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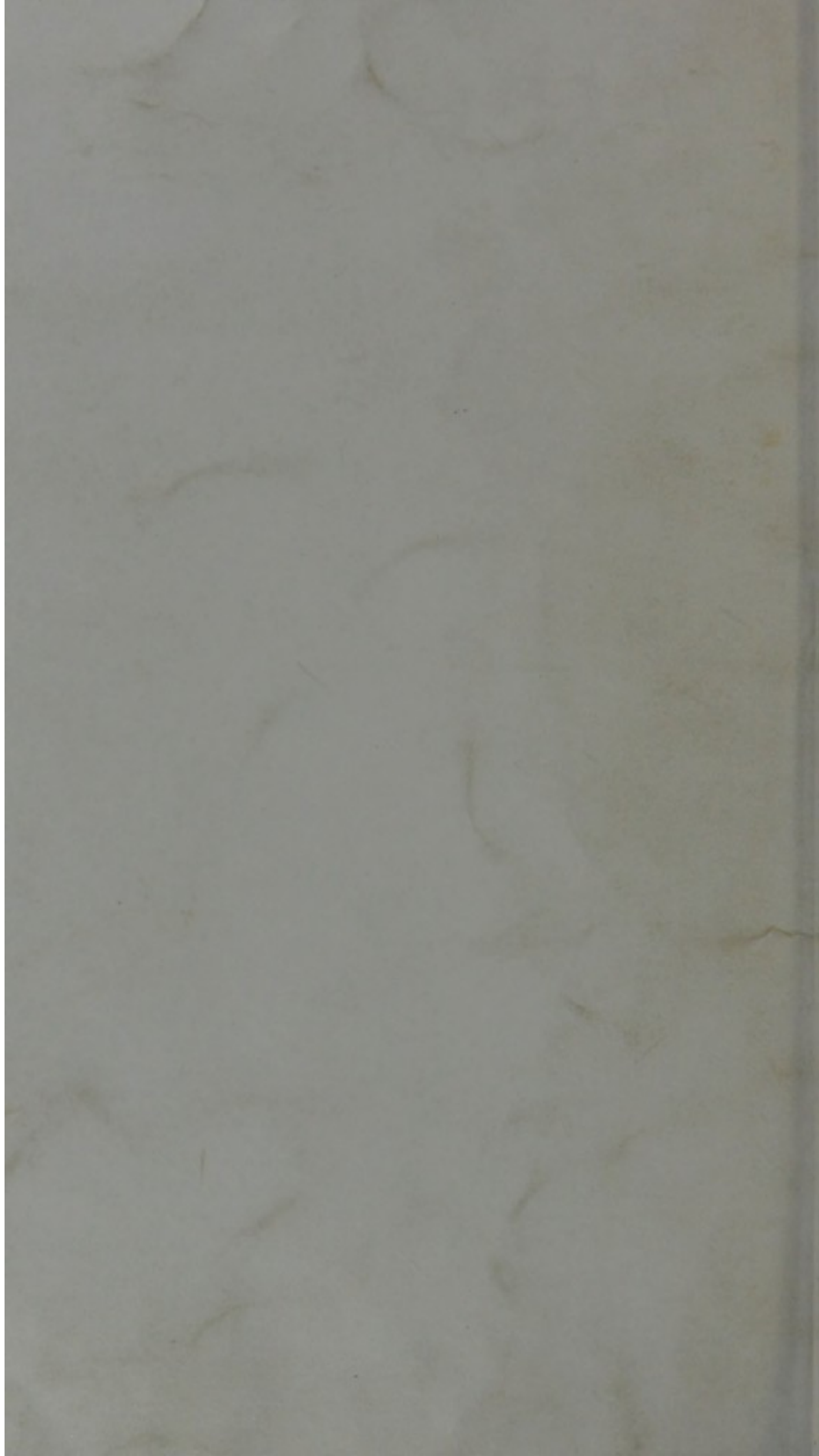
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CASES IN SURGERY.

By JAMES SPENCE, SURGEON.

FROM THE MONTHLY JOURNAL OF MEDICAL SCIENCE, FOR FEBRUARY 1848.

CASE I.—*Case of Ligature of the Axillary Artery for Hemorrhage resulting from a Burn of the Arm.*

DAVID HENDERSON, æt. nine years, met with a severe burn of his left arm, on the 20th December 1845, owing to his clothes taking fire.

In the absence of Mr Kerr, the usual medical attendant of the family, another medical gentleman dressed the wound with cotton wadding; but owing to the offensive smell of the discharge, and to see the full extent of the injury, Mr Kerr removed this after some days. He then found that the true skin was very severely injured, and that the burn extended from the lower part of the axilla to near the hand, and in the upper arm was chiefly situated towards the inner side.

Stimulating applications and poultices were now used, and in a short time sloughs separated from the injured surface above and below the bend of the arm, and the sore healed kindly enough at several points. At the bend of the arm, the sloughs were very deep and long in separating, and Mr Kerr watched their separation with considerable anxiety for fear of hemorrhage taking place.

On the evening of the 6th of January 1846, a portion of slough came away, and was followed by considerable loss of blood. Mr Kerr and Dr Duncan saw the boy shortly after this, and as the bleeding was then evidently venous, they arrested it by bandaging from the fingers upwards, and placing a graduated compress over the bleeding point. This completely arrested it until the evening of the 8th January, when a deeper portion of slough separating, sudden and profuse hemorrhage took place; Mr Kerr attended almost immediately, and seeing the bleeding was now arterial, arrested it

by compressing the humeral till I arrived, but the child had already lost a very large quantity of blood. On examining the arm, the whole extent of the limb, from the lower margin of the axilla to the hand, exhibited the effects of the burn, being raw and discharging freely. On removing a piece of lint from over the bend of the arm, a deep cavity was exposed, and at the bottom of it the brachial artery was seen, with a small oval opening in its anterior wall; when the pressure on the brachial was relaxed, a jet of blood came from this opening, so as to leave no doubt as to the source of the hemorrhage. From the appearance of the opened vessel, and the sloughing state of the surrounding parts, I considered it improper to trust to ligature immediately above and below the opening; whilst the state of the arm, together with the impaired vitality of the skin and other tissues, rendered ligature of the brachial in the middle, or higher in the arm, equally unadvisable. I therefore determined to tie the axillary in the third portion of its course, where it lies on the tendon of the latissimus dorsi; with this view the arm was separated from the side, and extended as far as could be done under the circumstances.

I made an incision about $2\frac{1}{2}$ inches long, commencing about an inch and a half within the anterior margin of the axilla, and carried down along the inner edge of the coraco-brachialis; the fascia was divided to the same extent, and the plexus of nerves brought into view. I next carefully separated the median and internal cutaneous nerves, which exposed the vessel, and, after carefully cleaning it, passed a ligature round it and tied it. There was a good deal of troublesome oozing of blood during the dissection, owing to the raw and vascular state of the skin at the lower part of the incision, and considerable delay and annoyance were caused by the unmanageable state of the patient (who, I should have mentioned, was deaf, dumb, idiotic, and epileptic). At the commencement of the operation, he thought proper to amuse himself by blowing out the candle, and when I was about to pass the ligature round the artery, he took an epileptic fit.

After the vessel was tied, the edges of the upper part of the wound were brought together by points of suture, and the ligature allowed to hang out at the lower part. After waiting a short time, slight bleeding was noticed to take place from the lower part of the opening in the brachial artery; I therefore placed ligatures above and below the opening, as compresses seemed to give rise to much irritation, and as I trusted there might be sufficient vitality of the coats of the vessel there to sustain the ligatures for a day or two till more permanent changes at the part, and in the collateral circulation, had taken place. The burned surface was then dressed with a stimulating lotion.

Next day I found that the patient had passed a very restless night, constantly moving the injured arm, but no further bleeding had taken place. On the evening of the 11th January, the ligatures above and below the opening in the brachial artery came away, but

no more hemorrhage took place. The ulcerated surface at the bend of the arm healed kindly.

The edges of my incision at the lower part, where it had reached the injured skin, looked sloughy; but the upper part of the incision, corresponding to the point where the vessel was tied, had united, and I removed the stitches. As the patient still continued restless and unmanageable, constantly moving the arm and disturbing the dressings, it was found necessary to muffle the opposite hand and secure the injured arm towards the side. The sloughy appearance of the lower part of the incision increased for some days, and gave me some anxiety; stimulating dressings were applied to it, and, on the ninth day after the operation, a slough separated which relieved our fears, as it was found not to extend deeper than the skin, and the parts beneath were healthy in appearance; from this time every thing went on well in spite of the unfavourable nature of the case, and the unmanageable state of the patient.

The ligature from the axillary came away on the sixteenth day after the operation, and the incision healed rapidly. After this I did not attend him, but Mr Kerr informs me that cicatrization of the whole surface was not effected until the end of February, and that now the contraction of the hand and fore-arm towards the shoulder is very great. He also mentions that, strangely enough, the first time the boy was left alone he ran to the fire-place (fortunately empty), and thrust his injured arm between the bars of the grate.

Remarks.—In this case it will be observed, that whilst the injured vessel was situated (as regarded retrograde bleeding) much in the same circumstances as an artery wounded by a cutting instrument, it differed from it in this material point, that the vitality of its coats was impaired, and partook in the weakened action of the surrounding parts from the effects of the burn; so that I could not have trusted to ligature above and below the opening, because the action of the ligature on the vessel would have proceeded too rapidly, and the impulse of the circulation would, in all probability, have caused secondary hemorrhage in a day or two, on the decidence of the ligature. On the other hand, ligature of the arterial trunk higher up, whilst it arrested the flow of blood immediately from the upper part of the vessel, would not have sufficed to arrest the retrograde bleeding; and hence I adopted the practice of tying the main trunk high up, where it was healthy, and situated amongst healthy parts, to divert the impulse of the blood from the canal of the wounded vessel; whilst the ligatures above and below the opening at the bend of the arm, prevented the retrograde bleeding sufficiently long to allow of consolidation of the surrounding textures, and permanent obliteration of the vessel at that point, and also by avoiding the necessity for bandaging and compresses; the necessary dressings to the general burned surface were not interfered with. Of course, the nature of the agent causing

the sloughing must be taken into consideration, as this may materially influence the line of practice.

Whilst writing out these remarks, I was called to a young gentleman in the country, who, by applying nitrate of silver over the course of the radial artery, had opened that vessel; the eschar separated whilst he was out shooting, and he had lost a very large quantity of blood. In this case I merely cut down upon, and tied the vessel a short distance above and below the wounded point; because I knew that the adjacent structures, after the separation of an eschar caused by nitrate of silver, are generally in a state of healthy action, and not in that condition of impaired vitality which characterises the tissues implicated in a severe burn by fire.

CASE 2.—*Amputation of Arm for the secondary effects of a Burn.*

I was consulted by Mr Falconer of Loanhead, in the case of a patient of his, a girl aged eleven years, whose health was sinking under the secondary effects of a burn. About two years previously she had been very severely burnt in the arm whilst playing near the fire. She recovered from the first effects of the injury, although with great contraction of the wrist and elbow. After the burned surface had apparently healed for some weeks, the newly-formed skin gave way at several points, and a discharge took place from the ulcerated surface. Various remedies were had recourse to for the purpose of checking the discharge, and promoting the cicatrization of the parts, but all had ultimately failed. The ulceration had increased rapidly, and the patient's health had gradually sunk under the long-continued discharge and irritation. When I first saw her, she was apparently in the last stage of hectic, and worn almost to a skeleton, with rapid weak pulse.

The injured arm, from the wrist to the middle of the upper arm, presented an almost continuous ulcerated surface, which was discharging profusely, and so irritable, that she screamed out whenever the dressings were touched. Over the posterior part of the elbow, there was a cicatrix, corresponding to the position of the ulnar nerve, between the olecranon and inner condyle, which, she stated frequently, gave her excruciating pain; her mother stated, that she seldom slept at night, and when she did, was bathed in perspiration, and that her appetite had latterly almost entirely failed.

Under these circumstances, I said, that I considered amputation the only chance of saving life; and that, although she seemed so much sunk, I would still recommend it as a means of relief from her sufferings. To this, both the parents and the patient readily consented, and I accordingly amputated the arm below the insertion of the deltoid by double flap. The operation seemed to afford almost immediate relief from the constitutional irritation; for she slept well the night after it was performed, which she had not done for months previously, and the wound healed almost entirely by the first intention. As she

resided some distance in the country, I did not see her after the first fortnight until about six weeks from the date of the amputation, when she called upon me in town perfectly restored in health.

On dissection of the amputated limb, which had been previously injected with size by my friend Mr Goodsir, the muscular tissue was found quite altered in structure, of a pale, almost white, colour, and scarcely showing any appearance of fibrous texture. The ligaments were thickened, and so contracted as scarcely to admit of the slightest motion, even after the division of the other soft parts; but the synovial membrane and articular cartilages were perfectly healthy, and presented no appearance of ulcerative absorption at any point. The ulnar nerve was found involved, and apparently compressed, by the consolidated tissues corresponding to the cicatrix behind the elbow. All the deep-seated parts of the limb seemed much less vascular than usual, probably owing to the consolidation of the tissues through which the vessels passed; but this appearance might also, in some measure, have been caused by the injection escaping more readily from the open vessels of the ulcerated surfaces.

CASE 3.—Injury of Axillary Artery from Fracture of the Neck of the Humerus.

Mr J. B——, aged sixty-three, in coming down-stairs from the drawing-room, tripped on the carpet, and fell down with his whole weight on the elbow and point of shoulder. I was sent for on the part of Dr Lawrie, who attended the family, and found the humerus broken at the neck, the broken end of the shaft considerably displaced inwards to the axilla, and the elbow tilted outwards.

Mr B—— was exceedingly sick and faint, having only a short time previously recovered from a severe attack of rheumatic fever, and suffering, at the time of the accident, from bowel complaint.

The fracture was readily adjusted, scarcely any force whatever being necessary to extend the shaft of the bone, and withdraw it from the axilla. I put it up in the usual manner, with a soft compress in the axilla, placing the fore-arm in a sling, and confining the arm and elbow to the side by means of a broad soft shawl. I then ordered him an opiate to arrest the diarrhœa, and left him.

Next morning I saw him with Dr Lawrie; he had passed a very restless night from the bowel complaint, and also from pain at the fractured part, and numbness in the hand. On loosing the bandages, the hand and fore-arm were found not much swollen, but they were much colder than those of the opposite side, and no pulsation could be felt either in the brachial, radial, or ulnar arteries at any point, but distinct and full pulsation could be felt in the axillary, immediately above the fracture; there was considerable ecchymosis and bruising over the point of the shoulder and deltoid, also some swelling along the inner side of the biceps, but there was no pulsatory movement in the swelling, nor any appearance of its communicating with the

artery. It was evident, however, that the axillary had suffered, that circulation through it was obstructed, and that the treatment of the fracture must be considered secondary to that of the injury of the vessel. I accordingly did not replace the pad in the axilla, but got a soft cushion made sufficiently long to reach from the axilla to the hand, jointed at the elbow, and thicker above than below. This I placed on the inside of the arm, and another soft cushion and thin pasteboard splint on the outside of the arm and fore-arm; the elbow was kept only slightly bent, the splint and cushions secured with slip-knots, and the whole limb covered with flannel.

This plan, whilst it interfered but little with the restoration of the circulation through the collateral branches, kept the broken ends of the bone pretty well in position. I continued it for the first fifteen days; when, although I could feel no pulse in the larger vessels, I was satisfied, from the restored heat and sensation of the part, that the circulation was re-established sufficiently to allow of the ordinary apparatus being used. Accordingly, I replaced a soft elastic hair cushion in the axilla, and a leather splint, well padded, along the outside of the arm and fore-arm (from the point of shoulder to extremity of the fingers). The fore-arm was supported in a sling, and the arm kept to the side by a soft shawl.

Under this treatment the cure went on favourably, except that, about the end of third week, he complained much of severe pain in the part, and of a sense of suffocation, and of a feeling of weight across the chest, which he attributed to the position of the fore-arm across the body. The sling was lowered so as to change this position, but still the feeling continued; alterative medicine was given with some relief.

As it became of great importance for him to get home to London at this time, and as the union of the bone seemed sufficiently firm to warrant his removal, he left Edinburgh, with my consent, on the 17th of August. Since then, I received the following accounts of his progress from his usual medical attendant, Dr Bower of Hatton Garden, and subsequently from Mr Liston, to whom I had requested him to apply, but whom he had not consulted till 1st October.

“As Mr B—— has now been under my watching more than a month, I am able to give you an account of his progress more satisfactorily than if I had written sooner. The callus around the fracture is completed, and he begins to move his arm somewhat, and in time doubtless it will turn out all right. I cannot, however, say as much for the circulation through the fore-arm and hand. I can only distinguish a very faint pulsation in any artery beneath the fracture. At the wrist there is none either in the radial or ulnar, and therefore I suppose the circulation through the hand must be by means of the interosseous or carpal. As you may suppose, the hand is not properly supplied, and much colder and more useless than it other-

wise would be. I have adopted gentle friction and warm clothing to remedy this, but I expect more benefit from time than from either.

"From this statement I think you will agree with me, that, considering the severe nature of the injury, he is doing well; and, as I do not perceive any symptoms of disease or aneurism in the brachial artery, I trust he will go on uninterruptedly to recovery."

"October 1st, 1847.—Yours, dated 17th August, only came to hand this morning.

"Mr B——'s case is a very interesting one, and one that must have required anxious and careful management. It is a capital cure; there is pulsation in the brachial, and a certain thrill at the wrist; there is a good deal of œdematous swelling on the inside of the arm, and in the sheath of the biceps, but I can detect nothing wrong in the axilla; no tumour, no unusual beating; so far so good. I should not apprehend any formation of aneurism now."

Remarks.—The complication of fracture of the neck of the humerus, with the untoward injury detailed in the foregoing case, is fortunately of very rare occurrence, and I cannot help attributing it, in the present instance, more to the state of the vessels in this gentleman, than to the effects of direct injury of the artery by the broken end of the bone; in other words, I consider that the internal and middle coats of the vessel, softened and altered in structure by the previous rheumatic affection, had given way, at the time of the injury, from indirect violence, whilst the cellular coat had been stretched and twisted so as to obstruct the flow of blood through its canal. I am led to this conclusion by the following circumstances in the case:—1st, There was no unusual swelling or appearance of extravasation in the axilla at the time of the accident, as would have occurred had a large vessel been torn through by the sharp fractured end of the bone. 2d, Though the displacement of the shaft was considerable, it was not greater than I have frequently seen in fracture of the neck of the humerus, and, owing to the faintness of the patient, there was little or no force required to extend it, and produce coaptation. 3d, No false aneurism has subsequently formed, which would also have probably been the case, had all the coats of the artery been torn by the broken end of the bone.

The method of treating the fracture which I adopted, was had recourse to on the spur of the moment, the principal point kept in view being not to interfere with the circulation; it answered the purpose sufficiently well, though, I daresay, many improvements could be suggested.

with which I have selected for the first and second editions to supply this, but I expect more benefit than from either. From the statement I think it will appear that the injury to the system of the body is not so great as it is often represented to be. I trust I shall be able to show that the injury is not so great as it is often represented to be.

October 1st 1845. - Young, aged 17th, admitted into the hospital.

"17th" - This case is a very interesting one, and one that must have required anxious and careful management. It is a capital case; there is nothing in the history and a certain skill in the treatment; there is a good deal of evidence as to the nature of the injury, and in the report of the hospital I can detect nothing wrong in the action; certainly no unusual feature; so far as good, I should not as yet have any hesitation in recommending it.

History. - The case is a very interesting one, and one that must have required anxious and careful management. It is a capital case; there is nothing in the history and a certain skill in the treatment; there is a good deal of evidence as to the nature of the injury, and in the report of the hospital I can detect nothing wrong in the action; certainly no unusual feature; so far as good, I should not as yet have any hesitation in recommending it.

The method of treating the disease which I adopted was that of the hospital, and I think it will appear that the injury to the system of the body is not so great as it is often represented to be. I trust I shall be able to show that the injury is not so great as it is often represented to be.

