

**Revolutionizing Bunion Treatment with Customized Splints: Overcoming the Drawbacks of Traditional Solutions**

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**Abstract**

In the current research work, I am focusing to give an optimized and better solution for Hallux valgus. A complex disorder characterized as a combined deformity with a mispositioning in the first metatarsophalangeal (MTP) joint with lateral deviation of the great toe and medial deviation of the first metatarsal bone [1].Most common pathology of the big toe bone deformity malposition of big toe bone is due to any rigorous condition on ligaments or tendons which keeps the bone in appropriate manner in activity doable state [3,4]. Currently available solution are adjustable splints but they come up with certain drawbacks as it cannot hold much stiffness in deformity facing with long term damage to toe and angle of bend of toe is much more than 20 degrees [2] and mostly used during nocturnal periods. The stiffness of elastic material used for adjustment around the foot can cause uncomfortable sensation in the foot which can lead to low amount of blood supply to foot. Adjustment of splint sometime can be challenging to Splint users. In some, cases the splint does not meet the condition to patient bone deformity level. Technical gap on customized splints for hallux valgus is the lack of studies that evaluate the effectiveness of the splints in treating the condition. While there are some studies that describe the design and development of customized splints, there is limited research on their clinical outcomes and how they compare to traditional splints or other treatment options. Proposed solution for the condition in current research is as follows that splints can be designed based on the specific anatomy of the patient's foot, providing a more personalized and precise fit compared to traditional splints. Additionally, integration of specialized features, such as adjustable components, to enhance the effectiveness of the splint in treating hallux valgus. Employment 3D printing technology to develop an HV orthosis with manual measurement of certain foot parameters. Ideabehind the whole project is to create a splint that can meets to needs of patient deformity level. Splint presently used and recommended by physiotherapist and physician are not able to solve the HV bone deformity or we can say fail to meet expected end results.

References –

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