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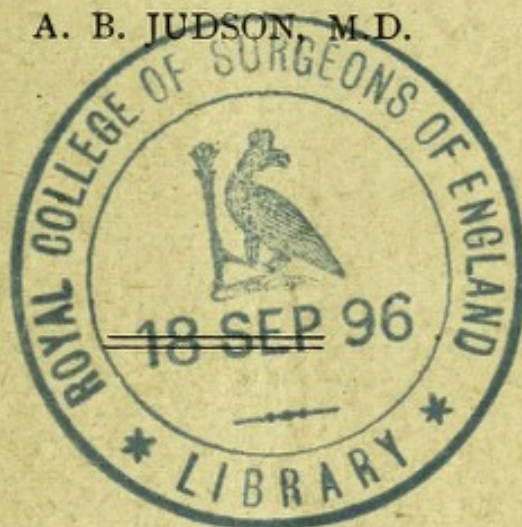
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A METHOD OF PREVENTING
SHORTENING AFTER HIP-
DISEASE.

BY

A. B. JUDSON, M.D.



REPRINT FROM

American Medico-Surgical Bulletin,
January 1, 1895.

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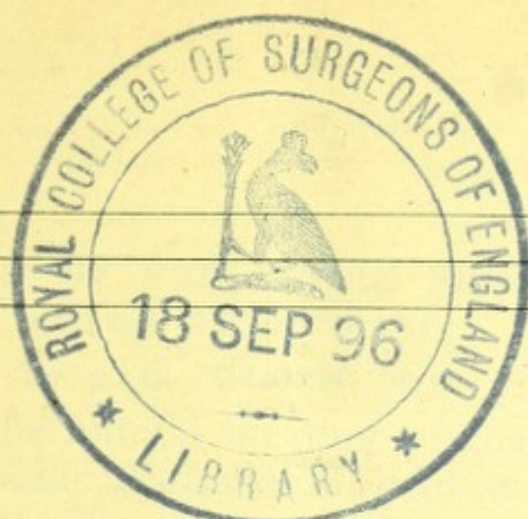
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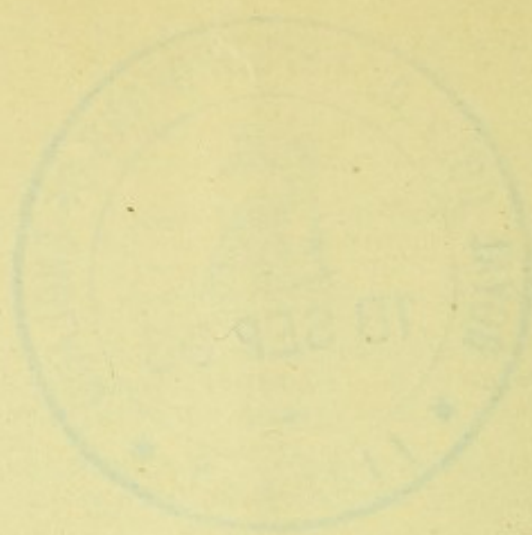
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A METHOD OF PREVENTING SHORTENING AFTER HIP-DISEASE.

By A. B. JUDSON, M.D.

AT the annual meeting of the Orthopædic Association, held at Boston, in 1889, I read a paper on "The Prevention of the Short Leg of Hip Disease." I believe the method advocated on that occasion has a practical value, and therefore invite attention to it again. I have made it a part of the treatment of all cases of hip disease for a number of years. I have measured and recorded the angles of flexion, adduction and abduction many times in every patient treated, and have ample material for illustrating the subject. This paper will, however, be limited to a brief history of patients who came to me in bad position from previous treatment, or neglect of treatment, and whose immediate subsequent history emphasizes the importance of symmetrical walking as a part of the treatment of hip disease.

The shortening to be considered is not the structural shortening found by linear measurement of the bones and due to loss of bony tissue or to inequality of growth in the two limbs, but the apparent, or practical, or positional shortening which is due to adduction of the femur with partial or complete loss of motion in the joint.

Case I.—Girl, 14 years old. Duration of disease, six or seven years. Previous treatment by traction splint, ischiatic crutch, manual reduction of deformity under ether,

and weight and pulley in bed. There were some indications of active disease. There were 10° of adduction and 10° of flexion. Three months after treatment was begun there were 6° of adduction, and three months later there was no deformity, the limb being neither adducted nor abducted. The treatment of the deformity was limited to occasional instruction in symmetrical walking and efforts on the part of the patient to divide the time equally between the two feet. During the summer vacation, adduction returned to the extent of 6° , but in a few weeks it had again disappeared after further instruction and personal effort as above described.

This method of reducing or preventing the shortening of hip disease is based on the observation that the bad position of the limb is due to its drawing-up in flexion and adduction while the well limb does the greater part of the work of progression. In the characteristic gait of hip disease, the well limb hurries forward to receive the weight of the body and thus breaks up the natural rhythm in which the two feet move alike and in equal time. It follows that if they are made to move alike, or symmetrically, and to bear in equal alternations the weight of the body, the affected limb, protected by a splint from really bearing the weight of the body, will become less flexed and adducted, because it can thus do better its part in locomotion. In other words, if the patient, by an effort of the will, divides the time equally between the two feet, the affected limb which is adducted and flexed will move toward abduction and extension; because, when less adducted and flexed, it is practically longer and more con-

veniently situated to do its share of work, which it must do if the patient resumes the natural "one-two-one-two" rhythm of bipedal locomotion.

Case II.—Boy, 8 years old. Duration of disease, two or three years. Previous treatment by axillary crutches and 2 lbs. of lead attached to his shoe. Signs of active disease present. There were 20° of adduction and 35° of flexion. One month after treatment was begun, adduction was 6° and flexion 35° . Four months later the limb was in normal position laterally, neither adducted nor abducted, and there were 10° of flexion. No attention was paid throughout the treatment to the position of the limb beyond instruction and domestic drill in symmetrical walking. Treatment was interrupted by typhoid fever. When it was resumed, after protracted convalescence at his home in another state, adduction was 15° and flexion 40° . At a later date, when treatment was finally suspended, adduction was 5° and flexion 20° .

It would have been better if this boy could have been dismissed with 5° of abduction instead of that amount of adduction, but untoward circumstances prevented. There was considerable bony or structural shortening, which would have been largely offset by the positional lengthening which attends a few degrees of abduction. The 20° of flexion remaining in this case do not make a bad result, as that amount of flexion renders it easier for the patient to sit, and it not enough to interfere with locomotion.

It is curious to note that the shortening which is produced by adduction applies to the affected limb when compared with its fel-

low, while the height of the patient is increased by either adduction or abduction. On the other hand, the shortening produced by flexion applies to the patient's height, while it has no appreciable effect on the comparative length of the two limbs. In Pott's disease the stature is reduced by kyphosis, and in hip disease by lordosis.

The patients here reported, with one exception, were treated by me with the long traction, or American, splint, and with all of them the ischiatic crutch was the instrument used during a part of the treatment. When traction was used, it was applied with force day and night, and when the ischiatic crutch was used, it was laid aside at bed-time. It was observed that the deformity yielded as readily with one splint as with the other. It is probable that this method of reducing deformity would be effective, no matter what form of walking splint is used. Even long after splints of every kind are removed, in patients who have recovered with limited motion, it is not unreasonable to look for reduction or increase of deformity, according as symmetrical walking is taken up or discontinued.

Case III.—Boy, 9 years old. Duration of disease, two or three years. Previous treatment, weight and pulley, exsection and long traction splint. Signs of active disease were present. Adduction, 40° ; flexion, 30° . At the end of three and one-half months adduction was 18° , flexion 30° . Six and one-half months later, adduction 5° , flexion 20° . Three months later, abduction 2° , flexion 20° . Seven months later, abduction 5° , flexion 15° . Eight months later, abduction 17° , flexion

15°. The deformity was treated as in the preceding cases.

The structural shortening following excision in this boy is partly offset by the very considerable positional lengthening which attends so many degrees of abduction.

In regard to extreme deformity, it may be said that it yields to a certain extent to the application of almost any mechanical treatment, whether the patient is up or in bed. But when extreme has been exchanged for moderate deformity, further reduction by machinery is prevented by the familiar difficulties which hinder the coercion of a ball and socket joint which has almost no leverage on one side of the line of the joint. By the method in question, however, the limb may "be gently persuaded to come back from the erring position,"* to use the words which Mr. Thomas applied to his own method of reducing flexion.

Case IV.—Man, 25 years old. Duration of disease, about one year. Previous treatment: recumbency, internal medicine, massage, and cutaneous applications. Signs of active disease were present. Adduction, 8°; flexion, 15°. At the end of six weeks, adduction 2°. Six weeks later, abduction 3°. One year later, abduction 7°. The deformity was treated as in the preceding cases.

This is another case in which structural shortening was partly offset by positional lengthening, but the structural shortening was the result of infantile poliomyelitis, an unusual coincident of hip disease. This group of five cases did not lack, however, the

* Disease of the Hip, Knee and Ankle: Hugh Owen Thomas. Liverpool, England, 1875, p. 41.

ordinary complications. Case I had scars from incised abscesses. Case III had osteitic pains, discharging abscesses and multiple joint disease. Case V had a large abscess absorbed. In other respects, these histories had the usual variety. Case II lived a long distance away, and came as often as practicable for treatment. Case IV was often absent, part of the time traveling in foreign countries. Case III had been operated on at private hospital. Case V had been an inmate of a public hospital, and two patients in this group had been advised to have osteotomy for correction of the deformity.

Case V.—Boy, 5 years old. Duration of disease, three or four years. Previous treatment by recumbency and weight and pulley. No treatment for several months. Signs of active disease present. Deformity treated as in the preceding cases. Adduction, 10° ; flexion, 60° . At the end of six weeks, adduction 6° , flexion 20° . Four and one-half months later, neither adduction nor abduction, flexion 20° . Four months later, abduction 4° , flexion 20° . This was maintained for fourteen months, at the end of which time he returned from a summer vacation spent on a farm, with adduction 10° , which was reduced to 2° in a few weeks after he came again under instruction and exercise.

The deformity in these cases was measured in accordance with the following rules, the patient being supine on a moderately hard table: Adduction and abduction:—The limb is slowly moved in the direction of abduction and adduction alternately until, after repeated trials, it is seen that when it is held at a certain point in the arc of lateral motion

the iliac spines are at right angles with the axis of the body. One arm of the goniometer is then held at right angles with the axis of the body, and the other is made to coincide with a line parallel, as near as may be, with the axis of the limb. For this purpose I have imagined a line drawn from the middle of Poupart's ligament to the middle of the heel. The degrees then read off are the degrees of abduction or adduction, as the case may be. Flexion:—With one hand the limb is slowly moved in the direction of flexion and extension, alternately until, after repeated trials, it is seen that when the limb is held at a certain point in the arc of antero-posterior motion, the lumbar spines press gently on the fingers of the other hand placed under the lower part of the back. One arm of the goniometer is then held horizontally, while the other is made to coincide as near as may be with a line parallel with the axis of the limb. The degrees then read off are the degrees of flexion.

From the history of these cases it may be inferred that the fixation which we find in the progress of a case of hip disease is not a hard and fast immobility, but a condition in which the joint may be moved in various directions by gentle and persistent efforts without interfering with conservative reflex muscular contraction. This leads to the thought, elaborated in the paper above referred to, that the position of the limb is the result of the unconscious efforts of the patient to put it where it will give the most convenience and the least trouble in his habitual attitudes and movements.

The question may be asked: How is a patient to be made to resume symmetrical

walking? My practice is to take advantage of the visits of the patient to the office or dispensary to instruct not only the patient, but the parent as well, in the difference between the correct and an incorrect rhythm of locomotion. I say that anybody who is free from lameness can assume the appearance of lameness by walking in "bad time," while the patient by walking in "true time" can cause his lameness to disappear in part or entirely. These points are demonstrable on the spot. I make the patient march in correct time and teach him to "count time" as he walks, in the same way that the music teacher does it, line upon line and precept upon precept. I advise daily lessons at home in keeping time and walking correctly. Dancing lessons are not out of place. Some children fall into the new order with readiness, while others, who are naturally awkward and whose parents are pre-occupied or lack intelligence, are a long time in learning to walk properly, and some of them never learn. I find it useful to cultivate personal vanity and to excite an ambition to appear well at all times, as these traits lead the child to walk with as little defect as possible. A wall mirror will help a child to correct his gait. Careful parents teach their young correct deportment, and the lame child should have very special instruction in the matter of walking. And the instruction and drill should be so persistent that the patient will, after a time, from sheer force of habit, walk correctly without thinking of it, as a soldier goes through with the manual of arms under fire as a matter of habit or second nature. To make the result a permanent one, the patient, after treatment

has ceased, should not be permitted to relapse into the old ways, because the deformity is then likely to return. Children should therefore be watched and instructed till they are old enough to take care of themselves in this regard. I have found adults very ready to appropriate and hold the benefit which is obtained in this way. The subject of this paper does not, of course, apply to patients who recover with wide motion in the joint.

In regard to the structural shortening, it may be mitigated by placing the foot in the equine position. The increase in one's height when rising on the toes suggests that this is an effective method of lengthening the too short limb. This is the common position of the foot when the hip-splint is worn, and if the tendo-Achillis becomes structurally shortened in this way, it is but an instance of non-deforming club-foot and an advantage in helping to give the limb ultimate practical lengthening.

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