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CLINICAL LECTURES,

IN COURSE OF DELIVERY DURING THE PRESENT SESSION

AT GUY'S HOSPITAL,

BY BRANSBY B. COOPER, ESQ. F.R.S.

(Published with Permission of the Lecturer.)

MONDAY, DEC. 14, 1840.

LECT. VI.—*Excision of Scrofulous Joints—Amputation in Compound Fracture; with Cases.*

GENTLEMEN,—I recur to-day to the subject of the excision of joints, not only to read you the reports of the progress of both the patients whose cases I discussed with you some weeks ago, but also to describe a little more minutely than I did at that time, the process employed by nature to effect that reparation which it is the aim of the surgeon to accomplish by mechanical means.

The last report of the boy in Stephen's ward, whose elbow-joint I excised, was on the 8th of November; and ever since that report he has been improving, with the exception of slight purging, for which the chalk mixture was ordered, and after its administration the purging soon ceased. A weak solution of the sulphate of zinc was applied to the wound, as the granulations had assumed rather a flabby appearance. They are now much more healthy, and the wound is rapidly healing. The general health of the patient has also much improved. The elbow has considerable passive motion, he being easily able to put the hand to his mouth, with the assistance of the other hand.

The woman in Dorcas ward has also been going on most favourably, but the degree of motion is rather less than in the former case. The wound is healing rapidly, the soap plaster being the only application used.

Now the disease in these cases was of such an extent, that our only resources were to remove the limb by amputation, to excise the morbid structures as I did, or to endeavour to support the patient during the process set up by nature to produce soft ankylosis. Suppose I had amputated, the patients would have been mutilated for the remainder of their existence; and if we had merely employed palliative measures; the process of separation and throwing off of the diseased tissues would have been so slow, that instead of there now being considerable power restored to the limb, with the almost certain expectation of rapid progression, all we should have been able to say would have been that the disease had advanced a little, and the general health was beginning to suffer more evidently from the pain and discharge.

The cases were instances of what is termed white swelling—scrofulous caries of the articular extremities of the

bones; and when I state that it is found by statistical investigation, that about three-fourths of all the amputations which are practised, are performed on account of this disease, you will see at once how very important it is to advocate a practice which, at the expense of a less severe operation, leaves a useful limb, in place of a deformed and useless stump. The morbid action in some of these cases may commence in the synovial membrane, in others in the articular cartilage; but the adjacent bone is always subsequently if not primarily affected. This disease is generally of an indolent character; for the delicacy of the blood-vessels which is visible externally in the common signs of a scrofulous constitution—thick lips, fine delicate skin, and irritability of the extremities of the mucous canals—extends throughout the body; and thus when inflammation attacks any structures whose vessels have little power, its progress is very slow and indolent, but also extremely obstinate, for you cannot restore the vessels to their healthy action, as under other circumstances. The lymph which is thrown out, instead of becoming rapidly organized, as it does when the vessels which have effused it are of normal power, is fragile and weak; the pus, instead of being of a creamy consistence, is flaky and ichorous; and the granulations of a sore are pale and flabby. You must remember that it is under all these unfavourable circumstances that you have to wait upon nature's process of reparation of a scrofulous ulcerated joint. There is a deposit of a yellowish cheesy substance in the cancellated structure of the head of the bone, by which irritation is set up: the adhering cartilage is separated and removed by absorption; and the synovial membrane is converted into adventitious organized adhesive matter. Fistulous openings form in the soft parts, by which the carious bone, and other diseased tissues, are thrown off; and ankylosis is finally accomplished, either by bone, leaving a stiff joint, or by a fibro-ligamentous tissue, which, under properly regulated motion, has sufficient flexibility and elasticity to allow of very considerable power being exerted by the limb. The man you all saw in the hospital last year, was certainly in the house eleven months after the operation; but at the end of that period he could lift a heavy form, or table, and put his limb into any position. There will always be some slight deformity after this operation; the joint loses its natural prominences by the removal of the extremities of its bones; and, as you may observe in the boy in Stephen's, there is a little shortening of the limb, and a doughy feel about the new articulation. I have only one more remark to make on this subject, and that is to warn you to be very careful of the angle at which you retain the limb during the progress of ankylosis; for if you have a stiff joint, with the limb in an awkward position,

such deformity results, that it is not very uncommon for patients to desire amputation, rather than be burthened by the useless member. I think also that this is another case where excision may take the place of amputation, and that it will be found a very proper operation to remove the deformity resulting from bony ankylosis at a useless angle.

I have now, gentlemen, to draw your attention to a case of severe comminuted fracture of the tibia and fibula, on account of which I amputated above the knee a few days since.

CASE.—Samuel Fox, aged 20, a fine athletic man, employed as a tanner, of temperate habits and excellent health, was admitted into Naaman's ward on the 1st of December last. While employed about some of the machinery of a steam engine, about half-past two in the afternoon, the bottom of a smock-frock which he had on became entangled in the fly-wheel of the engine, and his leg was dragged in with it. The engine was immediately stopped, and his limb extricated. He says that he felt no pain for some little time after the accident, but that while being conveyed to the hospital his leg began to ache very much. He was not at all faint after the accident; was perfectly sensible, and lost very little blood.

This immunity from suffering at the time of the occurrence of very severe accidents, is very common, but equally difficult to account for. When soldiers are wounded by ball in action, it is very common for them to look for blood or some other sign by which they can detect the situation of the injury, as they have no pain, or other sensation for some time after the wound. This is also especially remarkable in cases of compound fracture with laceration, from heavy shot. The wounded man has so little suffering, that it is often a considerable time before the surgeon can convince him that he has experienced an amount of injury sufficient to warrant amputation. There was very little hæmorrhage in this case, and this is also frequently observed in gunshot wounds. I have repeatedly known cases where a limb has been completely carried off by a cannon-shot, and the man carried two or three miles to the rear, without there being a stain of blood on the sash in which he was conveyed. But the absence of hæmorrhage is much more easily accounted for, than the absence of painful sensation; for in these lacerations the arteries of the limb are greatly stretched, and the external coat, by reason of its elasticity, is drawn out to a considerable length before it gives way, and is then torn in shreds; while the middle and inner coats are ruptured much sooner, and, curling up, form with the shreds of the external coat an effectual barrier to the effusion of blood, and favour the formation of a clot.

To return to our case. He was admitted five minutes before three in the afternoon, when we found the tibia very much comminuted, and the upper portion of bone protruding for some distance out of the wound, the fracture extending to within three inches of the knee-joint. The fibula was very much comminuted, and its head dislocated. The soft parts were very much lacerated, the lower part of the leg being almost separated from the upper. There was scarcely any hæmorrhage, though, upon examining the leg after its removal, the anterior tibial artery was found to be lacerated, but the posterior tibial artery with the nerves was uninjured. The man was perfectly calm, his pulse good, and surface warm; and as I was in the hospital I saw him a few minutes after his admission, and at once decided to remove the leg immediately. He was removed to the operating theatre, and I amputated the leg above the knee by the circular operation, the fracture being too high to admit of its being performed below the knee.

Now, whenever you have the choice, you would invariably prefer to operate below the knee,—and I was going to say even run some risk in doing so; but risk is a word scarcely admissible in the vocabulary of the surgeon,—for just consider the different condition of a poor man who is left with a knee-joint, from another without it. You may

say, why a poor man? How does a poor man differ from a rich one? There is this important difference, that the one is independent of work, while the other must labour for bread; and it is almost impossible for him to do so in any common occupation without the greatest weariness, when he has only the stump of his thigh; but if the knee be left, an artificial support enables him to go through his duties with little more fatigue than before his injury? Why did I not save the knee in this case? Because the injury was too high, and the superior tibio-fibular articulation injured; for though the synovial membranes of this joint and that of the knee do not always communicate, there is always a danger of their doing so, from their close connexion. Here is a preparation on the table of the head of a fibula which was excised, in this hospital, and the man died from inflammation extending to the synovial membrane of the knee-joint. If I had operated below the knee, the patient would in all probability have been exposed to a second operation above, and this at a time when his powers were impaired by local disease.—The patient bore the operation very well, and there was very little hæmorrhage, the femoral artery being remarkably small. When taken to bed he was perfectly quiet, and calm. Before leaving the theatre the edges of the stump were brought together by two strips of adhesive plaster, and shortly afterwards he had 25 drops of laudanum.

9 P.M. The stump, which is very large, started a good deal at first, but for the last hour and a half has been pretty quiet. The temporary dressing was now taken off, and circular strips of soap plaster applied so as bring the soft parts over the bone, while the edges were brought together by strips applied from behind forwards. There was no bleeding, and he was very comfortable.

Dec. 2. Has slept a little during the night; remains easy.

3. Good deal of discharge from the stump; bowels not open. Ordered two drachms of sulphate of magnesia in peppermint-water every four hours.

8. Since last report he has been going on very well. The stump was dressed to-day and looked very healthy; patient quite comfortable.

12. Stump dressed again; all going on well.

This was one of those cases in which no man of common understanding would defer amputation, in the hope of saving the limb, there being so much comminution of bone and laceration of soft parts as to render such a hope altogether absurd. But more frequently, when called upon to decide as to the question of amputation in compound fracture, you will have to exercise much more judgment, and should think very deeply before you mutilate a fellow-being. What are the objects you have in view? First, to save life, then to save the limb, and thirdly, to make the saved limb as useful as possible; and while you must be especially cautious against any undue anxiety to save the limb, endangering the life of your patient, on the other hand you must not rashly render him an object of pity for the remainder of life. There are some operations in surgery which, when successfully performed, not only relieve the sufferer from present danger and pain, but, while they remove the disease and clearly save life, they leave him as perfect a man, as fit for all the purposes of life, as before he became affected by the complaint. Thus, in removing a stone from the bladder, in reducing a strangulated hernia, and in curing an aneurism by ligature—(certainly, when the effect of merely local disease of the artery)—we restore our patient to all his powers, and all the enjoyments of existence; and the mind is filled by the pleasing consciousness of the successful exercise of science in the relief of suffering humanity. But amputation cannot be regarded in this light; it is merely a means of removing a limb we cannot cure, or of saving life when a limb has been too much shattered to admit of reparation; for the injured person is left maimed, and rendered unfit for active occupation. It is extremely difficult to know the precise extent of injury

which will warrant or require it; and I can only say that this is one of the most difficult questions in surgery, and one which must be decided by the judgment and experience of the practitioner, and the peculiar circumstances of individual cases. This is not the time for me to enter on the subject of the various diseases requiring amputation; but I will occupy the few minutes left with a few words on the period at which it should be performed in cases of local injury. Suppose that, as in the case of Fox, it is very evident the limb cannot be saved,—wait till the effects of the shock upon the nervous system have gone off, before you add the fresh one of the operation, and then the sooner the limb is removed the better. If you have attempted to save a limb, and irritative fever comes on, with unhealthy action about the injured part, your chances are very poor, and you will have to seize the most favourable opportunity which presents itself in the absence of great suffering, and feverish disturbance. You may have to amputate on account of some secondary accident; and it was usually considered that, when the femoral artery was wounded in cases of compound fracture, this operation was imperatively called for; but there was a case, I dare say you have often heard spoken of here, in which I tied the femoral artery, with the effect of saving the limb. A man had a compound fracture of the thigh, which was put up over night in the usual manner, and there were no unusual symptoms; but the next day the dresser said it was very much swollen, and asked me to look at it. It was a very great size, and distinctly pulsated. The man said the limb had a sort of spasmodic start in the night, and had been swelled ever since. It was, therefore, pretty clear that the rough edges of the bone had torn through the femoral artery; and I, accordingly, cut down upon it, and tied it. Now that man recovered so rapidly, that there was a joke about the hospital at the time to the effect that the best way to cause speedy union of a compound fracture of the thigh, was to tie the femoral artery. And really, on a little examination, there would appear to be some truth in it; for the main trunk of the limb being tied, the collateral circulation would be more active, and the blood passing more fully through the smaller vessels, the reparative process might be, therefore, accelerated.

This preparation, now on the table, reminds me of another case where you may have to perform secondary amputation. In this case amputation was first performed above the wrist from an injury to that joint. The extremities of the nerves became morbidly affected, attended with insufferable pain, which induced the patient to seek a second operation, and the limb was removed at the upper part of the forearm. The result of this led to only temporary relief, when a recurrence of former symptoms supervened, and a third time the patient underwent amputation, on this occasion above the elbow. Again the nerves became affected, and I amputated at the shoulder-joint, which led to a permanent cure.

A CASE OF HYDROPHOBIA.

By JONATHAN TOOGOOD, Esq.

SENIOR SURGEON TO THE BRIDGEWATER INFIRMARY.

On Saturday evening, August 31st, 1816, an apprentice of Mr. William Holloway, Bridgewater, aged about 12, first expressed himself as feeling indisposed, refusing to take his usual supper. He was persuaded, however, to drink some warm cyder. On entering into his bed, his bed-fellow observed him to shudder considerably. On the morning of Sunday, Sept. 1st, the boy refused to take his tea, although he complained of thirst, alleging and wondering that he could not swallow. He took, however, some solid food,—a little bread and butter. About noon, on this day, he was found to be affected with slight headache, slight sickness at the stomach, and a spasmodic convulsive affection of the muscles of the throat. The countenance was expressive of anxiety, the tongue white, the pulse frequent, and the skin hot. On offering him a glass of water, he was

seized with a violent convulsion of the face, head, throat, and trunk of the body, whilst attempting to bring the glass to his lips; after repeated attempts to swallow, each of which was attended with a degree of shuddering and horror, he succeeded at length in taking a spoonful into his mouth, but was immediately seized with a spasmodic affection of the throat, threatening suffocation. He took three grains of tartar emetic, which induced vomiting and purging. In the afternoon all the symptoms were increased. The spasms were induced by slight causes, such as an agitation of the bed-clothes; the pulse beat 110 in a minute, and there was much thirst. On Monday morning, Sept. 2d, 10 o'clock A.M., the boy was found sitting up in bed, the countenance flushed, and the skin hot; the sight of water, of the spoon by means of which it was intended to inspect the fauces, a draught of air, the rapid motion of any object near the face, the opening of the window,—all induced immediate spasmodic catching motions of the face, neck, and arms, and a sort of swinging movement of the trunk of the body; occasionally these convulsive motions took place spontaneously without any apparent external cause. Articulation was sometimes easy and distinct, but sometimes difficult, agitated, hurried, with hesitation and a spasmodic effort. The countenance denoted great anxiety. The patient always sat up in bed. The tongue was protruded easily, and was whitish. The pulse was 120. Hæmorrhage had taken place from the nose. Thirty ounces of blood were taken from the arm. About 5 P.M. every symptom appeared in an aggravated form; the countenance was suffused, except about the nose and upper lip, which were preternaturally white; the eyes started, and were glossy. There was an expression of anxiety amounting to agony. A quantity of mucus and saliva now collected constantly in the fauces and on the tongue, which he protruded out of the mouth in a hurried manner, and seemed anxious and impatient to have removed. The sight of this frothy fluid seemed indeed to aggravate all his sufferings, and he requested repeatedly, in an eager and impatient manner, to have it removed by means of a handkerchief; this he sometimes did himself too, with the same impatience, until at length the lips presented an abraded surface. The body, arms, &c. were now almost constantly affected with strong spasmodic affections; sometimes he requested to be held still. The respiration became frequent; the hands and feet were cold and clammy; the pulse 160, and small; there was no erection of the penis. At this time he attempted to get out of bed to go to stool, in doing which the motions of the body and limbs were rapid, hurried, convulsive, and apparently little under his control. The sight of water, &c. still induced the same painful effects as before. There were occasionally moments of delirium, but in general he was rational and sensible to external objects, and recognized the bystanders. He had been occasionally much exasperated at his mother, whom he had hurt on the hand, by the finger nail; in general he manifested no disposition to hurt or bite any one. About 8 P.M. the countenance appeared fallen, the surface was become cold, the pulse imperceptible. There was still constant but feeble spasms, and still the protrusion of frothy mucus from the mouth. There was at this time a constant muttering delirium; the voice had become inarticulate. Soon afterwards he assumed the supine, recumbent posture, the spasms became still feebler and smaller, and confined to the mouth, throat, and neck; the eyes were opened and unfixed, the pupils throughout the disease were unusually dilated. In this state of debility and feeble spasmodic agitation he remained a short time, and expired just forty-eight hours after the accession of the first symptoms of hydrophobia. This little boy had been bitten under the left eye, slightly, about six weeks before, by a large spaniel dog, which afterwards died. The skin had been slightly broken and abraded, and a drop or two of blood flowed from the part. But the wound was regarded as altogether trifling; about this part the boy complained of pain during the continuance of his complaint.