

## CASE STUDY: Hallux Abducto Valgus

This was a case outlined in 'The Orthotic Revolution' (2008). Unfortunately, the surgical intervention on a Hallux Abducto Valgus ('bunion' deformity) was not successful and the patient was left with a condition that made her daily life somewhat of a struggle. She did not want further surgery and asked to be treated using non-invasive, conservative methods.

The patient presented with severe pain in the extensor Hallucis Longus muscle and the extensors to the lesser digits. The patient was refusing to proceed with surgery to the right foot, and requested conservative treatment be undertaken.



Note (picture above), how the lesser digits on the left foot were clawing in an endeavour to 'hold the ground' and the patient was supinating slightly on that foot to relieve the pressure on the medial side.

There was some redness and inflammation on the right HAV but the patient was more concerned about the inability to carry on a normal life with the left Hallux protruding at almost a 90° angle. It was inconvenient and painful as the patient said that she kept 'catching'

the toe on furniture, and the Hallux protruded to the Medial side from her footwear causing severe discomfort.

Dr Abbie Najjarine was the attending practitioner and this is an account of the steps taken to gain a result for this patient.

In cases like this it is important to start with the basics - so the NAS Assessment Technique was employed (as outlined in 'The Orthotic Revolution' (2008, p.111)). This Technique combines accepted assessment techniques and seeks to provide an understanding and explanation to the patient as to why and how orthotic therapy can be utilised to assist the patient.

The following table outlines the steps involved in the NAS Technique:

<b>RCSP</b>	Resting Calcaneal Stance position
<b>NCSP</b>	Neutral Calcaneal Stance Position (corrected position)
<b>MP</b>	Malleolar Position - a measurement of Tibial Torsion
<b>HIP ROM: Internal</b>	Measurement of the soft tissue to establish body compensations
<b>HIP ROM: External</b>	
<b>FOREFOOT</b>	Measurement of either Varus or Valgus foot deformities.
<b>LEG LENGTH (Structural)</b>	Generally if >3mm, treatment is required.

### Step 1:

The patient was assessed in Supine for:

- Malleolar Position (MP) ,
- Hip Range of Motion (internal and external),
- Forefoot Valgus/Varus and
- Leg Length (see below).



### Step 3:

Next the the manufacturer shoe insert was removed and replaced with the ICB Full Length 'Sports' (blue/green) orthotic which was heated and moulded to the patient's NCSP for the Right foot (see below).



### Step 2 :

Assessment for Resting Calcaneal Stance Position (RCSP) and Neutral Calcaneal Stance Position (NCSP) was performed (see below).



### Step 4:

A process of fitting and modifying took several attempts, each time the orthotic was removed and a further addition added or modified (see below).



**Step 5:** The orthotic was moulded and additions were added and modified and adjusted to suite the patient. One issue was that the practitioner had basic tools to work with and the orthotic and orthotic additions were simple and uncomplicated being attached into place with double sided tape.



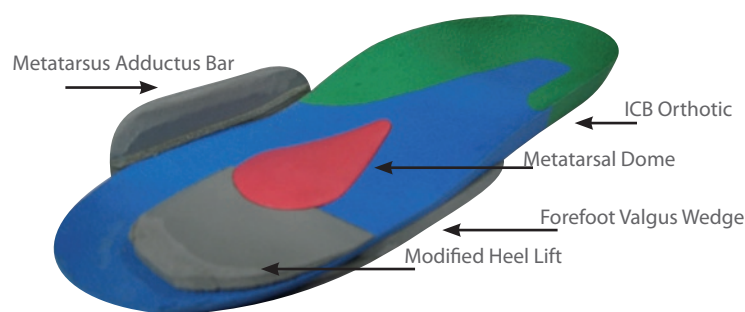
**Step 6:** The result was amazing and the patient immediately reported that the pain had subsided. The Hallux was able to be held in place and the strain on the Extensor was reduced.



**Treatment Result**

The result was surprising as the spasms ceased immediately. In this case the patient's Hallux was mobile and able to be flexed, however, she was suffering from Metatarsalgia and of course the clawed toes.

So we need to look at the orthotic treatment to understand the process undertaken to treat the patient which took 15 to 20 minutes in all. Below is the orthotic treatment that was prescribed, remembering that there was very limited equipment and orthotic materials available. The list of materials were as follows: an ICB Orthotic and ICB Additions: metatarsal domes, forefoot additions and heel lifts.



When treating patients we need to think laterally and keep a simple treatment approach.

In this instance, as mentioned, we did not try to construct the orthotic device with all the additions at once. Rather we started with the obvious:

1. Correct the foundation (i.e. pronation)
2. Treat the Hallux

3. Add each addition as a progressive treatment, consulting with the patient at each step to monitor how their body structure reacts to each addition.

**Orthotic Prescription:** A forefoot addition was used to create a Metatarsus Adductus Bar to control the hallux (by heating and bending a Forefoot Addition into an L-shape), a Metatarsal Dome was added to lift and separate the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> metatarsals (to treat the Metatarsalgia/ Mortons Neuroma), and forefoot valgus addition was incorporated to correct the forefoot valgus deformity.

Finally, a heel lift turned the opposite way and shaved down was placed under the claw toes to encourage them to straighten.

This was an unusual case, and on first inspection, it looked like there was little that could be done for this patient. However, by taking it step by step, and isolating the different biomechanical factors/conditions at play, it simply became a matter of modifying the orthotics to create a supportive and corrective foundation.