

studied and laid out for each individual case, the line of pull made as direct as the desired motion requires. With care the belly of a muscle may be transferred some distance. The muscle selected should be strong. Weak, degenerated muscles ought not to be transferred as they simply bring discredit to a procedure that is good and helpful. The attachment should be firm, not likely to slip or pull out. The silk itself should be tested before use and in situ, the limb put in such a position and the transferred muscles so placed that there will be no slack to mar the results. Muscles too weak to take up fully the desired motion may be transferred exceptionally for locking a joint. For instance, the transfer of two weak hamstrings, although not sufficiently strong to extend the lower leg, may be sufficient to lock the knee in walking and standing and allow a certain amount of flexion in sitting. Paralyzed muscles should not be used for this purpose on account of their almost endless tendency to stretch out. Beside the many and varied muscles that may be transferred the following muscles, when large and vigorous, give pretty uniform success when transplanted, the pronator-radii-teres, the flexors and extensors of the fingers, the hamstrings forward, the peronei, the sartorius, the long flexors and extensors of the toes, the tibialis posterior and anterior.

The opponents of the muscle to be transferred should be carefully considered and balanced. In other words, a small, weak, transferred muscle should not be expected to be of value when opposed to a strong, healthy group. Enough must be transferred to give good balance.

The transfer is more successful when the lateral stability of the joint is maintained by good muscles or by natural or artificial ligaments. The individual not interested in mechanics to a minute degree should not transfer muscles or endeavor to place silk ligaments but once the technique of the operation is well mastered a prolonged study of the single strong muscle in various extensively paralyzed cases will help more toward successful transplantation than any one other thing.

Since the introduction of astragalectomy the lateral stability of the ankle joint can always be obtained without stiffening the joint. This gives us one of the most valuable operations known in the treatment of paralyzed ankle muscles. It also gives us a method of obtaining the lateral stability where a transplantation is desired but otherwise impossible on account of lateral weakness. The cripple must be given a limb on which he can trust his weight. Misdirected muscular activity may be advantageously corrected by transplantation, which gives the desired motion; more should be done if alone this does not give a stable limb well balanced for weight bearing. In a child the calculation should be made for the probable future weight, both from natural growth and lack of activity. Silk ligaments may be used

early to maintain position of the joint, later to maintain antagonism to existing muscles that unopposed would contract and cause deformity and themselves become useless. They may be used as an aid to stability of the joints as in toe drop combined with a lateral lack of stability. They are also of use to stiffen the joint. These ligaments should not be used to prevent a varus or valgus due to bony deformity where the weight is over balanced and out of line nor where the varus or valgus is due to the strong contracture of muscles. Except in these instances with proper technique silk ligaments give the greatest satisfaction to the patient and surgeon. Wherever silk is used crescentic incisions should be made and care taken to have several layers of tissue overlapping the silk insertion, the latter being placed under the flap some distance from the line of incision.

The after care of these cases is quite as important as the consideration before operation. Motion may be encouraged early under observation but strain in the early weeks must be prevented for two months by plaster and for six or eight more by suitable braces. After this, braces are used that allow motion but limit its arc. Silk ligaments and muscle and tendon transplantations, followed by careful after treatment and muscle training give us a most effective means of aiding the extensively paralyzed and deformed cripple. We can correct deformity, make up for loss of function, maintain corrected contractures and displacements and overcome much of the atrophy and do away with many braces. In all the severe cases a benefit can be expected and in many of the light cases a practical restoration of functional usefulness.

XVI.

THE IMPORTANCE OF THE EARLY RECOGNITION OF ACUTE ARTHRITIS OF THE HIP-JOINT IN INFANTS.

By ARTHUR T. LEGG, M.D.

THE recognition of the presence of an acute septic process in the hip-joint in infants would seem to give very little difficulty, but the number of cases seen in which the condition during the acute stage was not recognized, shows that the importance of its early recognition cannot be too strongly emphasized.

The condition, as is well known, follows any of the acute infectious diseases, such as pneumonia, measles and scarlet fever, intestinal auto-infection or from a septic process elsewhere, and starts as an infectious synovitis or an epiphysitis which breaks through into the joint; and, as

in all acute infections of the joints, is characterized by limitation of motion, tenderness, thickening of the joint, and fever, with high white count.

The great difficulty in the early diagnosis comes from the fact that infants unable to express themselves can show only in a general way the location of any trouble, and the general intoxication, especially at this age, is so great that the local condition is often entirely masked.

Cases in which the condition has not been recognized are usually brought for advice on account of a limp noticed when the child began to walk, with a history of having had an acute abscess of the upper thigh accompanied by more or less prostration and high temperature, when an infant, the condition at the time having been considered a superficial abscess of the soft parts, which was simply incised or allowed to rupture spontaneously.

Examination of these cases will show a limp identical to that of a congenital dislocation, with a half inch to an inch shortening of one leg, and a cicatrix of the upper thigh, usually about the trochanter, where the abscess pointed or was incised.

Roentgenological examination of these cases will show dislocation of the affected hip with absence of the head and a portion if not the entire neck of the femur, showing that during the acute process, the head and a portion of the neck were destroyed by the septic process, and the abscess breaking through the capsule allowed the remaining upper end of the femur to dislocate; the abscess, after rupturing the capsule, pointing in the upper thigh.

In those cases seen soon after the onset, a common history given is that the apparently well infant became suddenly irritable, cried constantly when bathed, and had considerable prostration and fever; or if the condition comes on more acutely, the first symptom noticed may be a convulsion followed by symptoms typical to an acute meningitis.

Given these histories and symptoms, it is quite natural that a local condition in the hip is not at first considered, and these general symptoms may continue to predominate the local symptoms for some days and a diagnosis of a beginning acute infectious disease or an anterior poliomyelitis is often made.

It is not until after careful watching and a very complete physical examination is made that the true condition is recognized; and even this at times is most difficult in an irritable infant where all attempts at examination are resisted.

The classical symptoms as already mentioned, of local tenderness, limitation of motion, and thickening of the joint, are often masked by the general condition of the infant. As regards local tenderness, the infant may seem to be in pain when any part of the affected leg is touched, and no one region can be made to show more tenderness than another. While the af-

ected hip usually shows more or less limitation of motion from spasm, motions of the unaffected hip may be equally resisted. To palpate joint thickening is at times very difficult, especially in an infant where there is much fat about the pelvis; but this can generally be made out if both trochanters are grasped and a careful comparison of the thickness is made. In some cases, the recognition of this joint thickening is the only positive means of recognizing the condition except by the roentgenogram. Examination by this method will show in the very early cases a markedly dilated joint capsule, with the head of the femur usually thrown out to the brim of the acetabulum; or, in cases which have gone on for some time, the head will be seen free in the joint or entirely disintegrated.

Just how soon the head will be freed from the neck of the femur or entirely destroyed by the septic process depends upon the severity of the infection and the mode of invasion. That is, those infections starting at the epiphyseal line will free the head more readily than those starting as an infectious synovitis; but that it may be freed very early is evidenced by the fact that in one case operated upon by the writer, the head was found free in the joint four days after the onset.

It is on account, therefore, of this early separation of the head from the shaft, followed by destruction and dislocation, that the early recognition of this condition is of the greatest importance, that immediate surgical interference may be instituted; for early incision and evacuation of the pus in the joint will in many cases save the femoral head, or if the head has already been freed or destroyed, dislocation of the remaining neck, by maintaining it in its normal position, may be prevented.

XVII.

THE DIAGNOSIS OF ENLARGED THYMUS AND THE SYMPTOMATOLOGY OF HYPER-THYMATISM.

By PHILIP H. SYLVESTER, M.D.

THE diagnosis of enlarged thymus lies in finding it. The greatest difficulty in its diagnosis lies in not being on the lookout for it. The following cases are illustrative:—

CASE 1. W. B. C. Male, 14 months old; only child of well parents.

Past History. Full term, normal delivery, breast fed for six months, then on various mixtures. Always did well but has had a lot of colds. Has had no serious diseases.