SOME COMMENTS ON THE CASE OF TYNDALL V. ALCOCK:

WITH REMARKS AS TO THE ORIGIN OF ISCHAEMIC CONTRACTURE.

BY

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PROBABLY the majority of medical men who heard or read the account of this case, reported briefly in the *British Medical Journal* of December 10th, 1927 (p. 1121), and March 24th, 1928 (p. 528), were greatly shocked at its result. There can be no doubt that it throws an added light on the dangers which beset the practitioner in the treatment of a fracture.

Let me first briefly relate the accepted facts of the case and the trial.

In July, 1926, a girl, Phyllis Tyndall, aged 8 years, fell from a donkey and hurt her left elbow. Mrs. Tyndall, the patient's mother, did not take her child to the nearest doctor for first aid or bandaging, but decided to apply to Dr. Alcock,

FIG. 1.—Before reduction.

surgeon to the Gloucester Royal Infirmary. Accordingly, with the assistance of a neighbour, the child was taken in a motor car to Gloucester, a distance of ten miles, without any splint or sling, the injured arm being merely held in a more or less extended position of the elbow-joint. Dr. Alcock, being apprised by telephone, was waiting to receive the patient, and actually first saw her in the motor car. He recognized the serious character of the injury, and therefore did not have the child out of the car, but himself got into it and was driven to the consulting rooms of Dr. Goss, the leading radiologist in Gloucester. In Dr. Goss's rooms the child was anaesthetized and x-rayed. This showed a typical supracondylar fracture of the humerus, with great backward and upward displacement of the distal fragment, and the shaft of the broken bone so near the skin surface that it must have been pushed forwards through the muscles and other soft tissues in front of the elbow-joint (Fig. 1). Dr. Alcock then made traction upon the forearm, and gradually flexed it at the elbow, bringing the hand up till the fingers touched the shoulder of the injured limb. He felt the displaced lower end of the humerus move forward into place, and being satisfied as to the reduction of the displacement, he fixed the arm up in full flexion by passing adhesive plaster round the doubled-up limb. There was no pad in the flexure of the elbow, nor any bandage encircling any part of the arm or forearm. A bandage was placed over the flexed arm, and at this stage a further examination was made by the x-rays, with the screen, and Dr. Goss told Dr. Alcock that the reduction had been satisfactory and the position good.

In order to obtain a record of this position a plate was taken. The child was still unconscious, lying on the x-ray couch, the tube being below. In order to get a lateral view of the elbow

the arm was rotated outwards so that the hand lay on the same level as the back, but on the outer side of the shoulder. The resulting x-ray film (Fig. 2) was not developed until the next day, and it is not quite clear when Dr. Alcock saw this, as his opinion that satisfactory reduction of the displacement had been effected depended on his own palpation of the limb at the time of the manipulation and upon Dr. Goss's opinion of the screen examination. However, as it so happened, the trial largely turned upon the interpretation of this x-ray film.

The x-ray picture having been taken, the arm was replaced with the hand in front of the shoulder and a bandage passed round the body and left arm; thus there were three sets of bands round the limb—first, adhesive plaster; second, a bandage, these two going round the doubled-up arm; and a third bandage surrounding the arm and body.

Dr. Alcock then took the child in a motor car to a nursing home himself, and gave instructions about her care. She remained in the home for fifteen days, and Dr. Alcock saw her daily during this period. From the first few days and onwards Mrs. Tyndall, the patient's mother, was constantly asking that the child might be taken home, but Dr. Alcock absolutely refused to hear of this. Within a day or two of the accident it became apparent that the circulation of the hand was impaired, and the extreme position of flexion was relieved, the arm being brought down first by a few degrees and then to nearly a right angle.

FIG. 2.—After reduction, arm in acute flexion.

It was not clear at what precise moment Dr. Alcock recognized the existence of ischaemic paralysis, and he stated quite frankly that he had in a large experience never seen such a condition before. It was, however, pretty clear that he did recognize the gravity of the condition before the child left the home, as he told this to one of the relatives. For about two months more the child attended the Gloucester Infirmary as an out-patient under Dr. Alcock's care, but as the authorities of that institution did not consider she was a suitable patient for a charitable institution she was transferred to the Children's Hospital, Bristol. X-ray photographs at that institution showed posterior displacement of the lower end of the humerus, which had become attached to the shaft by a new periosteal bridge, the original shaft of the humerus projecting forwards above and in front of the elbow. An operation was performed, and the projecting portion of the humerus was removed, but this did not materially improve the elbow, which was almost fixed at a right angle. The final condition of the arm showed a well-marked ischaemic contracture of the forearm flexors and a stiff elbow. Dr. Alcock, after a trial lasting four days, was found guilty of "negligence," and was ordered to pay £2,000 damages to the plaintiff, Phyllis Tyndall, and £150 to Mrs. Tyndall, to reimburse the latter for expenses incurred in the treatment.

Having now given the main facts of the case, I should like to make certain comments on its medico-legal bearings. The first and most glaring thing is the interpretation which was put on the term "negligence." I venture to say there never was, and never will be, a fracture case which was treated with greater care and solicitude than that of Phyllis Tyndall by Dr. Alcock. He met her in the

motor car; he took her to an x-ray specialist; he anaesthetized her; he used the x rays before and after treatment; he treated her by the universally approved method, he was assured by an experienced radiologist that the position was satisfactory; he took the patient himself to a nursing home, and gave her unremitting care first at the home and then as a hospital out-patient. And yet this is consistent with negligence!

The second striking fact is the way in which a fracture case and the reading of an x-ray film lend themselves to misinterpretation by a jury. Counsel for the plaintiff made a great point of this being "a perfectly simple fracture." In the technical sense that it was a closed and not an open fracture this was quite true, but if by this it was meant that the case was a simple one in the ordinary sense of the word, and presented no difficulty, I most strongly disagree. There was not only fracture, but great displacement; the child had been jolted over a rough road in a motor car without the protection of any splint or sling; the shaft of the humerus was almost projecting through the skin, so that it must have torn through the overlying muscles; and yet this was a "perfectly simple fracture"! And again, take the phrase "setting a fracture." The common idea is that setting a fracture consists in perfect locking together of the broken surfaces, whereas it is common knowledge that this is very seldom done apart from open operation. That displacement can be reduced or even over-reduced, leaving the fractured surfaces in a favourable position for union by callus, though not actually touching one another, is an idea not acceptable to the lay mind.

Great controversy took place on the interpretation of the x-ray film taken after manipulation. Was it an antero-posterior or a lateral view? The plaintiff's experts held that it was an antero-posterior view, in spite of Dr. Goss's plain description of how it was taken. They said that the shape of the bones showed that they were viewed in an antero-posterior direction. In giving this opinion the fact was ignored that the arm was rotated outwards in order to get the picture, and also that this picture did not represent the bones as they lay when the arm was placed in front of the chest.

If the picture is an antero-posterior view, then it shows some lateral displacement; if it is a lateral view, then it shows that the displacement has been over-reduced and that the lower fragment of the humerus has been brought forward to lie rather in front of the shaft. But in any case, what has this to do with ischaemic paralysis or the stiff elbow? Apparently it was enough to convince the jury that the bones had not been "set" for them to conclude that the paralysis was caused by this faulty setting. The plaintiff's case was that there was lateral displacement of the lower end of the humerus upon the shaft, but not one word of explanation was given as to how this lateral displacement could constrict the artery or cause ischaemia. The idea of a blood effusion round the fracture first pressing upon the veins and then bringing the circulation to a standstill was dismissed as hypothetical. No effusion could be seen in the x-ray pictures, but the "misset" bones were there, and that was enough.

The next point upon which I should like to comment was the interpretation put upon Dr. Alcock's conduct after the first treatment and upon the indefiniteness of his evidence.

Great stress was laid upon discrepancies of various witnesses about the releasing of bandages. Mrs. Tyndall declared that for fourteen days the bandages were never released; but evidence was given that she had never seen the arm undone, and she only judged by the fact that she always saw it surrounded by the body bandage.

Then it was impossible to be certain on which day the flexion of the arm was released. But surely after the lapse of eighteen months this is quite natural. In the same way Dr. Alcock could not be clear when or how he first recognized the existence of ischaemic paralysis. This may seem strange to a layman; but surely any man of experience knows that the onset of failing circulation and the signs of congestion may be, and indeed often are, insidious, and that if a limb is covered with a bandage, easily overlooked. Dr. Alcock certainly realized before a week had passed that

he had charge of a bad case. He could quite easily at any time within the first few days have got out of all his difficulties by allowing the mother to take the child home, as he alleged she repeatedly asked. Instead of this, he persisted in keeping the child under his care. But instead of recognizing this as the action of a careful and conscientious man, it was represented to the jury as being the conduct of one who knew he had made a fatal blunder and wished to hide it.

The nature of the damage to the arm was very difficult to explain fairly. It is true that the muscles or muscle fibres affected by ischaemic paralysis are permanently lost, and this was represented as though the whole forearm was permanently and totally paralysed. In reality it is only certain groups of muscles which are affected, and usually some fibres of even these escape, so that, as Sir Robert Jones has shown, ischaemic contracture is capable of great amelioration by patient treatment, and the hand becomes ultimately quite useful in a limited degree. Similarly the fibrous ankylosis of the elbow is a condition susceptible of improvement. But in this case it was suggested that the left arm was permanently useless, and that the child, who was represented as a potential musical genius, had had her career wrecked.

But there is another question of great importance suggested by this case, quite apart from the manifest absurdity of saying that a want of alignment of the bones caused paralysis of the arm—and that is, What was the real cause of the ischaemia, and could this have been avoided? It is a matter of common agreement that the prime cause of ischaemic contracture is a damage to the blood vessels and soft parts. This may have been caused at the time of the accident, and was probably aggravated by the want of proper "first aid." The condition of a child with a broken elbow-joint surrounded by swelling and effusion is one which often has to be considered and the correct line of treatment determined. On this very point there is not enough emphasis laid down in textbooks upon the importance of watching the circulation rather than the fracture; and in particular it is not usually recognized that acute flexion of the elbow always has a constricting effect upon the blood vessels. In all individuals in whom I have tried the experiment, including myself, forced flexion of the normal elbow-joint can readily be brought to a point where the radial pulse ceases. And to this observation another may be added. A case is taken in which some operation in the neighbourhood of the elbow-joint is to be performed. It is noted what degree of forced flexion is required to cause cessation of the radial pulse. Then after the arm has been relaxed, about one ounce of saline solution is injected under the skin and deep fascia in front of the elbow. The arm is then again flexed, and it will be noted that the radial pulse disappears with a much less extreme flexion than before. This shows that the mere presence of effusion round the joint, quite apart from actual injury to the blood vessels, makes flexion of the elbow liable to obstruct the circulation; therefore it should be clearly understood that it is always a most dangerous thing to flex a swollen elbow-joint, and if this is done a most careful watch should be kept on the radial pulse, both at the time of manipulation and for some days afterwards.

When a case of fracture of the lower end of the humerus is presented for treatment some hours after the accident, presenting much swelling, it is far better to be content to leave the limb alone, simply supported upon a pillow, until the effusion has subsided. It is quite true that this delay generally means that manipulative reduction of the fracture will be impossible, and in these circumstances open reduction, which is quite a simple matter, is indicated. Through an external or posterior incision the blood clot is evacuated, the separated fragment is replaced, and then a moderate degree of flexion will be quite enough to retain it in position without any actual suturing of the bone itself.

It is perhaps unnecessary to add that if ischaemic paralysis has already developed, then no reposition of the bone, even if done within a few days of the accident, will have any effect in relieving it—another proof, if such were needed, of the absurdity of suggesting that ischaemia could be in any way due to a want of alignment of the bones.