PERIPHERAL NERVE SURGERY—POSTOPERATIVE REHABILITATION*

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(Received for publication February 26, 1944)

Rehabilitation of the wounded Soldier, Sailor and Marine is receiving more and more attention of the members of the Medical Departments of the Army and the Navy. Our responsibilities as Medical Officers do not end with the suture of the wound, the setting of a fracture, or the repair of a damaged nerve, but continue until the patient is fit to return to duty or discharge from the service in the best possible physical condition.

Owing to our lack of practical experience we have been interested in the methods used by our Allies and as an example of what can be accomplished I would like to refer to a case described in the British literature. Watson-Jones,\(^1\) in discussing rehabilitation in the Royal Air Force, tells the following story:

An air gunner of the Royal Air Force, a man of proved courage and determination, was admitted to a civilian orthopaedic hospital for the treatment of a torn and displaced semilunar cartilage. Ten months later he was still in the hospital and still totally incapacitated. He asked about the delayed recovery. The diagnosis had been correct and a skillful operation performed without complications. Early treatment had been continued in the physiotherapy department but the muscles of the thigh remained atrophic and weak. The joint had twice been manipulated under anesthesia without improvement. The man’s gait was slow and hesitant. He limped. He could not run. He had never tried to run. The medical officer blamed him because “he would not co-operate,” because he was disinterested, depressed and resentful. He was depressed, for after ten months the incapacity was more complete than on the day of admission. He was disinterested because, in his own words, “nobody takes any notice and it looks as if it is hopeless.” He was resentful because he could not believe the fault was his. Had he not been told that “the nerve to his knee had been cut”?

He was transferred to one of the orthopaedic rehabilitation centres of the R.A.F. Medical Service. He saw the sky, the sea, the open spaces. For many months he had seen only the stone walls of the hospital wards, the stone walls of massage rooms, the stone walls of many corridors. His new surroundings were different. There was a lounge and a writing room, tasteful decorations and flowers, a menu which was varied and excellent, an atmosphere of well-being and contentment. After a few days he smiled. There was sometimes a sparkle in his eye. Within a week he sensed the spirit of optimism. It grew upon him and he was reassured. His difficulties were explained and he was taught special exercises. He learned to walk and then to run. He became an enthusiast and worked hard. He worked in the gym, played on the fields, swam in the pool, cycled on the track. Time raced past, for he was busy. He attended lectures, played billiards and went to concerts. He became bronzed and fit. He laughed and was full of the joy of life. In seven weeks he returned to his unit and to full duty. He forgot about the “nerve in his knee.” Ten months total incapacity. Seven weeks full recovery. That is the story of rehabilitation in one air gunner.

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* The opinions or assertions contained herein are the private ones of the writer, and are not to be construed as official or as reflecting the views of the Navy Department or the naval service at large.

Presented at the meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, January 22 to 26, 1944.

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The experience of the air gunner is not unusual. It is typical of victims of injuries to the extremities. In the hospitals of every country at war, there are many injured men whose surgical treatment has been completed for months but who are incapacitated because of minor disuse changes, because confidence is lacking, because morale has been destroyed. Their bodies have been treated, not their minds. The treatment of fractures has been concentrated upon securing bony union, and the treatment of peripheral nerves concentrated upon end-to-end anastomosis. No treatment has been directed to the tone and volume of muscles, the stability of joints, and the circulation of the limbs. There has been no measurement and graduation of physical activity. There has been no attempt to continue treatment until the patient regained confidence and recognized for himself that recovery was complete.

It is a well-recognized fact that a successful nerve repair may be followed by an incomplete or faulty functional recovery, if the muscles are not properly prepared. Davis, in his monograph, states: "It is unfortunate that many times nerve ends are sutured and no thought is given to what we consider to be of at least as great importance—carefully supervised and persistent physical therapeutic after-care." Many structural and metabolic changes may and do take place in the denervated group of muscles. This is especially true when there is associated destruction or trauma to the contiguous structures, such as the muscles, the long bones and the joints. Every traumatized extremity should be treated as a unit and the peripheral nerves should be carefully considered from the standpoint of a functional return. Disabilities resulting from injuries to the radial, median and ulnar nerves, as well as sciatic, tibial and peroneal nerves should be analyzed, and any treatment instituted should include every means to insure a good functional final result. The activation of denervated muscles by passive or active motion, as well as electrical stimulation, increases the metabolism and the circulation of the muscles, and keeps them in much better physical condition, and therefore much more receptive to re-inervation. Although it is difficult to measure accurately, it is an accepted fact that those patients who receive physical therapy show evidences of recovery of function much earlier, and the degree of recovery is much greater, than those who do not.

Physical therapy should be carefully supervised because atrophied, denervated muscles may be injured by rough methods and fatigue. In many cases better results are obtained by simple devices and games which effect an unconscious and effortless exercise of the contracted muscles.

Massage and passive motion have long been used to take the place of active exercise. If massage is to be of service in cases of nerve suture it must be used skillfully at the right time.

The preoperative treatment of peripheral nerve injury cases should be carried out very carefully and should comprise all of the various forms of massage. In the preoperative stage, massage and exercises should be used to keep joint and muscle senses intact, to maintain full mobility or to restore it if lost, to encourage the fullest activity in muscles capable of contraction, and to devise movements and exercises to maintain the vitality of the part as a whole. In the Peripheral Nerve Centers in England during the postoperative treatment of peripheral nerve injuries, skilled masseurs initiate