

PARTIAL HAND PROSTHESIS

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There are as many different types of partial hand prosthesis, as there are digits or sites of amputation of the hand. In many cases it is necessary for the prosthetist to design a special partial hand prosthesis for the amputee, since the individual amputee requires an appliance to fit his social life as well as his occupation.

With the discovery of plastics and new materials, which are neat in appearance, easily worked and which will withstand water, solvents and other corrosive elements; the task of manufacturing a partial hand prosthesis has been greatly simplified. Figures "A" and "B" illustrate this type of appliance.

Materials selected for the fabrication of a partial hand prosthesis must be carefully considered, as one is faced with the problem of sanitation; that is, a material that may be washed or scrubbed with soap and water, without damaging the appliance. Plastics and stainless steel best meet this problem. Leather may be utilized when it is coated with a nylon material.

The Prosthetist is confronted with numerous problems when he is called upon to fabricate a partial hand prosthesis. The main problems are function, versus cosmetic appearance. If possible, it is an ideal situation when both of these elements are achieved in the fabrication of the partial hand prosthesis.

Restoration of the digits must be considered in relation to their importance to the hand. It is felt that the thumb is first, in order; next, the index finger and on down the line to the little finger.

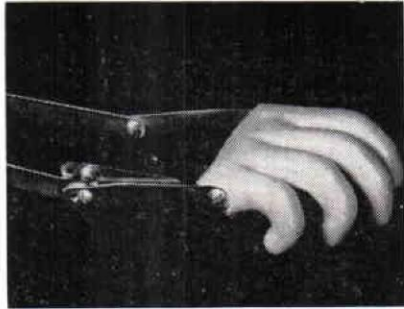


Fig. A. Partial hand prosthesis showing fingers and mechanism, source of control: wrist flexion. Materials: soft plastic, stainless steel and aluminum finger core.

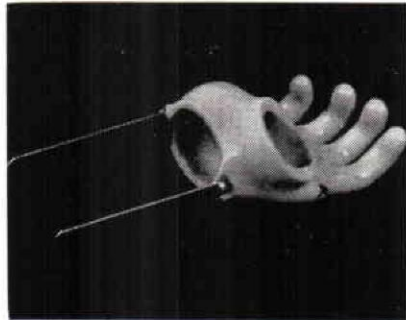


Fig. B. Partial hand prosthesis (same as Fig. A with the addition of a plastic socket to fit stump). Partially complete, other than cosmetic or leather glove, forearm cuff, socket to be trimmed and adjustments as necessary.

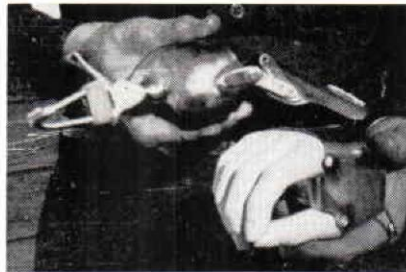


Fig. C. Interchangeable hand or hook partial hand appliance. Source of control: wrist flexion. Material: stainless steel.



Fig. D. Same partial hand appliance with hand attached.

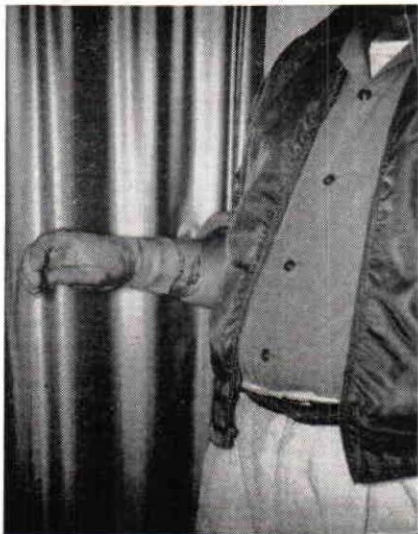


Fig. E. At right: Same appliance shown on patient with cosmetic glove.

Restoration of the thumb may be accomplished in numerous ways, for example: a steel post, cosmetic post, two-position mechanical thumb (such as the A.P.R.L. Hand Thumb) or a cable-controlled thumb, with one joint.

Since the hand is a delicate organ and its mechanisms small and complex, the same factors apply to the prosthesis for the partial hand; therefore, it is essential that this type of prosthesis be precision built. Since the human hand has very little padding on the dorsal surface and is, for the most part bone, a great deal of consideration must be given to the comfort of the wearer.

Four basic types or styles of partial hand prosthesis are the functional, the non-functional, the cosmetic and the non-cosmetic. The ideal function would be a combination of these, but this is seldom possible because of the desires of the patient. The determining factors in choosing an appliance are: the site of the amputation, the amputee's personality, social life and occupation. The prosthetist, with the assistance of the amputee and the

physician, must decide upon the most beneficial type.

There are two major sources of power to motivate the appliance — wrist and shoulder control.

The shoulder may be harnessed with a double shoulder loop to provide power for motivation. This is accomplished by means of a cable running from the shoulder to the appliance, encased in a housing. When wrist flexion is utilized, the harness is not required.

Figures A and E show several types of partial hand prostheses. Figures A and B are available in kits.

"What's New(s)"

- JAMES CAMPBELL, partner of Bryant and Campbell Artificial Limb Company, was honored by the Disabled American Veterans when he received the Salute of the Month Award for November, 1953. The monthly Awards by the DAV are part of a national program to point out to the American people the need for protecting the nation's rehabilitation program for disabled veterans.