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Clinical Evaluation of Hallux Abducto Valgus

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The clinical evaluation of the hallux abducto valgus deformity is extremely important. It is imperative that the nature and type of deformity are identified and documented to understand the presenting problem unique to each patient. Of equal importance is the fact that many patients presenting with hallux abducto valgus and associated symptoms will require surgical intervention to adequately treat the pathologic condition. In view of this fact, the physician is required to not only evaluate the local complaint, but also must determine the patient's status with respect to surgery and postoperative recovery.

PATIENT HISTORY

Obtaining the patient's medical history is an important aspect of the evaluation of any patient, but is of particular importance in the patient presenting with hallux abducto valgus. Many clinicians believe that 95 percent of diagnoses can be made through obtaining a careful patient history.¹ Information obtained from the patient history will provide valuable data that can be used in making decisions with regard to the extent of the patient's symptoms and development of a rational treatment plan, and in evaluating the patient's ability to undergo surgical procedures if required.

The medical history should focus on the areas of the chief complaint, with emphasis on the history of the present illness and past medical history with respect to the chief complaint. A record should be made of the onset of the symptoms, progression of the symptoms, and any aggravating factors as well as elements that

provide relief of the local symptoms. The type of pain as well as the location and duration of pain symptoms should be noted and documented in addition to any significant changes with regard to swelling or sensory changes. Difficulties experienced by the patient, such as problems associated with ambulation, wearing of shoes, or limitation of activities, remain a significant part of the history of the present illness.

The past medical history is important for eliciting important information with respect to previous type of treatment for hallux abducto valgus and bunion complaints. This is especially important if previous surgical treatment has been utilized. The surgical results and the patient's perception of this treatment should be elicited and documented. If surgical intervention has been previously employed, it is important to record the type of anesthesia used, the patient's reaction to anesthesia, and the patient's history with respect to the postoperative recovery period.

If a conservative approach to treatment has been used previously in the treatment of hallux abducto valgus, important information can be obtained relating to those treatment plans that have been effective or ineffective, and those plans that may have resulted in the exacerbation of the patient's symptoms. Only through a thorough approach to the patient's history of the present problem and past medical history can an accurate picture be obtained to assist the physician in the assessment as to the extent of the deformity and the disability experienced by the patient, and to provide insight necessary for the development of a sound treatment plan, whether a conservative or surgical approach.

Obtaining a good medical history is an essential part of any evaluation, but is again of utmost importance in the patient for whom a surgical treatment plan might be considered. In light of the fact that many patients with hallux abducto valgus require surgical intervention, it appears logical that the history include information that might be necessary in the preoperative evaluation so that all potential risks can be weighed before proposing or beginning any type of treatment plan.

The past medical history is specifically vital to obtaining information regarding any current medications or medications the patient has been using recently. One should not overlook over-the-counter medications (e.g., nonsteroidal anti-inflammatory drugs, aspirin, antacids, cold preparations), recreational drugs, caffeine, nicotine, and alcohol use.

Allergies are of special significance. The specific allergy (e.g., food, drug, metals) and nature of the allergic response (e.g., syncope, respiratory, dermatologic) should be documented thoroughly. A review of previous medical records or communication with the patient's medical physician may be necessary to obtain accurate and reliable information.

The patient's status with respect to past surgical history should be explored. One should bear in mind that the patient may not consider that minor or outpatient procedures are true surgical experiences, and this perception may need to be specifically elicited during the history-taking process. Again, associated with the history of past surgical procedures should be information related to previous anesthesia used and, of special significance, the patient's response to the anesthetic agent.

The review of systems is possibly the most important aspect of the past medical history. This portion of the past medical history involves an in-depth history review of each organ system in an organized manner. The questions should be designed so as to reveal any possible historical data that may not have been previously uncovered and that may present as a factor in determining the patient's risk with respect to surgical consideration. Of specific significance is asking female patients of child-bearing age about the possibility of pregnancy if medications, surgery, or anesthesia are a part of the treatment consideration.

The final area of required historical information is information relating to the patient's family history⁷ and

social history. Important considerations would be obvious diseases that may have a bearing on the patient's current problem or postoperative recovery or present a risk of morbidity and mortality.

The social history or patient profile, as it is sometimes referred to, will present valuable information regarding the patient's current work status, family or support system, geographic living situation, and possibly activity level and interests. This information may prove invaluable in communicating with the patient with respect to possible surgical treatment as well as providing the physician with insight into the patient's expectations, requirements of treatment, and ability to successfully carry out a proposed treatment plan.

PHYSICAL EXAMINATION

When a thorough clinical history has been obtained, a well-performed and well-documented physical examination must be completed. All patients for whom surgical treatment is proposed or who have medical history factors that may complicate even conservative treatment (e.g., diabetes, neuropathy, vascular disease) should receive a comprehensive and thorough medical physical examination. This examination should include an evaluation of the vital signs, cranial nerves, head and neck, cardiopulmonary system, gastrointestinal and genitourinary systems, and dermatologic and neurologic systems as well as the musculoskeletal system. The patient who has not had a complete medical physical examination or medical evaluation recently should also have a complete medical examination before the proposal of treatment for hallux abducto valgus.

The evaluation of the podiatric components of hallux abducto valgus is of prime importance to the decision-making process in patients with hallux abducto valgus and related conditions. The podiatric medical examination should be thorough and complete so that accurate and valid information can be acquired.

Podiatric Vascular Examination

The evaluation of the patient's vascular status is always relevant and must be accessed before initiating any type of treatment, particularly because surgical consid-

erations might be included in the treatment of hallux abducto valgus.

One of the most important skills of the examiner is the ability to determine the state of pulsations in the peripheral arteries of the foot and leg. The primary peripheral arteries that are usually evaluated are the dorsalis pedis, the posterior tibial, and possibly the femoral and popliteal arteries. A useful practice is to grade arterial pulsations on the basis of 0 to 4 in such a manner that 0 indicates a complete absence of pulsations; 1, marked impairment of arterial pulsations; 2, moderate impairment; 3, slight impairment, and 4, normal pulsations.²

Following examination of the pulses, the hair pattern on the legs is noted and especially any difference in temperature of the legs and the level at which this difference might occur. Color, temperature, and sensation of the foot and lower leg are evaluated and compared one foot to the other. Capillary filling is assessed by firmly pressing the finger over the distal aspect of the digits of the foot and observing the time required for normal color to return after release of the pressure. A finding of a time longer than 3-5 seconds could indicate vascular disease.

The legs should be elevated, noting undue pallor of the feet, and then the legs should be dangled over the edge of the examination table with the patient in the sitting position to evaluate any delay in venous or capillary filling time. In this position, a finding of dependent rubor, indicating reactive hyperemia, may be a sign of capillary ischemia.³

Podiatric Neurologic Evaluation

Evaluation of the deep tendon reflexes should include the patellar and achilles reflexes as well as examination for ankle clonus and pathologic reflexes. Both lower extremities should be examined for sensory findings, which should include the patient's ability to distinguish between sharp and dull stimulants, proprioceptive stimulants, and vibratory testing. Muscle testing of the major muscle groups of the lower extremity should be performed bilaterally with comparison of one extremity to the other. The muscle testing should include evaluation and documentation with respect to the strength and bulk of the muscles being evaluated.

Podiatric Dermatologic Examination

Both feet should be inspected for any skin lesions, tumors, or ulcerations. The texture and turgor of the skin should be observed and recorded. Of significance in the patient presenting with hallux abducto valgus is the presence and location of any hyperkeratotic lesions on the plantar surface of the foot or areas of the hallux. These lesions should be noted along with their type, size, and location and whether the lesions are symptomatic.

The position and extent of hyperkeratotic lesions, if present, can be valuable in evaluating the function of the foot and associated hallux deformity. These hyperkeratotic lesions should be closely correlated with the findings of the biomechanical evaluation in each patient before proposing and initiating treatment of hallux abducto valgus.

Podiatric Evaluation of Hallux Abducto Valgus

The usual presentation of symptoms of a patient with hallux abducto valgus is pain over the medial or dorsal medial aspect of the first metatarsal head region of the foot. A thorough evaluation of the area of palpable tenderness should be employed during the initial phase of the examination of the local deformity. Swelling or inflammation from an adventitious bursa about the area should be noted and documented (Fig. 5-1). Occasionally, pain can present on the plantar aspect of the metatarsal phalangeal joint region as a result of degenerative changes at the sesamoid-metatarsal articulation. Numbness may also be encountered along the medial side of the hallux secondary to pressure over the sensory nerve in the area producing symptomatic paresthesias.⁴

Evaluation of the hallux abducto valgus deformity should be carried out with the patient weight-bearing as well as non-weight-bearing. Usually the hallux abducto valgus deformity is accentuated when the patient is standing or bearing weight on the foot. Equally important to this examination is an evaluation of the associated deformities (i.e., hammer toes, digital subluxation, hyperkeratotic lesions) present on weight-bearing.

Lateral deviation of the great toe may be a result of luxation within the metatarsal phalangeal joint or in-



Fig. 5-1. Chronic bursitis associated with long-standing hallux valgus.

volve the structure of the hallux itself. Hallux abduction may be caused by positional or structural changes within the metatarsal phalangeal joint. This hallux abduction may also be caused by the structural shape of the proximal phalanx.⁵ It is important to clinically differentiate the level and etiology of this lateral deviation so that the appropriate corrective procedure or procedures are selected.

The generally accepted normal range of motion of the first metatarsal phalangeal joint is approximately

70°-90° of dorsiflexion and approximately 30° of plantar flexion. Any limitation in either dorsiflexion or plantar flexion should be noted and compared to that of the contralateral extremity. Limitation might be an indication of intra-articular degeneration with osteophytic lipping or a result of contractures of the periarticular structures of the first metatarsal phalangeal joint.

The quality of the range of motion of the first metatarsal phalangeal joint should be evaluated. In the normal motion, there is no medial or lateral deviation from the sagittal plane, and the movement causes no pain when the hallux is moved through its full range of motion. Limitation of motion, pain on motion, or crepitation may indicate deterioration or degeneration of the articular surfaces of the joint.

The range of motion of first metatarsophalangeal joint should be evaluated with the joint in the natural or deviated position and in the corrected or rectus position by reducing the transverse plane deformity of the hallux adduction and moving the base of the proximal phalanx through a full range of motion on the metatarsal head. If lateral luxation of the fibular sesamoid and associated contracture of the plantar lateral structures is present, a significant lateral deviation of the hallux as it moves through the dorsiflexion portion of this range of motion is usually noted. The degree of this deviation will provide valuable insight into the extent of the contracture and the deforming forces present on the plantar lateral structures of the first metatarsophalangeal joint.

In some instances it will be observed that the hallux has no range of dorsiflexion if held in the corrected or rectus position and has its usual range of dorsiflexion when evaluated in its natural or deviation position. This is described by many clinicians as being track-bound or of joint tracking and is thought to be a result of adaptive changes of the joint producing a lateral deviation of the articular surface of the first metatarsal head. If this is present, careful radiographic and clinical intraoperative evaluation is necessary to determine if an osteotomy might be indicated to reduce this lateral joint surface deviation to render appropriate correction and minimize the incidence of recurrence of the deformity.

While much effort is spent evaluating the transverse plane aspect of the hallux abducto valgus deformity, minimal effort and documentation of the frontal plane

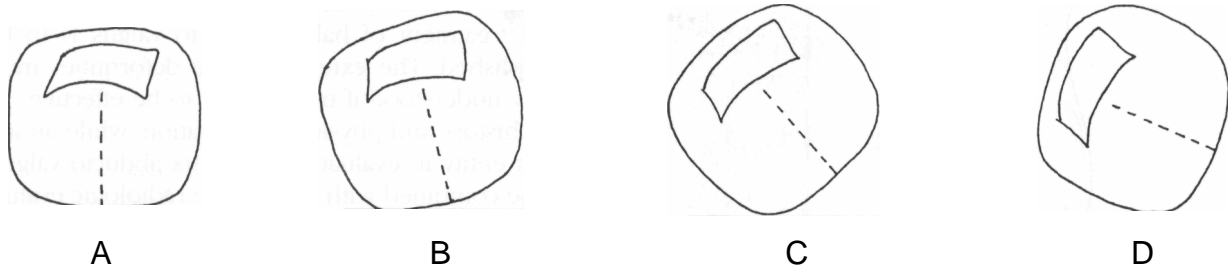


Fig. 5-2. Valgus rotation of the hallux. (A) Grade 0, no rotation. (B) Grade 1, rotation less than 25°. (C) Grade 2, rotation greater than 25°. (D) Grade 3, rotation greater than 45°.

of valgus component of the deformity is usually the rule. An attempt to evaluate and document the valgus position of the hallux has been suggested and would appear to be warranted.

The recommended classification used to describe this valgus component of the deformity is as follows; no rotation, grade 0; rotation less than 25°, grade 1; rotation greater than 25°, grade 2; and rotation greater than 45°, grade 3. Assessment is made with the patient standing. The 45° point is represented as one-half of a right angle; the 25° point is an approximation of one-quarter of a right angle (Fig. 5-2).⁶

Evaluation of the first ray and its range of motion is essential to selecting appropriate treatment of hallux abducto valgus and is of particular importance when evaluating for potential surgical procedures. The first ray dorsiflexion and plantar flexion should be evaluated with the subtalar joint and midtarsal joint in their neutral positions. One hand should be placed with the thumb and index finger located dorsal and plantar to the first metatarsal head and the thumb and index finger of the opposite hand placed over the approximate region of the second metatarsal head dorsally and plantarly in a similar fashion. The relationship of the thumbs and index fingers of both hands should be noted in this neutral position.

The first ray should then be dorsiflexed to the end of its range of motion and the interval between the level of the thumb or index fingers of both hands should be noted, measured, and recorded (Fig. 5-3). Similarly, the first ray should be plantar-flexed to the end of its plantar-flexory range of motion and the distance or interval between the thumb and index finger of both hands should again be noted (Fig. 5-4).

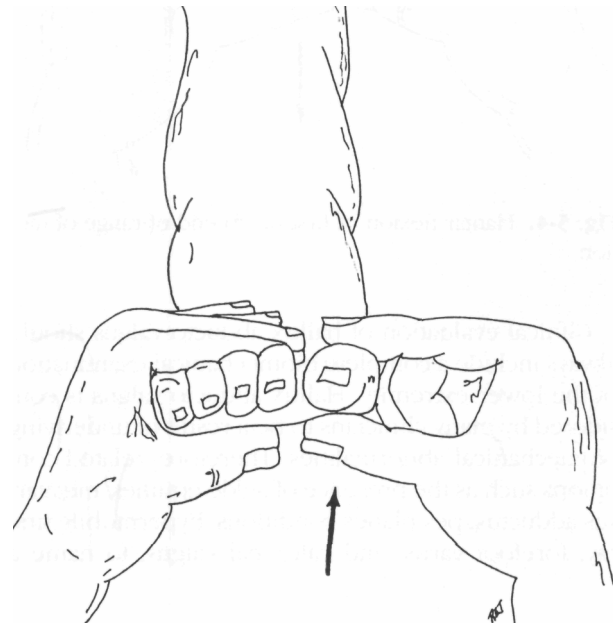


Fig. 5-3. Dorsiflexion of first ray to end of range of motion.

When dorsiflexion distance exceeds plantar flexion distance, the finding is consistent with dorsiflexed first ray. Conversely, when the plantar flexion distance exceeds the dorsiflexion distance, the finding is consistent with plantar-flexed first ray.⁷ These findings are of significance in treatment considerations associated with hypermobile first ray and when contemplating surgical procedures that involve osteotomies of the first ray.

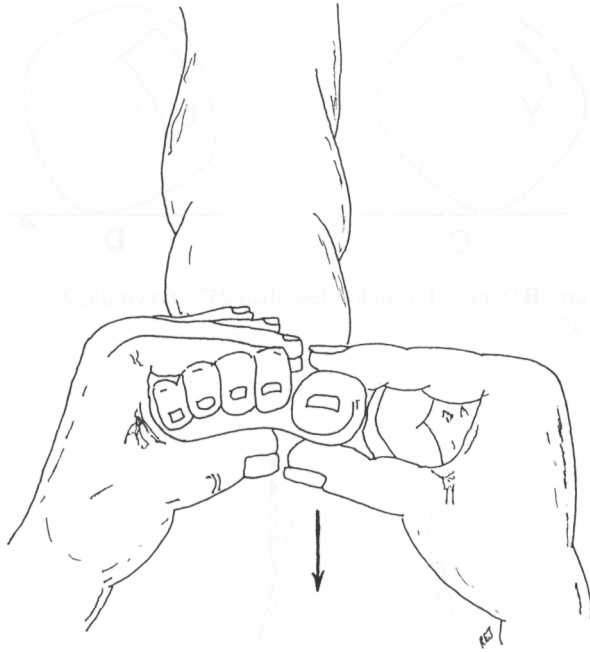


Fig. 5-4. Plantar flexion of first ray to end of range of motion.

Clinical evaluation of hallux abducto valgus should always include a complete biomechanical examination of the lower extremity. Hallux abducto valgus is considered by many clinicians to be a result of underlying biomechanical abnormalities. Therefore, related conditions, such as the presence of ankle equines, metatarsus adductus, pes planus conditions, hypermobile first ray, forefoot varus, and calcaneal valgus, to name a

few, must be clearly identified and considered if successful treatment of hallux abducto valgus is to be accomplished. The extent of these deformities must be fully understood if treatment is to be effective.

The history and physical examination, while an important entity in evaluation of hallux abducto valgus, must be combined with a complete radiologic evaluation of the deformity. These elements, along with a thorough understanding of the biomechanics and function of the first metatarsophalangeal joint, will assist in the formulation and institution of an appropriate and well-designed treatment plan for the relief of symptoms associated with hallux abducto valgus.

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