

# Clinical Lecture

ON

## CASES OF DISEASED BONE.

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GENTLEMEN,—I shall endeavour to pursue the same plan this session which I have hitherto adopted, of making a few clinical observations by the bed-side of my patients, when those observations can be made without pain to the individuals, or without giving them any further insight into their own cases than they already possess; but as this only applies to a few cases, we find it advantageous to retire for a short time to our operating theatre, where I can call your attention from time to time to the most interesting features of each case, with the practical and physiological instruction to be derived therefrom. You will soon perceive that they are not formal lectures, but simply clinical observations.

Now, you cannot fail to have been struck with the number of cases of diseased bone in my wards at the present time. This arises from two causes—first, cases of diseased bone are extremely frequent in this metropolis; secondly, we are able by operative interference to do more good in these cases in a short time than in many that present themselves for admission.

The first case that I will talk to you about is the one in which you have just seen me operate. You have seen me remove from a man's leg, while the patient was under the influence of chloroform, five detached pieces of bone, some of them with points as sharp as needles, none of them much larger than the end of your thumb. This is not, strictly speaking, a case of diseased bone, but a case of injured bone. It was originally a compound comminuted fracture, one of the worst I ever saw saved from the amputating knife. These fragments of bone had been detached at the time of the injury. The body of the bone had united, leaving these behind, a constant source of pain and distress to the poor fellow. The cavity from which they were removed was, as I showed you after the operation, smooth and soft, no carious or exposed bone communicating with it. I have therefore every reason to hope that all cause of irritation is gone, and that the patient will speedily enjoy the perfect use of the limb. As a rule, you should avoid all unnecessary meddling with a compound fracture after your examination of the limb when you are first called to attend it. And when you first examine a comminuted fracture, it is not good surgery to rake about the wound, and remove every detached piece of bone that you meet with. Such meddling with the wound adds to the constitutional irritation which always more or less follows a compound fracture. Any loose pieces that are superficial and apparent may be removed. The consequence of this non-interference is, that sometimes small pieces are left, and produce a good deal of pain; and you might imagine that they ought to be immediately removed, and that nothing was simpler or easier; but experience says no. It is better to wait a little, and see if Nature will not throw them off without your knife and forceps; for it has been found that such interference, even after the shaft of the bone had firmly united, and the whole seemed quiescent, has lit up a flame which the most skilful medical surgery has been unable to distinguish.

I had a case of this kind under my care many years ago, in which this occurred, and the man nearly lost his life, and I remember Mr. Green, to whom I was then acting as assistant, telling me of a case which occurred in his practice, in which erysipelas followed the removal of some dead bone of a compound fracture that carried the patient to his grave. Still one swallow does not prove it summer, nor one or two cases establish a principle. They do, however, warn us not to interfere lightly in the treatment of such cases, or without sufficient grounds disturb such inflammable materials as a limb which has been the seat of so serious an injury.

There is another point that I must advert to in regard to this case—namely, the impossibility of applying splints of any kind for the first month or five weeks. I have a great dislike to removing a limb if there is the slightest chance of saving it and the patient's life at the same time; still I must allow that in this case it is a question whether amputation had not better have been performed at the period of the accident. He cer-

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tainly would have been saved much suffering, and he would have got to his work much sooner; but I doubt if his wooden leg would have been as useful to him as his own, though it is shorter than the sound limb.

[This patient has gone on well in every respect since the operation; he has not had a bad symptom; he has lost the pricking and shooting pain he suffered from previously, and is now cheerful and contented.]

The next cases are also cases of bones injured by violence, though the violence has not been sufficient to fracture the bone asunder. This source of disease in bones has not, I think, been sufficiently attended to. You have all of you, I dare say, heard of such cases, or have seen bones fractured by muscular exertion alone. The fractured patella, of which there is a good case now in the ward, is an illustration of this form of accident. But larger bones have been broken, the humerus and femur have been snapped asunder by sudden and violent muscular contraction. The cases to which I now allude do not present such evident marks of injury at the time, and they are often passed by as mere sprains. A mere sprain! What does the surgeon mean by a sprain? What I mean by the term sprain is the forcible stretching of the ligaments of a joint until their fibres are more or less lacerated and torn. Tendons are sometimes torn or ruptured at a distance from their attachment to bone, as, for instance, the tendo-Achillis, the plantaris, and the rectus femoris, as pointed out by Mr. Grantham in his interesting surgical essays. The fibro-cellular tissue of which they are formed is also occasionally torn where it is incorporated with the osseous tissue of the bone to which it is attached; and this laceration is even more serious in its results than the more evident injury of the body of the tendon itself. It is this laceration which frequently gives rise to carious disease of bone, to necrosis, and also to inflammation of the periosteum. I believe that disease of bone is also induced by long-continued muscular exertion exciting inflammation of the osseous tissue at the point of a tendinous or muscular attachment without any laceration.

I remember a case in private practice of this kind, which interested me very much. The subject of it was a young lady, about twenty-four years of age, in good health at the time, but not strong, surrounded by every comfort that wealth could bestow, living well, and taking a fair amount of daily exercise. I was first consulted after a large chronic abscess had formed behind the right mamma, but not affecting the mamma itself. This was attributed, and, I believe, justly, to long-continued exertion of the arms above the head in dressing a Christmas tree. She was a woman of great nervous energy. Her determination and courage enabled her to go on with her occupation long after she felt fatigue. At night when she retired to rest, she felt an aching pain behind the left breast. Of this she made no complaint. A month after this, an abscess, in the form of a pullet's egg, showed itself above the mamma. The abscess was opened, pressure was applied, and a careful, tonic plan of constitutional treatment adopted, change of air, carriage exercise, &c., but still the sinus would not heal; and feeling convinced that there must be diseased bone, I recommended an examination of the sinus under chloroform, and the removal of any carious bone that might be found. The proceeding was thought too formidable, and another opinion was sought and given by a hospital surgeon of repute. His advice was to run a seton through the sinus, and this proceeding seemed to the patient and friends almost as bad as the one I had recommended, and my plan was ultimately agreed to.

With the assistance of my friend Mr. Martin, of Reigate, I first made an opening at the lower extremity of the sinus, below the mamma, with a prostatic trocar, for the sinus was at least five inches long. I next dilated the upper mouth of the sinus sufficiently to insert my finger, and then feeling a small portion of carious sternum at the upper part, and at the lower, a similar disease of the third and fourth ribs, I removed the softened bone, in both places, with the gouge, and from this time the case went on well, and the sinus rapidly healed. My only source of regret in the treatment of the case was, that I had not adopted this plan earlier; but one naturally shrinks from a formidable operation on a delicate, sensitive female, even with the assistance of chloroform.

There is a case now in the house, which illustrates this kind of injury and disease admirably. The subject, Nathaniel B—, aged eighteen, of strumous diathesis, a stoker on board a Thames steamer, exposed, therefore, to sudden transitions from heat to cold, was attacked with acute rheumatic inflammation of the knee-joint, and with subacute inflammation of the periosteum covering the clavicle. This latter mischief was indicated by a swelling, about the size of a pigeon's egg; but

as it disappeared in the course of a few days, by simply fomenting the part, we cannot suppose that suppuration had then taken place. About two months after this swelling first appeared, and after he had been on his back just nine weeks, whilst raising himself in bed, he felt a sudden snap of his collar-bone, and at the same time heard a distinct sound as if something had broken. He felt much uneasiness about the middle of the bone, and was quite unable to bring his arm forward, or raise it to his head, and all attempts to do so gave him great pain. At this time he was emaciated, and very weak.

From this account you will perceive that the collar bone was broken by the action of the clavicular portion of the pectoralis major, the bone having been previously weakened by disease. At the time the swelling took place just described, the periosteum was, I conclude, detached from the clavicle, and the portion of bone, which was thus deprived of the nutrition which it derives from the vessels of that membrane, mortified or necrosed. That some process of this kind took place was evident from his condition when he was admitted, which was only three weeks after the fracture took place. Instead of finding an ordinary fracture of the clavicle, which had not been bandaged, with the two fractured extremities overlapping, and tolerably firmly united, there was no attempt at union. There was a fluctuating tumour, about the size of a hen's egg, just below the bone, and the broken ends were expanded by imperfectly-developed callus, cup-like, and partly forming the walls of this tumour. When I first examined it, I was fearful that it was a malignant or cystic disease of the clavicle; but the fluid which followed the needle was unhealthy serum, presenting no appearance of cell growth under the microscope.

With a tonic plan of treatment and rest, the clavicle united, though the sinus did not close. I now allowed him to leave the hospital, believing that his general health would improve more in the country, and he was presented early in February. On the 17th of July he was re-admitted, still exhibiting marks of carious disease of the clavicle, but in addition to this mischief he had disease of the humerus. And now comes the practical and physiological point of interest. When he came in again there was an abscess over the insertion of the deltoid; when this was opened, a narrow sequestrum, about an inch and a half in length, was removed. This sequestrum was from that portion of the humerus to which the deltoid is attached. It would therefore appear that the same muscular effort which fractured the clavicle injured the humerus and induced necrosis; and hence the sequestrum which you now see before you.

The lower and posterior surface of the os femoris—that face of the bone which forms the anterior boundary of the popliteal space—is a very common seat of necrosis. The fact, for such it is, often puzzled me until I was aware of this muscular cause—if I may so express it—of necrosis. I believe that it is caused by violent and unexpected action of the gastrocnemius externus, and also, perhaps, by the short head of the biceps flexor cruris.

I had an interesting case of this kind, in Queen's ward, about a year ago, which got quite well after the removal of a large but superficial sequestrum.

At the commencement of this year I admitted a boy, only fifteen years of age, with disease of the lower third of the femur. He was not able to give a very clear account of the origin of the disease, but he says it commenced six years ago, during a convalescence from some cutaneous disease. For sixteen weeks he was confined to his bed with a profuse suppuration. Previous to his admission under my care he had been under a hospital surgeon; but still the disease lingered on without that operative relief which ought to have been afforded years ago.

On the 3rd of February I made an incision on the outer side of the thigh through two external openings, down to the bone, where I found a large loose sequestrum about five inches long—too long to be removed entire. I broke it with a pair of strong bone forceps. The cavity which lodged this bone was smooth and continuous. The wound soon healed, and he left the hospital quite well in about six weeks.

In all the above cases the injury to the bone might have been soon apparent, and the treatment clear and straightforward, but not so when the injured bone is more deeply seated. Sometimes, without any actual laceration of the surface of the bone taking place, the disease takes its rise from the tendinous attachment of a muscle, and extends to the ligaments and articulating surfaces in a joint. In some of these cases you find the bone neither carious nor necrosed, but the periosteum enormously thickened, and the bone in the immediate neighbourhood softened. This is especially the case when the injury is through the medium of tendon, which performs the double

office of a conductor of muscular power, and a ligament or guardian of a joint. Let me remind you of the origin and relation of the tendon of the popliteus muscle to the knee-joint. It arises in a deep pit on the outside of the outer condyle of the os femoris, a little above the articular margin of the bone; it descends obliquely behind the knee-joint, where it attains the space between the femur and the tibia; it is lined internally by the synovial membrane of the joint, and now plays the part of a true ligament. If therefore from any sudden or violent exertion on the part of this muscle its origin from the bone is injured and inflammation set up, you can readily understand how such inflammation may be extended to the knee-joint. This view is no mere theory. I will relate to you briefly a case, which many of the older students will remember as interesting me very much at the time. It would not yield to those measures which I have so frequently demonstrated to you are successful in arresting scrofulous disease of the cartilages; and though I was at last obliged to have recourse to amputation, I believe I delayed the operation, hoping against hope, some months after the case was considered hopeless by many who watched it with equal interest with myself.

E. B—, aged twenty-one, dark eyes and hair, rather strumous diathesis, was admitted under my care on April 11th, 1854. The knee is swollen and the shape altered, but apparently more from external than internal effusion. All motion gives her increased pain, which is not severe when at rest. It is much aggravated by pressure on the outer side, where there is a fistulous aperture, from which there is a slight discharge.

*History.*—Two years previous to her admission she slipped and fell on the grass suddenly, when preparing to run a race, and immediately felt a severe smarting pain in the right knee; it caused her to limp for a few hours, but she did not leave the picnic party she was at, nor did she lay up until four days had elapsed.

From this portion of the history we learn that the knee was not injured by a blow, but by a violent muscular exertion to save herself from falling after her foot had slipped upon the grass. The popliteus muscle would be called into play on such an occasion. The injury at this time could not have been very severe, for she did not lay by altogether until seventeen months after the receipt of this injury. If therefore she had rested it at once, I have no doubt that the serious mischief which afterwards ensued might have been prevented. About seven months ago the joint became enlarged and painful, and during the first month she used to lie upon a sofa during the daytime, and to walk up-stairs at night; at the end of that time, one evening when she was going up-stairs she experienced a sudden and severe pain in the knee, and felt as if something had given way in the joint. Since that night she has never been able to set her foot to the ground, and has lost all power of moving it, resting on it in the slightest degree, any attempt to do so giving her the most excruciating pain. At this time I believe that the connexion between the tendon of the popliteus and the external semilunar cartilage was torn through.

The surgeon who attended her placed the limb on a wooden splint, applied blisters from time to time, altogether amounting to eleven, eight leeches at six different times, cupped once, and used one seton. The pain during the last seven months has been very severe, sometimes worse at night, sometimes better; the general health does not appear to have suffered much. She has been well supported with wine, brandy, stout, and meat, all in moderation. Suppuration took place; the matter accumulated, and a swelling formed on the outer and back part of the joint. The surface broke, and a large quantity of pus escaped, and this opening has not healed.

I shall not weary you by reading the daily notes, though they are well taken and interesting, if our time was not so short. Repeated abscesses formed in the neighbourhood of the joint, and she had two or three severe attacks of hæmoptysis, and her sufferings at times were frightful; but still her health did not give way rapidly, and for ten months I combated the disease. At the end of that time it was clear that she must sink into her grave if her limb were allowed to remain on. On the 28th of February I amputated it, under chloroform. I made a very long stump, as her friends were able to afford her an artificial leg. She rallied quickly after the operation, and left the hospital quite well on the 29th of April, little more than a twelvemonth after her admission.

The examination of the knee-joint disclosed the following condition:—The patella was adherent to the femur by slight bands. The greater part of the cartilage was healthy, but there were patches of ulceration, and from the patches these adhesive bands sprang. The cartilage was nearly entire, and sound over the front of the femur in the rotulator furrow, and also over the inner condyle, but it was gone over the whole of

that portion of the outer condyle which articulates with the tibia. This bone was bare, soft, and eroded. The corresponding surface on the tibia was in a similar condition. The outer semilunar cartilage was softened and pulpy, and nearly absorbed. The tendon of the popliteus was brown, pulpy, soft, and disintegrated, and also the anterior crucial ligament; the posterior was discoloured, but firm. The periosteum covering the lower and back part of the femur was thickened, but not so much so as that on the tibia, which was nearly one-sixth of an inch in depth. The bone underneath was soft, but not carious. There was a large abscess in the lower part of the popliteal and upper part of the posterior tibia spaces. The popliteus muscle was thickened and infiltrated with serum, and completely disorganized.

The appearances just described are not those of an ordinary case of strumous ulceration of the cartilages. I must confess that I was glad to find that such was the case, as I believe it is only the second time that I have amputated a limb for disease of the knee-joint since I have been an officer of this hospital. In every other instance I have been able to procure anchylosis, though in one it required three years to accomplish it. I have several other cases of diseased bone that I want to talk to you about, but I must leave them to our next meeting.

## Clinical Lectures

ON

## PURULENT URINE

AS SYMPTOMATIC OF

## DISEASES OF THE KIDNEY.

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### CHRONIC PYELITIS.

THE value of the information to be derived by examining the chemical and microscopic character of the urine depends much on the care and accuracy with which these chemical and microscopic facts are applied to the condition and symptoms of the patient. The special characters of these deposits, if correctly interpreted, become highly significant and instructive, great aids to diagnosis, and the eventual basis of treatment. The cause and nature of a dropsical condition of the system are at once recognised, when in albuminous urine there are found epithelial, fibrinous, or waxy casts of a tubular character, glandular epithelial cells loaded with fat, or blood discs with amorphous fibrin, stained with hæmatin. The pathology of dropsy with such concomitants differs materially from that in which the urine is free from such deposits. But, on the other hand, cases occur in which there is no dropsy—no anasarca state, yet the urine contains albumen, to which is added the presence of pus corpuscles, minute membranous coagula entangling clots of blood, blood discs in abundance, and shreds of amorphous fibrine. If, in such cases, there be great irritability of the urinary organs, frequent micturition with pain referred to the neck of the bladder, perinæum, or penis, a suspicion at once exists of disease of the renal organs very different in character from that which we predicate on the first example. It is, however, only by a cautious comparison of the symptoms experienced by the patient with these morbid products in the urine that a correct and satisfactory diagnosis can be obtained. The presence of pus corpuscles in the urine is not, alone, sufficient to induce suspicion of renal disease. In gonorrhœa, or other inflammatory affections of the urethra, in catarrh of the bladder, or gouty inflammation of this viscus, pus would be present in the urine. In stricture, in chronic gleet, membranous *débris*, often entangling minute clots of blood, may be, and often are, present, and yet no suspicion of renal disease from any such appearances would be warranted. It is therefore by a careful comparison of the sedimentitious matters in the urine with the general symptoms of the patient that we are enabled to arrive at a correct and intelligible diagnosis. I have been led to these remarks by reflecting on the cases of pyelitis, or inflammation of the pelvis of the kidney which are now in Bur-

dett ward, believing that an interpretation of the means by which this diagnosis has been arrived at may be instructive and valuable to you hereafter.

The symptoms most characteristic of pyelitis are, rigors, with lumbar pains, sometimes dull and continuous, sometimes pungent and darting; often extending and becoming fixed at the crest of the ilium, or prolonged to the outside of the thigh, with numbness in the direction of the external crural nerve. Occasionally there is retraction of the testicle of the same side; there is frequent micturition, and great irritability of the urinary organs. The patient complains of pain in the perinæum, or in the neck of the bladder, or feels a darting pungent sensation along the urethra, fixing itself in the glans penis till temporarily relieved by passing urine: the quantity passed rarely exceeds one or two ounces, and the urgency for passing this small quantity recurs at very short intervals of time. The pain in the bladder, perinæum, or penis, is always relieved by micturition, and there is no difficulty or obstacle to the free passage of the urine.

The urine when first passed is cloudy, or even milky, but when set at rest, separating into two portions, an upper, clear, natural coloured fluid, not ropy, but containing albumen; a lower and distinct sediment of a yellowish colour, consisting of pus corpuscles, amongst which oftentimes may be seen minute fibrinous shreds or membranous flocculi, with a small coagula of blood attached. Earthy amorphous matter is also present in some cases. Hæmaturia, sufficient to cause discoloration of the urine may or may not have occurred; yet, in most cases, although the urine is not discoloured, scattered blood discs may be detected by the microscope.

If the disease be of a certain duration, there may be fullness and enlargement of the kidney of the affected side; for if a concretion becomes permanently fixed in the pelvis of a kidney, a partial obstruction of the ureter follows, and the usual conditions of an encysted and sacculated kidney have commenced. If, on the other hand, the calculus descends into the bladder, a train of symptoms sufficiently characteristic follows, which clearly indicate its descent into that cavity. The following case exhibits the symptoms of chronic pyelitis:—

W. M—, aged thirty-four, a groom, native of Suffolk, was admitted into Burdett ward. The ward-book states that he first began to complain, about three months since, of a sharp, pungent, fixed pain in the right lumbar region, which was followed by sensations as of extension of the pain downwards, in the direction of the bladder. At this time he passed his urine very frequently, and noticed that there was much sandy deposit in it. The pain and distress were always greatest before passing urine. After the gravel disappeared from the urine his symptoms became much aggravated, and he sought medical aid. He has never had rigors, nor has he known his urine to stop suddenly. On admission, his appearance did not indicate any amount of constitutional disturbance. He was of a spare habit of body, with the usual characteristics of those engaged in stable work. His chief symptoms related to the pain he suffered in the perinæum and neck of the bladder, the frequent micturition, and the want of continuous sleep. The urine, when first passed, is cloudy and milky in appearance; it soon separates into two portions—an upper, pale, clear, lemon-coloured fluid, and a lower yellowish-white precipitate. The first is neutral to test paper, and is albuminous; the second presents before the microscope the usual characters of pus corpuscles. The bladder was examined, and there was no evidence either of calculus, stricture, or prostatic disease. The patient was stripped and a careful examination made of the abdominal and lumbar regions. No want of symmetry, no fullness, nor irregularity in the region of either kidney could be detected; deep-seated pressure caused pain in the region of the right kidney, extending, the patient says, downwards in the direction of the bladder. The tongue is clean, the appetite natural, and the bowels are relieved daily. The patient, when closely questioned, adheres to his first statement, that the pain and distress he experiences gradually acquire intensity till the urgency to pass urine can be no longer restrained; that he rarely passes more than a tablespoonful, or at most a wine-glass, in quantity at a time; that relief immediately follows, but that uneasiness commences some fifteen or twenty minutes afterwards, and rapidly becomes worse till micturition again relieves him. He was ordered to be cupped, to be kept quiet, to be placed on a bland and simple diet, and the infusion of buchu to be taken three times daily, and an opiate at bedtime. A few days after admission a few membranous shreds, entangling a minute speck of blood, were observed amongst the purulent deposit. The patient stated that he had, in the earlier stage of the complaint, noticed similar appearances. The clear portion of the urine continued albuminous, and the