

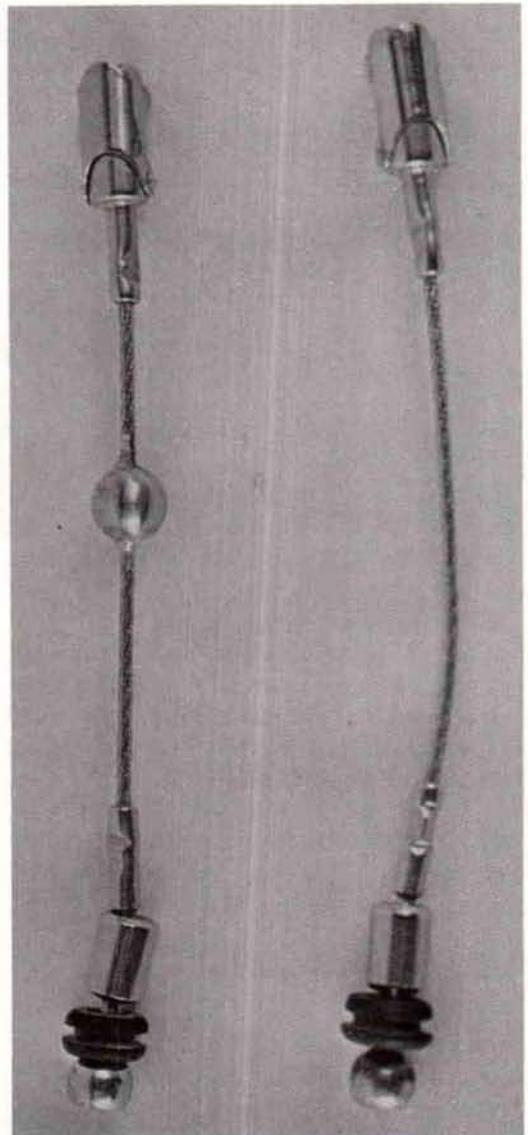
TECHNICAL NOTE

A Modified Hook-to-Cable Adaptor

Short above-elbow and shoulder-disarticulation prostheses present a unique problem to the prosthetist, one that is not found in most other upper-limb prostheses. Because of the short length of the residual limb, there is less excursion available in the control system. When excursion is lessened, the patient may be able to flex the prosthetic forearm to only 90 deg. with little or no terminal device opening, unless an excursion amplifier of some type is used.

Although an excursion amplifier will work for some patients, it does not work for all. Because the excursion is reduced, the amount of force required by the patient to raise the forearm is frequently more than the patient can deliver. In the case of an excursion amplifier on a shoulder-disarticulation amputee, it usually requires the axilla strap to be buckled tightly at all times, a condition that proves to be very uncomfortable to the patient. The sliding of the amplifier across the plastic socket creates an unpleasant noise during the operation of the prosthesis. Furthermore, the sheave on the excursion amplifier system tends to clog with lint from clothing and may cease to turn, causing the cable to rub and fray, requiring repair of the cable.

To eliminate these problems, a substitute method has been employed successfully by us. This consists of a modification of the hook-to-cable adaptor. A steel ball (Fig. 1), approximately 5/16 in. in



diameter with the center drilled out to allow the cable to pass through, it soldered proximally to the triple swivel ball terminal on the hook-to-cable adaptor. When the prosthesis is raised to its maximum position of flexion, the triple swivel ball terminal is removed from the thumb of the hook and the slack in the cable is taken up by placing the steel ball into the thumb of the hook. With the cable in a tightened position, the patient can now go further into flexion and, hopefully, into full hook opening in the full elbow flexion position. The few centimeters of cable extending distally to the thumb of the hook have not proven to be

a problem of interference in any way. The changing maneuver of triple swivel ball terminal to steel ball, back to the triple swivel ball terminal is easily and speedily completed with the sound hand.

By using this type of hook-to-cable adaptor, I have found it possible to harness most patients in the conventional manner, eliminating almost completely the need for extra and uncomfortable straps, excursion amplifiers, external elbow assists, etc.

David Fornuff, C.P.
55 Clinton Avenue,
New Providence
New Jersey 07974