses with the posterior auricular artery, with which it is in hemodynamic balance (Figs. 5.4, 5.8).

The positions of branching of these two arteries at the distal portion of the superficial temporal artery is variable. This division can occur very distally, in which case an additional artery supplies the territory located proximal to the bifurcation (Fig. 5.3).

When the frontoparietal trunk is more frontal than parietal, the zygomatico-orbital artery decreases proportionately in size and may even be absent. The frontal branch then becomes the zygomatico-orbital artery (Figs. 5.4, 5.5). Similarly, when the parietal branch is “weak,” the posterior auricular artery takes over the territory, therefore being “dominant” (Fig. 5.6).

The superficial temporal artery sometimes anastomoses with the meningeal system through the foramina of the emissary veins of the superior sagittal sinus (Fig. 1.30). These anastomoses are located near the midline; consequently, they can be seen near the outline of the skull in lateral projection. Usually, they are visible during selective injection of the middle meningeal artery. Only exceptionally are they seen after subselective injection of the superficial temporal artery.