

ABSTRACT

The characteristics of contralateral plantar pressure distribution in Diabetic patients with and without a prosthetic foot.

Aims and objectives

Aim: To study the characteristics of static plantar pressure distribution after a major amputation in the contralateral foot of diabetic patients with and without a prosthetic device.

Primary Objectives: To compare the relationship between plantar pressure distribution in the contralateral leg with and without a prosthesis in diabetic patients who have undergone a lower limb amputation and have been rehabilitated.

Secondary objectives: To identify areas of high pressure over the contralateral leg and suggest appropriate modifications in the prosthetic foot wear so as to reduce the plantar pressure in those high-pressure regions.

Methods

This was designed as an observational study, approved by the Institutional Review Board with financial grant for the same. A total of 48 diabetic patients who had undergone either an elective or emergency transmetatarsal amputation and had been rehabilitated with a Jaipur foot prosthesis were recruited to the study. The precious limb was the main focus of the study and static plantar pressure distribution was measured over the precious limb with and without the prosthetic limb. The Harris Mat was used as the tool to assess the static plantar pressure distribution. The following parameters were also assessed.

- a) Sensory testing assessment.
- b) Vibration testing assessment.

c) Temperature testing assessment.

The routine diabetic profile assessment was also done which included, fasting blood sugar profile, post-prandial sugar profile and glycosylated hemoglobin levels.

Results

A total of 48 diabetic patients who had undergone a transmetatarsal amputation were analyzed in this study. The static plantar pressure distribution was found to be significantly higher without the prosthetic device over the 1st, 2nd, 3rd, 4th, and 5th metatarsal. The ratio of the forefoot pressure versus the hind foot pressure was also significant.