SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

HALLUX VALGUS AND RIGIDUS

BY

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The first metatarso-phalangeal joint, owing to the stress to which it is subjected, is prone to develop changes which lead to considerable deformity and cause great disability. In hallux valgus deformity is the outstanding feature, while in hallux rigidus it is loss of mobility. The former condition is by far the more common, and female sufferers are in the majority. More men than women appear to develop a hallux rigidus. In both conditions the underlying pathological changes are the same, and treatment is directed along similar lines.

HALLUX VALGUS

In this condition the great toe is deflected at the metatarso-phalangeal joint towards the second toe. This deviation rarely occurs alone, but is accompanied by other changes in the foot—a widening of the fore part, and often by a flattening of the longitudinal arch.

The causes are several. The deformity may appear in late childhood, and it would seem that heredity plays a part. Most cases, however, are noticed in later life, and as women are far more often affected than men it is certain that improper footwear must be blamed above all other causes. High heels, which throw an undue proportion of the body weight on to the metatarsal heads and produce a spreading of the fore part of the foot, the divergence being especially big between the first and second metatarsals, and the cramping of the toes by pointed-toed shoes and by tight stockings, together act as deforming factors.

Morbid Anatomy

The initial change is a simple deflection of the big toe at the metatarso-phalangeal joint, with a displacement of the sesamoid bones towards the second toe, together with the tendons of the long flexor and extensor muscles. A stretching of the capsule on the medial side and a tightening on the lateral fix the deformity. Later, osteo-arthritic changes take place about the metatarsal head, while the exposure of the medial side of the head to increased friction and pressure results in the formation of a large exostosis. A bursa develops; this may later become inflamed, and so the typical bunion is formed. Osteophytes may also form on the dorsal and lateral aspects of the head, and must not be overlooked when treatment is considered. The splaying of the foot is accompanied by a dropping of the anterior arch and by the formation of callosities under the heads of the second and third metatarsals. A rotation of the great toe often occurs, so that the nail looks outwards as well as upwards.

The Symptoms

The condition is at first symptomless, especially in adolescents, and it is only when osteo-arthritic changes are present or when the bursa becomes inflamed that advice is sought. Pain is experienced from boot pressure on the enlarged head, though movement may still be quite painless and there is difficulty in fitting new shoes, which are only comfortable when worn into shape. Some-

times tenderness under the intermediate metatarsal heads is the first symptom. Occasionally metatarsalgic pains, which can be traced to the formation of osteophytes on the lateral aspect of the head, are the earliest complaint.

Early Treatment

In early cases, or when the deformity is slight, an effort may be made to remedy the defect by conservative measures. The wearing of a night splint to hold the great toe straighter, the use of digitated stockings, and the fitting of an insole with a toe post to hold the great toe separated from the second may be tried. The last is seldom acceptable, as if it is to be efficient in action it is uncomfortable. The wearing of a metatarsal support is a great help in early and late cases. It may take the form of a strong metatarsal garter with a well-filled pad fitting just behind the second and third heads if it is thought that the widening of the fore part of the foot is the primary factor in the causation of the deformity, or of an insole with a dome-shaped pad stitched to its upper surface. To give plenty of room for the toes it is best for the insole to terminate just beyond the dome and to be secured into position by nailing it through to the heel.

FIG. 1.—(i) The hallux valgus night splint. (ii) An insole with a dome one and three-quarter inches in diameter and half an inch deep in its centre.

Operative Treatment

In a great number of cases operative treatment becomes necessary to restore comfort in walking and to make the easy fitting of normal shoes possible. The object of the operation is twofold: first, the reduction of the bunion with removal of all excess bone, pressure on which has been the cause of pain; and, secondly, the realignment of the great toe. The former is the more important, as once the enlargement and protrusion of the metatarsal head is removed comfort is assured for many years, even though the valgus deformity remains. The first object can be secured by a trimming of the metatarsal head. The head of the bone is exposed by a dorsal or dorso-medial incision in the long axis of the great toe, extending about two inches above and one inch below the joint. This incision is preferable to a medial one, as it allows greater freedom of access to the lateral side of the head. The incision is

carried down to the periosteum, and the neck of the bone exposed subperiosteally. The soft tissues surrounding the head are then dissected off the bone as closely as possible, the periosteum and capsule forming one continuous sheet. The joint is opened and the proximal phalanx depressed downwards. The excess bone is then removed from the head with an osteotome, taking good care that enough is removed. This will involve about one-third of the head on its medial aspect and any dorsal or lateral osteophyte formation, so that in many cases the head will be whittled down to the size of the tip of the ring finger or even smaller, the end still remaining covered by articular cartilage. Only one wall of the bursa need be removed. Even though the valgus deformity is not completely corrected future comfort is assured by this procedure alone. When the valgus is excessive it may be corrected by an osteotomy of the proximal phalanx. The incision is carried a little further forward, and a small wedge of bone is taken from the medial side of the phalanx with a fine saw, as close to the joint as possible. No deep sutures are necessary, and the skin may be closed with fine silkworm-gut stitches.

FIG. 2.—X-ray tracing of hallux valgus before and after operation, showing the amount of bone removed from the metatarsal head and the correction of deformity by osteotomy through the base of the phalanx.

The removal of the metatarsal head is to be condemned, and should be reserved for cases only in which there is gross destruction of the articular surface of the metatarsal. If done the foot is left seriously weakened, and an additional strain is thrown on to the second and third metatarsal heads, with an increasing likelihood of painful callosities forming under their plantar aspects. Removal of the base of the phalanx avoids these objections, but leaves the great toe shortened, and as a trimming of the metatarsal head is almost always required as well the proximity of two raw bone surfaces may lead to serious stiffening of the joint. The cap phalangectomy operation of Girdlestone seems to overcome some of these difficulties, but it is yet early to assess the ultimate value of this procedure.

After-treatment

The after-treatment is of the greatest importance. Immediately after the operation it is my practice, following the teaching of the late Naughton Dunn, to enclose the foot in a plaster-of-Paris splint. This takes the form of a slipper, leaving the ankle-joint free and having a separate compartment for the great toe, to ensure that correct alignment is maintained. The plaster is retained for a month, or for six weeks when an osteotomy has accompanied the trimming of the head. The stitches are left in until the plaster case is removed, and after seven or eight days following the operation the patient is allowed to take full weight, wearing a slipper to protect the plaster from damp. The more active the patient becomes during this period the less swelling of the foot and stiffness in the toe-joint there is when the plaster is removed. A shoe with a straight-sided inner border and fitted with a domed insole to support the anterior arch is next worn. Faradic

foot baths and intrinsic muscle exercises are helpful in restoring full function. If the longitudinal arch was weak the shoe is raised on its inner border one-sixth of an inch, and flat foot exercises are given as well.

HALLUX RIGIDUS

Hallux rigidus occurring in adolescents may follow injury, and appears to be a synovitis of the metatarso-phalangeal joint with protective muscle spasm. Usually no change is seen radiographically, and the condition clears up with rest or with the wearing of a metatarsal bar behind the tread.

FIG. 3.—Position for fixing to the sole an outside metatarsal bar three-quarters of an inch wide and half an inch deep.

The hallux rigidus of later life is an osteo-arthritis change in which the rigidity is due to a mechanical locking of the joint, partly by the obstruction to movement presented by osteophytes and partly by a general flattening of the joint surfaces. Trauma is a frequent cause, either by the repeated stubbing of the great toe against the toe-cap of the boot or by the dropping of heavy weights direct on to the joint. The condition may be comparatively painless, or pain may be referred to the interphalangeal joint, which becomes hyperextended, with a callosity on its plantar surface, in the effort to compensate for the loss of mobility in the metatarso-phalangeal joint. The chief complaint is usually a disability in "taking off" owing to the rigid position of the toe. The rigidity of the long axis of the foot may force its owner to walk with the foot everted, and so be a cause of flat-foot. It often happens that the toe becomes fixed in plantar flexion (hallux flexus). This condition does not differ from hallux rigidus except in producing greater disability.

Treatment

This is directed chiefly to restoring mobility, and in mild cases, and when operation is contraindicated or is inconvenient, manipulative treatment can be employed. The great toe is firmly grasped through a thin towel to prevent the fingers slipping, strong traction is exerted in its long axis and continued for a minute or so, then rotatory and lateral movements are begun in either direction, and finally the toe is strongly dorsiflexed. This manipulation is repeated several times at one sitting and is given daily. The great-toe joint is strapped with one-inch elastoplast after each treatment. The wearing of a metatarsal bar will be helpful in taking stress off the joint while movement is returning.

In most cases, however, operation will be preferred, and where rigidity arises from the blocking of movement by osteophytes and the rounded contour of the central part of the head is intact a trimming operation as described for hallux valgus may suffice. In most instances the best results will be obtained by the removal of the base of the phalanx, at least one-third of the length of the bone being excised. As in many cases of hallux rigidus the great toes are abnormally long the shortening produced by this operation is an actual advantage, and the danger of ankylosis following the approximation of the cut end of

the phalanx and the raw surfaces from which osteophytes have been removed can be avoided by fixing a strapping extension on to the toe and tying this to a wire hook fixed to the plaster case and projecting forward in front of the toe. The extension is removed in two or three weeks, after which the patient walks for another week or so in the plaster case.

FIG. 4.—X-ray tracing of hallux rigidus before and after operation, showing amount of bone to be removed from metatarsal head and base of phalanx.

If a trimming operation alone has been performed the plaster case is applied with the great toe somewhat dorsiflexed, so that any temporary post-operative joint stiffness is not a hindrance during convalescence. When the plaster is removed an insole with a bar instead of a dome is fitted in the shoe.

After foot operations of all kinds it has been found advantageous to fit cheap temporary shoes of a correct shape, a half or one size larger than those to which the patient is accustomed, for three to six months before returning to the normal shoes, as although the period of post-operative swelling is greatly lessened by early activity in the plaster case it cannot be got rid of altogether.

FOODSTUFFS FOR THERAPEUTIC USE

We have received from the Ministry of Health the statement printed below, which was prepared by the Therapeutic Requirements Subcommittee of the Medical Research Council and has been approved by the Ministry of Food.

Sugar in Medicines

The present national situation in relation to supplies of sugar was recently reviewed publicly by the Minister of Food, who gave reasons for the control of this commodity and for restrictions on the amount to be used. The present position requires that the supplies of sugar should be directed into the forms in which they are most useful as foods. The quantities of sugar used annually in preparing medicines are considerable, and a definite restriction in this way would be helpful to the country.

The Ministry of Food has allowed, for the time being, a full ration of sugar for medicinal purposes, but has made the concession on the understanding that considerable economies will be made voluntarily by the medical and pharmaceutical professions. Otherwise rationing will have to be introduced. This being the case, members of the medical profession are urgently requested to restrict their prescriptions, for preparations containing sugar, to those cases in which such preparations are essential.

A survey of official preparations and standard prescriptions shows that the prescribing of preparations containing sugar could be restricted almost entirely to medicines for children without any serious loss of therapeutic efficiency. An appeal is made to the medical profession generally to bear the difficulties of the situation in mind when writing their prescriptions. It is to be hoped that by voluntary effort in this way the quantity of sugar used in making medicines may be reduced, so that it will be possible to maintain the present formulae for pharmaceutical preparations. The alternative is ration-

ing of pharmaceutical manufacturers with the consequent necessity for altering the formulae of the *British Pharmacopoeia* and the *British Pharmaceutical Codex* by removing sugar and substituting some other sweetening agent.

The alteration of official formulae is undesirable. Syrups which are used merely for flavouring purposes—orange, lemon, ginger, and possibly tolu—might well be omitted from prescriptions. Certain tonic syrups, such as Easton's compound glycerophosphates, and compound hypophosphites, could be prescribed in the form of the equivalent tablets, which are readily available.

Citrates

Citric acid is now manufactured chiefly from sucrose by a biological method, and the necessity for the conservation of stocks of sugar has given rise to difficulty in regard to supplies of citric acid and citrates.

Prescribers would be wise to restrict their use of citric acid and citrates to cases in which they are essential.

Cod-liver Oil

While it is understood that sufficient cod-liver oil is at present available to meet all reasonable medical requirements, it cannot be stated with certainty that this position will be maintained, and in order to conserve supplies it is clearly desirable that the strictest economy should be observed in its prescription and administration. The value of cod-liver oil can be ascribed to its content of vitamins A and D. The maximum effective daily dose of vitamins A and D is contained in about three teaspoonfuls of the oil, and no useful therapeutic purpose will be served by exceeding that dose. In most cases it is found more satisfactory and economical to administer the oil without admixture rather than in the form of an emulsion or in combination with malt extract.

Cod-liver oil provides a convenient way of administering vitamins A and D, but any edible oil containing the necessary vitamins would be satisfactory as a source of these vitamins if it were required to conform to a recognized specification. In this connexion it is understood that the British Pharmacopoeia Commission has in course of preparation, and purposes shortly to make official, a specification for a vitaminized oil containing vitamins A and D in a suitable edible oil.

Starch and Fats

Starch, animal fats, and vegetable oils and fats are controlled by various Orders and Departments of the Ministry of Food, but special privileges have been extended to the medical and pharmaceutical professions to allow of the use of these substances for therapeutic purposes. Efforts will be made to ensure that sufficient pure leaf lard will be available for all legitimate medical purposes, but it is desirable that substitutes should be used wherever possible. Moreover, whereas early Orders prohibited the use of vegetable oils and fats for any purpose except food, permission has now been given to allow the use of any of the following oils for the purpose of the preparation of any medicine or medicament for internal and external use: coconut oil, cotton-seed oil, gingelly (sesame) oil, ground-nut (arachis) oil, linseed oil, maize oil, olive oil, palm oil, and soya-bean oil. Liquid paraffin, soft paraffin both white and yellow, and hard paraffin or paraffin wax are governed by the various Rules and Orders issued by the Petroleum Board, but for the present sufficient supplies are available for medical purposes. The medical and pharmaceutical professions, having been spared the burdensome procedures associated with rationing, should exercise every economy in all the articles referred to in this paragraph. There are few large hospitals and dispensaries, for example, in which it would not be possible to reduce greatly the consumption of liquid paraffin without detriment to the patients.