

sawing of a bone, or the insufficiency of integument left to cover it, be considered a reason for not performing an amputation.

As I shall have occasion, in a moment or two, to speak of the *time* when operations should be performed, I may here remark, *en passant*, that not only is the union of a tendon perfect in proportion to the tender age of the patient, but also that adhesions to surrounding structures are weak and insignificant in the same direct ratio.

The adhesions which sometimes take place between the cut ends of a tendon and the sheath, are confined, for the most part, to the tendon of the tibialis-posticus, and even then only when the division has been made at the malleolus.

**THE PERIOD FOR OPERATING.**—This, gentlemen, is the real subject of my paper. It was this portion, and this portion alone, I had in view when I consented, at the request of the Secretary, to read a paper before you this evening.

I suppose every member of this Society has made up his mind when to, and when not to operate; when he will trust to mechanical appliances; when to physiological treatment; and when he will not trust to one or both of those, but resort to operative treatment.

Thus, no one would think of operating when, although there may be more or less of the varus variety of the deformity at birth (as if arising from mal-position, when the Liquor Amnii was deficient,) a little manipulation suffices for its removal. In such cases there are no structural changes; the heel can be brought down; the foot may be put in situ and even everted, and maintained thus without difficulty, the soft hand of the nurse sufficing, and without pain to the infant. But when the foot cannot be restored to its natural form or position without difficulty; when the heel refuses to be brought quite down, or the foot to be everted, so that the inner malleolus may become prominent; when the *os calcis* cannot be sufficiently depressed—or if when depressed, the ankle-joint cannot be flexed, operative treatment is necessary. And this brings me to that to which I wish specially to draw your attention.

The necessity for operating being established in the practitioner's mind, when should tenotomy be performed? "Wait till the tendons are more prominent," says one. "Wait till there is less adipose tissue in the way," says another. "Wait till the foot can bear the pressure of the boot," says a third. "Wait till we see what a Scarpa shoe, or tin splint, or caoutchouc boot and leg can effect," say

others who hope to gain by the handiwork of the mechanic more than the hand of the surgeon can effect. "Operate early" say some, and with the latter I agree, for the "earlier tenotomy is performed, and the more quickly all the muscles of the limb are brought into action, and the greater will be the muscular development."

The disadvantages of operating early have been already mentioned. The disadvantages of not operating early are many.

In *T. equinus* as in *talipes varus*, the *gastrocnemius* and *soleus* may, at birth, be alone contracted. But the *plantaris* is soon drawn in; afterwards the *flexor pollicis* and the *plantar fascia*; and afterwards, but long afterwards, the deeper muscles of the leg and foot. In *talipes equinus* the tuberosity of the *os calcis* is raised by their contraction—but easily depressed—after tenotomy. After a time, however, when the upper surface of the *calcis* impinges upon the posterior margin of the articulating surface of the tibia, the *astragalus* is thrust forwards and downwards; both bones are consequently *hors de place*, and their facets changed. Shortening of the ligaments of the sole of the foot takes place; the foot, which at first was straight, becomes bent upon itself, as it were, by being depressed at the transverse tarsal joint; and if the operation be delayed till the patient is old enough to walk, the weight of the body is thrown upon the extremities of the metatarsal bones.

As to the ligaments, Mr. Adams says: "The ligaments in front of the ankle joint, and on the dorsal aspect of the foot—especially the ligament between the *astragalus* and *navicular bone*—are found to be elongated in proportion to the degree and duration of the deformity; whilst those on the plantar aspect of the foot are contracted and shortened to a corresponding extent." The anterior portions of the lateral ligaments become elongated, and the posterior shortened.

Even should paralysis coexist, the necessity for early treatment is the same. "Structural changes in the joint, such as thinning and irregular removal of articular cartilage," "and adapted shortening of the ligaments of the joint, take place by the continuance of the deformity, thus rendering the case more difficult in proportion to the delay."

In that more common, yet more complicated form, *talipes varus*, the muscles at birth are healthy and well developed; but they do not continue to grow as those of the other limb. Muscular development is more or less arrested at birth. Not those alone upon the contraction of which the deformity depends