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The Core Curriculum

Adolescent bunion

Objectives

1. Define adolescent bunion and describe the pathologic anatomy
2. Describe the clinical and radiographic features of adolescent bunion
3. Discuss conservative management of adolescent bunion
4. Discuss structural components of a successful surgical correction
5. Describe several procedures used for treatment of adolescent bunions and the quality of the results reported for these procedures

Discussion point

1. Why is it so hard to determine the best procedure for adolescent bunion?

Discussion

Adolescent bunion is defined as the medial prominence of the head of the first metatarsal. Some authors require an open growth plate of the first metatarsal to qualify as an adolescent bunion. Hallux valgus by definition refers simply to a lateral deviation of the great toe, but the deformity bearing this name is much more complex than simple lateral deviation. Sometimes the terms are used interchangeably. There is often a history of maternal transmission in patients with adolescent bunion. Some authors believe valgus posture of the hindfoot is associated with an increased tendency to bunion formation. While metatarsus primus varus is often considered an essential feature of adolescent bunion, there is evidence that it is actually the second metatarsal moving laterally from a normally placed first metatarsal that is primarily at fault.

The intermetatarsal angle is greater than the 10 degrees considered the upper limits of normal. The metatarsophalangeal angle should normally be less than 15 degrees. With greater amounts of valgus, the toe pronates; the sesamoids are carried laterally by the adductor and short flexor, the medial capsule stretches, the abductor is carried plantarward so it is unable to counteract the adductor. The metatarsophalangeal joint subluxates and the articular surface is angulated in relation to the long axis of the metatarsal. This relationship is often noted as the distal metatarsal articular angle (DMAA), and its correction is considered critical to success by some authors.

Conservative treatment of adolescent bunion is infrequently discussed, the work by Groiso is the most complete discussion of the subject. The figure of 130 operative procedures described for bunions is frequently mentioned. The majority of reports of treatment of adolescent bunion are confined to a few procedures. Ideally, correction of bunions would include removal of the medial prominence, correction of the intermetatarsal angle, the metatarsophalangeal angle, the DMAA, correction of pronation of the toe, and the lateral displacement of the sesamoids. Soft tissue

procedures center around release or transfer of the adductor brevis, lateral capsular release, and medial capsular imbrication. The fibular sesamoid may be excised, and the medial prominence is excised. These are noted as variations of the McBride procedure. Hallux varus is the most common annoying complication

There are many varieties of metatarsal osteotomy. The Mitchell, with several described modifications, is probably the procedure most often performed for treatment of adolescent bunion. While most series report good results, complications include further shortening of the first metatarsal, stiffness of the metatarsophalangeal joint, and transfer lesions of the second metatarsal secondary to dorsal tilt of the osteotomy. The chevron is another variety of distal osteotomy. Proximal osteotomy provides a better fulcrum for correction, but more secure fixation is required to prevent displacement. Combinations of proximal and distal osteotomies are described, as are combinations of osteotomies and soft tissue correction. Arthrodesis of the metatarsocuneiform joint with soft tissue correction is known as the Lapidus procedure. Osteotomy of the proximal phalanx is the Akin osteotomy. Arthrodesis of the metatarsophalangeal joint is the most reliable way of correcting hallux valgus associated with cerebral palsy.

It is necessary to be sufficiently familiar with the pathoanatomy of adolescent bunion to analyze any particular deformity in a given patient, and design an operative procedure tailored to the type and degree of deformity. This requires a working knowledge of soft tissue correction, distal and proximal metatarsal osteotomy, and arthrodesis.

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