HIGH ARCHED FEET (CALLED THE PES CAVUS)

By

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Introduction

I guess you might have noticed that you have a beautiful arch on the inner side of your foot and it is possible to insinuate your fingers within this arch. This arch is because of the bracing of your foot bones by important ligaments (called the spring ligament), that keep all the foot bones taut. This arch is very much required for the normal gait and other functions of the foot. This is called the longitudinal arch and there is one more arch that is horizontal (Fig 1). If there is disturbance in this arch there could be high arched foot or a low arched foot (Fig 2) and both are not normal situations.

In Pes Cavus the arches of the foot are high and exaggerated (See Fig 3). This also is cosmetically unacceptable, functionally disturbs the normal gait pattern and leaves the foot painful and fatigued after walk for fewer distances.

Fig 1: your foot has a longitudinal arch (a) and a transverse arch (b)

Fig 2: Normal foot (a), High arch foot (b) and flat foot (c)

Figure 3 on the left showing a normal foot arch and the figure on the right showing high arched foot (Pes Cavus)
**Reasons**

The causes of this problem could be many, from hereditary causes to diseases of the foot (See box). But by far the most important acquired causes of this problem, is the habit of wearing high-heeled footwear and adopting improper postures for prolonged periods of time.

<table>
<thead>
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<th>Here are some of the foot diseases that can lead to an abnormal high arch:</th>
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<tr>
<td>• <em>Ironically in over 80% of the cases, no cause can be detected (called Idiopathic)</em></td>
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<td>• <em>Birth defects of the foot bones</em></td>
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<td>• <em>Development defects</em></td>
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<td>• <em>Post-injury ill effects</em></td>
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<td>• <em>Diseases of the foot bones</em></td>
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<td>• <em>Diseases like Cerebral palsy, Spina bifida, Polio etc</em></td>
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<td>• <em>In a condition which produces multiple Contracture of the joints (called Multiple Congenital Contracture or Arthrogryposis Multiplex Congenita).</em></td>
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*Note: However the most common causes of acquired high arched foot are improper foot wears and postures!*

**Presentation**

The following are some of the common modes of presentation in high arced feet:

- Cosmetically it looks ugly.
- Foot looks more concave on the inner side. (Fig 4).
- Always compare on the other side to know if the other foot is affected or normal.
- Patient experiences fatigue in the foot after a relatively less activity.
- Foot pain and discomfort after walking or standing etc.
- Altered gait - The natural spring in the stride is conspicuously absent in this condition. The gait is different and is noticeable both by the patient and an independent observer.
- The heel is deviated inwards (called the heel Varus).
- The normal gap over the inside of the foot is exaggerated.
- The footwear are worn out on the outside.
- Due to the high arched foot, there could be secondary claw toe deformities that makes the problems more worser for the patient (Fig 5)
- If the high arched foot is left uncorrected, then it will lead to rigid and permanent foot deformities. (Fig 6).
- The podoscopic appearance of various foot deformities are shown in fig 7.
Fig 4: clinical photograph of a high arched foot

Fig 5: Due to pes cavus, there could be secondary claw toe deformities

Fig 6: Clinical photograph showing uncorrected high arched foot
Figures 7 on the left shows the podoscopic features of the normal foot, flat foot and the Cavus foot, while the figure on the right shows the appearance of a flat foot and high arch foot.

**Remedies**

The treatment plan depends upon whether the high arched foot is mobile and correctable or fixed and non-correctable. If the arch is mobile, the problem can be tackled by:

1. **Simple Non-Surgical Methods**
   - Footwear corrections
   - Massage
   - Painkillers
   - Muscle Relaxants
   - Intrinsic foot muscle exercises etc.

   *Note: Mobile arch means, when you passively stretch your affected foot with your hand, the abnormal high arch disappears and reappears on releasing the pressure.*

2. **Surgical correction**

But if the arch is high and fixed, then it implies that permanent structural changes have taken place within the foot and this is not amenable to the simple measures suggested above. Hence this condition then needs surgical corrections and you need to see your doctor for the correction of this problem.

*Surgical methods:* There are many foot operations for this problem, but they are complex and demanding. The choice of the surgery is entirely at the discretion of the foot surgeon. Foot rehabilitation needs to be pursued vigorously to put the foot back to normal.