Ankle & foot deformities:

Club foot or clubfoot, also called congenital talipes equinovarus (CTEV), is a congenital deformity involving one foot or both. The affected foot appears to have been rotated internally at the ankle. Without treatment, people with club feet often appear to walk on their ankles or on the sides of their feet. However with treatment, the vast majority of patients recover completely during early childhood and are able to walk and participate in athletics. It is a relatively common birth defect, occurring in about one in every 1,000 live births. Approximately half of people with clubfoot have it affect both feet, which is called bilateral club foot. In most cases it is an isolated disorder of the limbs. It occurs in males twice as frequently as in females. The child has clubfoot, his or her foot may have the following appearance:

- The top of the foot is usually twisted downward and inward, increasing the arch and turning the heel inward.
- The foot may be turned so severely that it actually looks as if it's upside down.
- The calf muscles in the affected leg are usually underdeveloped.
- The affected foot may be up to 1/2 inch (about 1 centimeter) shorter than the other foot.
- Despite its look, however, clubfoot itself doesn't cause any discomfort or pain.

Risk factors include:

- **Sex.** Clubfoot is more common in males.
- **Family history.** If either one of the parents or their other children have had clubfoot, the baby is more likely to have it as well. It's also more common if the baby has another birth defect.
- **Smoking during pregnancy.** If a woman with a family history of clubfoot smokes during pregnancy, her baby's risk of the condition may be 20 times greater than average.
- **Not enough amniotic fluid during pregnancy.** Too little of the fluid that surrounds the baby in the womb may increase the risk of clubfoot.
- **Getting an infection or using drugs during pregnancy.** These can increase the risk of clubfoot.
**Diagnosis:**

Most commonly, a doctor recognizes clubfoot soon after birth just from looking at the shape and positioning of the newborn's feet. Occasionally, the doctor may request X-rays to fully understand how severe the clubfoot is, but usually X-rays are not necessary.

**Treatment:**

Treatment for clubfoot should begin almost immediately to have the best chance for a successful outcome without the need for surgery. Once a child has been diagnosed with clubfoot, there are many different treatment approaches. Treatment should be given immediately after diagnosis to take full advantage of the flexibility in the baby’s bones and joints. This allows for improved manipulation to try to achieve a normal foot. The Ponseti method appears to result in better outcomes than other methods (This treatment requires stretching and the foot is repositioned to the normal position then a cast (the "Ponseti cast") is placed on top of it. The baby’s foot is then continually repositioned and placed back into a cast once a week for several months. After correction has been achieved, maintenance of correction may require the full-time (23 hours per day) use of a splint—also known as a foot abduction brace (FAB)—on both feet, regardless of whether the TEV is on one side or both, for several weeks after treatment. Part-time use of a brace (generally at night, usually 12 hours per day) is frequently prescribed for up to 4 years.

In severe cases, surgery may be the only option to correct the foot after trying all other non-invasive methods for treatment. Surgery does not ensure full recovery, but most babies who underwent the surgery have maintained their normal feet. A surgeon will go in and lengthen the muscles and tendons to ease the foot into position. After surgery when the cast is removed, a brace is to be worn to prevent the foot from returning to the old position. Usually surgery done at 8 months of age.
Flat foot:

Flat feet (also called pes planus or fallen arches) is a postural deformity in which the arch of the foot collapses, with the entire sole of the foot coming into complete or near-complete contact with the ground. Some individuals (an estimated 20–30% of the general population) have an arch that simply never develops in one foot (unilaterally) or both feet (bilaterally). There is a functional relationship between the structure of the arch of the foot and the biomechanics of the lower leg. The arch provides an elastic, springy connection between the forefoot and the hind foot.

In pes planus, the head of the talus bone is displaced medially and distal from the navicular. As a result, the spring ligament and the tendon of the tibialis posterior muscle are stretched, so much so that the individual with pes planus loses the function of the medial longitudinal arch (MLA). If the MLA is absent or nonfunctional in both the seated and standing positions, the individual has “rigid” flatfoot (mostly due to congenital vertical talus, tarsal coalition" fusion of the tarsal bones" or accessory navicular bone. due to co. If the MLA is present and functional while the individual is sitting or standing up on their toes, but this arch disappears when assuming a foot-flat stance, the individual has “supple” or (flexible) flatfoot (secondary to hip or knee problems). This latter condition can be

Treatment:

Most flexible flat feet are asymptomatic, and do not cause pain. In these cases, there is usually no cause for concern, and the condition may be considered a normal human variant. It's found that the use of shoes with properly fitting, arch-supporting orthoses will enhance selective activation of the tibialis posterior muscle thus, acting as an adequate treatment.

Rigid flatfoot, a condition where the sole of the foot is rigidly flat even when a person is not standing, often indicates a significant problem in the bones of the affected feet, and can cause pain in about a quarter of those affected. Other flatfoot-related conditions, such as Congenital Vertical Talus( C.V.T) or various forms of tarsal coalition (two or more bones in the midfoot or hindfoot abnormally joined) or an accessory navicular (extra bone on the inner side of the foot) should be treated promptly, usually by the very early teen years, before a child's bone structure firms up permanently as a young adult. Both C.V.T, tarsal coalition and an accessory navicular can be confirmed by x-ray for the undesirable symptoms of pes planus.
Pes Cavus:

Pes cavus (in medical terminology, also high instep, high arch, talipes cavus, cavoid foot, and supinated foot type) is a human foot type in which the sole of the foot is distinctly hollow when bearing weight. That is, there is a fixed plantar flexion of the foot. A high arch is the opposite of a flat foot, and somewhat less common.

Cause:

Pes cavus may be hereditary or acquired, and the underlying cause may be neurological, orthopedic or neuromuscular. Pes cavus is sometimes—but not always—connected through Hereditary Motor and Sensory Neuropathy Type 1 (Charcot-Marie-Tooth disease) and Friedreich's Ataxia; many other cases of pes cavus are natural. The cause and deforming mechanism underlying pes cavus is complex and not well understood. Factors considered influential in the development of pes cavus include muscle weakness and imbalance in neuromuscular disease, residual effects of congenital clubfoot, post-traumatic bone malformation, contracture of the plantar fascia and shortening of the Achilles tendon. Foot pain in people with pes cavus may result from abnormal plantar pressure loading, and causing clawing of toes.

Treatment:

Suggested conservative management of patients with painful pes cavus typically involves strategies to reduce and redistribute plantar pressure loading with the use of foot orthoses and specialized cushioned footwear.

Surgical treatment is only initiated if there is severe pain, as the available operations can be difficult. Otherwise, high arches may be handled with care and proper treatment. Surgical procedures fall into three main groups:

1. soft-tissue procedures (e.g. plantar fascia release, Achilles tendon lengthening, tendon transfer);
2. osteotomy (e.g. metatarsal, midfoot or calcaneal);
3. bone-stabilising procedures (e.g. triple arthrodesis).
Hammer Toe:

A hammer toe or contracted toe is a deformity of the proximal interphalangeal joint of the second, third, or fourth toe causing it to be permanently bent, resembling a hammer. Mallet toe is a similar condition affecting the distal interphalangeal joint.

Claw toe:

is another similar condition, with dorsiflexion of the metatarsophalangeal joint, combined with flexion of both the proximal and distal interphalangeal joints. Claw toe can affect the second, third, fourth, or fifth toes.

Hallux valgus:

The term "hallux valgus" are the most commonly used medical terms associated with a bunion anomaly, where "hallux" refers to the great toe, "valgus" refers to the abnormal angulation of the great toe commonly associated with bunion anomalies. The symptoms of bunions include irritated skin around the bunion, pain when walking, joint redness and pain, and possible shift of the big toe toward the other toes. Blisters may form more easily around the site of the bunion as well. Having bunions can also make it more difficult to find shoes that fit properly; bunions may force a person to have to buy a larger size shoe to accommodate the width the bunion creates. When bunion deformity becomes severe enough, the foot can hurt in different places even without the constriction of shoes because it then becomes a mechanical function problem of the forefoot.

Treatment:

Bunions may be treated conservatively with changes in shoe gear, different orthotics (accommodative padding and shielding), rest, ice and medications. These sorts of treatments address symptoms more than they correct the actual deformity. Surgery, may be necessary if discomfort is severe enough or when correction of the deformity is desired.
**Causes of painful Heel:**

1- **Plantar Fasciitis**: as being the most common cause of heel pain. Typical symptoms of this condition include sensations of pain, burning or heat in one or both heels. Plantar Fasciitis is closely associated with heel pain that occurs upon taking your first steps in the morning, or when getting up after a prolonged period of being seated. Heel spurs frequently develop in association with Plantar Fasciitis.

**Treatment:**

Most cases of Plantar Fasciitis can be resolved without drugs or surgery. A combination of rest, icing, heel stretching exercises and daily use of a specialized Plantar Fasciitis orthotic shoe insert, such as Heel Seats, proves effective in the majority of cases.

2- **Achilles Tendinitis**

3- **Tarsal tunnel syndrome**:

4- **Fracture calcaneum or bon cyst in calcaneum**.

5- **Sever's disease**.

**Causes of pain in mid foot:**

1- **Kohler disease**: ostiochonderitis of the navicular bone.

2- **Mid tarsal joint strain**.

3- **Tibialis posterior tendinitis (over bone or accessory navicular bone)**.

**Causes of pain in forefoot:**

1- **Stress fracture (march fracture)**: mainly occur in 2\textsuperscript{nd} & 3\textsuperscript{rd} metatarsal shaft mostly in nurses & recruitment army.

2- **Fierberg's disease**: ostiochonderitis of the 3\textsuperscript{rd} & 4\textsuperscript{th} metatarsal heads.

3- **Morton's neuroma**: due to pressure of planter nerve between quadratus plante muscle mainly between 3\textsuperscript{rd} & 4\textsuperscript{th} toes, patients had pain & tingling sensation in the 3\textsuperscript{rd} & 4\textsuperscript{th} toes.