Editorial

Evolution of the AK Socket

by H. R. Lehneis, Ph.D., CPO

The lead article for this issue of *C.P.O.*, "Sockets, Linings, and Interfaces," by Dr. Eugene Murphy represents the culmination of many years of research, writing, and studying the principles of socket design and interfaces.

Admittedly, very little advance has been made in AK socket design since the development of the total contact socket. Today, the principles espoused by Dr. Murphy of selective flexibility/rigidity of socket interfaces can be realized in clinical practice.

There is a pressing need to re-evaluate the traditional quadrilateral AK socket design in light of the drastic changes over the years in the amputee patient population. Today, the vast majority of AK amputees are geriatrics—a complete reversal from the time of development of the quadrilaterally-shaped socket. Most practitioners would agree that the most prevalent complaint of geriatric amputees is discomfort. This is not surprising, considering that most geriatric amputees suffer from reduced muscle tone, sensation, and vascularity.

Thus, it has been proposed by this author to re-examine the cross-sectional configuration of AK sockets to specifically address the physiological alterations in stump shape and consistency of geriatric amputees, to evolve a socket design specific for this patient population. Such new configuration, combined with contemporary interface materials, e.g., silicone, copolymer inserts, and selective flexibility/rigidity, should lead to much improved physiological and biomechanical function and comfort (see Winter issue *C.P.O.*—Vol. 8, No. 1).

Other attempts to improve comfort are seen in Scandinavian socket designs in which the entire socket is semi-flexible except for the medial wall and a portion of the proximal brim area. In the Ockenfels design, the socket contains selective fenestrations and an inner elastic cloth liner or sock to prevent window edema. The so-called Contoured Adducted Trochanteric Controlled Alignment Method (CAT-CAM), developed by Sabolich, is to not only improve comfort but supposedly the patient's gait pattern.

Now that these new developments are emerging, it seems rather puzzling, in retrospect, that there was such a long hiatus in the application of soft or flexible interface materials in AK sockets. And so it appears that we are on the verge of a major breakthrough, particularly in AK socket design and interface materials. Though not universally practiced, these noteworthy developments will change the practice of prosthetics in dramatic ways to improve comfort and function our patients so much deserve.