

## DISLOCATION OF THE HIP.

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MY attention has been directed to a lecture by Professor Humphry in THE LANCET of Nov. 27th, 1886, on three cases of hip dislocations. In his remarks the lecturer says: "It has lately been maintained, upon insufficient grounds I think, that the dislocations of the hip backwards are always, or almost always, indirect; that the head of the bone escapes from the acetabulum close to the transverse ligament, and is then, if the limb be in an inverted position, carried backwards, and perhaps upwards. Furthermore, it is held that the accident occurs during the abducted position of the limb." Professor Humphry's authority on anatomical and surgical matters is so well recognised that any views published by him are likely to be accepted by the majority without hesitation or question. It is for this reason that I venture to point out, with due respect for the weight of his opinions, wherein there is ground for differing from his conclusions.

I will, as briefly as possible, first state how very nearly the views which I have published correspond with those which Professor Humphry seeks to disprove, and upon what kind of foundation my views are based.

Ten years ago, when demonstrator of practical surgery, I found myself expected to teach that the "backward," or (as Hamilton calls them) "backward and upward," varieties of the four regular dislocations—namely, the dorsal and the ischiatic—were always produced by violence applied to the limb when in a flexed and adducted position; that in these dislocations the head of the femur reached its new position by being driven there *directly* through the back of the capsule; that the head of the bone often escaped through a mere buttonhole in the capsule; and that in the dorsal dislocation it always passed out above the tendon of the obturator internus. This teaching, venerable and authoritative as it is, seemed to me so inconsistent with the anatomical construction of the joint, and with the magical ease with which dorsal and ischiatic dislocations are reduced by manipulations—i.e., by movements which simply bring the head of the femur down to the lower and shallow edge of the acetabulum, and then turn it upwards into its socket through the rent here situated,—so inconsistent, too, with the facility with which pubic and obturator dislocations can be converted into dorsal, or dorsal and ischiatic into pubic, that I was induced to investigate for myself.

My inquiries were directed first to the anatomy of the joint, and to the results of experiments on the dead subject, but they by no means ended there. I carefully studied the descriptions of published cases, and the contents of many museums, both British and foreign: and in course of time I published no less than five cases of traumatic dislocations of the hip, which had been under my own care,<sup>1</sup> besides the description of another, the dissection of which was made under my own observation. This I believe to be a somewhat larger experience than usually falls to the lot of one surgeon within a period of five or six years. Moreover, I have since had the advantage of witnessing the dissection of a seventh case, an account of which was published by Mr. Hulke, in a lecture in THE LANCET. I hope, therefore, I have not allowed myself to infer too much from experiments on the dead body. Certainly, I have taken pains to check and, where necessary, correct the inferences I drew from such experiments, and to obtain from all these sources put together sufficient grounds for the opinions I maintain. Some of these views I may shortly sum up as follows:—1. In the regular backward dislocations (i.e., dorsal and sciatic) the head of the femur leaves the acetabulum in a downward, or downward and backward, direction through a rupture in the thin parts of the capsule, and is carried upwards outside the acetabulum to its position on the dorsum ilii or ischium. In other words, that these dislocations (when not complicated with fracture of one or both bones of the joint) are indirect in the sense that the head of the bone ascends to its position after having burst through the capsule at a lower point. 2. That the thin part of the capsule is all that portion of it, except the narrow pubo-

femoral band, which is below and between two imaginary lines—namely, one drawn from the inferior iliac spine to the small trochanter, and the other from the upper part of the tuber ischii to the digital fossa of the femur. 3. That during abduction the head of the bone bulges against the thin portion of the capsule, and that in this position dislocation most easily occurs. 4. That the mode of occurrence of backward dislocations described in No. 1 affords the only rational explanation of the ease with which dorsal and sciatic dislocations are reduced, or converted into the pubic variety, by manipulation.

After refuting the statement that dislocations backwards occur in the living body during abduction, Professor Humphry states the following to be some of the points to which he specially wishes to direct attention: "1. The position of the rent in the capsule through which the head of the bone escapes from the acetabulum—namely, at the lower and back part, behind the pubo-femoral ligament, therefore not at the lowest part, although the weakness of the capsule here may seem to predispose it to give way in this latter situation. 2. That the dislocation occurs commonly, not, as recently suggested, when the limb is abducted, but when the thigh is adducted, flexed, and inverted. 3. That the dislocation is not indirect, but direct, the head of the bone being driven through the rent in the capsule at the lower and back part of the joint, and then carried up to a variable extent by the force which caused the dislocation." If I might change the positions of the two words, indirect and direct, in No. 3, I could agree substantially with Professor Humphry's first and third conclusions. From the second I entirely dissent. On a fourth point I entirely agree with him, for he gives precisely the same *rationale* of the reduction of manipulation which I insisted upon—namely, that the head of the bone is *carried down* opposite to the rent in the capsule before any effort is made to turn it back into the acetabulum. Respecting the first conclusion, I submit that the lowest part of the capsule is behind the pubo-femoral ligament, and that in backward dislocations by abduction it is not necessary, though it is not unfrequent, for this band to be either detached or ruptured. As a proof of the latter part of this statement, take the following description of the rent in the capsule in a case of dorsal dislocation during abduction, figured in my paper in the Royal Medical and Chirurgical Transactions for 1877. Place side by side with this the description of any one—it matters not which—of the three cases given in Professor Humphry's lecture. I will take the first, because it is the first, and is described as a case of dislocation on the dorsum of the ilium.

*Case published in 1877.*

"The rent commenced below the pectineo-femoral band, midway between the acetabulum and the femur, and ran (1) outwards and backwards to the neck of the latter, which it reached just above and behind the small trochanter, and (2) inwards and backwards across the thin portion of the capsule towards the acetabulum, which it nearly reached, a little behind the ischial border of the cotyloid notch. It thus formed two sides of a large opening, which was made quadrilateral in form by the detachment of the flap from the back of the femoral neck."

*Prof. Humphry's Case.*

"There was a valvular rent in the under and back part of the capsule, commencing just behind the pubo-femoral ligament, midway between the acetabulum and the femoral attachments, as a single tear, which divided and extended upwards and backwards to the tuber ischii, and upwards and forwards to the trochanter near the attachment of the obturator externus; or it might be described as a tri-radiate rent, the rays diverging from the apex of the valve which was situated opposite the lower part of the tuber ischii."

Allowing for difference in phraseology, it will be seen that the rents in these two capsules were essentially the same. In both cases, by rising on to the dorsum ilii the head of the bone reached a much higher position than that at which it was forced through the capsule; therefore in both cases the position attained was *secondary* and by an *indirect* course. In his second case the head of the bone did not mount up so high, and the dislocation was therefore less *indirect*; it was, however, neither a dorsal nor an ischiatic dislocation, but, as Hamilton calls it, an "irregular" dislocation, *downwards and backwards*, upon the tuber ischii. This form of dislocation simply corroborates my arguments as to the general direction of dislocations; and how it can ever be used, as it has been, to refute

<sup>1</sup> Royal Medical and Chirurgical Transactions, vols. lx. and lxxv.

them, I do not understand. The third case was a "regular" ischiatic dislocation or "dorsal below the tendon," and the rent in the capsule was such as I have produced any number of times by abduction; it was entirely confined to the thin part of the capsule.

Indeed, all three of Prof. Humphry's cases afford strong confirmation of my view as to the position of the rent in the capsule in hip dislocations. It would be almost impossible for any cases to correspond more completely than they do with my published description of the usual lesions of the capsule—namely, that the rent is confined to its thin portion, and takes a general course along the femoral attachment of this portion.

I am unable, within the limits of this paper, to discuss all Professor Humphry's arguments in favour of his second conclusion; but I cannot see that his cases afford any evidence whatever in support of it; on the contrary, two of them—the first and third—point to abduction as having been the position of the limb at the time of injury, for a boy aged thirteen, riding on the back of a horse in a cart, and falling astride the shaft, and a man in the act of excavating a bank part of which falls upon him, are pretty certain to have their legs well separated. As to the position of the limb in the second case nothing can be inferred, because all that is said about it is that a lad aged thirteen was run over by a heavy cart. It is often impossible to learn what was the exact position of the patient when dislocation occurred, but in not a few published cases in which it is stated that the thigh was adducted, a careful consideration of the account given shows reasons for thinking that it was abducted. Referring to the position of the limb, Professor Humphry says "The probabilities, of course, are that a limb will be in a habitual or natural position when an accident occurs, and the position of flexion, adduction, and inversion, is both a habitual position, and is the one in which the head of the femur is pressed against the part of the capsule (the under and back part), and this is the part which gave way in the specimens before you." But Professor Humphry does not, and could not, mean to imply that abduction is an unusual or an unnatural position; or that during abduction the head of the bone is *not* pressed against the same thin part of the capsule, or that this is *not* the part of the capsule which gives way in dislocation by abduction. I have proved both by experiments and by the lesions in accident cases that such are the results of abduction, and these, at any rate, are points capable of being tested on the *dead* body. The degree of abduction requisite to make the head of the femur press against the part of the capsule which gave way in Professor Humphry's cases is not great; in every position of abduction the head of the bone projects beyond the lower edge of the socket, and in some it is more than half out of the acetabulum. But the degree of flexion, adduction, and inversion necessary to make the head of the femur press against the same part of the capsule is extreme, and the attitude resulting therefrom is neither a habitual nor a natural one, with most persons.

I could refer to several instances of traumatic dorsal and ischiatic dislocations which occurred during abduction; two<sup>2</sup> will suffice here. Guersant well describes a case of ordinary dorsal dislocation, and states that the thigh was dislocated by a forcible movement of abduction and inward rotation. Crawford reported a case of double dislocation in a miner aged thirty-six, who was standing on an incline "with his feet widely separated, the right one being much lower (and therefore much less flexed) than the left, and the body bent forwards. While in this position a large mass of rock fell upon his dorsal region, bending his body upon the thighs and pressing him forcibly down upon the rock on which he was standing." The man was certain that both joints were dislocated at the same instant; the right was a dorsal, the left an ischiatic dislocation. Such cases as these cannot be put aside as inconclusive or insufficient. Such a position as this miner was in is one of the most natural and frequent; the forms of dislocation were theoretically and practically perfect.

As to Professor Humphry's third conclusion, I confess my inability to understand it; for I do not know how a dislocation can be other than *indirect* if the head of the bone is "carried up to a variable extent," no matter by what force, after it has left the acetabulum.

It is, however, a great gain to find a teacher so

eminent as Professor Humphry pointing out that in the backward dislocations of the hip the rent is in the lower and back part of the capsule; and granting that dislocation is easily caused, in the dead body, by forcible abduction of the limb. But I regret to see he is of opinion "that the view formerly entertained is correct—namely, that the backward dislocations of the hip, whether accompanied by fracture of the edge of the acetabulum or not, are commonly direct, and produced by force applied to the limb in its flexed, adducted, and inverted position." It was this view which led to attempts at reduction by pulleys. It was this view which kept alive the idea that the head of the bone, having passed *directly* back to its abnormal position, must be pulled right again by traction in the axis of the displaced limb. It was this view which sanctioned the barbarous practice of bleeding, tartar emetic, and enormous traction force of hundreds of pounds' weight, continued over several hours. And it was this view which caused large extravasations of blood, and abscesses, around the joint, and even death itself—results such as Professor Humphry, and not a few surgeons besides, witnessed in the comparatively recent past; results which were the outcome of the ignorance of, or an indifference to, the position of the rent in the capsule in hip dislocations. It is this view which, to my thinking, Professor Humphry himself, in his lecture, takes care to explain ought not to be acted upon; for he describes the *rationale* of reduction by manipulation upon the opposite view—the view, namely, for which I contend.

I have good reasons for knowing that during the last ten years a great deal of the instruction given, in London at least, on dislocations of the hip, has been clearer and simpler than it was before. This better understanding is probably much more due to an accurate knowledge of the position of the rent in the capsule than to the fact that dislocations of the hip occur during abduction.

There is, however, this value in knowing that abduction is the simplest and commonest position which favours dislocation; it explains why the rent in the capsule is always in the thin part and below, and why three of the regular forms of dislocations of the hip are (with the rarest, if any, exceptions) indirect or secondary, and that *some* of the other forms are direct only because the head of the femur *remains below*, opposite the rent through which it was forced. It is always desirable to have a reasonable explanation of the success of our treatment, and, as regards reduction by manipulation, this is only to be found in a knowledge of the position of the rent in the capsule, and of the direction taken by the head of the bone after it leaves the acetabulum. In other words, by knowing that in pubic and in dorsal and sciatic dislocations (when not complicated by fracture at the hip-joint), the head of the bone, having been driven down through the thin lower part of the capsule, ploughs its way up outside the acetabulum, and over the deep muscles, to its new position on the pubes, the dorsum ilii, or the ischium; and that the surgeon has to make it retrace its steps—first, down to the rent in the capsule, and then through this rent into the acetabulum. This is the lesson of practical and surgical importance which is taught us by a complete study of hip dislocations, and this fact we all now set upon, whatever may be our individual views of the position of the limb at the moment of luxation.

## AN EXPERIMENT IN HOSPITAL PAY SYSTEM.

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So much has been recently written and spoken concerning the theory of the pay system in hospitals that an appeal to actual experience may be both refreshing and instructive. It would be difficult to find a better example of the changes which ensue upon the adoption of the paying system at a hospital, in the number of new cases, in the attendances of the old, and in the receipts and expenditure, than that which we are about to present.

<sup>2</sup>The references to these and other cases are given in the article on "Injuries to the Lower Extremities" (ed. 3, vol. i., p. 1062, &c.), in Holmes' and Hulke's System of Surgery.