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NOTES ON THE DISSECTION OF A CASE OF CONGENITAL DISLOCATION OF THE HEAD OF THE FEMUR.

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A female subject about 50 years of age was brought to the dissecting-room of M'Gill University in the autumn of 1879 in whom it was noticed that the right leg was smaller and shorter than the left, and everted. The woman was very stout, and the head of the femur could not be distinctly made out, but it was noticed that the trochanter was higher than usual; abduction was limited, but otherwise the joint was freely movable. The tuberosity of right ischium was quite subcutaneous, the muscles appearing as if carried up with the trochanter-major. Amount of shortening, 2 inches. The exact nature of the lesion was not made out from an external examination, and it was only on dissection of the part that it was discovered to be a congenital dislocation.

Dissection.—There are no scars to be seen on the skin of gluteal or femoral region, indicating that old sinuses had existed, the skin is perfectly smooth. On removing the skin and fascia of the gluteal region, the fibres of the gluteus maximus, and gluteus medius muscles are found to be shorter than normal, their points of origin and insertion being approximated; the muscular tissue is much altered, in some places being completely changed into fatty tissue. I may here remark that all the muscles of the body have become fatty degenerated to a greater or less extent, but this condition is much more marked in some of the muscles about the affected hip. On removing the two superficial gluteal muscles (between which a lot of fat is seen), the quadratus femoris, obturator externus, gemelli, and obturator internus are brought into view. These muscles, instead of passing transversely outwards to get to their insertion, pass upwards; the pyriformis is found to pass outwards and slightly upwards, instead of downwards. The gluteus medius, obturator internus, gemelli, and pyriformis in passing to their insertions go over the head of the femur. More of the obturator externus is

exposed to view than usual; this muscle passes upwards to the great trochanter close to the old capsule, which is seen lying between it and the gluteus minimus; the obturator externus is much longer than normal, and is quite a strong muscle, the tissue of which is healthy and without any trace of fatty degeneration. The gluteus minimus is shortened, and nearly all composed of fibrous tissue, it is pushed upwards by the ascent of the great trochanter, and has a smaller origin than usual, owing to the space on the dorsum of the ilium between the middle and inferior curved lines being partly occupied by the new socket for the head of the femur. This muscle covers the head of the femur, and is so closely united to the new capsule that it can only in places be separated from it.

The adductors and gracilis muscles are shortened and tense, and have participated but slightly in the general degeneration; the pectineus is smaller than usual, its outer portion being fibrous; it is attached as usual to the shaft of the femur. The iliacus internus muscle has nearly all atrophied away, and now consists of a very thin flat layer of muscular fibres, streaked with fat, which become united to the tendon of the psoas magnus, an inch above Poupart's ligament, so that none of its muscular fibres are seen below this ligament; above and below this muscle in the iliac fossa is a large deposit of fat. The psoas magnus has the usual origin, but consists almost entirely of fatty tissue, streaked here and there with muscular fibres, it ends in a flat tendon a little higher up than usual, and after being joined by the wasted iliacus muscle passes as a narrow, thin, ribbon-like tendon in the groove below the anterior inferior spine of the ilium under Poupart's ligament, in a direction outwards and upwards, and becomes blended with the anterior part of the old capsule.

Ligamentous Structures.—Two capsular ligaments are seen, the old and the new. The *old capsule* is still attached to the margin of the acetabulum, and is much thickened; the ilio-femoral ligament is well marked, being strengthened by the blending with it of the tendon of the psoas and iliacus muscles. The capsule is stretched upwards and outwards, following, of course, the ascent of the head of the femur; in its upper and posterior part is seen the head of the femur protruding through

a slit; this slit embraces the neck of the femur, and it appears as if the head of the femur has worn away the capsule at this point by pressing it against the dorsum ilii. The *new capsule* is attached at its pelvic extremity around the socket which has been formed on the dorsum ilii by the wearing away of the bone, —at its femoral end it is attached internally to the slit in the old capsule through which the head of the femur protrudes, and externally is continuous with the inner surface of the gluteus minimus. It is ligamentous in structure, its inner surface is smooth, and a number of small villous processes are seen hanging from it. No synovial fluid can be seen. The *ligamentum teres* is entirely absent, no trace of it being seen either in the old acetabulum or in the head of the femur; it has probably been worn through and the two ends absorbed.

Osseous Structures.—Femur. The whole bone is perceptibly smaller than that of the opposite side. The head is remarkably altered in appearance, it is of less size than normal, and where the ligamentum teres should be attached it is flat and devoid of cartilage, as if it had been worn away or had lost its epiphysis; on the upper part of this flattened surface a shallow groove is seen, crescentic in form. The remaining part of the head is covered with cartilage. The compact bony tissue covering the head is remarkably thin, and on breaking it through the cancellated structure is found to be very soft. The neck of the bone is much shortened, and forms a right angle with the shaft; the upper part of the shaft is arched outwards; where the gluteus maximus was attached a rather prominent crest is seen. The *lesser trochanter* is absent, its place being occupied by a shallow groove.

Pelvis.—The whole right half is smaller than the left. The wing of the right ilium is much thinner, more upright, more curled inwards, and altogether smaller than the left; the anterior inferior spine is prominent, and in consequence the groove below it in which lay the tendon of the psoas and iliacus is deeper. The rami of the pubis and ischium on the right side are flatter, thinner, and seem to spread out more than those of the opposite side, that is if a perpendicular be dropped from the symphysis pubis, the angle formed by it with the rami of the right side is much more obtuse than that formed by it with the

rami of the left. The right obturator foramen has lost its triangular shape, and is now broadest in its transverse diameter. The *acetabulum* is much altered in appearance, being a mere triangular depression in the bone; the apex of the triangle is upwards and to the right, and the base corresponds to the cotyloid notch. The edges of this triangular depression are smooth and curled inwards, and but slightly covered with fibro-cartilage; the transverse ligament has almost disappeared. Around the edges of the depression is attached the old capsular ligament. The bottom of the cavity is completely ossified, and shows no trace of any disease having existed, the depression for the Haversian gland is well seen, it is small, being about the size of a sixpence. The acetabulum measures two inches in length, three-quarters of an inch in breadth, and half an inch in depth, it was filled with fatty tissue. The *new socket* for the head of the femur is an oval depression on the dorsum ilii between the middle and inferior curved lines, and on a level with the great sciatic notch, the inner edge of this new socket corresponding to the bony edge of the notch. It has not been deepened by ossific deposit, but appears to have been made by the wearing action of the head of the femur. It is two inches in diameter and a quarter of an inch in depth. Around its edge the new capsule is attached, and its floor is covered by a sort of periosteum, which receives fibres from the capsule. The ilium is not very thin at this point.

The measurements of the pelvis are altered, the diameters of the inlet being increased and outlet slightly diminished:—

Diameters.	Inlet.	Outlet.
Conjugate, ...	4¾ inches.	4 inches.
Right oblique, . . .	5½ „	—
Left oblique, . . .	5¼ „	—
Transverse, . . .	6 „	4½ „

The distance between the anterior superior spines of the ilia measured nine inches.

The sacrum is slightly turned to the affected side, but otherwise is not much altered in appearance. There is no great anterior convexity of the lower dorsal and lumbar vertebrae, but the vertebrae incline laterally to the affected side.

Remarks.—(1.) *The absence of anterior convexity* in the lower

dorsal and lumbar regions was probably due to the atrophied condition of the psoas and iliacus muscles and their abnormal attachment to the old capsule. Probably during life, when the woman assumed the erect position, this anterior convexity existed, though not to the great degree that is usual.

(2.) *The absence of the lesser trochanter* was due no doubt to its having been torn away from its attachment to the femur at the time the dislocation occurred, and to its afterwards having been absorbed. This would account for the insertion of the psoas and iliacus tendon into the old capsule, the muscles thus having a very limited action would atrophy. This condition would also favour the opinion held by some that this form of dislocation is due to violence (at birth).

(3.) There was no twisting forwards of the head and neck of the femur, a condition which is described by some, and which, had it existed, would have accounted for the eversion. The eversion of the limb may have been only a *post-mortem* symptom due to the relaxed state of the muscle, the large capsule, and small head of femur.

Note.—The subject in which the above described dislocation occurred, owing to the unfortunate state of affairs in Canada, had been illegally obtained, so that no history could at the time be procured. I have since heard that this woman had suffered from "lameness" all her life, that she walked with a waddling motion, and also that she had borne a large family of children. This information I have fair reasons for supposing is authentic.

NOTE BY DR SHEPHERD ON HIS CASE OF CONGENITAL DISLOCATION OF THE HEAD OF THE FEMUR, IN VOL. XIV. p. 368.

With regard to the hip case, since I published the article I have found out the history. One of my students happened to be in the neighbourhood of the place where the woman once resided, and at my request made careful inquiries concerning her. He was fortunate enough to meet the midwife who officiated at her birth forty-five years ago. This midwife was nearly ninety years of age, and very talkative. It appears from her account that the birth was a *breech*, and that she had pulled down one of the legs, and had used considerable force, but without effect, and that the delivery had to be completed by the neighbouring doctor. The child did not walk till she was nearly four years of age, and always walked with a peculiar limping, jerky motion. On growing up she married, and was the mother of six children.

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