

## The geriatric prosthesis as metaphor: a clinical note

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### Abstract

This clinical note describes a 96-year-old patient who wears a lengthening prosthesis in connection with the shortening of his leg which occurred after osteomyelitis of his left knee at the age of six years. The prosthesis was made and issued to him when he was twelve years old, and had never been replaced. The considerations that need to be made when replacing the prosthesis of an elderly patient are discussed.

In the case described, the prosthesis is replaced by a model that has no fundamental changes from the original. The better fit improves walking considerably and the patient is able to move about safely again using a walking frame.

### Introduction

In the Netherlands, the costs of prostheses and orthoses are covered, almost without exception, by health insurance. The patient only needs a note with a short explanation and justification from the rehabilitation specialist or (orthopaedic) surgeon. The average life-span of a KBM-prosthesis, for instance, is two years. Most insurance policies allow for replacement of a prosthesis after two years.

When replacing the old prosthesis of an elderly patient, one is faced with the choice of whether to use new and more modern materials and techniques or ideas in the new prosthesis, or to provide a copy of the old prosthesis.

It is a fact that the older the patient is, and the

greater the difference of a new prosthesis from the old one, the more difficult it will be to adapt to the new prosthesis.

The patient described in this report, demonstrates that a two year term before replacement need not apply to every prosthesis and throws light on the considerations to be made when replacing the old prosthesis of an elderly patient.

### Case history

Patient A., 96-year-old man, was referred by his General Practitioner (GP) to a rehabilitation specialist for the first time in his life.

The patient was, for the most part, able to answer questions and describe his own history. His family and GP could complete the information.

### Problem

Is the prosthesis still adequate or does it need to be replaced? If it is to be replaced, what are the specifications to which the new prosthesis must comply?

### Previous history

The patient developed osteomyelitis and arthritis of the left knee when he was 6 years old. Protracted bed rest and an operation (on the kitchen table) were the main components of the medical treatment.

After healing of the inflammation, an arthrodesis of the knee in a 45° position remained, and in the course of time the growth in length of the left leg was retarded because of damage to the epiphyses.

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At 12 years of age the relative shortening of leg length caused by the bent position of the knee and the actual leg length shortening became so great, through the growth disorder, that standing and walking were seriously hampered. He was measured for a lengthening prosthesis and this was made.

During the years in which his body length was still increasing, the prosthesis could be lengthened when necessary by replacing the wooden stilt.

#### Relevant examination

There are no abnormalities to the upper limbs or the right leg. The hip and ankle joints of the left leg show normal movements for his age. There is atrophy of the lower and upper leg and arthrodesis of the knee joint in 45°.

The patient is able to stand up himself with the help of his arms and to walk about indoors with a walking frame. Walking is, however, no longer safe and the patient feels insecure.

#### Prosthesis

The patient has a lengthening prosthesis (Figs. 1 and 2) with upper and lower leg cuffs of leather. The frame is made of wrought iron.

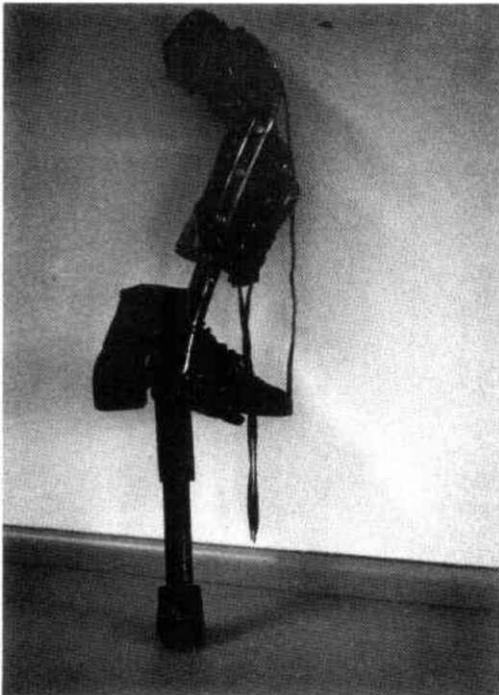


Fig. 1. The lengthening prosthesis.

The shoe rests on a plate under which is fixed a wooden stilt with a rubber cap.

The shoe and leather cuffs are very worn and the fit around the upper and lower leg is no longer sufficient because of atrophy of the musculature.

#### Discussion

The lengthening prosthesis that this patient received when he was 12 years old, in connection with his shortened leg length, has never been replaced.

In the growth stage it was sufficient to lengthen the wooden stilt and provide a new shoe. Afterwards only occasional repairs to shoe or leather cuffs were necessary and could be carried out by the local shoemaker.

The prosthesis has thus been worn every day for 84 years and this may be regarded as an unofficial world record.

The patient worked all his life as an administrator. He drove a car and motorbike. He is now a widower and has brought up 6 children. He has lived in a residential home for the elderly for six months.

Despite the significant impairment there were very few disabilities and one can hardly speak of a handicap.

When replacing the old prosthesis of an elderly patient, one is faced with making the choice of either changing the design of the prosthesis and/or using new techniques and materials. Will the patient get used to a new prosthesis that is essentially different to the old one? The answer to these questions will largely depend on the vitality of the patient and the type of changes to be made to the prosthesis.

The general advice would be to exercise caution. In this case it was decided, not to



Fig. 2. Details of shoe wear.

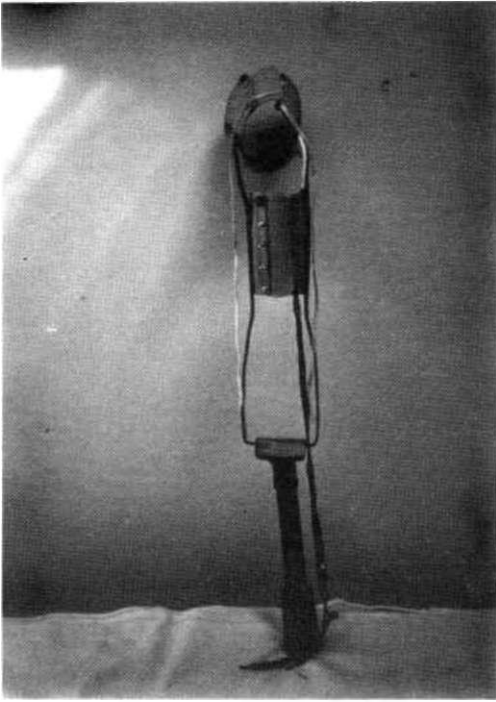


Fig. 3. The redesigned prosthesis.



Fig. 4. The prosthesis in use.

change the design of the prosthesis but to make the prosthesis fit better and be lighter (Fig. 3).

A new metal frame was made on the basis of a plaster model. The leather cuffs with lace-up fastenings were replaced by new ones. A new shoe was made to measure.

It was decided not to fit a rocker bar or artificial foot but to keep the rubber cap.

After receipt of the new prosthesis, the pattern of walking showed objective

improvement. It was also a subjective success because the better fit increased the patient's feeling of stability and he was able to move about more safely (Fig. 4).

In conclusion, it can be established that replacement of a prosthesis after 84 years can be useful and desirable, as long as one carefully considers which changes one should make and also which changes one should definitely not make to the new prosthesis.