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The Anatomy of the Arteries and Veins of the Breast

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Textbook accounts of this subject are inadequate. This review considers the work of Cooper and Salmon and reproduces some of their figures. Applications in the diagnosis and treatment of cancer are discussed. The largest mammary arteries are the lateral (from the axillary) and the anterior medial and posterior medial (from the internal thoracic). The branches of these arteries do not follow the duct system, but instead form a plexus in the anterior fat layer. Normally there are no hypervascular or hypovascular areas. The contribution of the mammary branches of the posterior (aortic) intercostal arteries is minor. There are superficial and deep sets of veins, the latter associated with arteries. Mammary vessels of living women are demonstrated by infrared photography, thermography, and mammography. In the diagnostic use of these methods there is a tendency to rely upon the concept of normal vascular symmetry, but this is a fallacy.

Key words: breast anatomy, breast cancer, arteries of breast, veins of breast, thermography

The clinical importance of the arteries and veins of the breast is obvious. Unfortunately there are no clear descriptions of these vessels to be found in textbooks. The cause of this defect appears to be that the textbook accounts have been standardized for more than 100 years, and so have escaped the influence of the two most important contributions to this field of anatomy (10, 48).

Cooper employed his technique of injection with colored gelatin to study both arteries and veins (Figs. 1, 2). Salmon introduced a method of arterial injection better than Cooper's, but he specialized, ignoring the veins. In fact, I have been unable to find any publications except Cooper's which describe the veins of the breast, apart from a few papers about infrared photography of the most superficial vessels. In the 20th century several workers have attempted the injection of mammary arteries, but only Salmon's results are technically acceptable.

One review of the arteries of the breast has appeared (34); the veins have not been reviewed. There is a substantial difference between Maliniac's conclusions and my own, because he accepted Marcus's results (35), which I reject.

I have emphasized the problem of vascular symmetry, which is important in the diagnosis of cancer of the breast.

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