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STUMP ARTERIAL CIRCULATION AND ITS RELATIONSHIP TO THE PRESCRIPTION OF A PROSTHESIS FOR THE GERIATRIC PATIENT

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The primary purpose of the Research Program in Prosthetics, inaugurated by the Surgeon General of the Army in 1945 and now supported by the Veterans Administration and other agencies, has been to improve or construct artificial limbs that would enable the amputee to assume his place in society with a minimum loss of function. Although research has been mainly devoted to fitting the young, vigorous soldier, fitting the geriatric amputee has become an ever-increasing problem. Recognizing this fact, the National Academy of the Sciences authorized a special conference on The Geriatric Amputee, which was held in Washington, D.C. in 1961. At that conference, the Panel on Medical Management (1) chaired by Dr. George T. Aitken, recommended that the geriatric amputee be defined as a person over 55 years of age, and that the terms "old amputee" and "new amputee" be used to designated two subclasses. The panel recognized this terms as somewhat arbitrary since age is a matter not only of chronology but also of physiological fitness.

In my experience, the statement credited to Dr. Osler of The Johns Hopkins University, "You are as old

as your arteries," is true in the majority of cases; statistics also bear out the adage. Since arteries may be obstructed in the young as well as in the old, the term geriatric amputee should probably be abolished, and the title, "Amputations and prostheses in case of decreased arterial supply in the extremities and in the stump" be used instead. This all-embracing title would also have subgroups, such as nondiabetic and diabetic, and would include consideration of amputation sites and technics.

Statistics indicate that vascular diseases, particularly atherosclerosis, cause more deaths than the next five causes, which include cancer. Certainly in most cases, the degree of lower-extremity function is directly related to arterial condition, such as degree of obstruction. With increasing obstruction, there is a corresponding decrease in function and an "aging" of the limb, which may lead to gangrene, resulting in death. The same symptoms associated with gradually increasing obstruction in the arteries of a limb may also be presented by the stump, i.e., the stump may get tired or develop claudication after a brief walk with the prosthesis; stump abrasions may

develop after socket contact during a short walk, and the abrasions may be slow-healing or nonhealing, depending upon the degree of loss of stump arterial circulation. It is evident, therefore, that a prosthesis cannot be properly prescribed unless the arterial circulation of the stump is accurately evaluated. For example, if a patellar tendon-bearing prosthesis were prescribed for a stump with poor circulation, the patient would probably experience serious stump problems in a relatively short time.

The site of amputation and shape of the stump are also factors that profoundly influence the prescription of a prosthesis, and it is the surgeon's responsibility to select a level that will provide the greatest function restoration that the circulatory state of stump and contralateral extremity will allow and, of course, in terms of available prostheses. Unfortunately, few surgeons are expert in both circulatory and prosthetic specialties, so poor rehabilitation often results for many patients.

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