Original Communications.

EVOLUTION OF THE FŒTUS IN UTERO.

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THE particulars of the following case are submitted to the society for the purpose of showing that *spontaneous evolution* of the fœtus, as described by Denman, does occasionally occur, and consequently that the doctrine of *spontaneous expulsion*, as maintained by Douglas and generally accepted by the profession, must be received with some degree of qualification.

CASE. A lady, about five months advanced in her third pregnancy, was taken ill on the evening of the 11th of November with symptoms of uterine uneasiness, but not such as to lead her to suspect that any danger of a miscarriage was imminent. On visiting her I found that she had experienced little or no pain, and had sustained little or no hæmorrhage; but on a vaginal examination I found the membranes engaged in the os uteri, which was dilated to about the size of a shilling, and protruding into the vagina. Within half an hour the bag of membranes presented externally, and shortly afterwards broke. The liquor amnii, however, alone escaped, and nothing could be felt within the vagina, the fœtus being as yet wholly *in utero*. After giving a few doses of ergot with cinnamon and bark, and waiting a short time, a spongy mass presented at the os uteri, which, after a few pains, was expelled, and found to be the placenta. No hæmorrhage followed upon its expulsion, and shortly afterwards, one of the superior extremities descended into the vagina, which, upon slight traction, broke away at the shoulder-joint. Convinced that manual assistance could be of little avail in the present state of the case, I left the patient for about two hours, and on then making an examination, found what proved to be the breech engaged in the os uteri. I followed it digitally downwards, and in due course the lower extremities descended; the case having assumed all the characters of an original breech-presentation. With a little manipulation the head was brought through the os uteri, and the entire birth completed without any difficulty. The patient made a good recovery, and throughout had scarcely any hæmorrhage.

REMARKS. A brief reference to the views of Denman and Douglas respectively on the subject of "spontaneous evolution", will best indicate the relations of the present case to the main question at issue between them. By Denman it was maintained that "spontaneous evolution" consisted in a complete change in the position or evolution of the child *in utero*, whereby some other part was substituted for that originally presenting; as for instance, the breech for the arm and shoulder. By Douglas, on the other hand, it was contended, that no such evolution or change in the position of the child could or did take place, and consequently that there could be no such substitution of one part of the child for another. He maintained that, in all the presumed cases of "evolution", in which the arm and shoulder originally presented and had descended into the pelvis, they remained unchanged in that position, whilst the body of the child was simultaneously doubled upon itself, and so forced by them through the pelvis. Now, there can be no doubt that this view is correct in regard to the greater number of instances which come under the designation of spontaneous evolution; but there are yet cases alleged to have occurred in which the evolution of the child, as described by Denman, has veritably taken place, and although perhaps rarely met with, are not on that account to be ignored. Dr. Murphy has met with such, and the present is one strictly to the point. Evolution of the fœtus, in the most rigid acceptance of the word, occurred; the breech was substituted for the arm, and from being originally an arm, it became eventually a breech-presentation. Undoubtedly, the early period of pregnancy modifies very much the importance of the case in relation to the question at issue; but it has, nevertheless, appeared to me worthy of record, as showing how, under certain circumstances, spontaneous evolution may take place as described by Denman, and that his views, therefore, upon the subject, are not so wholly unsound as has been generally supposed. It is at least important, as showing that an argument which has been alleged against them is fallacious; viz., that it is incon-

sistent with the nature of uterine contraction that such substitution of the presentation of one part of the child for another should take place.

ON THE TREATMENT OF CONTRACTION OF THE KNEE FOLLOWING STRUMOUS AND RHEUMATIC DISEASES.

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SOME cases of disease of the knee-joint, illustrating the different methods of treatment necessary to extend a contracted limb, after the subsidence of all the acuter symptoms, have been lately under my care in St. Bartholomew's Hospital. Before mentioning the particulars, I would remark that, if cases the result of accident, or those proceeding from malignant disease, be omitted, the greater number of the remainder may be referred to one of those two conditions of constitution termed respectively "rheumatic" and "scrofulous".

In speaking, on a former occasion, of the rapid destruction of a joint by acute rheumatic inflammation, I was greatly surprised at finding the very existence of such a disease questioned by respectable authority. It may be useful, therefore, to repeat that such cases are unfortunately of too frequent occurrence. I can recall at the present moment the particulars of two, in which rapid disorganisation of the hip-joint occurred in sailors, both strong and active men; and, in the Museum of St. Bartholomew's Hospital, there is a preparation showing the usual morbid changes, of which case the following account is given. The patient was a sailor, forty years old. He awoke one night with intense pain in the hip, which lasted some hours, and then in a less degree continued till, in a fall, he bruised his hip. After this, the pain again became exceedingly severe; and this continued without remission till he died. Upon examination, it was found that the cartilage had been completely separated from the head of the femur, and from the acetabulum; and some shreds and ulcerated remnants of it were loose in the cavity of the joint. The ligamentum teres was destroyed. The exposed bones were superficially but smoothly ulcerated; the cavity of the acetabulum was enlarged by the ulceration of its walls. The capsule was thickened; the synovial surface swollen, soft, and thinly coated with lymph. (Ser. II, Prep. 14.)

The contrast between a joint disorganised by rheumatic inflammation and that by scrofulous inflammation is well marked. In the former, the bones are of their normal weight and firmness, although the surface may be deeply ulcerated; in the latter, the bones are light, and give every indication of want of power. Hence it is that osseous ankylosis may be expected as a termination of rheumatic inflammation, but not of scrofulous disease; the only apparent exception to the above being those instances in which, after many years, a loose and spongy osseous tissue has been thrown out, the patient having outlived the strumous diathesis.

Preparations of osseous ankylosis of the knee are uncommon; they occur more frequently in the hip-joint. In the Museum of St. Bartholomew's Hospital there are but five preparations of the former. The first (Ser. II, Prep. 29) shows only bony union of the patella to the outer condyle of the femur. The second (Ser. II, Prep. 55) is in this respect precisely similar. The third (Subseries B, Prep. 22) exhibits more general osseous union. The fourth (Subseries B, Prep. 24) is a case of osseous union of the inner border of the femur to the corresponding surface of the tibia. The fifth (Subseries B, Prep. 26) is general osseous union, the bones being light and spongy. Similar cases are related by Bonnet (*Malad. des Articul.*, t. ii, p. 201); by Löbl (*Zeitschrift der k. k. Gesell. d. Aertze zu Wien*, 1844); by Führer (*Deutsche Klinik*, 1850. Bd. 2, s. 429); by Astley Cooper, and by Sandeford and others. There are also some preparations in the College of Surgeons of England. But this list, so far from showing that similar preparations "hang about in dozens", proves directly the reverse. It is evidence that all such specimens are valuable from their rarity.

It is scarcely possible to attach too much importance to this fact respecting osseous ankylosis of the knee, for it serves us as a guide in most important points of treatment. In incipient cases of strumous disease, we may safely predicate that

the contraction is chiefly due to muscular action; and we should, therefore, repudiate any such proceeding as that of "*the forcible extension of the limb, the patient being under the influence of chloroform*"; well knowing that, after the full action of the anæsthetic, the muscles relax of their own accord, and the limb becomes straight without the necessity of any force.

In some cases, there may be fibrous bands, which had, however, better be stretched than torn; or tendons may be so tight as to need subcutaneous division. The bones of the leg may be drawn backwards into the popliteal space, or the knee may be turned inwards, as in genu valgum; but there is still movement in the joint, except in cases where there has been an extraordinary amount of destructive disease; and it will be found that infinitely more good can be effected by steady, slow mechanical extension, than by any amount of sudden violence, however skilfully employed. But in cases where the joint has been destroyed by an attack of acute rheumatic inflammation, the opposed surfaces of the tibia and femur may become united by bone, the patella adhering to the outer condyle; and here mechanical extension often fails to act upon the limb. The resistance offered at the knee is such that the necessary counter pressure bruises and excoriates the limb; and here we may with advantage forcibly break through the bony adhesions, which are rarely very strong; and then gradually extend by mechanical apparatus, as in the former case.

The question may be asked, Why not extend the limb at once, when the bony adhesions have been broken? The reply is, You wish to extend the limb without pain; without injury to the flexor muscles of the ham; without chance of stretching, tearing, or otherwise injuring the popliteal vessels and nerve. Some months ago, I amputated the limb of a young man, at his urgent request, in whom the knee-joint had long been contracted, and various methods of treatment had been adopted without success. He declined any further trials in this hospital, saying that he could not follow his avocation with a diseased knee. Extension had been tried on several occasions. On examining the limb after its removal, ecchymoses were found extending along the hamstring tendons; the muscular fibres had been torn and bruised; the popliteal vessels were so thickened and changed in structure that violent and sudden extension might have been followed by injury to their walls.

The patient needs the support of the muscles and tendons surrounding a joint; it is they which contribute so much to the strength of the limb. If they are torn and injured, the patient loses the necessary command over the bones.

And here it may not be out of place to state why it is that, in cases of disease of the knee, the leg becomes flexed on the thigh. When the leg is fully extended, the ligaments of the knee, especially the two lateral and the crucial ligaments, become extremely tight, and hold the bones firmly pressed against one another. The lower extremity moves in extension as one piece. Under circumstances of disease, this pressure cannot be borne; hence the muscles flex the leg, and, by so doing, relax the ligaments and set the bones free. This is another reason why forcible extension is unscientific and wrong in cases of progressive disease of the knee-joint. We should always wait until active disease has subsided.

It is not difficult to ascertain the nature of the contraction, whether muscular, fibrous, or osseous. In the first instance, the tendons of the hamstring muscles are at once felt quivering in spasm on the least attempt being made to extend the leg. In the second, the patient complains of pain about the ligamentum patellæ when the leg is drawn forward; the hamstring muscles also contract, though not to the same extent as in the former state. When the union is osseous, the parts are flexed and immovable; extension seems to exert no influence on the muscles, and the patient complains but slightly of pain. There are, of course, other points which in each case will occupy attention; but these constitute the broad rule.

We may in very many cases promise to the patient, with safety, the advantage of an extended limb, which will be useful in progression; but we must not speak of "restored motion". When the tissues which are proper to a joint—namely, synovial membrane and articular cartilage, with the necessary ligaments—have been destroyed, free motion never can be regained. In order to effect such a phenomenon, we must supply our patient with a new joint. Let any one look around the different museums, and examine the specimens illustrating these diseases, and ask how free motion could have existed under the varied circumstances there presented for examina-

tion and reflection. But a moderate amount of movement may be very useful; and a stiff and extended limb is infinitely preferable to any artificial contrivance.

George Clark, aged 13, was sent to the hospital with contraction of the left leg at right angles to the thigh. The boy, whose general aspect was not unhealthy, stated that he had lost his mother when he was an infant, and that his father had always been very poor. At the age of two years, he suffered from strumous disease of the joint. Abscesses formed, leaving marks of fistulous passages, which are still obvious. The bones of the leg were drawn a little backwards and outwards. There was still some motion in the limb, at the knee. No expectation of benefit resulting from treatment was anticipated by those who had had charge of him; and the patient himself expected, and was willing, to submit to amputation.

October 5th. An apparatus for the gradual extension of the leg, worked by a cogwheel, was applied to the limb.

November 17th. The leg is straight, and the patient walks about without difficulty. He is still obliged to wear the apparatus, and there is no motion at the knee; but he is able to occupy himself usefully in various ways.

A young woman, suffering from the effects of similar disease in the right knee, was sent to me by Dr. Kidd. In this, as in other cases of strumous disease, there was still some amount of movement at the joint; but the leg was twisted in such a way that she suffered from knockknee, as well as rectangular contraction of the leg. The treatment in this case differed from the preceding—first, in the subcutaneous division of the biceps flexor cruris tendon; secondly, in the necessity of rectifying the state of knockknee before proceeding to the extension of the limb. The result of the case is satisfactory, and the patient has discarded the use of her crutch.

In striking contrast to these two cases is that of a young girl aged 18, in Treasurer Ward, under the care of Mr. Lloyd. She is well grown and healthy looking, and states that, when in the country at her home, two years ago, she had a severe attack of rheumatism in the left knee. We know not much of the particulars of this part of her complaint; but she came to the hospital, with the knee immovably bent, May 19th, 1859. So firm were the adhesions, that the muscles scarcely acted at all when the limb was dragged in examination. The patella was united to the outer condyle. Both Mr. Lloyd and I were convinced that the union was osseous; but, bearing in mind the yielding nature of such bony effusions, he determined at first to try gradual extension. After a fair trial, it was found that no impression was made on the limb; and then it was determined to break the bony union forcibly, and to apply the same extension afterwards. I performed the operation, at Mr. Lloyd's request, October 26th, as he was at the time indisposed. By first firmly and yet carefully flexing the leg, the patella was dragged from the outer condyle. Then a very limited amount of extension separated the tibia and femur. But the limb was *not put immediately straight*. Had I done so, I should have torn and otherwise injured the soft parts in the popliteal space. The leg was kept in its bent position for four days, so as to allow the parts to regain their usual quiet state. Then the extending apparatus was applied, and worked gently with the cogwheel. At the present time, six weeks after the operation, the girl, who has never had any pain during the treatment, is enabled to walk about, with the leg quite straight, supported by the usual apparatus; she having also quite discarded the use of crutches.

I have mentioned these cases because they are now in the hospital, and any one may judge how far what I have stated is according to fact. They illustrate well the differences between strumous and rheumatic diseases of joints, and point out the different plans of treatment to rectify contraction of the limb. The forcible rupture of bony adhesions is no new practice, and is useful when properly managed. But the practice of dragging the limb straight at once is certainly not safe, and, in my opinion, unscientific. Finally, let me repeat that, when disease has once destroyed the proper tissues of a joint, both surgeon and patient may dismiss from their minds the expectation of restoration of motion. Such a result is simply an impossibility; and the latter must rest content with the advantages accruing from an extended, though, it may be, a stiffened limb.

I may state, in conclusion, that the two first cases were received into the wards of Mr. Lawrence, who kindly gave his permission, and also his advice during the course of treatment.