

Predictive Clubfoot Correction Method Through Cellphone Imaging and 3D Printing

Summary

Vanderbilt University researchers have developed a new approach to the treatment of clubfoot, a congenital deformity, that incorporates the use of cell phone imaging and a 3D printer. The new method automates a large part of the therapy making treatment of clubfoot available to a broad set of physicians by removing the requirement for specialized training.

Addressed Need

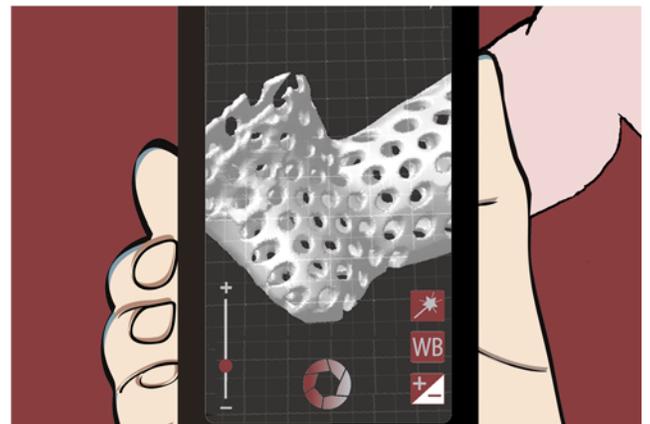
Clubfoot is a congenital deformity affecting 1 in 1000 newborns. The standard treatment today is to have a specially trained physician apply a series of casts that stretch and manipulate the foot in the right position. The number of physicians specializing in clubfoot treatment is sparse and many patients need to travel long distances for each casting. This inconvenience often limits the number of castings patients undergo while studies have shown that more frequent casting leads to shorter treatment span.

Technology Description

The treatment method invented at Vanderbilt uses images taken on a cellphone to manipulate a 3D model of the patient's foot and lower leg. A software application analyzes the images, quantifies the deformity, and determines the correction required. With this information, a cast is created on a 3D printer in a clamshell design allowing for an easy and quick casting and de-casting process. In the beginning of this process, the predictive component of the software can forecast the treatment steps required and eliminate the necessity for highly specialized training for the physician overseeing the treatment.

Technology Features

- Use of predictive technology
- Eliminates the requirement for specialized training
- 3D printed cast for improved ergonomics and fit
- No special technology platform required (use of cell phones)
- Decreases time between castings and shortens treatment
- Increases the accessibility of treatment and allows greater parental involvement



Intellectual Property Status

A patent application has been filed