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CLINICAL LECTURE

ON A

CASE OF DISLOCATION OF THE KNEE AND OF THE HIP.

Delivered at the Middlesex Hospital,

By J. W. HULKE, F.R.S.,

Surgeon to the Hospital.

GENTLEMEN,—The case which I propose to review to-day is an instance of a very unusual injury—compound dislocation of the knee-joint; or, more correctly, of the upper articular end of the tibia.

The notes of the dresser (Mr. B. Lawson) mention that the patient, 44 years old, was admitted into Broderipp Ward on the 23rd of last month, having, within half an hour previously, been run over by a cab whilst crossing the street. He was not able to give a distinct account of the circumstances of the accident; but from the torn and muddy state of his trousers, it was probable that the wheels passed across his legs. Mr. Harratt, our house-surgeon, found his left leg abducted on the thigh, and the head of the tibia displaced outwards. Over the inner border of this latter was a bruised, jagged wound, one and three-quarter inches long, from which synovia and venous blood oozed freely. This wound divided the internal lateral ligament, and it entered the joint, above and also beneath the internal semilunar cartilage, which was here separated from the tibia, leaving this bare and rough. This was not the only injury; for the head of the femur was dislocated upwards and backwards. It was clearly felt upon the dorsum ilii. The thigh also was inverted, adducted, and shortened to the extent of two and a half inches.

Anæsthesia having been induced with ether, both dislocations were easily reduced by manipulation. The wound and the interior of the knee-joint were thoroughly syringed with a 5 per cent. solution of carbolic acid, a compress was put on for the arrest of the oozing, and the limb was fixed with a back, and a long outside splint. On the following morning, when I first saw the patient, his condition was satisfactory. He had slept. Temperature, 99.2°; pulse, 96. As the dressings (boric charpie) were saturated with bloody serum and synovia, they were changed, and a drainage-tube was inserted to facilitate the escape of the discharge. On the evening of the second day after the accident (April 26th) he had a rigor, during which his temperature rose to 102.2° Fahr., in the armpit; two and a half hours later it had fallen to 98.8° Fahr. Next day the knee was very swollen, and on pressure upon it much bloody, grumous fluid, slightly fetid, escaped from the wound. It was evident that the wound and the cavity of the joint were no longer aseptic. Incisions were therefore made into the joint at both sides of the knee, it was syringed for several minutes with a large quantity of a watery mixture of sulphurous acid of the strength $\frac{1}{3}$, and large drainage-tubes were put in. The original wound and the incisions were dusted with iodoform, and covered with protective oiled silk, over which was placed the usual carbolised gauze. For about one week these measures were followed by local and general improvement. Then the thigh swelled, and its cutaneous veins became very dilated; the temperature again rose, and his strength began to decline, although his appetite continued remarkably good.

On May the 14th, as it had become manifest that any further attempt to save the limb would probably entail fatal consequences, he acceded to amputation, which was done by a modification of Teale's method. The main artery was twisted, and the vein, as it

continued to bleed after twisting, was secured with a carbolised catgut ligature. The surfaces of the flaps and an abscess were washed with a watery solution of zinc chloride (forty grains to one ounce of water), four large drainage-tubes were put in, and the edge of the flaps brought together with aseptic ligatures. He bore the operation well, and next day expressed himself as feeling much better.

On the morning of the third day an abscess broke near the lower border of the gluteus maximus in the left buttock, and gave escape to about two ounces of grumous bloody pus. Evidently this was not a bedsore. It was suspected that it might be connected with the injury of the hip-joint. However, on questioning him repeatedly, he always replied that he did not feel any pain worth complaining of in the hip. For a week after the amputation, he maintained his strength, he had a good appetite, slept well, and was cheerful.

On the 21st, hæmorrhage occurred, and although the femoral artery was promptly compressed, he lost so large a quantity of blood, that he became deeply collapsed. Having slightly rallied under a hypodermic injection of ether, the flaps were segmented, the clots removed, and a thread placed round the large vessels, as the bleeding seemed to have proceeded from their situation. He sank rapidly and died within about three-quarters of an hour, no further hæmorrhage occurring.

Dr. Fowler has furnished the following notes of the inspection of the body. The end of the femoral artery where it had been twisted was softened, and it had a small opening in it which had evidently been the source of the hæmorrhage. The artery in its whole course was atheromatously thickened, and no clot had formed in it. The femoral vein was plugged throughout its whole extent with an adherent thrombosis. At the inner side of the left buttock was an ulcer, from which a sinus extended through a ragged hole in the gluteus maximus, of a size of a sixpence, near the ischial tuberosity, to the hip-joint. In the substance of this muscle were several extravasations of blood, varying in size from that of a pea to a chestnut, and the space between this and the deeper muscles about the joint was filled with a grumous fetid fluid composed of pus, broken-down clot, and gangrenous muscle-fibre.

The two other gluteal muscles and the pyriformis were uninjured by the accident, but shared in the inflammatory softening which involved all the muscles around the joint. The obturator internus and the gemelli were lacerated, but they were not torn through, as was also the obturator externus. All these last named muscles were extremely softened, so much so, that much of their tissue could be washed away by a stream of water. The quadratus was entirely ruptured. In the inferior and posterior part of the capsular ligament of the hip-joint was an extensive laceration, crossed, and divided into two parts by the tendon of the obturator externus. The femoral attachment of the ligament had been torn from the bone, leaving only there a fringe of its synovial membrane about a quarter of an inch broad, whilst its attachment to the acetabulum had been preserved. The ligamentum teres was ruptured, and through the laceration in the capsule the head of the femur could be easily slipped out of the acetabulum beneath the lower border of the obturator internus on to the dorsum, then resting there on this muscle and on the pyriformis.

I need not trouble you with the report of the condition of the thoracic and abdominal viscera. It will be sufficient to remark that they were free from traces of pyæmic disorders. An examination of the amputated knee revealed, in addition to the lesions already noticed, partial laceration of the anterior cervical ligament, inflammatory swelling of the synovial membrane, and ulceration of cartilage, particularly on those parts of the femoral condyles which were in contact with the tibia.

I give you these details of the careful dissection made by Mr. B. Lawson, because the opportunity of ascertaining precisely the anatomical lesions in dislocations of the hip very rarely occurs, and there has been much difference of opinion respecting the part taken

by the head of the bone; but it is not my present intention to say more on this subject, except that the dissection confirms the opinion respecting the production of backward dislocation held by Mr. Morris, who has given much consideration to this matter, and taught it to you in his surgical course.

A question of greater importance is: Why did suppuration of the joint and surrounding soft parts ensue upon the dislocation, which was simple and uncomplicated by external wound? I take it that the explanation lies in the febrile condition provoked by the putrefaction and suppuration in the knee; for experiments have demonstrated that subcutaneous operations, which, as you well know, are in non-feverish animals very inapt to suppurate, will often suppurate when inflicted on an animal in which fever has been previously induced by a local septic inflammation. The influence, therefore, of the septic inflammation of the knee in the injury of the hip may not be ignored.

Here, the fact that the dislocation of the knee was complicated by a wound communicating with the joint, added immensely to the seriousness of the injury, for simple dislocations of this joint are singularly free from risk; the inflammation which attends them is often very slight, and ultimate damage to the mechanism of the joint is much less than might be expected. It is remarkable how much displacement is possible without laceration of the coverings. The two following cases narrated by Pitha are good examples of this.

1. A countrywoman, carrying a heavy basket on her head, stumbled and fell on the bridge of Prague. Taken into the hospital, she was found to have a complete dislocation of the head of the tibia outwards, to the degree that four fingers could be placed on the upper articular surface.

2. A young man jumped from a carriage, the horses of which had bolted, and fell in front of the hospital. He was found to have sustained an outward dislocation of the upper end of the tibia, the displacement of which was so great, that an ordinary drinking-glass could be stood on its articular surface.

In both these cases, replacement was easily effected by manipulation, and the patients made good recoveries.

In the last ten years, the three following cases have been admitted into Broderipp Ward under my care.

1. A plumber, aged 40, slipped through treading on a piece of orange-peel, and, falling heavily, twisted his left leg. Brought to the hospital, the house-surgeon found an inward luxation of the head of the tibia, to the extent that half the upper articular surface was internal to a line dropped vertically from the inner aspect of the corresponding femoral condyle. A large ecchymosis was present over the inner side of the knee.

2. A shoemaker, aged 53, was thrown in wrestling, his opponent falling heavily upon him. Unable to rise, by an injury to his right knee, he was brought directly to the hospital, where he was found to have sustained an inward and forward displacement of the head of the tibia. A large part of the upper articular surface of the tibia, internal to its spine, could be plainly felt. The femoral condyles projected backwards, notably behind the plane of the tibia. The leg was rotated outwards.

3. A very athletic man, about 26 years old, was knocked down by a cab, one wheel of which, he thought, struck him on the right knee. Brought to the hospital, he was found to have a considerable inward displacement of the head of the tibia. In this way, the inner side of the joint was grazed and very bruised.

In all these three cases, reduction was easily effected by manipulation. Very little inflammation followed the injury. The early treatment was immobilisation of the limb and the extensive application of ice. Afterwards, the light mechanical support, with hinge-movement, was worn for a considerable time. In each instance, a very useful limb was retained.

These given cases were instances of lateral dislocation, though in the last the displacement was not purely transverse; backward, or forward dislocations are, from the relations of the popliteal vessels to the bones of the joint, much more grave. In a case of backward dislocation of the tibia, recorded by Pitha, these vessels were crushed, and on the third day, when he first saw the patient, the skin of the ham was gangrenous. Here immediate amputation afforded the only chance of life. Reviewing all the circumstances of our present case, it is a matter of regret that the old rule of primary amputation was not followed here. Only a few years ago, immediate amputation would have been unhesitatingly practised, but, influenced by the teachings of the antiseptic method, we tried to save, where formerly we should have amputated; and the result has, unfortunately, proved that in face of the concurrent injury to the hip, the old rule might have been safer.

One word, before I conclude, about the final hæmorrhage. Does it prove the greater insecurity of torsion compared with ligature? I think not; for, at the date at which this hæmorrhage occurred, the ligature, in presence of the softened state of the end of the artery, and the total absence of clot within it, could not, I believe, have withstood the heightened arterial pressure consequent on the thrombosis of the vein.

REMARKS

ON

THE FATTY TRANSFORMATION OF THE KIDNEY.

By EDWIN RICKARDS, M.B.,

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IN fatty transformation of the kidney, there is a replacement of renal tissue by true adipose tissue, the contour of the organ being, to a varying extent, preserved. The condition is a rare one, and the cases on record are few. It has not, as far as I am aware, been before portrayed, numerous and excellent as are the illustrations of the various morbid changes in the kidney by Bright and others.

Whatever be the source of the fat, there can be no doubt that it is not degenerated renal parenchyma, and it is equally certain that the fat does not stamp out renal tissue. It seems probable that the fat is developed to fill up space created by the breaking down and discharge of renal substance, and that the process is one of physiological compensation, an effort of nature to prevent a vacuum. The origin of the fat may be accounted for in three ways; 1, hypertrophy of the circumrenal fat, which pushes its way into the interior of the organ at its hilum; 2, hypertrophy of the fat, which normally is found in small amount in the interior of the organ between the apices of the pyramids; 3, absorption of fat by the cells forming the stroma of the organ.

Rokitansky, under hypertrophy of circumrenal fat, says that it may increase to such an extent as to force its way into the hilus of the organ, and when this condition has advanced to its highest stage, the kidney presents the appearance of a mere piece of fat, surrounded by a mass of adipose tissue, without the slightest trace of renal organisation, the urinary passages being atrophied and obliterated; that excess of circumrenal fat accompanies atrophy of the organ, and is frequently found when the kidney is affected by moderate but lasting inflammation, especially that caused by calculi. Rayer, under fatty kidney, refers to a case observed by M. Briche-teau. A woman, aged 40, died with suppression of urine of fifteen days' standing; the kidneys appeared plunged in the midst of an immense quantity of fat; they retained their form and natural bulk, but were transformed into two masses of compact fat, in which some vestiges of tubular substance were traceable.

Dr. W. Roberts refers to a case by Godard, where the lower half of one kidney was converted into a mass of ordinary adipose tissue. A calculus of large size was lodged in the dilated pelvis.

In Dr. Browne's case (*Pathological Society's Transactions*, vol. xiii), small abscesses, communicating with each other, were found in the fat, and in one of the abscesses a calculus; there were sinuses in the left groin, extending to the left kidney, which was the one affected.

In Dr. Whipple's case (*Pathological Society's Transactions*, vol. xix), the right kidney was replaced by a pure piece of fat, which was surrounded by an abscess. There was a discharging wound in the right thigh.

In Mr. Heath's case (*Pathological Society's Transactions*, vol. x), there was no renal artery from the aorta.

In my case, from which the lithograph was taken, there was a calculus in the centre of the fat representing the kidney, and a history of calculus for twenty years.

Statistics, therefore, go to show that fatty transformation of the kidney is frequently associated with renal calculus. Even in Dr. Whipple's case, a calculus may have escaped from the kidney, and found its way out of the body through the wound in the thigh. It is reasonable to suppose the sequence of events in such cases