CHAPTER 28

A SURGICAL APPROACH TO THE TAILOR'S BUNION

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A tailor's bunion is a pathological enlargement of bone and/or soft tissue occurring at the lateral aspect of the fifth metatarsophalangeal joint. Typical symptoms occurring with this deformity can range from mild discomfort to more severe pain and edema. Chronic irritation from footwear can cause inflammation to the skin around the joint, resulting in bursitis. Joint inflammation can put further pressure between the bones, nerve, and shoe producing a sharp neuritic pain that can extend proximally or distally. An overlying hyperkeratosis can occur secondary to shoe pressure, making the condition more symptomatic with the use of shoes.

ETIOLOGY

The pathogenesis of tailor's bunion has been well-documented in the literature.[1-3] A variety of etiological factors have been previous reported, including structural pathology of the fifth metatarsal which includes an abnormality within the bone itself, such as embryonic splaying of the fifth metatarsal, or a plantarflexed or dorsiflexed fifth ray. Pressure on the lateral side of the fifth metatarsal secondary to a sitting position can also cause further irritation. An etiologic mechanism was discussed by DuVries who believed that a tailor's bunion was probably a result of the following mechanisms.[4]

1. Hypertrophy of the soft tissue overlying the fifth joint.
2. A congenitally wide dumbbell-shaped fifth metatarsal.
3. Lateral bending of a fifth metatarsal head.

Of the mechanisms described by DuVries, lateral bending of the fifth metatarsal head was probably felt to be the most common cause. This can occur due to a deformity within the metatarsal neck, which would cause the distal aspect of the fifth metatarsal to bend laterally, causing pressure in that area with shoes. Other authors have also suggested different etiologies to this deformity which have included lack of insertion of the transverse head of the adductor hallucis, a short fourth metatarsal, or hypertrophy of the plantar condyles of the fifth metatarsal.[5-7]

Biomechanics plays a primary role in the tailor's bunion deformity. Any pronatory condition which can cause excessive abduction and/or pronation of the fifth ray will result in splaying of the fifth metatarsal, leading to a tailor's bunion deformity. A biomechanical etiology was first documented and best explained by the early work of Hicks,[8] who believed a tailor's bunion was a result of any of the following:

1. Abnormal subtalar joint pronation.
2. Uncompensated varus position of the forefoot and the rearfoot on a fully pronated foot.
3. Congenital plantarflexed fifth ray.
4. Congenital dorsiflexed fifth ray.
5. An idiopathic condition possibly caused by the absence of a transverse head of the adductor hallucis inserting into the fifth metatarsal joint.

As with other deformities, it is most likely that a tailor's bunion represents a combined etiology of both structural and biomechanical origin. Any biomechanical condition that results in rearfoot instability will affect forefoot stability and thereby affect the fifth ray. For example, an uncompensated varus deformity of the forefoot or rearfoot can place excessive pressure on the fifth metatarsal head, creating symptoms consistent with a tailor's bunion. Other less common etiologies of the tailor's bunion include malunited fractures, neoplasms, systemic diseases, and neurological disorders which may cause a muscle imbalance, resulting in subluxation of the fifth metatarsophalangeal joint.

Conservative treatment for tailor's bunion is generally directed at relieving pressure to the area by padding and debridement, and the use of orthotics when the etiology of the deformity can be attributed to faulty biomechanics. A conservative approach includes modifications of shoes to produce a wider toe box, balancing type insoles, and the use of medications such as nonsteroidal

anti-inflammatory agents when the area becomes inflamed. Corticosteroid injection is another alternative to the inflamed bursa that can accompany a tailor's bunion. When conservative therapy has failed and the symptoms are not relieved, a surgical approach should be considered.

EVALUATION OF THE TAILOR'S BUNION

A thorough evaluation of a patient with a tailor's bunion involves both clinical and radiographic evaluation. A clinical examination should begin with a biomechanical exam. Most patients present with pain or discomfort over the dorsal, lateral, and/or planar aspect of the fifth metatarsal head. This can range from tenderness to acute inflammation, characterized by swelling and erythema with or without an inflammed bursa. Some patients have an associated hyperkeratotic lesion, while others may present with an enlarged bunionette that is uncomfortable in shoes. This condition tends to be more prevalent with females because of the stylish shoes worn by women. Any shoe with a narrowed toe box will tend to draw the fifth toe into a more adducted position, making the fifth metatarsal head more prominent. Fifth toe deformities, such as a adductovarus position of the fifth toe with or without heloma durum formation, may accompany the chief complaint. Symptoms are typically aggravated when wearing shoes, and may be relieved by walking barefoot. Less commonly, the proper digital branch of the superficial division of the lateral plantar nerve may be irritated, causing neuritic-type symptoms around the fifth MPJ.

The quality and range of motion of the fifth ray should be evaluated in all planes, and the foot should be examined in a non-weight bearing and weight-bearing position.[9] The foot should be evaluated for any splaying which may be present in either the forefoot, rearfoot, or both. The subtalar joint and midtarsal joints should be evaluated, and a gait analysis should be performed.

An important part in the evaluation of tailor's bunion involves radiographic findings. One of the most comprehensive studies was done by Fallat and Buckholz, who developed radiographic measurements to analyze the tailor's bunion deformity.[1,3] Based on their study, two important angular measurements were discussed as being important in the evaluation of a tailor's bunion. The lateral deviation angle is a measurement that quantifies the amount of lateral bowing of the distal one-third of the metatarsal shaft. It is formed by the intersection of two lines: a first line is made by bisecting the head and neck of the fifth metatarsal at its articular surface, and a second line runs parallel and adjacent to the medial proximal surface of the fifth metatarsal shaft. They found an average lateral deviation angle in a normal foot to be approximately 2.64 degrees, with a range of 0 to 7 degrees.

The second radiographic parameter is the intermetatarsal angle between the fourth and fifth metatarsals. This is formed by the intersection of two lines. The first is a line which bisects the fourth metatarsal in a standard manner. The second is a line drawn parallel and adjacent to the medial proximal surface of the fifth metatarsal shaft. The intersection of these two lines establishes the intermetatarsal angle. In the study by Fallat and Buckholz, a normal average intermetatarsal angle is 6.47 degrees, with a range of 3 to 11 degrees. This is consistent with other studies which also found an average intermetatarsal angle to be approximately 9 degrees, plus or minus 2 degrees. Any condition which produces pronation of the subtalar and midtarsal joints can result in eversion, abduction, and dorsiflexion of the fifth ray, and will increase the intermetatarsal angle.[1,3]

A third parameter which needs to be evaluated is the sagittal position of the fifth metatarsal head. This will determine the dorsal position of the distal metatarsal head and neck, which is an important consideration in the surgical correction of a bunionette.

SURGICAL MANAGEMENT

There have been many different surgical procedures described for the correction of a tailor's bunion.[10-19] They range from a simple lateral fifth metatarsal exostectomy for the mildest deformity, to osteotomies within the proximal aspect of the fifth metatarsal to correct more moderate to severe deformities.

A surgical classification was developed by Fallat in 1990, which attempted to classify the etiology of a tailor's bunion deformity and recommend an appropriate surgical procedure.[3] Numerous osteotomies have been described within the proximal, distal, or midshaft area of the fifth

metatarsal with varying degrees of success. Arthroplasty procedures have also been documented, including a total fifth metatarsal head resection with or without the use of an implant. The goal of surgical management of a tailor's bunion deformity should be to relieve pain without affecting the function of the fifth MPJ. The surgical procedures can be divided into the categories: simple exostectomy, arthroplasty, and osteotomies of the fifth metatarsal.

Simple Exostectomy

This procedure is only indicated when there is hypertrophy of the fifth metatarsal head without any other positional or structural deformity of the fifth metatarsal. Generally, this is performed as an ancillary procedure along with a distal or proximal metatarsal osteotomy for the correction of a tailor's bunion.

The simple exostectomy involves resection of the lateral one-quarter to one-third of the prominent fifth metatarsal head. When a bursa is present, it is usually excised. Care must be taken to not remove too much bone when performing this procedure, as it can result in instability of the fifth MPJ. Since most tailor's bunion deformities are due to a deformity within the distal or proximal aspect of the fifth ray, this procedure has little indication as a sole procedure for the correction of a tailor's bunion.

Arthroplasty

An arthroplasty procedure which includes partial or total excision of the fifth metatarsal head is generally considered a salvage-type procedure for the correction of tailor's bunion. These procedures can result in excessive retraction and dorsal contracture of the fifth toe, and transfer of weight beneath the adjacent metatarsals. The use of an implant in conjunction with an arthroplasty of the fifth metatarsal head has also been discussed but has limited indications.

Osteotomies of the Fifth Metatarsal

Numerous types of osteotomies for the correction of a tailor's bunion have been discussed in the literature, depending on whether the deformity is proximal or distal. Although shaft osteotomies have been discussed, most deformities can be addressed within the proximal or distal aspect of the bone. These procedures can be used in conjunction with a lateral exostectomy of the fifth metatarsal head.

Osteotomies within the distal aspect of the fifth ray are usually performed when an abnormal lateral bowing angle is present. The first distal transpositional osteotomy was described by Hohmann. A step-down osteotomy was later described by Leach and Igou, and the oblique distal osteotomy by Sponsel. Throckmorton and Dradely described a transverse sliding "V" osteotomy with medial transposition for the correction of tailor's bunion. A crescentic osteotomy of the metatarsal neck has also been described by Habner and Kraft. In most cases, the authors described their surgical procedures without the use of fixation. Fixation has been documented in previous studies by both Keating, Catanzariti, and others as an important factor in the success of the correction of a tailor's bunion. Fixation can range from the use of a Kirschner wire to absorbable fixation or screw fixation. Immobilization with a soft or hard cast may be used in conjunction with the above procedures.

When a deformity is more proximal, as evidenced by an increase in the intermetatarsal angle, a more proximal osteotomy is indicated. This is typically encountered in the splay foot. A proximal osteotomy is generally unicorrectional within the transverse plane, but can be bicorrectional to achieve sagittal and transverse plane correction. Fixation in this area can vary again from the use of a Kirschner wire to screw fixation. The use of mono-filament wire or staples has also been described as an adequate means of fixation. Cast immobilization is generally considered to be necessary when the osteotomy is performed more proximally, in order to assure uncomplicated bone healing.

The advantage of a proximal fifth metatarsal osteotomy is that it can more efficiently address a larger intermetatarsal angle, but the disadvantage is that it requires longer healing time and immobilization.

When a fifth toe deformity exists, such as an adducto varus position of the fifth toe, it should be addressed at the same time as the correction of the tailor's bunion. Just as a hallux in an abducted and valgus position can produce a retrograde force on a first metatarsal which increases the hallux valgus deformity, the same can happen on a fifth metatarsophalangeal joint. When a fifth toe

deformity is contributing to excessive pressure on the fifth metatarsal and increasing the splaying between the fourth and fifth metatarsal, it needs to be addressed even when the fifth toe is not symptomatic.

The surgical approach to the tailor's bunion deformity requires careful dissection in order to preserve the transverse intermetatarsal ligament which acts to stabilize the fifth metatarsal head. Ancillary procedures, such as skin plasties and tendon lengthening, may also be indicated.

Tailor's bunion deformities need to be analyzed both clinically and radiographically. Surgical correction should be directed to the specific location of the deformity, whether it be structural, biomechanical, or a combination of these factors.

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