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Hammer Toe Overview

Anatomy:

All digits of the foot are composed of both bone and soft tissue structures. The big toe (similar to the thumb in the hand) has two bones (phalanges), and all the smaller toes have three bones. Each toe has two sets of tendons that pull the toe up (extensors) and pull the toe down (flexors). Together, these bony and soft tissue structures allow for toe flexion and extension, which are important for balance and coordination.

Pathomechancis:

Considering the digits of the feet are made up of bone and soft tissue structures, anatomic causes of digital deformities can be soft tissue, bony, or both soft tissue and bony in origin. The pull of the tendons direct the position of the toe. These actions are accomplished by the interplay between flexor and extensor tendons. Similar to a pulley system that requires equal pull on either side to remain static, a toe requires equal force pulling the toe up and down to remain in a straightened position. When the pull of either the flexor or extensor tendon becomes too strong, it overpowers the antagonistic (opposing) tendon, which cannot straighten the toe, and the digit buckles. This leads to a hammer toe.

Types:

There are four man clinical types of digital deformities:

1. Hammer toe
    - Flexion only at the proximal (near) joint
2. Mallet toe
    - Flexion only at the distal (far) joint
3. Claw Toe
    - Flexion at **both** the proximal and distal joints
4. Curly toe
    - Flexion in both the toe and foot joints

Clinical Subcategories:

In addition, there are two subdivisions of hammer toe deformities based on their ability to be straightened with manipulation:

Clinical subdivisions:

- Flexible: can be physically straightened with manipulation, but then returns to a flexed position
- Non Flexible: unable to straighten toe with manipulation

Clinical features:
Patients will often present with complaints of a digit in a flexed (curled) position that is rubbing on the top of their shoes, leading to a blister or callus. Depending on the location of the deformity, calluses at the end of the toes are also common. There may also be an element of transverse plane (side to side) deformity, leading to a toe rubbing against an adjacent toe.

Conservative treatments:
Flexible deformities can be accommodated with digital splints and toe sleeves. This allows for reduced friction at the site of rubbing or callus build up. Spacers are also beneficial in separating toes that are rubbing against each other. Ensuring a patient has appropriate shoes that are long enough, wide enough, and have enough depth (height in toe box of the shoe) is crucial.

Surgical options:
As a hammer toe deformity is structural in nature, it is often that conservative methods are helpful in alleviating symptoms, but will likely not lead to permanent anatomic correction. Surgery is often indicated in patients who do not respond to conservative methods or progress over time. Surgical correction of a hammer toe deformity is targeted toward the joints affected (distal or proximal), the underlying cause, and the reducibility of the deformity.

- Tendon lengthening or release: A reducible deformity means a tendon is pulling a toe into a deformed position, but the joint of the toe is mobile and would otherwise allow the toe to straighten. Identifying and correcting the tendon is a quick and effective method for straightening the toe.
- Osteotomy: If the joints of the toe are not arthritic but are flexed or angled in the wrong direction, a combination of both a tendon lengthening and osteotomy (bone cut) can allow corrected position of the hammer toe. This can often be done via a minimally invasive technique and may require several weeks of splinting or a pin to be temporarily placed to allow the bone to heal in the corrected position.
- Joint fusion: If the hammer toe is non reducible (unable to straighten by hand), the cause may be arthritis at the joint level of the toe keeping it in a fixed position. This often requires fusion of the small joint or joints to better align the toe. This often requires a pin or a small screw or implant to maintain position while this area of the bone heals. This is also a good option for hammer toe recurrence.

Surgical recovery:
When performed in isolation, a hammer toe repair often has a straightforward and relatively painless recovery. Pins or screws may be placed to hold the toe in the corrected position during the healing process. Pins will be removed after several weeks. Unless performed with other procedures (bunion, Tailor's bunion, flat foot correction, high arch foot correction), patients can walk the day of surgery in a surgical shoe or boot. Pain is well managed with oral pain medicine the first few days, and then with Tylenol or Ibuprofen. Full recovery depends on the procedure selected, but most people are back into normal shoes within 6-8 weeks from surgery.

Complications:
With any surgery, complications can arise. Most complications include incisional break down, pin infections, persistent swelling, non union (toe joint doesn't fuse). Most of these local complications are clinically treatable and don't require a return to surgery.