

THE FRACTURE PROBLEM.*

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Since the inception of the Southend General Hospital a considerable amount of work has been done in the Department of Physical Medicine on what is probably the most vital of all the medical problems facing the Nation to-day, namely, the fracture problem. Great numbers of fracture cases are constantly being dealt with at the Southend Hospital, and we feel that after two and a half years of continued experience, we can speak with some little authority on the matter. We feel that a careful review of our results justifies us in this belief. The British Medical Association has shown the way to our profession in its recently published report on the fracture problem. A number of distinguished experts have considered the matter fully from all angles, and we must all agree that this excellent document will have an exceedingly prominent place in the medical publications of our time.

The majority of medical men and women must feel that we have a vital duty to the State, to place those wage earners who have been temporarily disabled as the results of accidents, back in their full employment in the shortest possible time. When we consider the many bad results following the unsatisfactory treatment of fractures, which every medical person who has done any insurance work is constantly seeing, we must realise more fully than ever how vital this problem has become.

The tremendous attempts being made by the Ministry of Transport to lessen the number of accidents occurring to-day, together with the obvious daily increase in the number of mechanically propelled vehicles to be seen on the streets, is a clear indication that drastic steps must be taken to deal with this problem. Many charitable individuals have given large sums of money towards Cancer and other research, and much as we must praise them for their generosity we do wish that some person would come forward and generously equip a Hospital to be established in London for the purpose of research into the treatment of fracture cases. It has clearly been shown in the British Medical Association's report that a fracture is a lesion requiring the assistance of the specially trained expert, and it is in the interests of the medical profession and of the State alike that all medical practitioners should become conversant with the modern methods of treatment.

This paper will include a reference in detail to some of the problems which constantly arise in connection with fractures, and will give details of the treatment of some of the most important of these.

In dealing with a fracture we are always faced with the possibility of certain complications arising and, if the best possible result for the patient is to be obtained, those outstanding difficulties which may arise during the course of treatment in each individual fracture must be constantly borne in mind. It is a correct statement to make that there is one outstanding complication which may follow every particular fracture, and it is with detailed reference to these that the rest of this paper will be specially concerned.

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I think that the question can be studied best from a consideration of typical examples of the more important fractures with which we are constantly being called upon to deal, and I shall review the treatment of each in brief. The special fractures I propose discussing are:—

1. Fracture of the scaphoid bone of the wrist.
2. Colles's fracture.
3. Transverse fracture of the middle of the shafts of the radius and ulna.
4. Transverse supracondylar fracture of the lower end of the humerus.
5. Fracture of the surgical neck of the humerus.
6. Fracture of os calcis.
7. Pott's fracture-dislocation of the ankle joint.

1.—Fracture of the Scaphoid bone of the wrist joint.

In dealing with a fracture of this bone the medical practitioner is always reminded of the fact that non-union of this particular fracture is very frequent. This would appear to be due to the poor blood supply of the bone. It is common to find that the bony fragments are in a good position and consequently any manipulation is seldom called for. In view of the possibility of delayed or non-union which would result in the patient having a painful weak wrist, relatively long immobilization in plaster is indicated. A light plaster casing is applied to the limb extending from the centre of the forearm down to and including the wrist joint, with the wrist in a position of dorsi-flexion. The fingers and thumb are left free and the patient is allowed to make whatever use he can of them.

The plaster should be left on for a period of six weeks, at the end of which time it should be removed and the limb X-rayed. If there is no sign of any definite bony union the plaster should be reapplied for a further period of four weeks, after which another X-ray picture should be taken.

It is essential that the limb should be kept in plaster until definite bony union has been demonstrated in the X-ray films. After the plaster has been finally discarded a short course of physical treatment, including radiant heat, massage and passive movements, should be carried out to loosen the patient's wrist joint. In our experience it is seldom that a patient suffering from a fractured scaphoid is able to resume heavy work in under three months from the time of the accident.

2.—Colles's fracture.

This is undoubtedly the commonest fracture met with in the accident department of the Southend General Hospital, and because of the fact that many of the patients treated are relatively young and active individuals, we have spent a considerable length of time in studying these cases. We have all frequently seen numbers of young working-men who have received unsatisfactory treatment for such fractures and who have consequently never been able to resume their full work again, and so have become a charge on the community.

In the treatment of this fracture accurate reduction of the deformity is vital, if a good functional result is to be obtained. For this procedure the value of local anæsthesia must be emphasized. The technique of administering the anæsthetic is extremely simple; the most perfect anæsthesia is obtained and consequently good muscular relaxation. If reasonable precautions are taken there is no likelihood of any complications ensuing on the use of a local anæsthetic.

After the reduction of the deformity the question of immobilization arises and we have found that it is seldom necessary to splint these cases for more than seven days. Our routine practice is to apply a Carr's splint or a light posterior plaster strip to the forearm and wrist and to discard it at the end of one week. We have not seen a single case in which deformity has recurred spontaneously as a result of the too early discarding of the splint. After the first week the patient's limb is worn in a sling for a period of three weeks, during which time the patient attends three times a week for movements. The wrist is gently put through its full range of movement at each treatment by the massage assistant, and by the end of three to four weeks from the time of the accident the patient is usually able to carry out these movements freely by himself. At the end of four weeks from the time of the accident the sling can be discarded, and apart from a bandage over the wrist the patient does not require any support. As a general rule the patient who has sustained a Colles's fracture should be quite fit to resume work from six to seven weeks from the time of the accident, provided that the above course of treatment has been carried out. We would mention here one outstanding point, and that is that we have found that the one complication to be feared is limitation of wrist flexion, and it is because of this that we insist on early wrist movement. We have noticed in a number of cases that where the ulnar styloid has been broken off there is sometimes some delay in the patient getting the full range of wrist flexion.

3.—Transverse fracture of the middle of the shafts of the Radius and Ulna.

The majority of the cases that we have had to deal with have been children between the ages of seven and sixteen, and we have satisfied ourselves that the best results in these cases have been obtained following the use of plaster for the purpose of immobilization. The one movement which the patient tends to lose in the long run is that of supination, and because of this we regularly treat such cases in a position of full supination. The fracture is carefully manipulated into the best possible position and when this has been obtained a light plaster case is applied, enclosing the elbow and the lower three inches of the arm, with the forearm in supination and the wrist slightly flexed. The patient's fingers are left free and he is instructed to move them frequently. The plaster is usually left on in a case which has been associated with marked deformity for a period of six weeks, at the end of which time it is divided down the sides, and the divided plaster is then worn for a further two weeks. During this time the patient attends the Massage Department and his wrist and elbow are moved by the assistant, the divided plaster being reapplied after each treatment. At the end of eight weeks the plaster is discarded and the limb is then worn in a sling for a further week or two. Physical treatment is continued after this and we find that the great majority of cases are fit to use the limb freely and to resume work at the end of a period of three months from the time of the original accident.

4.—Transverse supracondylar fracture of the lower end of the Humerus.

After the Colles's fracture this is certainly the commonest and most troublesome fracture with which we have to deal. From a study of great numbers of cases in the past we have found that such patients are very liable to suffer from limitation of flexion of the elbow joint and it is with this possibility in mind that we are particularly concerned in our treatment. Accurate reduction of the deformity is essential. The majority of cases are associated with considerable swelling around the elbow and because of this a careful watch must be kept on the condition of the patient's radial pulse during the earlier days of treatment. The limb is placed

in a position of partial flexion of the elbow in a high sling and each day this flexion is gradually increased as the swelling around the elbow diminishes until at the end of a week to ten days full flexion has been obtained. After this the limb is kept in full flexion for about a week and it is then slowly brought down into a position of extension. While this is being done the massage assistant moves the elbow each day making sure that the movement of flexion is not being lost. It is sometimes necessary to bandage the elbow up in flexion for twenty-four hours or so when it appears that this movement is being lost.

In the majority of cases where an adult is being treated he should be fit to resume work in from twelve to sixteen weeks from the time of the accident. Many patients do not get back their full elbow extension for some months after the accident, but in over 90 per cent. of cases this movement will eventually be regained when the elbow is being freely used. The disability of incomplete elbow extension is only very slight compared with the inability to fully flex this joint.

5.—Fracture of the Surgical Neck of the Humerus.

From our statistics at the Southend-on-Sea General Hospital we have found that roughly an equal number of these fractures occur in young men and elderly women and that 75 per cent. of them are impacted in a reasonably good position when first seen. From a study of many such cases it has been clearly shown that the commonest complication is a limitation of the extent of shoulder abduction and consequently most of our cases are treated in a position of abduction, on a humerus-abduction splint or so-called aeroplane splint. The limb is kept in this position on the splint from four to six weeks according to the severity of the fracture. During this time the patient attends the Massage Department three times a week when his limb is massaged and the muscles re-educated. When the splint has been discarded the limb is worn in a sling for a further period of two to three weeks, after which even the sling is discarded. Physical treatment, however, has frequently to be continued up to the end of three months, but by this time the majority of patients will be found fit to resume their full work. In some patients, especially where the fracture is well impacted in a good position, the aeroplane splint is not used. In these circumstances the limb is kept in a sling, and the shoulder gently moved from the start. In most cases we find that treatment is usually necessary for at least ten to twelve weeks from the date of the accident.

In a small percentage of cases where the deformity cannot be reduced by manipulation the question of applying extension to the limb or even an open operation may have to be considered. In the event of extension being necessary the patient has to be kept in bed and the extension applied on a Thomas's arm splint. In our opinion the Robert Jones' humerus extension splint is not satisfactory for this purpose.

6.—Fracture of Os Calcis.

In its way this is probably one of the most interesting fractures to be met with, because an apparently minor fracture of this bone is liable to be followed by the most serious results. It is a well known fact that many patients have been completely incapacitated and have been unable to walk because of a painful heel, which has followed a cracked os calcis, where weight bearing has been permitted too soon after the accident. Keeping this fact in mind we apply a plaster case to the patient's leg running from just below the knee and including the ankle, which is held at

a right angle, the foot being in a position of inversion. The plaster should be left on for a period of ten weeks at least and may have to be reapplied later if the patient shows any signs of developing a painful heel. In our experience patients are very fortunate if they are able to resume work in less than four months after sustaining even a slight fracture of the os calcis. We have demonstrated to our own satisfaction the great value of a walking plaster on the lines advised by Bohler of Vienna.

7.—Pott's fracture-dislocation of the ankle joint.

In this fracture the vital importance of accurate reduction of the bony fragments need scarcely be emphasized, and for this purpose spinal anaesthesia is extremely valuable, giving as it does the most perfect muscular relaxation. When the deformity has been properly reduced a plaster case is applied in exactly the same fashion as has been described already for fracture of the os calcis. In connection with this we prefer to wait for a few days until any obvious swelling has subsided and then to apply the plaster. The limb should be shaved and should be coated with vaseline beforehand, after which the plaster is applied directly to the skin. A Bohler's walking iron can quite easily be incorporated in the plaster and may be of great assistance to the patient in getting about. At the end of a period of from six to eight weeks, or even ten weeks in very bad fractures, the plaster is removed and the patient then receives suitable physical treatment to restore the function of his ankle.

It is wise that several weeks should elapse after the plaster has been discarded before the patient is allowed to take any weight on his limb. The majority of these fractures are not able to return to work in less than four months from the time of the accident.

Summary.

This paper summarises for the benefit of medical practitioners the treatment of some of the commoner fractures and includes a preliminary reference to the great importance of the fracture problem which at last has clearly been recognized by those in authority. The methods of treatment advocated require for the most part the assistance of a Department of Physical Medicine such as exists at the Southend Hospital, but there appears to be no reason why any medical practitioner should not treat cases on the lines suggested, if he is able to secure the assistance of a skilled masseuse.

In this connection the attention of the reader is drawn to the fact that little has been said about the value of massage. In itself we do not believe that massage plays any important part in the treatment of fractures but we do feel that special emphasis must be placed on the great importance of early movements in the care of fracture cases. The greatest problem of all is the question of immobilization. Every case must clearly be treated on its own merits, must be splinted or kept in plaster for a sufficient length of time and when the splint or plaster is discarded, joint movement should be started as soon as it can conveniently be done.

It is worth impressing upon the reader the fact that the joints of children very seldom get stiff so that movements do not play so important a part in the treatment of fractures in children as they do in adult cases.