

Below-Knee Waterproof Sports Prosthesis with Joints and Corset

by Alfred W. Lehneis, C.P.

This article is concerned with the development of a waterproof below-knee prosthesis with knee joints and corset, utilizing the supracondylar/suprapatellar (SC/SP) suspension socket. A case report is described below.

The patient had a below-knee amputation due to traumatic injury with a resultant amputation length of the tibia of approximately 1" (Figure 1). This patient currently wears a PTB type socket with leather thigh corset, polycentric joints and an SC/SP suspension socket, thus, no auxilliary suspension was necessary (Figure 2). He was doing well with this design in all activities of daily living, but desired a waterproof prosthesis for boating.

In developing the waterproof design, the following components were utilized: Kingsley beachcomber foot, Otto Bock polycentric stainless steel knee joints, and a corset fabricated from 4mm Subortholen thermoplastic. Closures were 1" dacron straps with virgin nylon buckle closures used on scoliosis type body jackets.



Figure 1. Length of tibia is approximately 1".

The fitting and fabrication of the prosthesis was as follows: the patient was casted (including the thigh) and the cast modified, using standard procedures for SC/SP suspension, an insert was fabricated from PeliteTM, and the socket was fabricated with acrylic resin and carbon/glass reinforcements, especially at the side bar attachment sites.

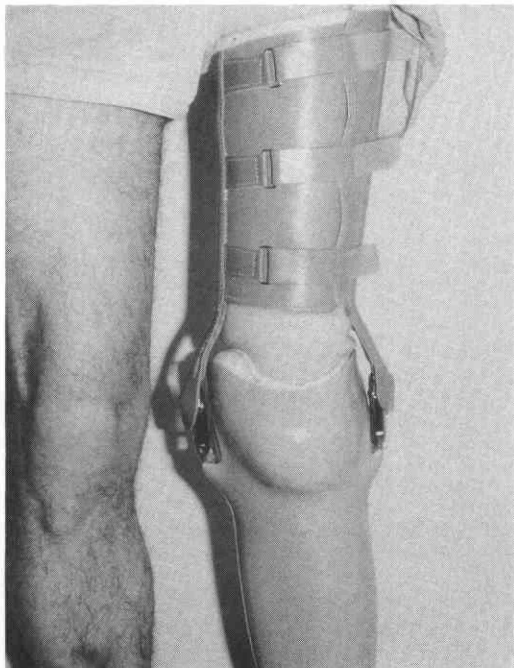


Figure 2. Patient currently wears a PTB type socket with a leather thigh corset.

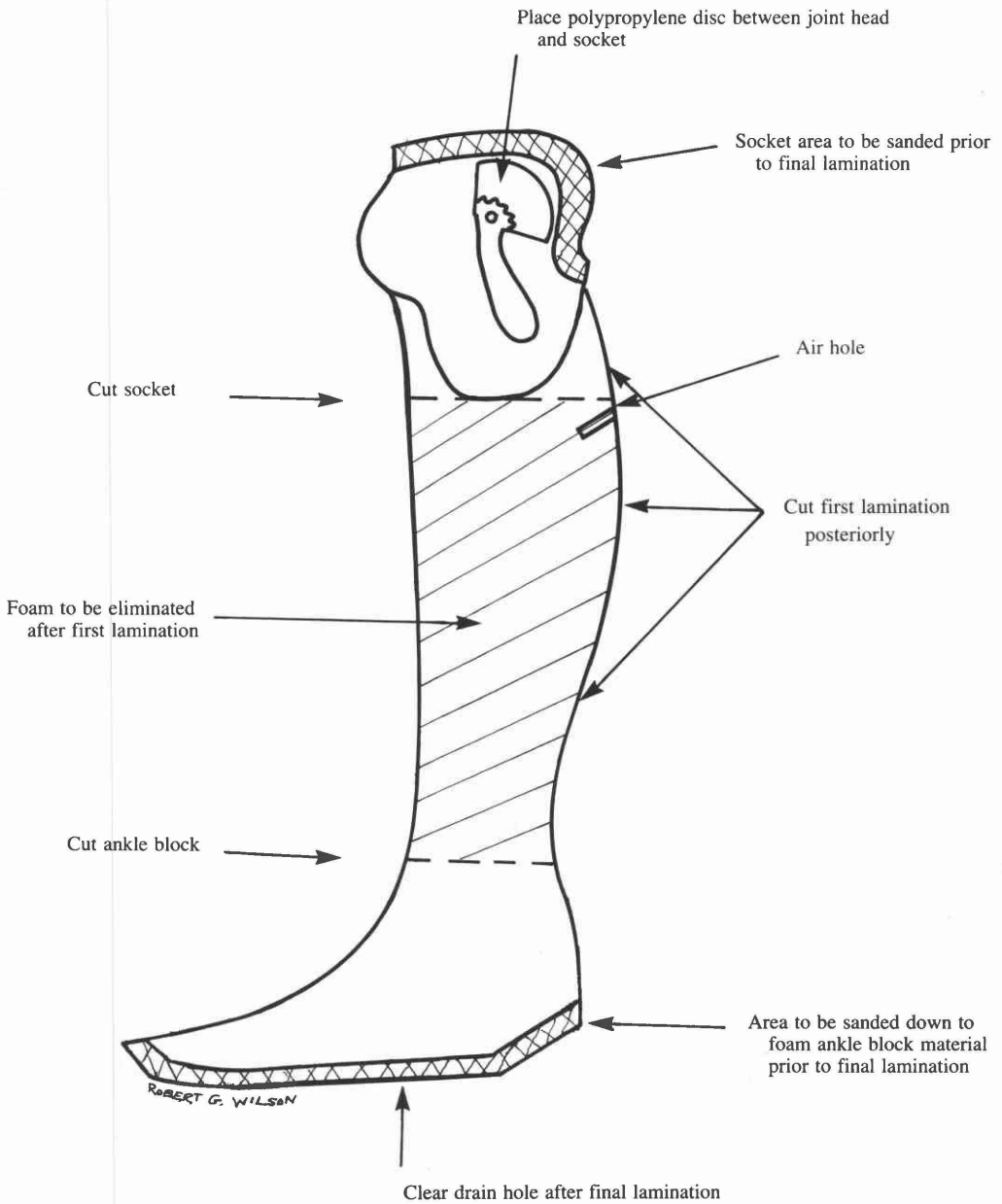


Figure 3. The laminated shell is split longitudinally on the posterior aspect.

