The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 79, No. 4

CHICAGO, ILLINOIS

JULY 22, 1922

THE FUNDAMENTAL PRINCIPLES OF ORTHOPEDIC, RECONSTRUCTION AND INDUSTRIAL SURGERY

THE REAL LESSONS OF THE WORLD WAR *

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In this section we should remember that in 1916 Col. Joel E. Goldthwait and four other members, Hibbs, Henderson, Osgood and Allison, were appointed a committee on preparedness to arrange for our participation as orthopedic surgeons if the United States became engaged in the World War. Our attitude then was one of high idealism; we were prepared to offer time, effort and even life if necessary, in the service of our country and our countrymen.

It is now a matter of history that the opportunity came, and that, in the spirit suggested above, Colonel Goldthwait and his associates made exactly the offer and the effort that was expected of them.¹

Now, however, if we attempt to discuss the results of that effort, in the spirit of today, we are very likely to develop a tone that differs greatly from that which was used in 1916. There are those who not only disparage the effort, but who deny the patriotism of those who engaged in the orthopedic part of our campaign against the belligerent Central Powers. There are also those who contend that the final victory of the Allies has brought us no good results of any kind. In fact, there is so much confusion in politics and international policies, and in the affairs of the world in general, that it is difficult to discuss even questions of service and scientific progress and separate them, for special study, from other national and world affairs that are clamoring for attention.

This puzzled and uncertain or even negative attitude is, perhaps, not entirely unreasonable. It is difficult for one to devote oneself wholeheartedly to the solution of problems of surgical procedure and methods of physical reconstruction for his patients, when the surgeon himself is trying to rehabilitate after a period of military service. Moreover, the situation is complicated when the soldier patient is more concerned about securing a cash bonus or compensation than he is about getting well.

All of these things have a bearing upon the topic which I have selected for my address. I feel that, with a little time for consideration, we can arrive at fairly definite conclusions as to some of the lessons learned from the war.

FIRST PRINCIPLES

Our Surgeon General has said recently that the surgery of the war consisted chiefly in a "harking back to first principles."² This comment may or may not do justice to our two years of effort in the military service. One might say that, if we really had successfully "harked back" to first principles, we might feel fairly well satisfied with the achievement. After all, compliance with first principles is one of the things that surgeons have not done too well. It does seem to me, however, that this comment calls for both elaboration and explanation if we, as surgeons, are to get anything for our patients and ourselves out of our war experience.

There were during the war certain occurrences in the surgical services that represented serious aberrations, if we consider them from the standpoint of first principles.

Our concern, as orthopedic surgeons, has been chiefly with the prevention and correction of deformity, and with the restoring to useful citizenship of those who suffered by reason of the military service.

Have we as surgeons learned anything new or profited in any way by our service in the hospitals in Great Britain, in France or in the United States?

I believe that it may be said that the character of such work is better at the present time than it was five years ago, and that it is better because of certain lessons learned in the army hospitals.

Orthopedic or reconstruction surgery in this country is still very poorly done. We have still many thousands of children and industrial workers who are crippled, deformed and physically handicapped because of inadequate medical and surgical attention. There are as yet insufficient hospitals. We lack special training schools for selected vocations for the crippled, and there is even now no real public or even professional conception of what may be done in the prevention and cure of deformity, the relief of disability, and the retraining of the physically handicapped.

To illustrate: If only the splinting of fractures and infantile paralysis were promptly and properly done in the United States, the total amount of crippling and serious disability would be reduced by about 10 per cent. Or if suitable measures were appreciated and encouraged by physicians to prevent and relieve foot strain, foot pronation and acquired foot deformities, another 15 to 20 per cent. of our partially or totally disabled workers could be made more comfortable and more efficient. With regard to the latter cases alone, Colonel Goldthwait's special training battalions in France furnished a lesson from which every city in

* Chairman's address, read before the Section on Orthopedic Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Report of Committee on Orthopedic Preparedness, Tr. Sec. Orthop. Surg. A. M. A., 1917, p. 248.

2. Garrison, F. H.: History of Medicine, Ed. 3, Philadelphia, W. B. Saunders Company, 1921.

this country could profit if the message were carried by our orthopedic surgeons and the other members of the medical profession.

LESSONS FROM VARIOUS PROCEDURES

The war taught us that much disability and deformity may be prevented by adequate first aid treatment. Our experience in this regard, though less extensive, was just as convincing as the prophylaxis that succeeded so well in typhoid fever and tetanus. It is only necessary to refer here, by way of illustration, to the saving of life and limb that was accomplished by the application of the Thomas splint in compound injuries of the femur, by splint teams on the battlefield. The results achieved by this one procedure should be sufficient reason for placing Thomas splints and splint teams at every point in America where such accidents are likely to occur. As it is, there are already hundreds of places where a Thomas splint had never been seen before, where there are now adequate provisions for the immediate splinting of such injuries.

This section should acknowledge, as one of the outstanding achievements of the war, the results of the labors of Goldthwait, Allison, Osgood, and Baer, in the simplification and standardization of splints and splint methods. In this respect, at least, we caught step and I think even went ahead of our allies. We are now certainly getting better results than formerly in the care of many industrial accident cases. I believe that these results are due more largely to the earlier and better application of splints than to any other cause.

In any discussion of progress in war surgery, one of the first topics to be suggested is that of the Carrel-Dakin treatment of infected wounds. The results of such wound treatment in a few instances were such as to give the whole subject almost an atmosphere of romance. The rapid and obvious reduction in infection, the diminishing number of septic organisms, the improvement of the patient's general condition, and finally even the secondary closure of certain wounds made a strong appeal, both to patient and surgeon. I believe I can say, however, that out of these very experiences we should get one of the important lessons of the war. The field of application of the Carrel-Dakin method has already been fairly well realized, and we shall admit without argument that the method has a certain, if limited, value.

My principal point, however, from the standpoint of an orthopedic surgeon, is that neither the Carrel-Dakin method nor any other kind of wound treatment should be permitted to interfere seriously with the fundamental principles in the treatment of bone and joint injuries. Those principles are, first, the immediate replacement, as nearly as possible, of injured parts in anatomic relationship, and second, the maintenance of immobilization ("enforced, uninterrupted, and prolonged"—Hugh Owen Thomas) of such injured parts in proper relationship until healing occurs.

In other words, wound treatment of whatever kind must not interfere with splinting in correct position. In the application of the Carrel-Dakin method, the disturbance of splints and the discarding of casts has been very common. It is my belief that splinting should come first in compound injuries, just as it should in infantile paralysis. In infantile paralysis, massage, electricity, manipulations, hydrotherapy and all other measures of physiotherapy are of secondary and minor importance

as compared with splinting in correct position. My attitude with regard to the Carrel-Dakin or any other forms of wound treatment (except drainage) in compound injuries is exactly the same, that is, they are secondary to correct splinting.

This argument also brings up the old question as to splinting and stiff joints. To this my answer is that stiffness, whether of the joint itself or of the adjacent soft parts, is due not to immobilization but to pathologic changes. Such changes are always due to irritation, inflammation, tissue destruction and scar formation. All of these are kept at a minimum, not by movement, but by rest. The minor stiffness that is inevitable to the minor injury can be broken up after healing occurs. The more serious stiffness that results from more serious injury cannot be broken up either at the time by poor splinting or by force later on.

Another important war experience, and one which attracted much attention at the time, had to do with the so-called Willems method of the treatment of infected joints by keeping them in motion. Accurate and careful adherence to the exact technic promulgated by Willems surely gave, and will give, good results in some acute septic joints. (Careful splinting and sound healing will give the same results or better.) On the other hand, experience taught us the great danger of keeping infected joints moving under any except ideal conditions. I saw during the war, and have seen since, many cases of serious disability and severe deformity in which attempts were made to maintain motion in joint cases, which should have been protected and allowed to become stiff in better position.

Even from one of the most brilliant procedures that came out of the surgery of the war—*débridement*—there are negative as well as positive lessons to be learned. Certainly we saw that lives and limbs were saved by the early and complete removal of badly damaged and infected tissues. That such procedures should be done only by skilled surgeons, however, is attested by the frequency with which principal peripheral nerves were sacrificed and serious disabilities resulted, owing to bony and soft part defects.

OCCUPATION OF DISABLED

One of the greatest lessons of the war is one in regard to which we, as a profession, still have much to learn. This is the lesson of the occupation of the sick and disabled. Both in the army and out of it, we are still pursuing, with regard to our disabled, a policy which in many cases is bad for them and bad for us.

This is the policy of compensation without directed or supervised employment. It is true that we have a fairly elaborate machine set up for the vocational guidance and for the employment of our crippled discharged soldiers. For our industrial cripples there is almost no provision whatever. The fault now is not so much with the governmental agencies as it is with the general public and with the profession. The employment of the idle presents a problem for the solution of which the intelligent cooperation of the entire community is necessary. As long as idleness is permitted, and especially as long as it is encouraged, we shall have the problem of the unemployed, either lame or well. Certainly, however, in institutions in which supervision is at hand, every inmate should be engaged, if possible, in some sort of useful occupation. These occupations can be made educational and instructive as well as

remunerative and curative. Then the individual will be on the way to real rehabilitation, socially as well as physically.

We have passed, have we not, that period in human history in which power and possession were yielded to that one who was physically the strongest? We are supposed to have now a government which guarantees to us all equal rights for the enjoyment of life, liberty and the pursuit of happiness. Are we not perhaps ready for the next step forward into an era in which, by common consent, we may give special opportunities, special privileges and special facilities for self help (instead of merely charity) to those who cannot—mentally or physically—keep up under the strain of competition with those who are fit?

CONSULTATION AND SUPERVISION

In spite of the arguments of those who fear and object to paternalism, I wish to say a word from our experience with the supervising consultant in the military hospitals. It is an idea which remained firmly rooted in our surgeons, even after they became medical officers in the United States Army, that the hospital service and the patient assigned to any one became more or less his personal property. One needs only to see the attitude of any surgeon now toward his hospital service and his hospital patients to find out how quickly he resents supervision, direction or even suggestions as to the care of his patients. If any attempt is made to direct the care of any patient apart from the surgeon's invitation, he is at once affronted. This feeling must, of course, rest on the assumption that the surgeon knows so much about his work that no one can tell him anything.

Would it not be better for our patients to meet this question fairly and allow methods of treatment to be checked up by those who are competent to give an expert opinion?

In the military service, we certainly found hospitals, surgical services and wards in which specially trained consultants were able to contribute much to the work that was being done. I believe that it may be said that this is particularly true of consultants in orthopedic surgery. At any rate, in orthopedic surgery, it was particularly easy to demonstrate the results of decisions as to treatment and the supervision of the care of patients by consultants. I can recall instances in which a single visit by the consultant with a tape measure to a femur fracture ward resulted in correction of deformity, lengthening of shortened limbs, and the improvement of the condition of twenty or thirty patients in a single day.

That this method might be applied in the same way to present day conditions and present day hospitals, I believe no one can deny. It is my belief that a consultant in orthopedic surgery with correct ideas regarding the prevention of deformity could contribute to the welfare of many patients, to the improvement of their condition, and to the prevention of some deformity, in most of the hospitals in this country.

I am not unaware of the objections to further inspection, consultation and supervision by city, county or state officials of any kind. I have some reason to believe that this sort of thing is being overdone. And yet the chief objections to consultation and supervision come from those who, in a sense, create the necessity for it. We have many inspectors of all kinds who are

incompetent and superfluous. On the other hand, we have inspectors who are responsible for the fact that we are served with healthful meat and clean milk; that we enjoy a measure of police and fire protection; that we have paved streets and good roads, and that we enjoy many other privileges and immunities.

In the same way I believe that it may be said that, in spite of any objections that may be raised, systems of hospital or community consultation in fractures and other serious injuries would raise the level of such treatment and bring about an era of better results. It cannot be denied that many fractures are being treated today by those without proper training, skill or experience in such work.

Other disabilities and deformity-producing diseases and injuries are being handled in the same way. Standards of treatment and results definitely set down, and more or less rigidly enforced, seem to me to be the only answer. And for this purpose a consultation scheme with the development of something like an "orthopedic conscience" seems to be necessary.

POSSIBILITIES OF REESTABLISHMENT

The experience of the war has brought to our attention very forcibly the fact that our results in this class of cases are not as good as they should be. In the draft, in the army hospitals, and since the armistice we found, and do find, disability and crippling that should have been prevented. We constantly find instances of avoidable deformity. And there are daily opportunities to replace in society and in industry cripples who are idle now because of the neglect of treatment and training.

We have had splendid illustrations in our own country as well as in Great Britain, France and Italy of the meaning and methods of rehabilitation in the broadest sense. Canada has shown us in a very striking way the possibilities of "reestablishment." In all the countries of our allies, as well as our own, surgical reconstruction is being admirably done to a certain extent.

Moreover, we now know that congenital and acquired deformities are equally amenable to relief if we follow the fundamental principles of orthopedic surgery. And, briefly stated, these fundamental principles are, first, to restore to and secure healing of parts (at any time after injury) in as nearly correct anatomic relationship as possible. And second, we have surely learned that there are practically no limits to the possibilities of reestablishment of the individual by the educational and training development of original compensatory or vicarious functions.

Fighting the Drug Menace.—The League of Nations recently held a conference in Geneva on opium; and Congress has passed a bill limiting the importation of drugs. The medical societies are also assisting in the crusade by endeavoring to eliminate those who profess to be curing addicts by administering smaller, but continuous doses. The drug problem has assumed such large proportions that a physician has been placed in charge of the special narcotic control division of the New York police department. This agency has cooperated with other forces throughout the United States and foreign countries until a clearing house has been established to supply information regarding drug addicts and venders. The narcotic division has already collected the finger prints of 20,000 drug users in this country, Canada and Europe. It has been stated that there are from 250,000 to 400,000 drug addicts in this country alone, and that the habit results in an annual loss of \$750,000,000. Narcotics valued at \$3,500,000 were confiscated and destroyed in New York alone during 1921, and 3,086 venders or users arrested.