

PORTEN REPORTS ON FITTING DEFORMITIES WITH PLASTIC SOCKET

An interesting report on the use of a plastic socket in the fitting of a short-leg prosthesis for a young girl of 18 has come to us from Laurence Porten, president of the Union Limb and Brace Company, Inc.

The girl is severely handicapped with congenital deformities. She has no right femur and knee joint and the foot, which has only three toes, is located at the knee level. The hip joint is out of proportion, but functions normally. In addition she is without a right arm—a condition that is similar to a shoulder disarticulation—and has a retarded left arm, about 4 inches shorter than normal, twisted backward, and with no elbow joint and only three fingers.

The girl was first fitted in 1949, when she was seven years old. She was then given a combination Above Knee limb with hip joint and pelvic band, a moulded leather thigh corset which enclosed the whole leg and foot, and a wooden shin with artificial foot. In order to get a perfect fit it was necessary to make a plaster mold of the entire right side, including hip and leg down to the toes.

She was also fitted at the same time with a right shoulder disarticulation arm which improved the cosmetic appearance as well as giving better body balance. A simple wooden hand with movable thumb and lock proved quite useful after the child learned to operate the elbow lock.

Both prostheses were worn for about four years, during which time the wooden shin was lengthened three times. In 1953, shortly before the girl's family moved to another state, a new leg had to be made to compen-

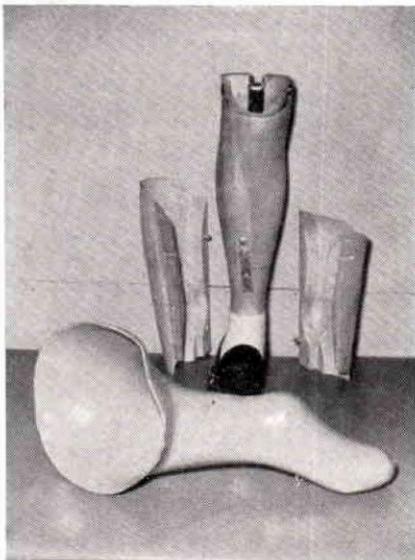


Fig. 1—The plastic socket and wooden shin, knee and thigh pieces dis-assembled.

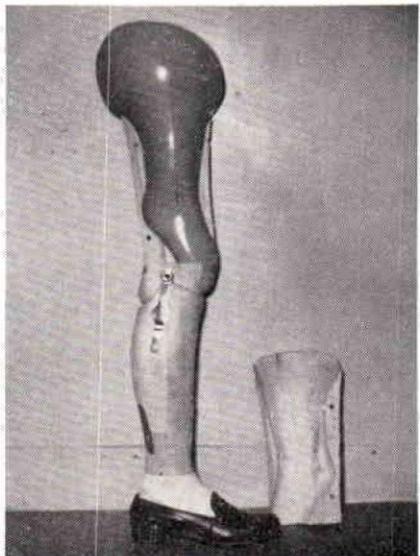


Fig. 2—Outside view of installed plastic socket.

sate for her growth. After this time there was no contact with the patient until July 1960 when she came to the office to be measured for a new prosthesis.

Mr. Porten describes the construction and fitting of the new leg as follows:

"After the regular procedure of casting, etc., we followed up with a wax socket fitting and the regular plastic laminating process. The new prosthesis consists of a laminated plastic socket—instead of a moulded leather thigh corset—which is fitted into a wooden thigh socket, and also has a wooden

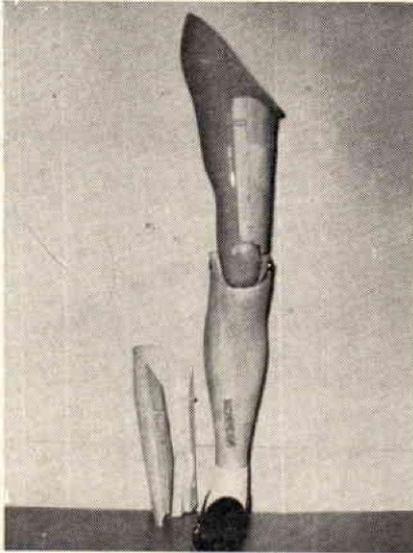


Fig. 3—Front view of installed plastic socket, partly covered with wooden halves.

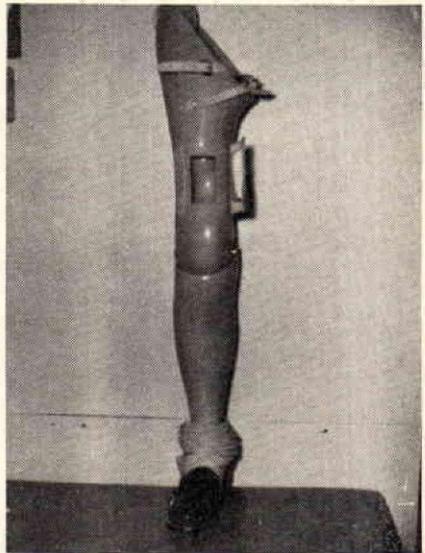


Fig. 4—The finished leg with laminated plastic cover.



Fig. 5—The patient wearing the leg.

knee, shin, and SACH foot. (See Figs. 1 through 4.) The conventional hip joint and pelvic band were replaced by a Silesian bandage, which is used successfully on Suction Socket legs.

"The deformity is well hidden in the wooden thigh, the plastic socket is sanitary and odorless and fits the leg perfectly. A cut-out front window allows the deformed leg to slide easily into the socket and a window pad holds the leg securely in place. The Silesian bandage maintains a very good hip control and holds the prosthesis in perfect alignment.

"This new combination has proved to be very satisfactory and the 18 year old girl is most happy with it. We have handled several similar cases in the past with equal success.

"The idea of reporting this case is to show that plastic material has great possibilities in the fitting of deformities. I have used it for shoe extension braces, shin protectors, arm and leg braces, arch supports, hand and arm splints, and artificial leg covers ever since I attended the UCLA Upper Extremity School in Los Angeles in 1953."

A SURGEON COMMENTS

By **EVERETT J. GORDON, M.D.**

Those of you who attended the September convention at the Waldorf-Astoria in New York City will certainly agree that this was one of the finest sessions our organization has ever held. The group was indeed fortunate to hear professional talks of the highest caliber from speakers from all over the world. After hearing a doctor from the Philippines describe conditions in Southeast Asia, most of us felt quite proud of the progress we have made in the U.S.A. However, our ego was soon deflated by the brilliant exhibition of prosthetic advancements made in Germany, especially of upper extremity appliances with suction-type sockets, and bracing in the treatment of scoliosis. Especial thanks is due to those who planned the program to immediately precede the meeting of the International Society of Orthopaedic Surgeons, who also met in New York City, thereby making it possible to secure such a brilliant array of world renowned speakers.

Everyone agrees that the prescription of new prosthetic devices must always be done on a conservative basis. We are all familiar with the immediate onrush of amputees seeking to use a newly announced device, believing that this will be the long-awaited answer to their problem. The experienced prosthetist and orthopaedist is especially careful in prescribing newly innovated devices for the problem amputee. The resultant difficulties when this policy is not followed was recently demonstrated in the Washington area by a below knee amputee who had gotten along very well with a conventional type of hard socket until very recently when he developed stump ulceration and swelling. After several months of self-care he reported to our clinic and requested a new UCB or Patellar Tendon Bearing type of prosthesis, believing that this would correct his stump problem. He was advised on local care to heal the stump ulcer and told to defer using his prosthesis until the stump was healed; physical therapy including whirlpool baths and ultra-violet applications was also prescribed. An appointment was given to return in 3-4 months when the stump was healed, so that further consideration could then be given to prescription of a new type of prosthesis. However, the patient was "impatient," bypassed the clinic, and through other channels secured a new UCB prosthesis. After 5 days use his stump, which

had begun to respond to the prescribed therapy, became very edematous, the ulcer deepened, and he became bedridden. Sheepishly, he returned and asked for aid, recognizing his error. This demonstrates that the doctor may not be right every time, but he is more often right than wrong—*his* advice should be heeded in lieu of the patient's do-it-yourself opinion!

We have found in using a UCB prosthesis that the amount of hyperextension must be controlled, although it is recognized that a slight amount does add to stability. However, if alignment in excess hyperextension occurs, incoordinated heel-toe gait follows, with resultant abnormal pressures upon the stump and probable stump pain and skin ulcerations.

In our brief experience with the UCB (patella tendon bearing) prosthesis we have found that a second or spare limb is usually unnecessary. In some cases a spare replica insert may be supplied, which will correctly fit into the plastic shell and can easily be switched with the original insert. This may be of aid to those who perspire freely, with odor problems, or who change frequently for sanitary reasons. Actually, there is little need for a complete new prosthesis, as it is the insert which is more apt to need replacement than the shell or foot of the prosthesis. The SACH foot can easily be repaired with little delay whenever required.

In one bilateral below-knee amputee who is using UCB prostheses, we have had a problem of clicking of the knees with ambulation, due to striking of screws on the inner side of the knees. This is somewhat difficult to control, except by retaining his gait with a wider stance. Has anyone else had similar experiences? If so, how have you corrected it? We certainly would like to know as this appears to be a rather interesting phenomenon in bilateral BK's that occurs with the freedom of gait resulting from UCB prostheses.

Our experiences with the SACH foot have continued to be quite favorable. We have had only one amputee in the last year who has expressed dissatisfaction and wanted to return to his old wood foot; he was a farmer who felt that the SACH foot was not durable enough for him. However, some of our amputees have expressed difficulty in going up and down stairs, because of excessive compression of the heel of the SACH foot. They noted definite instability with heel compression, which was not noted with their previous solid type wood foot. We have found that in some instances it may be necessary to use firmer heel inserts, if stair climbing is an important phase of the amputee's daily activities.

Several of our amputees have preferred a large flap of leather to line the front of the fork strap of their knee extension aid, to prevent the knee joint from pinching and tearing their trousers. This seems to afford good protection and does cut down the reweaving bills. Such innovations are often devised by the amputee himself—if you have any interesting ones, we would be glad to publish them for the benefit of others.

We have not had any communications from our readers for some time. Let's not make this just a local column, but continue the original purpose of interchange of ideas. There are a lot of smart men in our organization—let's confirm this by sending along your ideas so that someone else can be benefited—we want to hear from *you*!