

# Hallux valgus

Hallux valgus (HV), hallux valgus is a complex progressive three-dimensional deformity of the forefoot characterized by valgus position of the big toe, increased varus of the first metatarsal ' and **the media prominence of his head**'. In the area of the leg muscles, lateral dislocation of the tendon *m. flexor hallucis brevis* and sesamoid bones, internal rotation of the thumb and sliding of the tendon *m. abductor hallucis plantar*. It consists of a whole series of other changes according to the etiology, duration and severity of the dislocation.

## Etiology

- Congenital predisposing factors (length of the first metatarsal, hypermobility, fibrous weakness).
- Direct influences (inappropriate footwear).
- Indirect influences (long static load, flat feet). <sup>[1]</sup>

An important congenital factor can be the convex curvature of the head of the first metatarsal leading to "*reduced stability of the metatarsophalangeal joint*". Furthermore, congenitally weak ligaments. If the forefoot loses its fiber strength, due to overload, the metatarsals will move away from each other, and the foot is thus easily accessible to deforming influences. <sup>[2]</sup> A big influence on the creation of this deformity is ""poorly chosen footwear". A significantly higher incidence of hallux valgus was found in the population using shoes compared to individuals who do not wear shoes. Another basic cause is poor weight distribution on the foot, which subsequently causes the collapse of the longitudinal or transverse arch, thereby changing the orientation (rotation) of the first metatarsal. The axis of the I. metatarsus thus becomes vertical and thus gives the possibility of the I. metatarsus to adduct.



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In childhood it is often based on heredity, in adulthood (more often) due to the other named causes.

## Clinic

### Early Stage

- Pain in the MTP joint of the thumb (when walking, in shoes),
- swelling of the MTP joint, heat,
- hallux deviated from axis to II. fingers

File:Hallux Valgus-Aspect  
pré op discharge.JPG  
Hallux valgus

### More Advanced Stage

- Lowering of the longitudinal and transverse arches,
- arthrotic changes of the MTP joint,
- a flat medial prominence and a painful bursa above it arise on the head of the first metatarsus,
- tendon *m. abductor hallucis* slips plantarly (worsening the deformity),
- early fatigue of the forelegs under load.

## X-ray image

- Valgusness of the thumb;
- varus position of the first metatarsus;
- medial prominence on the head of the first metatarsus;
- arthrotic changes in the MTP joint of the thumb.

## Therapy

### Conservative therapy

In orthopedics, "interdigital correctors" and "orthopedic insoles" are used as conservative therapy. According to a study by Torkki et al. (2001)<sup>[3]</sup> however, this methodology has the effect of only short-term pain relief.

In physiotherapy, **foot activation methods** *and* *active exercise* have proved more effective.

### Physiotherapy

Physiotherapy techniques are based on the assumption that HV can be corrected by correcting the *function* of the leg, which is pathological due to HV. It works with improving the position of the foot, i.e. **active holding of the arch of the foot**, *sufficient activity of the abductor hallucis muscle* while standing, but especially when walking. Furthermore, it is necessary to practice the correct walking stereotype, involving the thumb in the rebound phase.

It is necessary to start conservative treatment at an early stage of the deformity. If correction does not occur at an early stage, the deformity deepens and becomes rigid. In addition, there is a change in position in higher segments (knee, hip, pelvis, spine), its '*gradual fixation*', a change in movement stereotypes and their gradual incorporation into the CNS.

The foot is often the beginning of pathological functional chains that continue through the ankle, fibula and thigh muscles to the pelvis. Muscle tension in the leg, foot fulcrums, and arch shape create afferent signals to the CNS that activates upright posture. The activity of the leg muscles affects the change in the position of the chest and diaphragm, thus also affecting breathing.

### Active exercise

The aim is to restore the activity of the muscles in the area of the thumb. Their exercise requires high patient concentration and gradual training. At first, it is possible to help yourself with the movement of your hands, possibly start with an isometric contraction, then follow up with an active movement.

### Sensorimotor stimulation

Afferent signals from the sole of the foot regulate body position through afferentation to the brain. Sensorimotor stimulation uses this mechanism and tries to improve the posture and arch of the foot by stimulating the foot.

### Exteroceptive stimulation

By exteroceptive stimulation, we support afferent from the plane. The methods used include stroking, brushing, walking in nature – i.e. on sand, grass, pebbles, acupressure balls.

### Soft tissue techniques

These techniques aim to reduce the tension of the soft tissues (skin, subcutaneous tissue, fascia, muscles) and remove the resulting blockages in the joints of both the thumb and the entire foot. The following techniques can be used for mobilization: traction of the MTP joints, fan-like pushing of the heads, mobilization of the Lisfranc and Chopart articulations, mobilization of individual tarsal bones, mobilization of the lower and upper ankle joints.

### Taping

The main effect of functional taping is strengthening of the segment, limiting the range of movements that cause problems, but at the same time there is no limitation of movement in the physiological range, thus the function of the segment is not limited. Elastic tape or kinesiotape is used, which is glued to pull the thumb into abduction and thus keep the thumb in a physiological position.

## Operative therapy

Before the operation, it is necessary to take an X-ray image to assess the degree of arthrosis. More than 100 types of operations are described.

In young patients and where there is no arthrosis, a ``corrective metatarsal osteotomy *is used*. *Austin's operation is popular, which consists in a Y-shaped incision of the medial part of the capsule. The contracted lateral part of the capsule is crossed, then the medial prominence is lowered and a V osteotomy of the head of the first metatarsal is performed with its subsequent lateralization and the protruding part of the diaphysis is lowered. After the operation, 2 weeks of fixation with a plaster spica*

In older patients (with expressed arthrosis of the MTP joint of the thumb on X-ray), the most common is **resection plastic** according to Keller and Brandes, i.e. resection of 1/3 of the base of the base joint of the thumb and removal of the exostosis of the metatarsal head.

## Links

### Related Articles

- Finger deformities
  - Hallux varus
  - Hallux rigidus
  - Digitus malleus

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