

be dangerous? The hip-joint is not a vital organ. The fact is, that disease of the hip-joint is very rarely the immediate cause of death; but when an abscess has burst externally, discharging matter, and has continued to do so for a long time—when the patient has been long exhausted by suffering and night perspirations, disease takes place in the thoracic and abdominal viscera. Such circumstances are always favourable in bad constitutions to the production of disease, especially in the lungs and mesenteric glands. In like manner scrofulous persons may become phthisical when the constitution has been weakened by ague, by a course of mercury, by the venereal disease, by scarlet fever, or measles, or anything else.

I mentioned that a great aggravation of pain takes place when suppuration is established in the joint. The escape of the head or neck of the thigh-bone from the acetabulum tends not at all to diminish the patient's sufferings, but rather to increase them. When this has taken place, the patient, of course, is relieved so far as the tension is concerned; but he now suffers from another cause. The head of the thigh-bone in some cases, and the ulcerated neck of the femur in other cases, coming in contact with the soft parts in the vicinity of the joint, keeps these parts in a state of irritation, and every attempt to remove the limb, even the slightest, is a source of torment.

LECTURE XXXI.

ON DISEASES OF THE HIP-JOINT. (*Continued.*)

THERE are two important circumstances in the history of the scrofulous disease of the hip, which I neglected to notice. One is, the shrunk, flattened appearance of the nates. This appearance is not, in fact, an absolute diagnostic mark of disease in the hip-joint, though it does usually accompany it. It arises simply from the wasting of the muscles. If you tie up one arm the muscles will waste; if it be painful to use the knee, and it be not employed, the muscles of the thigh waste; if it be painful to use the ankle, the muscles of the leg waste; if it be painful to use the hip, the muscles of the hip waste; and the largest muscles of the hip are those situated posteriorly, the glutæi. These are the muscles of which the wasting is most perceptible, and thus you will understand the reason of the altered form of the nates. The flattened appearance of the nates may occur, not only in cases of diseased hip, but wherever there is anything which prevents the hip-joint from being moved; as, for instance, in that paralytic affection to which young children are liable. I have known a painful tumour in the groin, and disease in the thigh-bone produce the same effect, although the hip-joint was perfectly sound.

In some cases there is an alteration in the appearance of the nates from another cause. If the acetabulum be filled up with lymph, the head of the thigh-bone must be pushed more or less out of the socket, and this being the case, the great trochanter must project farther on the side of the disease than on the other, so that the nates become actually widened. Then, again, if the head of the thigh-bone be quite pushed out of the socket, and lodged on the dorsum of the ilium, the appearance of the nates must be different from what is natural. The great trochanter is prominent behind, and the head of the thigh-bone may be felt or even seen through the wasted glutæi muscles lying on the dorsum of the ilium.

Another of the symptoms of this disease is an apparent elongation of the limb. In the advanced stage of the disease the limb is always shortened; and I have explained to you how that occurs. But in the early stage of the disease there is sometimes the appearance of elongation, and there may, indeed, be some absolute elongation, though it cannot be much; for if you look at the skeleton you will see that the acetabulum looks a little downward, but more outward. If the acetabulum be filled with lymph or matter, and the head of the thigh bone be pushed out, this must be in the direction outwards rather than downwards. The absolute elongation of the limb can never amount to more than half an inch, yet it appears sometimes to be elongated to the extent of two inches. This arises from the distorted condition of the pelvis. It makes with the spine an obtuse angle on the side of the disease, and of course an acute angle on the other side. The tuberosity of the ischium is lower on that side than on the other. Observe the position in which the patient places himself when he stands. In order to save the diseased hip from supporting the weight of the body, as much as possible, he throws his principal weight on the foot of the sound limb, while he advances the other foot merely to steady himself. But this cannot be accomplished without the tuberosity of the ischium being a little depressed. The apparent elongation of the limb often vanishes when the patient has been some time in bed. Occasionally I have seen an apparent shortening of the limb, without a real shortening, produced by the pelvis being twisted in an opposite direction.

In order to know whether a limb is shortened or elongated, it is not sufficient to look at a patient as he lies in bed. You must lay him flat on his back, and take care to place the two limbs parallel to each other, so that a line which passes from the patient's chin straight over the navel and the symphysis pubis, should go exactly between the knees. When you have placed him in this position, the two thighs making exactly the same angle with the pelvis, you measure with a tape from the anterior superior spinous process of the ilium to the patella. It is only by this method that you can acquire a knowledge of the comparative length of the two limbs. If you trust to your eye, and not to the measurement with a tape, you will be continually deceived.

PRIMARY ULCERATION OF THE CARTILAGES.

I give this name especially to a class of cases in which ulceration of the cartilages takes place in a different way from either of those already described. The disease begins in the harder textures; but it is not preceded by that soft or scrofulous condition of the bones which I then described. The first thing that you observe, if you happen to have the opportunity (as I have had many times), of examining the body after death, where the patient has died in the early stage of the disease, is a destruction of the cartilage by ulceration. Here is a very fine specimen [presenting it] of what I now mention. Looking at it, you will see that the synovial membrane and the ligaments are in a natural condition; that the cartilage is absorbed from a considerable portion of the acetabulum in two spots; and that the cartilage covering the head of the bone has not its natural structure, but is converted into a sort of fibrous substance. The soft parts are in a natural condition, and also the bones. The latter are perfectly hard, having none of the scrofulous alteration which I mentioned in the last lecture. There are other specimens on the table showing similar appearances.

Now this ulceration of the cartilage I believe to begin in different ways: sometimes in the cartilage itself, which becomes converted into a fibrous substance first, and that fibrous substance becoming ulcerated afterwards. Here is a specimen, in which you perceive the disease in these two different stages; for while the cartilage of the head of the femur is converted into a fibrous substance, that of the acetabulum is completely absorbed. Here is another preparation [showing it] where the cartilage is converted into a fibrous substance, actual ulceration not having as yet taken place. There was a body in the dissecting-room, in which many joints were affected in this manner. In some the cartilage was converted into a fibrous substance; in others it was ulcerated away, and the carious surface of the bone exposed. In some joints the disease had gone to a greater extent than in others. Here is a preparation of two patellæ, where you see ulceration of the cartilage going on. In one the cartilage is merely converted into a fibrous substance; in the other it is completely destroyed by ulceration.

Then I have reason to believe that in other cases the disease originates not so much in the cartilage itself as on the surface of the bone to which it is connected, and that it corresponds to what happens in cases of periosteal nodes. In syphilitic, mercurial, and some other nodes, you know that the first thing that calls your attention is often the thickening of the periosteum. But the fact is, that there is a previous alteration in the condition of the bone, which becomes inflamed and ulcerated under the periosteum, and then the thickening of the periosteum is consequent upon the disease on the surface of the bone. The bone is more vascular and of a darker colour than healthy bone, and you may peel the cartilage off its surface. In this specimen you perceive that the surface of the bone is of a dark colour,

and that the ulceration began on the surface of the cartilage which is towards the bone.

In practice I do not pretend to distinguish these two orders of cases from one another, any more than I can in practice distinguish those cases in which nodes are the consequence of disease beginning in the periosteum, and other nodes which are the consequence of disease commencing in the bones.

Ulceration of the cartilage, beginning with the conversion of it in the first instance into fibrous structure, is one of the diseases of joints to which persons are liable in old age. I have seen a person, sixty years of age, have disease and abscess in the hip-joint in consequence of this kind of ulceration in the cartilage. Ulceration of the cartilage sometimes takes place as a consequence of rheumatic affection. A patient, for example, came into the hospital who had been exposed to damp and cold. He had pains in the whole of the lower limbs, and in one shoulder. The man died from some other complaint—I believe from an attack of fever—and I examined the body. There was no affection of the soft parts, no disease in the bones anywhere, but in the right hip the cartilages were ulcerated to a great extent. There was pain in the other parts of the limb, but no ulceration of the cartilages anywhere else. There was pain in the opposite shoulder, but there were no morbid appearances in it when it was examined. I have seen several other cases where ulceration of the cartilage has been preceded by pain similar to that from rheumatism, but without any affection of the soft parts.

Ulceration of the cartilage sometimes takes place in a very remarkable manner, as a consequence of inflammation and abscess in the neighbouring parts. Of this I have met with many examples. Here is a case [presenting a specimen] in which the cartilages of the knee-joint are extensively ulcerated, but there is no disease in the softer textures—no matter in the joint. It was taken from a boy who had had compound fracture of the femur; and an enormous abscess in the thigh, contiguous to the knee-joint, had preceded death. I have seen several other cases where a large abscess in the neighbourhood of a joint has been followed by ulceration of the cartilages to a great extent. Mr. Mayo has published some cases of the same description.

In those cases in which the cartilages are ulcerated independently of the scrofulous disease of the bones, the progress of the complaint after the ulceration has taken place must be very similar to the progress of it in those other cases which I described in the concluding part of the last lecture. Pus is thrown out into the joint, and then the soft parts are affected, or the acetabulum being filled with lymph, the head of the thigh-bone is pushed more or less out of the socket: the ulceration of the cartilage extends, the bones become destroyed, the head of the thigh-bone is diminished in size, the margin of the acetabulum is more or less destroyed, the neck of the thigh-bone is drawn up and lodged on the dorsum of the ilium: and in other cases the head of the femur is pushed out of the socket, and there is dislocation. But I need not trouble you with a complete history of the

symptoms, which I described in the last lecture. You have, in fact, almost all the symptoms which I mentioned as occurring in cases of scrofulous disease of the bone.

But how are you to distinguish these cases in practice? You cannot distinguish them in all instances, but you may do so in most cases so as to make a diagnosis which will be very useful in practice.

In the first place you will judge something by the aspect of the patient's countenance. If he is not that kind of person whom you would judge to be predisposed to what is called scrofula, it would be a reason for suspecting that it is not a case of strumous affection of the bone. Such affection of the bone almost invariably occurs in early life, and there may be ulceration of the cartilages, independent of scrofulous disease of the bone, in early life also. But the latter may occur in advanced life as well; and if the patient be above twenty-five years of age, it is more likely that he will have simple ulceration of the cartilage than the true scrofulous disease. Another important diagnostic mark is this:—A much greater amount of pain attends the disease in its early stage, in cases of simple ulceration of the cartilage, than where the ulceration is combined with scrofulous disease of the bone. One most remarkable circumstance connected with scrofulous disease of the bone is, that there is so little pain in the first instance, the patient going on for weeks, and even months, limping, and yet the disease being scarcely noticed. But in simple ulceration there is generally severe pain at an early period. In scrofulous disease of the bone you have very little pain in general, till the cartilages are extensively ulcerated, and matter begins to form, but in the other cases there is a great deal of pain long before that period has arrived.

I have given you my notions of ulceration of the cartilages, but I should tell you that other pathologists have entertained different views respecting the functions of the cartilage, and its capability of being ulcerated. Among these pathologists I may mention especially Cruveilhier, in Paris, and my friend Mr. Key in this country: both of whom seem to regard the cartilages as being not vascular, and as incapable of ulceration, from the action of vessels belonging to itself. Mr. Key has indeed published a paper to show that ulceration of the cartilage is the consequence in general of disease of the synovial membrane. He describes vascular processes of the synovial membrane as projecting into the joint, filling it up, and then, as it were, eating away the cartilage.

Now I do believe that if these gentlemen had taken as much pains as I have done to examine the bodies of patients who have died in the *early* stage of these diseases, they would have come to a different conclusion. They seem to have examined the bodies of persons when the disease was in a late stage, and when the morbid appearances were deceptive. The first question is, are the cartilages vascular or are they not? The cartilages of children are undoubtedly vascular—nobody can hesitate to admit that—till the period of growth is over. Growth could not take place otherwise. If you cut the articular cartilage of a growing child you see the vessels, or

rather the sinuses, in which the blood flows very distinctly. The cartilages of children resemble the cartilages of adults in all essential circumstances. Some changes take place, as I shall mention presently, but still in all essential circumstances they resemble each other. Merely looking at the structure, you would say that if the cartilages of children are vascular, those of adults are vascular also. You see in this preparation, and in others taken from adult subjects, the alteration of cartilage into a fibrous structure; and how could such a morbid alteration of structure take place, if the part were not organized?

The epidermis, or cuticle, is not organized. You may have bad cuticle secreted; but being once secreted it does not become altered in quality. The nails and the hair are not organized; you may have bad hair and bad nails secreted, but these being once formed, they do not alter. But this preparation [exhibiting it] and a number of others, show that the cartilage does alter. It seems to me that this single specimen which I now hold in my hand is quite sufficient to prove the organization of the cartilage. Look at the two patellæ in this preparation; the cartilage in one of them is clearly undergoing a change of structure, while in the other it is entirely destroyed by ulceration. How can this be accounted for, except upon the supposition that the cartilage is organized? Then observe what happens to cartilage in its healthy state; how it is exposed to friction, and if there were not a power in the cartilage of regeneration, how could it bear the quantity of friction to which it is exposed during life? Take the example of a wild animal, with its limbs in constant motion, the cartilage constantly exposed to friction, except during the hours of sleep, yet all this produces no change in it. But if there were anything else there, an elastic substance, such as caoutchouc, or the hardest metal, as gold or platina, would it not be worn away? The living body is subject to the same mechanical laws as dead matter. The fingers of a mechanic would be worn out if their organization did not enable them to repair the loss occasioned by the destructive power of friction. Are not the articular cartilages placed under the same circumstances? How can you explain their durability, except by supposing them to be endowed with vital powers and organization?

You cannot see blood-vessels in the healthy cartilage of an adult; but does that prove that vessels in it do not exist? You cannot see vessels in the transparent cornea, but who doubts its vascularity?

Besides what I have already mentioned, it would be easy to indicate many other changes in cartilage which must be referred to organization and vascularity. The cartilage of a young man and the cartilage of an old one differ in many respects. There is a difference of colour, of thickness, and consistence, sufficiently marked, which cannot be the effect of friction, which can only be attributed to a change taking place in the cartilage itself.

I have already adverted to the analogy between the cornea of the eye and the articular cartilages. But it may be said that in the

cornea you have the proof of its being endowed with vessels, in its liability to inflammation; and it is quite true that in long-continued ophthalmia you may see the blood-vessels running into the substance of the cornea, injected with blood. But you may see just the same thing in the cartilages of the joints. I have observed it distinctly in many instances. Two or three instances of this are recorded in my work on Diseases of the Joints. A man, for example, had that scrofulous disease of the ankle which I described in my last lecture. The cartilage in some parts was ulcerated, in others it was beginning to ulcerate. Where it was beginning to ulcerate there were red spots, into which I could distinctly trace blood-vessels shooting from the neighbouring bone, exactly corresponding to the blood-vessels which shoot into the transparent cornea in cases of ophthalmia. Mr. Mayo has described a case of the same kind, and I believe that in the Museum of King's College the specimen which he met with is preserved, and that the vessels running into the cartilage are seen injected with size and vermilion. Now taking all these things into consideration I really know not how we can refuse our assent to these propositions: first that cartilage is organized, and secondly, that cartilage, like other parts which are organized and possessed of vital properties, is capable of ulceration.

To illustrate the subject still further:—In the subject from which this drawing was taken, there was an extensive absorption of the cartilages of some of the tarsal bones, the os calcis, the os naviculare, and astragalus. Now observe how the absorption has taken place. In some parts the cartilage has disappeared altogether, and the bony surface is exposed. In other parts the cartilage is partially absorbed; it is rendered thin and semi-transparent, so that you can see the brown colour of the bone through it; and the absorption has taken place *on that surface of the cartilage which is towards the articular cavity, while the layer towards the bone remains entire, and retains its natural adhesion to it*: a fact quite incompatible with the notion of its being absorbed by the vessels of the bone to which it adheres. There was no disease of the soft parts.

The preparation which I now show you is of great interest; and in order that you should understand its relation to the present inquiry, I must briefly explain the patient's case.

There was a compound fracture of the thigh, and a portion of the femur was sawn off, for not till then could the fracture be reduced. An immense abscess formed in the thigh, near the knee-joint, but not communicating with it. The boy sank and died, and on examining the body we found the large collection of matter which I mentioned in the thigh. The knee-joint externally presented no indication of disease; there was nothing the matter with the synovial membrane or the ligaments, no effusion of pus, or serum, or lymph, in the joint. All that we could discover was the disappearance of the cartilage. Now observe how it has disappeared. In the centre the cartilage is altogether absorbed, and the bone exposed. Then, in some parts, the cartilage is partially absorbed; the surface of it

towards the cavity of the joint having been taken away, while that which is next to the bone remains entire, and has its natural adhesion to it. You will see the cartilage in some parts putting on a peculiar grooved appearance, as if you had dug out a piece of it with a chisel. How could the cartilage be absorbed in this case, except from the action of its own vessels?

Mr. Key, in his interesting paper on Ulceration of the Cartilage, has given a drawing of the knee-joint, where the cartilage was affected in this manner—that is, partially absorbed on the surface towards the articular cavity; and this was in a case where the original disease had been inflammation of the synovial membrane. Large processes of inflamed synovial membrane are seen hanging pendulous into the joint, and he supposes that these pendulous processes of the synovial membrane came in contact with the different parts of the cartilage, and were the agents through which the absorption had taken place.

Without entering into the question as to how far this explanation is correct, as applied to this particular case, I may observe that it certainly is not applicable to the cases of which I have just given you the history, any more than it is to the cases of ulceration of the cartilage published by Mr. Mayo in the Medico-Chirurgical Transactions; in none of which these pendulous excrescences of the synovial membrane existed.

At the conclusion of this investigation, you will ask “what becomes of a joint of which the cartilage has been destroyed by ulceration?” If it be extensively destroyed without suppuration, the case may be compared to one of simple fracture; and if there be suppuration, it may be compared to one of compound fracture; and in either instance the ulcerated surfaces of the bone come together and ultimately become united. Bony ankylosis, however, takes place very slowly in the scrofulous disease which I described in the last lecture; the bond of union being for a very long time nothing but a soft ligamentous substance. But in other cases, where the cartilage is ulcerated without scrofulous disease of the bone, bony ankylosis takes place, I believe, readily enough. There may, however, be absorption of cartilage to a considerable extent, without it being followed by bony ankylosis. I showed you, in the last lecture, a drawing where the cartilage had been ulcerated in several parts of the patella and condyles of the femur, in consequence of inflammation of the synovial membrane. The patient died a year afterwards from disease of the chest; and on examining the body after death, I found that where the cartilage had been absorbed, it was replaced by a sort of ligamentous membrane. You will see the same thing in this preparation, where the cartilages of the hip have been partially absorbed, and replaced by a dense membrane. I cannot say whether this substance ever is or is not converted into true cartilage; perhaps it may be; but you know how difficult it must be to acquire anything like satisfactory evidence on this point.

TREATMENT OF DISEASES OF THE HIP.

If you could *always* be exactly certain as to the nature of the disease in the hip-joint, of course you would be able to apply your remedies more precisely than you can with that sort of doubtful diagnosis which we are compelled to make in some cases. The diagnosis of diseases of the hip is more difficult than the diagnosis of the same diseases in other joints, simply for this reason, that the hip is not a superficial joint, but is covered by a great mass of muscle, and you cannot examine it with the hand as you can the knee, the elbow, or the wrist. We are necessarily compelled to depend more upon the history which the patient gives of the disease than when the other joints are affected. This history, going back as it often does to a long period, and in a great number of instances having to be drawn from very young persons, is often not much to be depended upon. There are, however, many cases of disease of the hip in which we are able to say at once what kind of disease exists in it; there are others where we must give a more doubtful opinion; but even here a careful investigation will generally enable us to make such a diagnosis as will be sufficient to lay a tolerable foundation for our practice.

There is one remedy which is applicable to all cases of disease of the hip, and this happens in all of them to be the most important part of the treatment, at least of the local treatment; and of this I shall speak first.

If your leg were inflamed, and you were to rub it a dozen times every day, would you not make the inflammation worse? If your leg were ulcerated, and you were to rub it in the same manner, would you not prevent the ulcer from healing? nay, rather, would you not make the ulcer spread? If the hip-joint, then, be inflamed, and you move it several times a day, will not the inflammation be kept up? If the cartilages or bones, or both are ulcerated, and the joint be moved, and the ulcerated surfaces are rubbed against each other, is it not to be expected that the disease will be aggravated? Have we not a right, under all circumstances, to expect that motion or exercise of the hip-joint will tend to aggravate the disease, whatever it may be; and that the keeping of the joint in a state of perfect repose will be a most important part of the treatment to be employed. In all cases of affection of the hip-joint, without inquiring into the nature of the disease, the first thing that you have to do is to keep the joint in a state of perfect repose. This may be accomplished in different ways. In one of the cases now in the hospital a quantity of bandage was rolled upon the pelvis and the upper part of the thigh; then stripes of adhesive plaster were put over the bandage; then other bandages were applied, and other stripes of plaster; and so on till a great mass of bandage and plaster, all sticking together, was fastened round the pelvis and round the upper part of the thigh. This has fixed the boy's hip-joint very firmly, and is very nearly the method which Mr. Scott, of Bromley, employs for all diseases of the

joints. He, indeed, uses mercurial ointment spread on lint under the plasters; but this I apprehend to be perfectly unnecessary. The good which he attributes in diseased hips to the ointment, I attribute altogether to the support afforded by the plaster and bandage, forming a kind of splint, and limiting the motion of the joint. This method, in the case up stairs, and in a number of others, is productive of very good results. But a still better method than this, in the majority of cases, is that of applying a splint adapted to the hip-joint, thigh and pelvis, such as are used for the knee and elbow, made of a very thick, hard, firm, strong leather, prepared without oil or other grease. This leather is prepared for the purpose, of cow's-hide; and the consequence is, that on putting it into water a little below boiling heat, it becomes as soft as wet brown paper, and you may cut it out to any shape you please, and mould it to the hip, securing it afterwards by a bandage, and leaving it to dry on. This splint cannot fail to fit the joint, and must therefore be easy to be worn. Altogether it answers the purpose very well when the thigh is not much bent on the pelvis. Where, however, this is the case, it is very difficult to adjust the splint, and the plasters and bandages which I mentioned just now are preferable. There is still another method of fixing and supporting a diseased hip, which you will see carried into effect in one of the patients up stairs. The lad is placed on Mr. Earle's fracture or invalid bedstead. He lies there on his back; the shoulders are raised by one inclined plane, the thighs are raised by another, and the legs are supported by a third; so that he lies on three inclined planes, and cannot slip upwards or downwards. The thigh is kept at that angle which is most convenient to the patient, and the two limbs are placed parallel to each other. Lying in this manner, the patient, you perceive, has very little motion; he can scarcely manage to turn, and has no inducement to attempt it. In this bedstead there is a sort of trap-door beneath, filled up with a cushion, which may be taken out when necessary, and which answers the purpose of a bed-pan, so that the patient has his evacuations without being in the smallest degree disturbed. This method is especially applicable to those who have passed the age of childhood, and in whom the disease is still in its most early stage.

It is of some moment that you should, before the disease is very far advanced, get the limb into a good position. A child especially has always a tendency to throw one knee over the other, and to lie on one side. The consequence is, that the thigh-bone gets twisted into an awkward posture, the pelvis and the spine are also twisted, and the whole figure is in a state of distortion. It matters not how trifling the disease may be, your first duty to your patient is to make him lie down at once. Take care to place him with his shoulders a little elevated, and his limbs parallel to each other, and thus you will prevent that ugly distortion of the whole body which always takes place where these precautions are neglected.