

Immediate Post-Operative Prosthetic Fitting

Correspondence between William A. Tosberg, C.P.O.,
and Dieter Mozer

INTRODUCTION

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There is intense interest in the immediate post-operative fitting of prostheses. A considerable number of amputees have been fitted in the United States utilizing the technique as originated by Prof. Marian Weiss of Konstancin, Poland.

Through personal correspondence with Mr. Dieter Mozer, an outstanding technician from Sweden whom I have known for many years, I have been aware of the work which has been carried on at Centrallasarettet, Boras, Sweden. Docent Dr. F. Stahl, Chief of the Orthopedic Division, and Mr. Dieter L. Mozer, Chief Prosthetist and Orthotist, have done a number of immediate post-operative fittings. In the June 1964 issue of the *Orthopedic and Prosthetic Appliance Journal*, pp. 105-109, a translation of his initial report was published. At that time Mr. Mozer supplied information on nine cases. Since these nine covered a fairly wide range of patients, I became very interested in their technique and have carried on fairly extensive correspondence, requesting details of their procedure not only from a prosthetic but also from a surgical point of view.

Following are translations of Mr. Mozer's answer and also the translation of a letter from Dr. Stahl, concerning surgery. Mr. Mozer's letter of August 18 supplies data on sixteen patients, and his letter of September 3 indicates the time of discharge from hospital on temporary prostheses. It is significant that, even for patients of advanced age when amputation was the result of peripheral insufficiency, this time does not exceed four weeks.

It is well to note that Mr. Mozer is very much concerned with prostheses for geriatric amputees, a group of patients which, to an ever greater extent, requires our attention.

One would think that a close cooperation on an international level could greatly improve services available to all amputees and should be pursued wherever possible.

Dieter Mozer to Wm. Tosberg

August 18, 1964

DEAR MR. TOSBERG:

Thank you very much for your letter.

It is interesting to hear that one of your patients had a necrotic scar after removing the cast and that this

scar was very slow in healing. Fortunately, we have not had this experience up to now. Curious, and also encouraged by your reports, I could not restrain myself last week from applying a plaster cast in the operating room to a below-knee amputation stump. This was at approximately four o'clock in the afternoon. During the next morning everything was still

fine. The patient felt well while we prepared the foot and the adjustable leg. However, shortly *before* the patient was asked to apply weight to his stump he complained of severe pain along the whole tibia. With a knife I opened a window in the cast over the tibial crest. When this did not relieve the pain and pain-relieving pills did not bring any relief, I removed the whole cast and discovered a massive water-filled blister over the end of the tibia and also a number of small blisters surrounding the large one. These, however, disappeared practically before my eyes within a few minutes. Today I have applied a strong elastic bandage and he is resting. Too bad!

Wherever the mistake lies, I do not know. The surgeon thinks that he might have applied too much tension on the skin while closing the stump. I am of the opinion that I should have provided some relief over the tibial crest as well as over the end of the tibia during the casting. I have just been informed by the surgeon that the patient has fever and we have to wait. The problem in this case might be due to other reasons. I will, however, by all means try a few more immediate casts with future amputations.

Have you ever tried this method on AK amputations? One thing which I have not really been able to understand is the following. Immediately after amputation the stump appears to be swollen already. The plaster cast which you apply in the operating room, therefore, encloses a swollen stump. If you leave the cast on approximately three or four weeks the swelling will never subside because, if it did, the prosthesis would not remain on the stump. Is this based on the fact that the stump, immediately after amputation, is not quite as swollen as it would be during the next day? With the patient I have mentioned in this letter—the one where I applied the plaster cast in the operating room—I had the impression that the stump was swollen already when the surgeon put down the needle. What is your opinion on this?

I am enclosing a list of the patients which we have been fitting up to now.

I am sorry that I could not meet you in Copenhagen to discuss our prosthetic method of immediate fittings. I was most anxious to do this.

I would greatly appreciate hearing from you soon. With best regards,

Yours,

/s/ DIETER MOZER

Most Recent Information about Post-Operative Prosthetic Fittings in Sweden

Patient	Age	Amputation	Diagnosis	Amputation Date
1.	17	BK	accident	10-7-63
2.	18	AK	sarcoma	10-14-63
3.	33	BK	accident	10-21-63
4.	82	BK	peripheral insufficiency	10-22-63
5.	29	BK	chronic osteomyelitis	10-23-63
6.	64	BK	peripheral insufficiency	12-17-63
7.	68	AK	peripheral insufficiency	1-7-64
8.	15	BK	congenital	1-9-64
9.	69	AK	peripheral insufficiency	1-15-64
10.	76	BK	arteriosclerosis	4-24-64
11.	62	BK	peripheral insufficiency	7-13-64
12.	19	BK	accident	7-13-64
13.	66	BK	sarcoma	7-16-64
14.	76	AK	peripheral insufficiency	7-29-64
15.	47	BK	tumor	8-13-64
16.	87	BK	gangrene	8-10-64

William Tosberg to Dieter Mozer

August 28, 1964

Dear Mr. Mozer:

Thank you very much for your letter of August 18, 1964. This information, together with your first report, is so highly positive that I took the liberty of discussing it with Dr. Howard Rusk, Director of our Institute, and Dr. Allen Russek, Chief of our Amputee Service, as well as members of our medical and surgical staff. As I have mentioned in my previous letter, we have undertaken a number of post-operative fittings but our results have not been as good as your reports appear to indicate. Our last two cases were done on young people. One was a young lady with a congenital deformity where a BK amputation was performed. The other one was a young man with a sarcoma which required an AK amputation. Both of these cases healed without any complications, and the patients are now ambulating on their permanent prostheses without problems. In all of our previous cases, however, the amputations were performed for vascular problems, and I do not consider any one of these fully successful.

Since in our opinion immediate post-operative fitting offers many advantages, we would greatly appreciate it if we could have a letter from your surgeon describing the surgical procedures used in an amputation for immediate post-operative fitting. Some of the more specific questions would be:

1. In vascular cases, what is the method of selection for immediate post-operative fitting?

2. What is the optimal length of stump?

3. Are you using myoplastic procedure?

4. What is the placement of the scar?

5. Does an amputation for this procedure vary from generally accepted amputation surgery, and in what areas?

6. Is a drainage tube used routinely, and for how long?

7. What type of dressing and how much is used before the plaster of Paris cast is applied? How often is this dressing changed?

8. Does immediate ambulation affect the healing either beneficially or adversely?

I would personally like to discuss some of the prosthetic techniques, such as suspension of AK prostheses, number of plaster casts used, average time of hospitalization, as well as the average time of ambulation on temporary prostheses, with you.

We would greatly appreciate having the information requested above for discussion with our staff.

Sincerely yours,

/s/ William A. Tosberg



Dieter Mozer to Wm. Tosberg

September 3, 1964

DEAR MR. TOSBERG:

Many thanks for your friendly letter of August 28, I am really surprised that only the last two of your cases, the young patients, could be taken care of without any complications. The reason for this, of course, could have many causes, or be a combination of reasons, but this fact does not make the solution any easier. The Chief of our Clinic and I are very much interested in your results and we are very anxious to be of help in any way possible. Since our material itself is relatively limited it is quite likely that we will run into complications of a similar type and therefore it would be advantageous if we could benefit from your experiences.

I discussed with Dean Dr. Folke Stahl, the Chief of our Orthopedic Division, your specific questions. It is, however, simpler for him to answer these questions not in English and therefore he has asked me to translate these answers. I am attaching his letter.

Now to your questions. Relating to the suspension for AK prostheses. Up to now we have simply attached a $1\frac{3}{4}$ inch webbing strap to the posterior part of the plaster cast, and run this strap over the opposite shoulder through a movable pad and attached it to a buckle riveted to the anterior part of the plaster socket. Very effective, although not too comfortable for the amputee.

We had to construct three plaster casts, as an average. We never got away with two only. In two or three cases I believe we even had to make four casts.

As it pertains to the time of hospitalization for the patients, I would say that this varies considerably. We have not been able to establish a re-

lationship between this time, the age of the patients, or the cause of amputation. I believe our material is still too limited for this purpose.

PATIENTS' DISCHARGE DATA

1	— 25	5	— 28	9	— 35
2	— 23	6	— 30	10	— 46
3	— 24	7	— 43	11	— 43
4	— 38	8	— 36	12	— 31

I have numbered the list of patients which I sent to you recently, and I am using the same numbers. The second number used indicates the number of days figured from the day of amputation, including the day of discharge with a provisional prosthesis with which he was sent home. This is with the exception of patients 10 and 11, who remained in hospital until their final prostheses were delivered. On the average, the patients received their finished prostheses within three to four weeks after discharge from hospital. We have waited as long as six to eight weeks in exceptional cases where we were not quite sure whether the stump was fully matured. If the patient lives far from our city he is readmitted and is then sent home with his final prosthesis.

May I finally ask a question of a different type? How do you provide for your geriatric AK patients? I am thinking of patients in the 60-70-80 age groups who are provided with their first AK prostheses. In most cases diabetes and vascular problems exist. We find it very difficult to have those patients ambulate without a knee lock. I would say that practically all types of prostheses that could be used and that I know of are not too well suited for those old people. They are too heavy, too rigid, too difficult to apply; and in relation to the few hours that these old patients actually walk or stand, unnecessarily strong and expensive. I hope you do not misunderstand me. I do not have the intention to provide these patients with prostheses of minor value. I feel that the average amputee who

is on an old-age pension puts his prosthesis to an entirely different use than a man in his younger years. Comfort, light weight, and simple handling are the main requirements which a patient who is in a lower physical condition needs. Since this type of patient is very numerous in our country, and is on the increase with the increasing life expectancy, I am very much involved with this problem. Therefore, my question. Do you have a specific prosthesis for the aged which would meet the requirements of this patient group in a greater degree? Or have you ever seen anything of this type during your trips to foreign countries?

This now will probably do for today. I am looking forward with anticipation to your next letter.

/s/ DIETER MOZER

**Reply from Dean Dr. Folke Stahl,
Chief of Orthopedic Division**

As an answer to your letter of August 28 I would like to make the following comments:

1.

The selection of patients with circulatory deficiency who are to be provided with prostheses immediately after amputation is very simply as follows: the general health of the patient should be such that he can still walk independently, even with the help of crutches, shortly before amputation, such as several days or even weeks.

2.

The optimal length of the stump is, according to our judgment, depending upon the prosthetic technical consideration, more so than from the medical aspects. This pertains primarily to AK amputations where the knee mechanism, as well as acceptable cosmesis, require an amputation where the femur is shortened by at least four inches. The best length for be-

low-knee stumps is, as is known, rarely the maximum length which can be preserved at the amputation. Besides the cosmetic problem which is very difficult to overcome in a long below-knee stump, a long stump is quite often bony and hard, tolerates very little weight-bearing, and in addition has the tendency of poor circulation in the distal part. Six to seven inches could be considered as a suitable length.

3.

We do not do any myoplasty operations in our amputations.

4.

The suture line is in the frontal plane of the stump and somewhat posterior to the midline.

5.

The amputation technique used with patients that are provided immediately after amputation with a prosthesis does not differ in any point from the accepted amputation technique.

6.

We always use a drainage tube and remove this the day after amputation.

7.

Before a plaster cast is applied we cover the wound with a light compress, which is changed once or twice daily, depending upon necessity. The whole stump is covered with an elastic bandage of about 40 to 60 inches.

8.

The healing process does not vary in any respect. It is neither improved nor retarded through the immediate initiation of ambulation exercises. The only difference that we have been able to note is that the swelling of the stump disappears faster than normally.

Our experiences in this area will be published in the very near future in the *Acta Orthopaedica*.