

Lectures

ON

CLINICAL SURGERY,

DELIVERED DURING

THE WINTER SESSION OF 1854-5.

By JAMES SYME, Esq.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF EDINBURGH.

LECTURE XIX.

EMPHYSEMA.

THERE is at present in ward No. 5, a case of emphysema, very remarkable on account of its extent, and still more remarkable from its source. The patient, James P—, aged twenty-one, was at work at the North British railway on the 26th of February, standing between an engine and the tender, which was propped up by a block at the end next him, when the block slipping, the tender fell, and after the wheels had struck the rails, was carried forward by its momentum, and crushed him across the shoulders against the engine. He was brought to the hospital within half an hour after the accident, labouring under considerable dyspnoea, which made the recumbent posture unbearable. On careful examination, however, no fracture of the ribs could be detected; but the left collar-bone was found broken, with considerable displacement of the fragments. He was spitting florid blood occasionally in small quantities, and the right side of the chest, and the right arm, to the wrist, gave the peculiar crackling sensation of emphysema, while the left side of the chest was free from this condition, except over the seat of fracture of the collar-bone. The only way of accounting for the emphysema and bloody sputa, appeared to be that the fragments of the clavicle had wounded the pleura and lung above the first rib, whence the air had curiously enough passed across the middle line to the right side, and inflated the cellular tissue there, although the left side was scarcely at all affected. This diagnosis was confirmed by the circumstance that as soon as the displacement of the fragments of the clavicle was reduced by drawing the shoulder outwards, the dyspnoea ceased almost entirely. In the evening, his pulse having risen to 128 with considerable fullness, while the dyspnoea had increased, blood was taken from his arm to the extent of twenty-five ounces, with the effect of reducing the force of the pulse, and greatly relieving the dyspnoea; the bowels were freely opened by a calomel and jalap purgative, and a mixture containing antimonial wine, liquor of acetate of ammonia, and a little morphia, was prescribed for him. Under this treatment he had gone on favourably on the whole. The emphysema did not increase much after his admission till yesterday afternoon, when, after a violent fit of coughing, the right side of the chest was found much distended, and the air had also passed up the right side of the face, and inflated the cheek and eyelid; the left side of the neck and chest were also now considerably affected. The emphysema has since continued to increase, and at present the face is enormously swollen, so that both eyes are closed, and the shape of the features completely altered, while the neck and both sides of the chest and abdomen are distended and tympanitic. Still his general symptoms are favourable: the breathing is not so laboured as might be expected; and the sputa have almost entirely lost their bloody stain. Such a degree of emphysema is very rarely seen; but the origin from fracture of the clavicle is still more rare; and, indeed, I do not recollect having ever before seen an example of it. But if a fracture of the rib may cause emphysema, there seems no reason why fracture of the clavicle, especially when produced by such extreme violence as in this case, should not have a similar effect. For the production of emphysema it is necessary, when there is no external wound, that there should be a double wound of the pleura—viz., of the pleura costalis

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and pulmonalis, and that such a double wound did exist in this case is proved by the spitting of blood that followed the accident. You do not find air entering the cellular substance unless there be some special circumstances causing pressure, and forcing it in. Such circumstances are present in the case of a double wound of the pleura; the act of expiration produces pressure on the air in the lung or pleural cavity, and tends to drive it out by any channel that may be open for its escape, and it is thus impelled through the wound in the pleura into the cellular substance. This occurs most when the force of expiration is greatest, as in coughing; and I am informed that last evening a single act of coughing was seen to inflate suddenly a part of the face that had not before been affected. The occurrence of emphysema is not in itself of much consequence; indeed, it rather seems to act as a sort of safety valve; for if the air should get into the pleural cavity without any way of egress externally, the wound in the lung being valved, every act of respiration would increase the quantity of air contained in the pleura, or pneumo-thorax, which might occur to such an extent as to cause compression of the lung. It has been proposed that in such cases, where the respiration becomes extremely embarrassed, an opening should be made into the pleural cavity to give vent to the confined air. This, however, though it appears very correct in theory, must be very seldom necessary; for though I have known several cases where it was talked of, I never saw one where it was actually required. If you do ever have recourse to it, you must take care to open the proper side of the chest; for if the sound side were punctured, the other lung would collapse with an effect no less speedy than fatal. This is no theoretical case; for it once happened long ago in this Infirmary, as I have been informed by one of the surgeons who were present. An incision was made between two ribs on the side supposed to be affected; immediately a hissing noise was heard. "Oh!" it was said, "that is the sound of the air coming out;" but unfortunately it was the air rushing in, and the patient died immediately. The stethoscope might be supposed to make the diagnosis more easy, the respiratory murmur being evidence that pneumo-thorax does not exist, or only to a very slight extent; but the condition of the integuments of the chest seriously opposes the recognition of this sign. I recollect a case in which I wished to puncture the chest, provided I could ascertain which was the side affected, and I requested two very distinguished authorities on the stethoscope, both since deceased, to examine the chest. One of them said one side was affected with pneumo-thorax, the other the other; so I thought it best to wait, and the patient recovered. The treatment in a case like that we are considering is to place the fragments of the bone in proper position, and to give tartrate of antimony, with diaphoretics and a little morphia; and should the swelling increase to an inconvenient extent, the distended integuments should be punctured to allow the air to escape; but this should be avoided unless urgently required. In this case the air has been introduced into the patient's body over a large space without any bad result, proving that the old notions of the deadly effects of the entrance of air were not well founded. You may recollect that this opinion was once so strongly entertained, that when a man had died in consequence of a red-hot poker being thrust through the chest, his death was attributed to the entrance of air.

[In the evening of the 1st of March, the patient suffered much from dyspnoea, and the distention of the integuments with air being much increased it was thought right to puncture the skin, and two openings were made, one in the middle of the throat and the other over the seat of the fracture of the clavicle, which was now more distended than any other part, and was only opened because the other puncture failed to give relief, and the dyspnoea was becoming alarming. A large quantity of air was discharged from the opening above the clavicle, and the difficulty of breathing was at once relieved. During the night, however, respiration became again so much oppressed that dissolution appeared to be impending, and another puncture was made in the neck, and more air was let out from that over the seat of fracture by removing a crust of inspissated blood. His breathing was again completely relieved, and during the next two days it remained generally easy, the air, which evidently still found its way from the pleural cavity into the cellular tissue, being discharged almost constantly by the puncture over the seat of fracture, which continued patent. Occasionally, however, the external aperture became closed by the drying of the slight discharge that exuded from it, and at these times the emphysema increased and the dyspnoea returned, till the crust was again removed from the puncture. On the whole, however, the emphysema continued on the increase, and

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on the 3rd of March, both sides of the face were equally and excessively distended, and even the conjunctiva was curiously blown up into semi-transparent vesicles, resembling the swim-bladder of a fish; both sides of the neck, chest, and abdomen were also greatly distended. The right arm was in the same condition. The scrotum was blown up like a bladder, while the penis was curiously free from emphysema, as also were the lower limbs, except for a short distance below the crest of the ilium: the left arm was only slightly affected. Yet notwithstanding this enormous degree of distention of the superficial parts, the breathing, as above stated, continued easy so long as air escaped by the puncture over the broken clavicle; the pulse, also, which had been as high as 130 before the punctures were made, fell to 108; the patient's appetite returned, though he was not allowed anything stronger than beef-tea, and his tongue continued clean and moist, as it had been ever since the accident. On the 4th of March, however, the exit of the air from the vicinity of the seat of fracture became prevented by inflammation extending from the punctures and spreading through the skin and cellular tissue; and from this time forward, although repeated punctures were made in different parts, little relief was given by them; at the same time, the emphysema diminished rather than increased, and it appeared that the opening in the pleura had closed, and that the dyspnoea, which now increased considerably, was not due, as it had before been, to obstruction of the movements of the chest by the distention of its parietes, but to some internal cause. An attempt was therefore made to ascertain whether pneumo-thorax was present, but the integuments of the chest being everywhere distended with air, a perfectly tympanitic percussion sound was produced from that cause on both sides, and auscultation was also interfered with by the loud crackling of the emphysematous integuments under the stethoscope. At the same time the motions of the chest were equal on the two sides, and it was therefore impossible to determine, from physical signs, which side of the chest, if either, was the seat of pneumo-thorax. It will be remembered that the right side was that which, in the first instance, was almost exclusively affected with emphysema, and though the diagnosis then made, was, that the fragments of the left clavicle had punctured the lung, yet considering the great rarity, if not the absence of precedence, of emphysema due to fracture of that bone, and the deadly effect of opening the wrong side of the chest, it was not thought justifiable to open the left pleural cavity, even when his dyspnoea became so extreme as to threaten dissolution. After about twelve hours of extreme suffering from laborious respiratory efforts, under which his robust frame bore up in a wonderful manner, he died at five A.M. of the 6th of March, his pulse remaining good, though very rapid, (140,) in sympathy with the respiration, and his lips retaining their rosy tint till within a very short time of his death. To the last his tongue was clean and moist, and the scanty sputa was simply bronchitic; in short, there were no symptoms of inflammation.

On examination of the body, thirty-six hours after death, a burst of air came from the left pleural cavity when the chest was opened, and the lung of that side lay close to the spine, perfectly collapsed, absolutely non-crepitant throughout, and of peculiar soft, yet tough consistence, and when removed from the body, it sank in water. The right lung was also somewhat collapsed. There was no fluid in the left pleural cavity, nor any sign of inflammation, except some minute portions of lymph upon the diaphragm; and the whole of the surface of the pleura costalis and pulmonalis was therefore readily inspected. The only suspicious part of the pleura costalis was the portion corresponding to the apex of the lung. This was removed, together with the first three ribs, and the part of the spine to which they were articulated; half the sternum, the clavicle, and adjacent soft parts. On examination of the parts removed, the first rib was found fractured close to the spine, but the fragments were so disposed, that it was clearly impossible for either of them to have punctured the pleura and lung. But in the part of the pleura costalis that projects above the first rib, there was, at one point, an appearance of congestion and irregularity of surface suggesting the idea of a cicatrizing wound, and this injury of the pleura was found to be exactly in a line with the outer fragment of the clavicle, which presented a very oblique fracture, with the outer portion depressed. These appearances led to a careful dissection of the parts immediately external to the pleura above the first rib, when it appeared that the injury of the pleura was seated a little internal to the subclavian vein; over this part a quantity of firm lymph was found containing bubbles of air, and so matting the parts together, that it was impossible to dissect off the surrounding textures from the external surface of the pleura at that point, whereas in all other

situations this dissection was easily accomplished. No doubt now remained that the suspected point of the pleura was really the seat of puncture, and it was found on pushing inwards the outer fragment of the clavicle, that the sharp point of that portion of bone reached the injured part of the pleura, after passing over the subclavian artery and vein; and it was thus explained how the piece of bone mentioned, which, it will be remembered, was found thrust inwards at the time of the accident, had produced the wound of the pleura without injuring the vessels. Further, on examination of the left lung, a puckered cicatrix appeared on its apex, at the part corresponding to the injury of the pleura costalis.]

CASE OF MALIGNANT TUMOUR.

In the beginning of January last a medical practitioner of this city called upon me with a young gentleman, thirteen years of age, accompanied by his father, to have my opinion of a slight enlargement which had been recently noticed in the forearm, a little below the elbow. There was no discoloration or other change perceptible by sight except some degree of fullness, but under the muscles a sort of thickening could be felt in the situation of the bone. It was stated that for a few weeks previously the boy had occasionally complained of uneasiness in moving his arm, in consequence, as he supposed, of over-exertion in playing at ball. Notwithstanding the trivial aspect of the case, there was something in the characters of the swelling that excited in my mind a strong suspicion, approaching to conviction, that it would prove to be a malignant growth. Having expressed this opinion to the medical gentleman, in order to avoid occasioning unnecessary alarm, I said to the parent, that the complaint seemed to be either of no consequence, or something which might prove serious; that, in the former case no treatment would be requisite, while, in the latter, none could be of any service; and, therefore, that the proper course was to take the boy from school and keep him under observation until time should determine the question which then appeared doubtful.

About a month afterwards the boy was again brought to me, that I might see a change for the better, which was supposed to have taken place from his being able to move the arm without uneasiness, and from the swelling being rather less than larger. Much desiring to entertain a more favourable opinion than I had felt it necessary to do upon the former occasion. I gladly learned these signs of improvement, and expressed a hope that nothing serious might result. But at the end of another month, on the 13th of March, the patient, who had still been kept quiet and away from school, was brought to me a third time in consequence of decided enlargement of the tumour having become perceptible, and I then found the evidence of a malignant growth from the bone so distinctly marked that I could no longer doubt the correctness of my original impression, or hesitate as to the necessity of amputation, which I accordingly advised to be performed without delay, in order to lessen the risk of contamination from the diffusive character of the disease. This communication was not well taken by the patient's father, who, instead of giving credit for the early discrimination which had prevented the employment of treatment that must have been useless at least, if not injurious, or feeling grateful for the interest which had been taken in the case, allowed his grief for the distressing truth to ferment into resentment against those who had discharged a painful duty in making him aware of it. In this humour he carried the boy to London, where Sir B. Brodie, Mr. Erichsen, Mr. Stanley, and Mr. Fergusson, are said to have decided that recovery was *not* impossible, that amputation was *not* inevitable, and that means of treatment were *not* hopeless. But the expectations thus excited were destined to be of short duration, as the tumour rapidly enlarged, and the patient, rejecting his food, began to vomit; so that the ceremonies of puncturing, probing, and incision having been duly gone through, removal of the limb, being at length declared necessary, was carried into effect on the 12th of April.

The father of the patient now alleges that if the means of treatment had been employed at an earlier period, they might, and probably would, have led to a more satisfactory result, and has expressed this opinion in terms so decided, especially with reference to professional judgment, that I feel it my duty to propose the following question:—

Did the gentlemen whose names have been mentioned, suggest or sanction the suggestion that any means of treatment, at any period of the case, however early, could have altered the nature of such a tumour, or prevented it from pursuing the course of a malignant growth?