

make sure he put his finger into the rectum and felt the back of the cystoscope. I pleaded with the man to undergo an operation but he refused. I notified the resident to call me up as soon as the man came in. Next afternoon the resident called me up, saying the man was feeling fine and was passing perfectly clear urine. I kept the man in bed and perfectly quiet for two weeks, and from that time to this he has passed perfectly clear urine and has never had any trouble from his accident.

DR. D. N. EISENDRATH, Chicago: I have had quite a large experience with both extraperitoneal and intraperitoneal rupture of the bladder, and I believe that if I had followed Dr. Fuller's suggestion my mortality probably would have been about 75 per cent. instead of about 10 per cent. in twelve cases. The only objection I have to Dr. Fuller's method of drainage is that it is altogether too radical for a man who has had as severe an injury as a recent fracture of the pelvis or a recent extraperitoneal rupture of the bladder. Every one of the cases I have had has been diagnosed within the first seventy-two hours, and it sufficed in all those cases simply to drain the bladder through a tube suprapubically, without any attempt to repair the rent in the bladder, and to drain the extravascular space through suprapubic drainage. With regard to the diagnosis, the chief point that I have always impressed on house surgeons is that if a man has met with any injury involving the region of the pelvis, the first thing the surgeon should do is to catheterize that patient if he can; if he cannot catheterize him, not to use any force at all, but to percuss above the pubes and if there is any dullness there to send word to someone at once who is more skilled in catheterization than he. If both then find that they cannot catheterize the patient, this means a rupture near the trigon, usually at about the junction of either the fixed portion of the urethra or at the anterior portion where it is attached to the symphysis pubis. If that is the case, the best way to do is not to try to do an external urethrotomy, but to do a retrograde catheterization, no matter whether the rupture

is of the extraperitoneal portion of the bladder or of the deep urethra. It is better not to waste time, but to go in from above, and if one finds a rupture of the urethra one can retrograde catheterize the patient much more quickly. If one has an extraperitoneal rupture of the bladder the bladder can thus be drained.

DR. EUGENE FULLER, New York: Dr. Eisendrath seems to be doing with his patients exactly what in my paper I said was generally done with them, that is, they are discharged from the hospital crippled, of no earthly use; not dead, but they might as well be. If you get a pus pocket outside of the bladder in which material has extravasated how is a patient going to get well by catheterizing or by fussing with him? He does not get well. This radical operation of mine is not horrible because you do not as a rule have to tie a blood-vessel in its performance and it is of slight danger. I have done this supposedly horrible dissection over six hundred times with but one death and that person died because he had granular kidneys. An operation that is terrible ought to have a bad record, and this one has not. It is technical. There is no use jumping on it because it is technical, and trying to sidetrack it on that account. It is far better to take a cadaver, do a little dissecting, thus mastering the technique and then to try the operation. The whole thing is to get these patients well. These cases belong to a neglected

branch of surgery, and the old way of doing nothing with them except seeing that they have a pervious urethra and leaving them alone does not cure them. The cases I reported were in a lot of derelicts who had been the rounds. The patients had been in four or five hospitals when I took hold of them, and I cured them. Dr. Pilcher wanted to know if I so treated these patients at the time of the injury. These are the cases in which the injury had taken place a long time before and in which extravasation is seen. If one gets a man with a rupture of the bladder immediately after the injury one naturally then would open suprapubically and drain as I stated in my paper. Then one probably would get ahead of the extravasation and prevent its occurrence.

## THE MECHANICS OF A PLASTER-OF-PARIS CAST IN FIXED LATERAL CURVATURE OF THE SPINE \*

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It is absolutely necessary to know the exact position of the anatomic parts entering into a deformity in order to correct it.

Overcorrection or the reversal of the deformity is necessary to effect a cure. Overcorrection is obtained by pushing the parts back through the same arc which they passed when the deformity developed, and thence through a similar arc to a position exactly opposite to that of the original.

In order to know through what arc the parts travel in the development of a deformity, they must be traced from their normal positions to that of the deformed.

Scoliosis is developed from a normal physiologic position and becomes

pathologic only when the individual is unable to reverse this position at will. Scoliosis in its beginning and through its development to a certain stage is a position of flexion, plus lateral bending plus rotation of the bodies of the vertebrae toward the convexity of the lateral bend.

It is first a normal physiologic position assumed at will, becomes pathologic after habitual assumption and may be easily created in the normal spine.

With a knowledge of the position of the parts in a normal spine, the position of the parts in a scoliotic spine and the arc through which they have traveled in the development of the deformity, it is possible to overcorrect or reverse the deformity, if it is borne in mind that these parts must pass back over the same route which they traversed to a normal position and thence through a similar arc to a position opposite to that of the original. Now the position must not only be understood in a general way, but an exact knowledge of every case must be obtained in order to

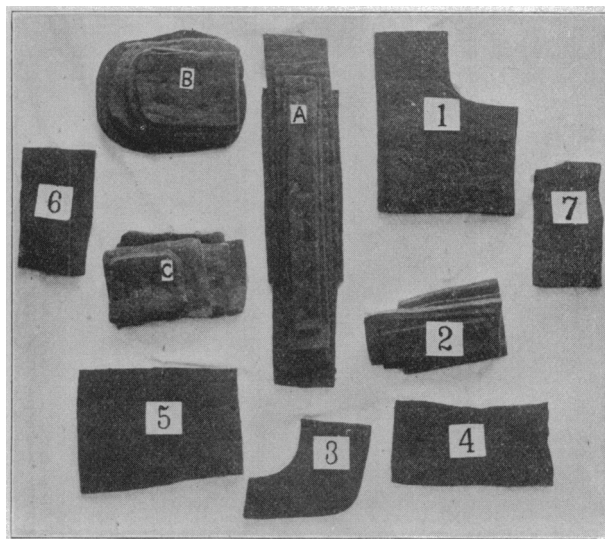


Fig. 1.—Pads used in the treatment of scoliosis.

\* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

apply intelligently the necessary force to reduce the deformity. Without this exact knowledge of the position of the parts in scoliosis, the force may be applied so that the deformity is increased rather than lessened.

The spine must be flexed, pressure made laterally against the curve and against the rotation, and if this is done with precision the spine must go into the overcorrected position, unless it is too firmly fixed in its deformity.

The principle is the same in all cases, but its application differs. Let us note at this point what, in a general way, is the position of overcorrection, before proceeding to analyze just how this may be obtained. Using the familiar figure of a boy sitting in an improper attitude at a desk writing, it may be seen that the position is that of flexion, plus lateral bending, plus rotation of the bodies of the vertebrae toward the convexity of the lateral curve, and there may be one or two curves according to the position of the pelvis.

are usually required, and the permanent ones, or those left in the corset, against which pressure is borne, are numbered and those used to shape the corset are lettered.

The positions which they occupy may be shown by placing them on a patient with scoliosis (Fig. 2). The permanent pads are placed posteriorly as shown in Figure 3, and anteriorly as in Figure 4. The posterior ones are fixed points in the corset. Pad 1 is composed of two pieces of felt placed over the bulging ribs, and so cut that it covers the shoulder blade and passes beneath the axilla. Pad 2 is placed in the lumbar region. It consists of several layers of felt so that firm pressure may be made against the left lumbar curve. Pad 3 is placed under the axilla and over the left shoulder. Pad 4 is placed across the sacrum. These four pads, 1, 2, 3 and 4, are points against which pressure is made and are never changed.

On the anterior surface of the body there are three pads, all permanent. Pad 5 passes across the thorax and Pads 6 and 7 are placed over the anterior superior

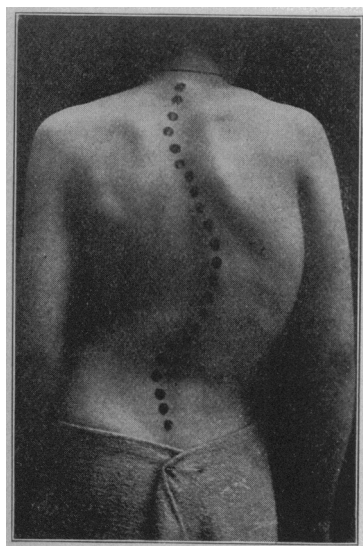


Fig. 2.—Patient with scoliosis.

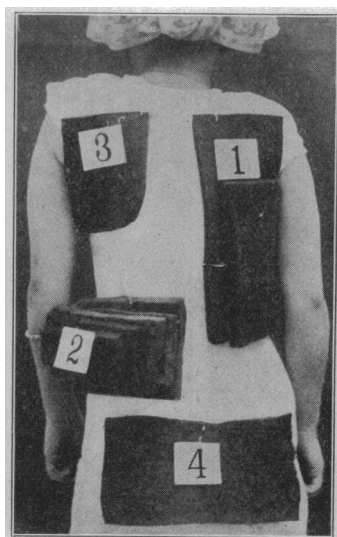


Fig. 3.—Showing method of application of posterior pads.

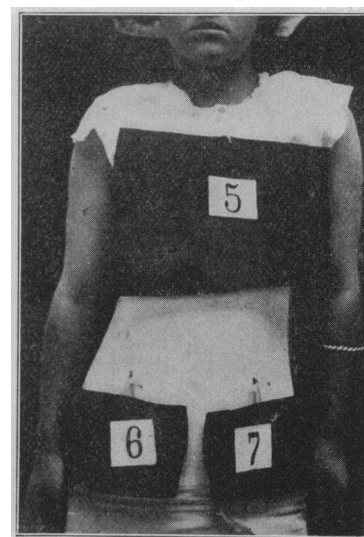


Fig. 4.—Application of anterior pads.

Now, in order to reverse this position we simply turn the child to the other side and the parts reverse their position, but the flexion remains unchanged. This is the position of scoliosis, be it physiologic or pathologic, and all other changes are secondary.

After the patient is placed in the position of flexion and the straps applied to pull the parts toward the position of overcorrection, the corset must be so shaped that the pressure against the fixed points continues to force the parts into an overcorrection. It is scarcely necessary to state that various forms of apparatus for pulling the patient into position might be used, but the exact position into which the patient must be forced must be borne in mind, and it is the application of a corset which will allow of reduction of the deformity that seems to present some difficulties. The corset must be heavily padded with saddler's felt, cut in suitable pieces according to the size of the patient. The technic may, perhaps, best be described by diagrams and illustrations showing just where force is applied, the fixed points in the corset and the necessary pads both permanent and removable used in the corset. Figure 1 represents all that

spinous processes (Fig. 4). The removable pads are placed as in Figure 5. The long pad marked A is about 4 inches in thickness at the center and tapers at the ends. It is for the purpose of allowing more flexion. Pad B is placed over the concave ribs, and shapes the corset so that rotation may be overcorrected in the dorsal region. Pad C is placed in the lumbar region and allows the lumbar spine to overcorrect.

Three undervests, or coverings, are placed on the body. The permanent pads are put between the first and second cover and the removable pads between the second and third. The covers hold the pads in correct position, and also allow of easy removal of those to be taken out after the corset is finished.

Figure 6 illustrates the necessary straps to pull the patient into the proper position in a case such as shown in Figure 1. Strap 1 passes around the axilla, making lateral traction on the upper end of the dorsal curve. Strap 2 encircles the thorax, making traction on the ribs which join the vertebrae at the apex of the dorsal curve. Strap 3 makes lateral traction on the lumbar curve at its apex. Strap 4 passes around

the pelvis and pulls against the lower end of the lumbar curve. Strap 5 is a rotator which is attached to Strap 2, and passes across the thorax and directly back. Strap 6 is attached to Strap 1 and pulls the low shoulder forward and upward. Strap 7 passes over the high shoulder and pulls it backward. Strap 8 is attached to Strap 3 and is a rotator which pulls against the thick pad of felt marked 2. Strap 9 tilts the pelvis. With the pads placed on the patient as indicated in Figures 3, 4 and 5, and the straps applied as in Figure 6, traction is made on them and the body is pulled in the direction of overcorrection. The plaster corset is then applied. As soon as the plaster hardens, windows are cut as in Figures 7 and 8. The window or slit in Figure 7 is for the purpose of inserting felt pads to induce further flexion. The windows in Figure 8 are over the removable pads B and C, and allow the depressed ribs and lumbar region to be pressed backward. At Point 1 (Fig. 8) the spine is 4 inches in front of the cast, that is, the spine may be further flexed 4 inches before it comes in contact with the plaster. Points 2 and 3, same figure,

## ABSTRACT OF DISCUSSION

DR. PAUL A. McILHENNY, New Orleans: I have not been able to get results, except in those cases in which we have what Dr. Abbott terms a "total scoliosis," or one in which there is only a slight curve in the lumbar region. I have followed, as closely as I could, instructions given in the various publications that I had access to; and I have obtained results in the moderate form of dorsal curve. In the marked cases of structural scoliosis, however, with a marked compensatory curve in the lumbar region, I have found an insurmountable obstacle, so far as I was concerned. Perhaps I am at fault. Other men have obtained these results in the double curves, as Dr. Abbott has, but I have not. There is some point in his technic, I believe, that I have missed; and I should like to get some light on why I cannot get a reduction of that compensatory curve or a correction of the primary curve, when I can get it in what we may term "total scoliosis" of the structural type.

DR. ROLAND MEISENBACH, Buffalo, N. Y.: Now that we are getting the results in the average type of structural lateral curvature of the spine, it will be necessary for us to consider more at length what can and what cannot be done for the severer types, which are so very common and which certainly require attention. In view of the recent



Fig. 5.—Showing position of removable pads.

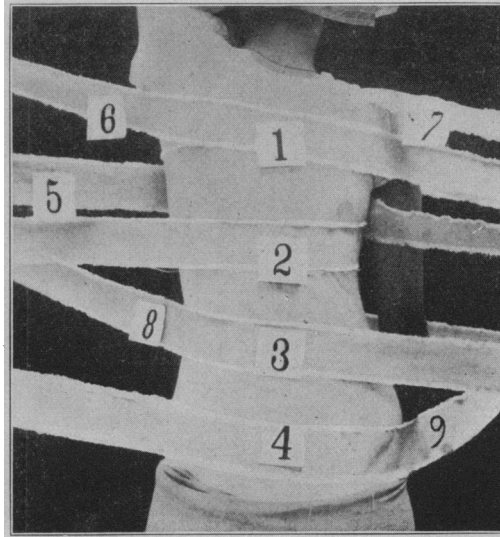


Fig. 6.—Straps used for pulling patient into position.

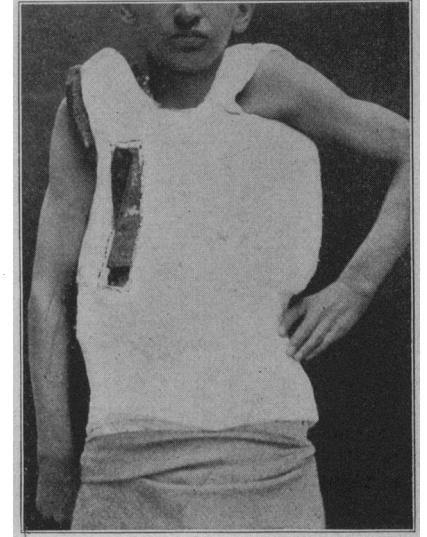


Fig. 7.—Showing window or slit for inserting felt pads to induce further flexion.

are fixed points which cannot change. When felt is inserted over the thorax through the slit or window (Fig. 7), the spine flexes further, carrying with it all of the body except those parts under Points 2 and 3, Figure 8, and if the deformity is not too extreme, it is possible to obtain overcorrection by inserting enough pads over the thorax to force the spine against the corset at Point 1 (Fig. 8). Should the lateral curves still remain, the corset is cut away along the dotted lines under the axilla and hip, and pads are inserted at 4 and 5.

Care must be exercised that the traction is applied at the exact point needed. For example, if force is used against points which are apparently opposite the part of the curve against which pressure is needed, the deformity is made worse. It must be borne in mind that the ribs run downward as well as outward, and pressure should be made at proper levels.

As already stated, the position into which the patient must be placed in order to overcorrect must be thoroughly understood in every case, and the force must be applied with precision. Unless such precaution is taken, more harm than good may be done.

progress in the treatment of scoliosis and the gratifying results obtained by Abbott's method in the average type of fixed lateral curvature, we should not give up the severe types in despair, but should attempt to do something for them. We must realize that the spine is not the only essential part of the patient, but that cardiac pressure, lack of excursion of the ribs, nerve pressure and visceral disturbances should be thought of. In the compound curves, the condition is even more exaggerated, and if carefully followed, much good can be done the patient, not only so far as the general symptomatology is concerned, but also in the actual anatomic straightening of the spine. The questions arise: How far shall we correct, and how much traction shall we apply, and what is the patient's endurance for correction? The last can only be determined by a thorough examination by internists, bacteriologists and pathologists, and by the orthopedist. I have had this emphasized many times, and I seldom undertake a case of a severe type unless I have had complete records of the patient made by a number of men. In the average and severe types more correction can be obtained, with less danger to the patient, if this method is followed carefully by the orthopedist. Not only can more correction of the spine be obtained, but such symptoms as muscular twitching and indigestion will rapidly disappear. I further believe that the cases should be taken early, and also in the severe types should be vigor-

ously treated and not be allowed to become utterly helpless, even though the spine is not replaced in a perfectly straight line.

DR. HENRY W. FRAUENTHAL, New York: I have used the Abbott method in a great many cases and from my experience I think that most men expect to get results too quickly. That is what I tried to do in the beginning, and I found that

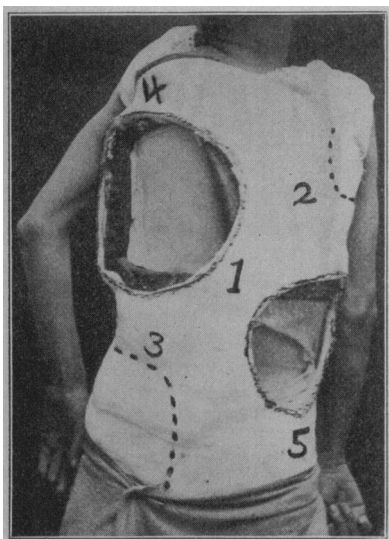


Fig. 8.—Showing windows for the insertion of pads.

I was exerting too much pressure. This accounts for the fact that Dr. Abbott has increased the thickness of his pads to 2 or 3 inches. I think that if we have more patience and do not expect a perfect result in too short a time, and if we manipulate the backs very much as we do club feet that we try to correct without cutting, some of these bad backs will make a remarkable recovery. I have treated about a hundred and have got much better results than by any other previous method.

DR. H. WINNETT ORR, Lincoln, Neb.:

Having had the privilege of acquiring this method directly from Dr. Abbott, two years ago, I have treated more than fifty patients since then by the Abbott method. One thing that I have learned from my experience in these cases is that it is more important to begin an Abbott treatment with a thorough comprehension of Dr. Abbott's principles of pathology and treatment than it is to endeavor to use exactly the same technic as he employs. Dr. Abbott has himself obtained better results with the method up to the present time than has anyone else who has tried to follow him. I venture to say that by mastering the principles of the method and then working out a technic suitable to one's own hands and fingers, the treatment of these patients will give much more satisfactory results than can be obtained in any other way. I have refused no case of this kind since Dr. Abbott showed me how to treat them, not because I felt that I could cure all, but because I found even the worst susceptible of some improvement. I treated over again six or eight patients in whom I had formerly failed to gain improvement by other methods. All these patients are loyal and enthusiastic about the Abbott method.

DR. CHARLES A. PARKER, Chicago: My experience is not so great as that of some others, yet I have handled quite a number of cases. One sees quite a number of them in Chicago. In the severe types of cases that one most wants to help I have seen improvement, but no cure. I do not want to say this to discourage; it is quite probable that Dr. Abbott has cured many of these patients, but the bad cases, in my experience, do not recover. There are several reasons for that I think. We have been showing the congenital deformities in scoliosis. Scoliosis high up in the neck takes in the upper dorsal region. The inherent conditions constitute another reason in the twisted vertebrae and transverse processes on the convex side. When lateral pressure is made on the ribs of the convex side with the leverage behind the center of the bodies, the tendency is to increase the rotation or flatten the angle of the ribs. The angle of the ribs has been increased in many cases, although the affected portion of the spine may be moved nearer the middle line.

DR. JAMES K. YOUNG, Philadelphia: Dr. Abbott has a great advantage over other men practicing this branch of

the profession because he can keep his patients in his hospital as long as he desires. So long a time is required for a cure that much difficulty is experienced in this respect. I have seen him treat patients in his own hospital and I have much confidence in his method. The mild functional forms of scoliosis do not require forcible correction, as they can be treated best by gymnastics and postural methods which I have been successfully using for over twenty years. I was glad to hear Dr. Abbott say at the meeting of the American Orthopedic Association in Philadelphia, that he took more time to treat severe cases, as this coincides with my experience in using his method. Certain forms of scoliosis are not suitable for this form of treatment, as severe paralytic deformity, supernumerary bones, empyema, rickets and softening of the bones of unknown etiology. Severe cases must be treated by a forcible method and in selected cases there is none so good as that of Dr. Abbott.

### THE THREE CARDINAL CLINICAL SIGNS OF FRACTURE INTO OR NEAR JOINTS\*

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The vast majority of fractures seen by the orthopedic surgeon are fractures into or near a joint, and of these too large a proportion are overlooked by the surgeon or practitioner rendering aid and are diagnosed as "sprains" or contusions. Roentgenologists affirm that at least 90 per cent. of all sprains coming to them for roentgenoscopy are really fractures of some sort and not sprains.

Be this as it may, few fractures about joints present all the usual classical symptoms of fracture, namely, crepitus, preternatural mobility or elasticity (Albert), deformity, angulation, shortening, loss of function, etc., either on account of an impaction of the fragments, incomplete fracturing or because one fragment

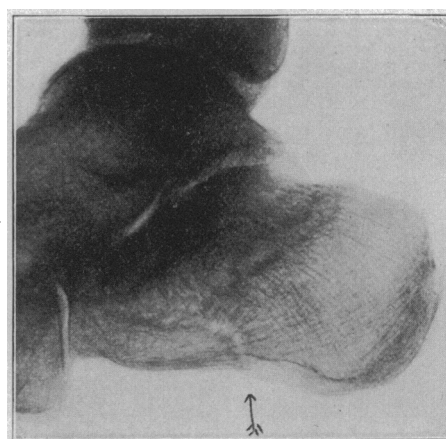


Fig. 1.—Avulsion fracture of os calcis (Case 1). Patient made a sudden jump to avoid being run over by an automobile. Diagnosed as "sprain" despite the pain, tenderness, swelling and ecchymosis which appeared a few hours after injury.

may be too small and too firmly attached to the structures of the neighboring joint or the parts too tender to permit of the necessary motion between the fragments for the elicitation of the foregoing symptoms.

\* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.