THE OPERATIVE TREATMENT
OF
CONGENITAL DISLOCATION OF THE
HIP.

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THE term “congenital dislocation of the hip” is somewhat misleading, for the anatomical condition is not a displacement of a normal head of the femur out of a perfect acetabulum, but a greater or less truncation of the former and an absence more or less complete of the latter.¹ A more minute description of these osseous defects does not enter into my present purpose; nor need I here discuss the well-known symptoms of this condition—the breadth of the buttocks—the waddling, uncertain and balancing gait—the mobility, restricted in certain ways, excessive in others and in false directions. Yet there are one or two points in the semeiology of the deformity having important bearings on its diagnosis and

¹ Excellent specimens were shown and described by Messrs. Lockwood, Bowlby, Morgan, Adams, Power, and Shattock, ‘Pathological Transactions,’ vol. xxxviii, p. 780.

prognosis, certain of which have not hitherto been observed, while others have not been sufficiently emphasized. In the former category is the following very characteristic symptom.

The patient stands erect ; the surgeon, seated directly behind her, causes her to keep the knees straight and to bow forwards, as though to touch the instep with the finger-tips. When by this means the trunk, more especially the pelvis, is brought to be almost or quite horizontal on the perpendicular thighs, the trochanters, or if the deformity be unilateral the one trochanter,¹ will project upward from the back of the pelvis in a very remarkable manner, which baffles my powers of description. Therefore I must beg the Fellows to excuse the inartistic

crudeness of an outline sketch which I took in 1890 of a child that was sent to me by Dr. Sprott, of Beeston. However rough, the sketch shows quite characteristically and in no degree exaggerated the upward and backward prominence of the trochanters, which is the more valuable as a diagnostic sign because it is never found in any

¹ In the unilateral deformity this conformation often does not appear spontaneously, because the child puts no weight on the dislocated limb. In such circumstances the surgeon, placing his hand on the sound side of the pelvis, gently pushes that part over towards the deformed side ; as soon as its full share of weight falls on the dislocated limb the characteristic projection shows itself.

other condition of the joint, and is, in my experience, always present in so-called congenital dislocation.

Another point is the ease with which, when the patient lies supine, the surgeon can shorten or lengthen the limb. He can, immobilising the pelvis with one hand, push the thigh up till the trochanter lies very nearly on a level with the iliac crest; then by traction he can cause it to descend until it lies at, or in some cases a little below, its proper level. It is important to observe whether or no, when drawing the limb down, there occur just as the trochanter reaches its proper place a certain jolt or jog. If it do occur the surgeon should gently push the bone up again, noting if at the same level a like jolt be felt. If such do take place he should observe, whether it be more marked and more abrupt than that which is produced by downward movement. The sign of course indicates that the side of the pelvis is not quite an even surface; but that there is some sort of ridge at the locality normally occupied by the upper lip of the acetabulum: the ridge may not necessarily be formed by a projection, but at least by the edge of a depression.¹ Those cases, which have this symptom most fully marked, are, *cæteris paribus*, most promising for treatment.

The actual amount of abnormal upward and downward movement of the femur upon the pelvis, and the amount of backward projection in the stooping posture above described, are in accordance, not with the conformation of either bone, but with the greater or less laxity of the capsular ligaments and muscles; hence such mobility is always greater in those children who have already walked for some time.

Before passing on to describe the form of treatment, which I have adopted for some eight years I must ask for a little patience for a short *résumé* of the principal methods hitherto made known.

¹ As far as I know, Buckminster Brown is the only surgeon who has taken notice of this "jog," and he did not observe it till the case had been some weeks under treatment.

1. *Division of rotator and capsular muscles.*—Guérin speaks of these muscles as obstacles to reduction, he divided them pretty freely, especially all three glutei. His sections appear to have also involved a considerable part of the capsular ligament; likewise he scarified the bone in the neighbourhood of the acetabulum. The report of a Commission (1848) is not favorable.¹ Mr. Brodhurst advises free division of the two smaller glutei and of the rotator and capsular muscles, saying that when these “are freely divided a thigh splint and groin pad effectually prevent further displacement.”²

2. *Prolonged rest with extension.*—This method originated with Pravaz, of Lyons, in 1838, and was vigorously defended by his pupil, Gillebert d’Hercourt,³ against the scepticism of Bouvier. Difficult as it may be to decide on the merits of an old controversy, a certain measure of success must be awarded to Pravaz. Carnochau’s well-known memoir in 1850 advocates a similar plan, to be carried out by means of very complicated machinery.⁴ I do not find in his book reference to any case treated by him after this method. In 1882 Dr. Buckminster Brown began the treatment of a girl, aged four, by a like method, but with different apparatus, and after twenty months effected a relative cure; the child being able to walk, and the weakness being such as might probably be removed by exercise.⁵

Mr. Wm. Adams has in this country carried out and zealously advocated this method. He refers to six cases, and reports on two which were unilateral; one was kept in recumbency for “the full period of two years, the other

¹ The Commission specially appointed reported on five cases at the end of two years. One had been attacked with zymotic disease, and was untouched; two very slightly, if at all, benefited; two still under treatment, and not in a promising condition.

² Holmes’s ‘System of Surgery,’ vol. iii, p. 800.

³ ‘De la Curabilité des Luxations congénitales fémorales,’ Lyon, 1854.

⁴ ‘On the Etiology, Pathology, and Treatment of Congenital Dislocations of the Head of the Femur,’ New York, 1854.

⁵ ‘Double Congenital Displacement of the Hip,’ New York, 1885.

for two years and seven months ; the ages were two years, and one year and nine months respectively." After cessation of extension the use of a special steel instrument and crutches was strictly enforced ; the patients do not appear to have dispensed with these appliances on the date of the last reports, three years after the commencement of treatment, but the prospect was satisfactory—the limbs were slightly shortened. Mr. Adams does not say if the other four cases were treated, or if they were failures of treatment.¹

Thus it must be conceded—indeed, it has been proved by Pravaz, by Buckminster Brown, and William Adams—that entire recumbency for two or for two and a half years, followed by another year or year and a half of instruments and crutches, may, in a certain proportion of cases, be followed by a gratifying amount of success, if such treatment be undertaken at a very early age. Indeed, Mr. Adams considers this an essential element of success, for he says that "at a later period, *i. e.* after ten years of age, there cannot be any reasonable hope of much improvement."

I would now submit that this prolonged treatment—doubtless very deterrent to parents—may be greatly shortened, and the ultimate success rendered more sure, even in much older patients, by the division of certain muscles, but decidedly not of the rotator and capsular muscles ; my contention being that M. Guérin did not divide the right ones, and that the statements of Mr. Brodhurst appear irreconcilable with pathological anatomy and with the consensus of clinical experience.

I was led to the view on which my practice is founded by observations made on a child three and a half years old with right congenital dislocation. They were the more easily verified because the girl was very thin. I observed that attempts to draw the femur down were strongly resisted by the adductors, which became more

¹ Paper read at Annual Meeting of British Medical Association at Leeds August, 1889.

and more tense as the traction increased. A time was fixed some three weeks later for the commencement of treatment; but the child was taken to the sea-side, contracted some form of contagious sore throat, and died.

About two years after occurred the following case :

October 13th, 1883. Miss T—, æt. 11, was born easily and naturally, and till lately has lived in South America. When a long time beyond the proper age for walking it was observed that she could support hardly any weight on the lower limbs. She has all her life been scarcely able to walk at all, but the cause of this inability was not elucidated until the above date, when Dr. Robertson, of Dulwich, who had been consulted, brought the child to me. The signs of double congenital dislocation were all markedly present—both thighs could be pushed up and drawn down very readily, the left one further in both directions than the right; in both the jolt already mentioned was distinctly felt just as the trochanter reached the normal level. On both sides, when the limbs were drawn down, the adductors became very tense. In the erect posture, which she could only maintain by grasping some piece of furniture, the pelvis was almost horizontal, lumbar lordosis being therefore excessive. There was no possibility of doubt as to the nature of the deformity.

October 23rd I operated, first on the left side by dividing the two lesser glutei through two skin punctures, one a little in front of, the other some distance behind, the great trochanter. I then divided the adductors. In performing this operation it is essential to avoid cutting through the bodies of the muscles, otherwise some subcutaneous bleeding and ecchymosis result; therefore it is necessary to keep the knife quite close to the pelvic bones.

Thus Dr. Robertson drew the thigh very slightly outwards, while I, finding the tendon of the adductor longus, passed in my tenotome just at its outer border quite close to the pubes, with the cutting edge upward, which I carried gently up until I felt the bone; then, turning the

edge inward, peeled that tendon from its origin, rather than simply divided it. In the same way, and while Dr. Robertson was still further abducting the thigh, the anterior fibres of the adductor magnus, the whole of the adductor brevis, and the gracilis were divided. I now felt with my left forefinger the condition above the inner condyle of the strong inner part of the great adductor; and as, when the thigh was abducted and at the same time drawn well downward, that tendon was in strong tension, I glided the tenotome still deeper, using my left index placed on the tuber ischii as a guide, and divided the origin of that part of the muscle; also, through the puncture for dividing the gluteus minimus, a strong band of fascia that tightened excessively on downward traction was cut. Through the posterior gluteal puncture a strong tenotome, with a long blunt and a short cutting portion, was passed to the place of the ridge, if I may so call it, which represents the upper lip of the acetabulum. Here I endeavoured, and, I believe, succeeded in turning up a flap of periosteum about one and a half inches long by half an inch wide. Pieces of plaster were put over the little orifices and covered with collodion.

A precisely similar operation, except that it was unnecessary to loosen the posterior part of the adductor magnus, was then performed on the right side; but when the thigh was drawn down the knee became rigid and could not be completely flexed, while endeavours to do so tightened the tendon of origin of the rectus. A tenotome was slipped under it, the edge turned forward, so that when Dr. Robertson again tried to bend the knee the tendon parted. The limbs could now with very slight force be drawn down to or below their proper level, and on cessation of traction showed no inclination to ride up again. The lordosis was, I thought, slightly diminished; but the punctures being well protected, I turned the child on the side, and stooping behind her, placing one hand across the sacrum and grasping the knee with the other, I hyperextended the thighs one after the other as far as

I could with the object of stretching the ileo-psoas. The lordosis was now decidedly less.

A firm belt, which had previously been carefully fitted, and was provided with under-straps, was tightly secured round the pelvis ; the child was kept in dorsal decubitus with the limbs somewhat abducted, and weight extension was applied.

Neither pain, pyrexia, nor ecchymosis followed the operation. For the next two months Dr. Robertson looked after her with great skill, I only seeing her occasionally. At the end of that period, viz. exactly nine weeks after the operation, I found any attempt to press the thigh upwards on the pelvis by manual force was pretty firmly resisted. She was provided with a three-wheeled go-cart with crutch handles (a special appliance), and with instruments preventing weight falling on the hip-joints, and she was strictly enjoined not to walk even a single step without both these mechanisms.

In October, 1884, I allowed her to stand a few minutes in my presence, and found the hip-joints very firm. I tested her, whilst recumbent, with Nelaton's line, and found that even when Dr. Robertson was pressing the thigh with some little force upward, the trochanter of each side was hardly at all above the proper level. I advised her to go on with the hip instrument ; the go-cart was discarded, but she was supplied with crutches. A donkey with large saddle for riding about the roads was provided.

July, 1885.—She walked very well, with barely a suspicion of a balancing or swaying movement. There was still slight, but only slight, lumbar lordosis.

November, 1891.—I do not think I saw her after the above date, but I heard of her in various parts of England. In November of this year I wrote, asking her to describe her condition, and suggesting certain points for her greater attention in her reply. I subjoin those parts of her letter which have reference to her physical condition.

“I never feel any pain in my hips at all. I seem to myself to limp a little, but a great many people, who have

known me for months, have not noticed any limp at all, and, unless I tell them, have no idea that there has been anything wrong with me. . . . The loins are a little bent forward, and I am broad across the hips, but I have large bones naturally. I can walk four or five miles without being at all tired; sometimes I walk more, and I do not mind stairs. I walk very well uphill; in doing so I prefer (though I can do quite well without it) to have an umbrella for a walking-stick. Yesterday I walked up Oliver's Mount (a steep hill near Scarborough). In Scilly (this in 1889 and 1890) I used to climb about the rocks famously, and go out boating whenever the weather was fine, without difficulty in getting in and out of the boats. I made myself quite famous by going out to the Bishop's Rock Lighthouse with another lady and father, being drawn up by a rope seventy feet, and let down again into our boat in the same manner, after which we had to scramble into a steamer. Another day we visited an old ruined castle, and I got to the top of it by granite steps very irregular, and without any rails to hold on to, which is more than some, even gentlemen, of the party would attempt."¹

CASE 2 (May 8th, 1886).—Master C—, æt. 7 years and 2 months, was born naturally in Australia, but has always limped, which his mother was told arose from a limb being

¹ Since this paper was read at the Society Miss T— called upon and kindly gave me the opportunity of a thorough examination. She is now just over twenty years of age, not tall, but otherwise a large, powerful-framed young woman, weighing probably between eleven and twelve stone. Her walk in indoor costume is perfect, with no more sway of the figure than is ordinarily possessed by women with large pelvic development. The garments being sufficiently removed, it is seen that the breadth of the hips, mentioned in her letter, is entirely due to the fact that the pelvis is large and broad. There may be, but this is doubtful, a little more lordosis than is usual with women of that stature. In causing her to walk, I, following with my palms upon the trochanters, found that they did not rise on the pelvis as she put the weight on either foot, their play seemed normal; but at the right hip I felt a slight click when the limb of that side was behind, and just before the other foot came to the ground. She could, by separating the feet, abduct

naturally short, and that he must wear a high shoe. He suffered no pain, was very lively and full of play—rather too much so. I found the limb in dorsal recumbency an inch and a half short, but it could be pushed still further up so as to be two and a quarter inches short, and could be drawn down to be only about three eighths of an inch short; and this latter seemed to depend on absolute loss of length, not from position of the femur. In thus drawing the limb down a very distinct jog was felt. There was a good deal of lordosis, and some lateral twist of the lumbar spine. The sway of the body in walking was very considerable, and there was great instability while endeavouring to stand on the left limb. I gave my opinion, and at the request of the family was asked to meet Sir J. Paget. The consultation took place on May 12th. Still another opinion was desired, and Mr. Erichsen met me on the 17th, but there was in reality no doubt as to the nature of the case.

May 22nd.—I divided the two smaller glutei, and the adductors, and found myself also compelled to divide the rectus. Weight extension in the recumbent position was employed, and immobility was obtained by means of sand-bags. No pyrexia, ecchymosis, nor pain followed the operation.

I attended to the boy as occasion required, but found that he kicked and moved about a great deal too much, in spite of all the arrangements that were possible. His brothers and sisters, too, augmented his too lively spirits; nevertheless, by a firm pelvic band fastened to the bedstead and considerable weight extension, I believe I kept the hip in fair position.

July 7th.—I allowed him to get up, and with the same steel instrument and crutches as in Case 1 to go about

the limbs like other women, and (a severer test) she could stand with the legs crossed, leaving an interval of four and a half inches between the outer malleoli. Recumbent, the limbs were capable of all movements. My strongest efforts to force the femur upward on the pelvis made no difference in the position of the trochanter.

on one floor and out of doors in the carriage. There was very considerable resistance in pushing up the hip.

August 2nd.—The boy walked, with the instrument on, very much better. He may now do so for half an hour without crutches. At the above date he went with the rest of the family to Scotland, and with strict directions from me to continue in the same way.

October 1st.—I fear my directions have not been very well obeyed; the boy wearing the instrument walks well, but with some sway of the body. There is good resistance in endeavouring to push the thigh upward, but the trochanter now lies above Nelaton's line, which was not the case before he left London.

18th.—At this date he was taken back to the colony and ordered to continue the instrument, in which he walks well, but he rushes about wildly.

CASE 3 (January 3rd, 1892).—Miss Muriel R—, æt. 2½ years, was sent to me at above date by Dr. Belcher Cooke. The birth was difficult but natural, without instruments. At the end of the month Mrs. R— undertook the management of her child, and observed something wrong, a lump about the hip-joint, which her then medical attendant said was nothing. After some weeks, the family having removed, Dr. Cooke saw the child and found the limb very feeble and almost without sensation. Under treatment these troubles diminished. At ten months of age she was taken to the Orthopædic Hospital, where, according to Mrs. R—, the case was diagnosed as an old fracture of the thigh; she was told that the child would always be lame, and would have to wear a high shoe.

When, at the above date, the child was brought to me she could bear hardly any weight on the left leg. When holding her by the axillæ and shoulders and directing her to lift the right foot, she instantly put it down again. Without some extraneous support she could not stand on the left limb at all—in fact, could not be induced to lift the right foot. Lordosis and a curve of the lumbar spine

to the left were very marked when she stood with both feet close together.

Placed lying on the back, the left limb was found to be $1\frac{1}{4}$ inches shorter than the right, the great trochanter lying considerably above Nelaton's line; but if drawn down so that that point of bone more nearly approached that line, the limb was $\frac{5}{8}$ inch short. By upward pressure, any movement of the pelvis itself being guarded against, the trochanter could be made to glide upward, and to lie much above Nelaton's line, very near to the crest of the ilium, and then the limb was $2\frac{3}{8}$ inches short. When she, with straight knees, bows forward, upward projection of the trochanter was well marked. This mobility of the trochanter on the pelvis and its projection in stooping left no room to doubt the nature of the case. The jog on drawing the limb either down or up could only be felt when it was abducted and rotated outward—a condition which indicated, as I believed, a small head of the femur.

January 8th.—I divided both the lesser glutei and the adductors—and after full examination, also the rectus—stretched the ilio-psoas and turned back the periosteum or perichondrium, for I found parts at edge of acetabulum quite soft. The same method of immobilising and extending the limb was adopted. In exactly a month she left the private hospital, with the steel extension instrument applied and with crutches. She was to walk at first only for a few minutes at a time, and not oftener than four times a day; the instrument was to be applied before she was allowed to rise, and as soon as the weight extension was removed—the change back to weight extension was to be effected.

In April of the same year she was allowed to discard the crutches, and in November, as the hip resisted strongly manual attempts to push the thigh upwards, weight extension was discontinued.

May, 1891.—The child appeared to be very strong on the left leg. I tested her carefully, and did not find the trochanter rise as she put weight on that foot. She was

to be allowed to walk for five minutes twice in the day without any appliance.

August.—The child is virtually well. The condition is as follows:—The trochanter lies just a shade above Nelaton's line. The left leg is not quite $\frac{1}{4}$ inch shorter than the right—this appears due to want of growth in the femur. She walks very well; the very slight limp quite disappears when a thickness of $\frac{1}{8}$ inch is added to the shoe. The joint, or what does duty for a joint, at the hip is quite firm. There is no lumbar lordosis.¹

I would now beg the Fellows of this Society to consider the action of muscles in upward congenital dislocation of the femur—by far the most usual form. It must be evident that the muscles, which pass from the pelvis outward and across the axis of the thigh to be inserted into the neighbourhood of the trochanter, have, among other actions, that of keeping the femur close to the innominate bone—of reinforcing the capsule; and that, therefore, their integrity is most important, especially if their course, like that of the obturators, be also a little upward.

Those muscles which, arising from the pelvis, pass downward to their insertion in the femur, more or less parallel to the axis of the thigh, must, in the absence of an acetabulum, tend to draw the head of the bone upward, to reproduce the original displacement. In fact, the aim and object of extension is to counteract this tendency; but while those muscles are entire, it takes a long time—at least two years according to Mr. Adams—to overcome their displacing activity. Hence in his case Dr. Buckminster Brown found the dislocation recurred every morning, although he put the thigh into position every night, and this continued for three weeks.

All this great loss of time, weariness, and risk to health—all this excessive tendency to recurrence may be overcome by the safe and painless operation above described;

¹ The mother of this patient kindly brought her to the meeting of the Society, when the above statements were verified by the Fellows attending.

moreover patients, the special cause of whose lameness and deformity has not been diagnosed till rather a late period—that is to say, patients whom there is no reasonable hope of benefiting by extension and recumbency—can be rendered as active and agile as my Case 1.

More than this, while those muscles are entire and active it is plain that any attempt to form a succedaneum for the acetabulum must be frustrated by continual riding up of the femur (as in Buckminster Brown's case) breaking down or flattening out any new osseous formation. The aim and object of the procedures, which I have carried out and have here described, is to bring the femur to its proper level, and by dividing those muscles which impel it upward to keep it in that place while a new upper lip of an acetabulum, which I make by turning up a semicircle of the periosteum, may have time to form and to become hard.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. iv, p. 92.)