Hallux valgus in a middle-aged woman

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A 59-year-old woman with painful bunions presents after experiencing additional pain in her second and third toes.

Case presentation

A 59-year-old teacher presents with increasing pain and inflammation over her bunions. For at least five years, she has been aware of increasing deformity associated with activity-related discomfort and inflammation over the bunions themselves. More recently, she has also noticed a pain located in the region of the second metatarsophalangeal joint that worsens with activity. She says she has always tended to wear 'sensible' shoes, but the increasing width of her forefoot has made buying comfortable footwear increasingly difficult.

The patient's mother and maternal grandmother both suffered from bunions. She is otherwise well, with no significant past medical history.

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On examination, the patient has marked bilateral hallux valgus with the second toe abutting the lateral border of the great toe (Figure 1a). The bursa overlying the bunion itself is mildly erythematous and thickened – it is not painful to palpation but she identifies the area as the site of a deep, activity-associated ache.

The range of motion of the first metatarsophalangeal joint is well preserved, and none of these joints are dislocated in the lesser toes. However, the anterior drawer test on the second toe causes discomfort with associated moderate metatarsophalangeal joint laxity (this test is performed by fixing the metatarsal head between thumb and forefinger of the left hand while holding the base of the proximal phalanx between thumb and index finger of the right hand and translating it dorsally). She recognises this discomfort as the pain in the ball of her foot. Sensation of all the lesser toes is normal and there is no palpable Mulder click (a painful click on transverse compression of the metatarsal heads) in the web space between either the second and third toes or the third and fourth toes.

Discussion

Differential diagnosis

This is a typical history for a patient with bunion-related discomfort and associated transfer metatarsalgia (pain in the region of the metatarsophalangeal joints) to the second and third toes. The primary deformity is a medial and dorsal displacement of the first metatarsal – this results in mechanical offloading of the first ray and the radiological feature of an increased intermetatarsal angle. The lesser toe discomfort results from mechanical overload of the metatarso - phalangeal joints. In addition to pain, this overload can cause stretching of the plantar plate and protective muscle spasm of the lesser toe extensors (in an ineffective attempt to withdraw the lesser toes from weightbearing) and will ultimately result in toe clawing.

Other diagnoses should be excluded. The most common other condition consistent with this patient's clinical features is osteoarthritis with associated hallux valgus, but the good range of motion of the first metatarsophalangeal joint makes this diagnosis less likely. A Morton's neuroma between the second and third toes could account for the discomfort in the lesser toes; however, the normal sensation in these toes and absence of a Mulder click makes this less likely. Furthermore, only about 25% of Morton's neuromas are found in the web space between the second and third toes. Finally, the painful instability of the second metatarsophalangeal joint strongly supports the diagnosis of transfer overload.

Investigations

Plain weightbearing radiographs of the feet are mandatory. Weightbearing will maximise the degree of deformity and allows accurate functional assessment of the foot. Nonweightbearing films are misleading and they should be avoided, except in cases of trauma if a fracture is suspected.

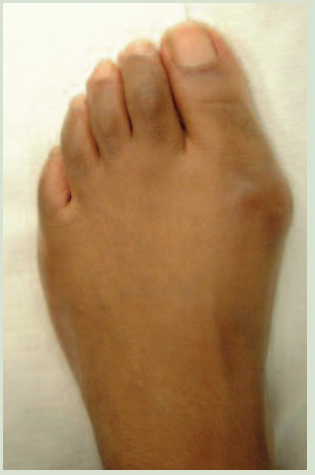
Of particular importance is an anteroposterior view, which can be used to exclude osteoarthritis of the first metatarsophalangeal joint and to confirm whether this joint is dislocated in the lesser toes. It is also possible to confirm overload of the second metatarsal by

Key points

- Bunions are a common problem, particularly in middle-aged women. There is usually a positive family history.
- Most patients do not require surgery.
- Pain is the most important factor when considering surgery.
- Newer surgical options, such as the scarf osteotomy, have several biological and mechanical advantages over other forms of osteotomy.

Case presentation

Preoperative



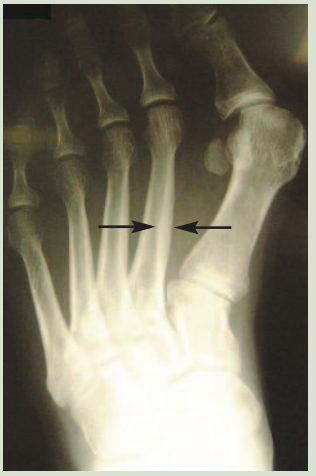
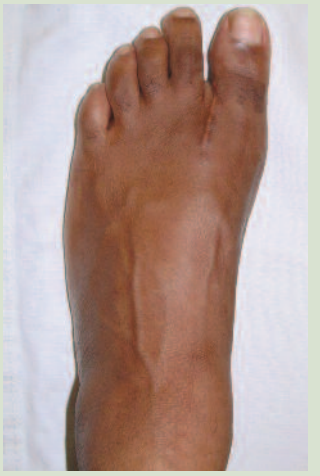


Figure 1a (above left). Marked bilateral hallux valgus of the left foot. Figure 1b (above right). Weightbearing AP radiograph of the foot. Cortical hypertrophy of the second ray indicates mechanical overload (arrows).

Postoperative



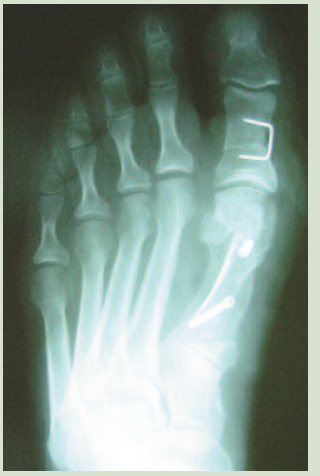


Figure 2a (above left). Clinical appearance of the foot six months after a scarf and Akin osteotomy and distal soft tissue release. Figure 2b (above right). The postoperative radiological appearance with weightbearing. Note the position of the first metatarsal head, now located over the sesamoids.

noting associated cortical hypertrophy of this toe (see Figure 1b). In addition, several angles can be measured that are helpful in classifying the degree of deformity and determining the appropriate option if the patient comes to surgery.

Treatment

Initial treatment of patients with bunion related symptoms should be nonoperative. This includes recommending comfortable shoes with a wide toe-box and activity modification. Good shoemakers can stretch areas of shoes that cause rubbing. The metatarsalgia may be improved by orthotics with a premetatarsal dome that can reduce the load on the lesser metatarsophalangeal joints. Some patients find toe spacers between the hallux and second toe useful.

If conservative measures fail, surgery should then be considered. Three factors should be taken into consideration:

- the degree of pain (the most important factor)
- a second toe overriding the hallux
- difficulty with footwear (a relative indication for surgical intervention).

There are many surgical procedures for bunions. Occasionally, mild bunions in young patients may be treated with 'bunionectomy' alone, which removes the medial eminence (the bunion itself) and may also tighten the medial capsule. It should be regarded as an extemporising measure only, with a relatively high likelihood of recurrence later in life.

More significant bunions (such as the ones described in the case described above), require more extensive surgery. After removing the bunion, the primary procedure is usually an osteotomy to correct the primary pathology with lateral translation of the first metatarsal to correct the intermetatarsal angle. The hallux is then rebalanced on the first metatarsal through an adductor hallucis release with medial capsular repair. The procedure can be fine-tuned with a medially based wedge osteotomy of the proximal phalanx of the great toe ('Akin' osteotomy) to correct any valgus deformity due to deformity in this phalanx and the pronation deformity often associated with hallux valgus.

A number of osteotomies have been described for the first metatarsal. One that is gaining increasing popularity is the 'scarf' osteotomy, a relatively technically demanding Z-shaped first metatarsal osteotomy with some distinct theoretical advantages:

- protection of the blood supply to the metatarsal head, thus minimising the risk of avascular necrosis and nonunion of the osteotomy
- lowering of the head fragment, which increases loadbearing of the first metatarsal and offloads the lesser metatarsals (thus helping to treat transfer metatarsalgia)
- versatility, allowing for shortening or lengthening of the first ray
- provision of a large surface area for bony union and fixation with two screws (confidence with this fixation also allows more rapid mobilisation than with other techniques).

Postoperatively, patients are mobilised heel-weightbearing for approximately four weeks in a commercially available bunion bootee (not plaster of Paris). The patient described above underwent a scarf and Akin osteotomy and distal soft tissue release (Figures 2a and b).

Outcomes

Most patients with bunions do not require surgery. The surgery is, however, very effective, with reported success rates of well over 90%. MT