MEDICAL PRACTICE

Contemporary Themes

Factors Influencing Return to Work

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Summary

Seventy-seven patients with severe brachial plexus injuries were interviewed two or more years later to determine their success in returning to work and the factors that had led to good or bad resettlement. For most of them these were crucial issues potentially influencing the rest of their lives. When interviewed virtually all had regular jobs in open industry, but many had endured long delays and most were working entirely one-handed. Failure of communication was regrettably common. Too often advice by doctors had been lacking, and there was evidence that the services for vocational resettlement could be improved.

Introduction

A speedy return to work after illness or injury is the main interest of the patient and is of immense importance in human, social, and economic terms. Most doctors have experience of the problems involved but would have difficulty in listing in order of importance the complex factors which lead to good or bad vocational resettlement. The primary purpose of our study was to collect facts on some aspects of rehabilitation and vocational resettlement to see what is wrong and what needs to be put right. We chose patients with severe brachial plexus injuries for investigation because they have much in common and the date of onset is easily defined. They are mostly young men between the ages of 15 and 25.

They suddenly lose the function of one arm, usually permanently. Few return to their own jobs, and from the time of injury there is a major problem of vocational resettlement.

Patients and Methods

The patients were selected at random from the diagnostic index at the Royal National Orthopaedic Hospital. Difficult cases are referred to it from other hospitals throughout the United Kingdom, and since in many instances they handle the resettlement problems any criticisms in this paper are not directed at a particular hospital.

One of us (J.W.D.), who has worked as a hospital rehabilitation officer at the Royal National Orthopaedic Hospital for the past 18 years,¹ visited all the patients in their homes or at their places of work. In each case a detailed history of the patient's training and work since his injury was recorded and an extensive questionnaire completed. Finally, when the patient's confidence had been gained, his spontaneous replies to some further specific questions were tape-recorded. These provided several hours of listening to candid comments. We also read the hospital notes.

When 50 patients had been interviewed the results were analysed. It was then decided to add a further 27 patients who had had amputations and to pose further questions to all the patients. The average interval between injury and interview was eight years.

At the time of injury 78% of the patients were aged between 15 and 25. About equal numbers were doing skilled, semi-skilled, or unskilled work; 33% were serving an apprenticeship or had completed it; 45% were doing regular overtime; and 15% already had financial worries before the injury. It was calculated (J.W.D.) that 30% of those in regular work at the time of injury could have returned to their old jobs working with one hand, though some would have required minor modifications in their jobs to make it possible.

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Injuries

Since 72% of the brachial plexus injuries were due to motor-cycle accidents some patients had other serious injuries, particularly of the legs, and 10% had head injuries, of which 3% were severe enough to require psychiatric care.

So that the extent and nature of the brachial plexus injury could be analysed separately the patients were placed in five arbitrary groups according to whether they ultimately had amputations and their clinical states when they had been assessed soon after their injuries. Twenty-one per cent. had had below-elbow and 35% above-elbow amputations. The remaining 44%, who did not have amputations, were grouped on the basis of hand function three months after injury. In 13% the hand was already normal or expected soon to become normal, 17% had partial hand paralysis, and 14% had total hand paralysis. 70% had paralysis of the dominant limb. All the injuries had occurred since 1946 and most between 1956 and 1966. In the past 20 years there have been advances in our knowledge of brachial plexus injuries and their management, so that it is now possible in almost all cases to assess the prognosis within three months. In the early years reconstructive surgery was not always successful, and consequently there was then a period when early elective amputation was advised more often. All of these changes influenced the results in the patients studied.

The patient's opinions about their surgical treatment were recorded because they influenced their attitudes, including their attitudes to work. Seven of the patients with normal hands had had operations in the shoulder region, and all but one thought their operations had been helpful. Nine of the 11 patients with partial hand paralysis who had had tendon transplants and other operative procedures were grateful for the improved function. By contrast the seven patients with complete hand paralysis who had had operations all found them to be of no help.

Several patients with artificial limbs were disappointed at their limited function. Nevertheless, almost half of them had previously damaged their hands owing to lack of sensation and 23% had been made more comfortable by the amputation. Of the 78% of amputees who wore their artificial limbs regularly only 21% thought their function was improved; 37% wore their artificial limbs mainly to conceal their deformities.

Employment when Interviewed

At the time of interview 90% of the patients had regular settled jobs and most of them had satisfactory incomes, some appreciably higher than before their injuries. There were also two housewives, a schoolboy, a man still training, a man doing sheltered work, and a man who had retired. Only two were unemployed, apparently unnecessarily, and in both instances the payment of large sums in compensation had made this possible. When it is considered that some patients had sustained head and other serious injuries this is a remarkable record.

Unfortunately, only 24 patients used their injured limbs at all in their work, and this could usually have been predicted soon after the injury. Naturally, the 10 patients with normal hands could use both hands, but only three of the 13 with partial hand function at three months and none of the 10 patients with total hand paralysis at the same stage. Eight of the 16 below-elbow amputees made some use of their prostheses at work, but only three of the 23 above-elbow amputees. Unless the hand was normal most patients worked essentially one-handed. The only exceptions were a camera-operator, who would have had to give up his skilled work without a below-elbow prosthesis, and four patients who found it useful to have a second "hand," though not indispensable.

Some patients had settled in work which made obvious

allowances for their disabilities: as clerks, welders, storemen, spray painters. But the majority had chosen a wide variety of jobs, some of which may seem surprising, including crane driver, wood machinist, groundsman, switchboard operator, electronic technician, painter-decorator, garage mechanic, bulldozer operator, electrician, and motor cycle dealer, all working entirely one-handed.

Time Off Work

Most people would regard six months off work as a tragedy, but these young men had sometimes spent two or three or more years out of settled work (see Table). In retrospect half of them thought they could have returned to work earlier.

Period of Time Before Starting Settled Work

Period in Months	No. of Patients
Less than 6	6 (8%)
7-12	12 (16%)
13-24	17 (22%)
25-36	22 (28%)
More than 36	12 (16%)
Not applicable	8 (10%)
Total	77

Temporary work was obtained by 35% of the patients while waiting to see if the limb would recover or for the correct time for surgical intervention. This was relatively easy for patients with normal hands, of whom 70% obtained interim work, mostly with their former employers. Similarly, 47% of those whose original work could be done one-handed found temporary jobs.

The advantages of having a skilled job was clear, since 53% of skilled and 43% of semi-skilled workers obtained temporary jobs, but only 11% of unskilled workers did so. Employers were keen for their skilled workers to return to work, but another factor was that several skilled jobs but few unskilled ones could be done one-handed. Most temporary jobs were for short periods for patients who were re-settled relatively quickly. Several patients did no work for two or more years.

Factors Contributing to Delay

Before considering individual factors that may lead to prolonged unemployment it must be stressed that in many cases there was a mixture of factors. The following case illustrates this.

A 22-year-old single man suffered a right brachial plexus injury, a head injury, and a fractured femur. He was in and out of hospital for 18 months and returned to regular work after 30 months. At the time of injury he was a skilled shipyard riveter. He did no overtime, enjoyed his job, and considered the pay to be adequate. Soon after his injury he slashed his wrists when his girl friend broke off their engagement on learning of his disability. He claimed that no doctor explained his injury in a way that helped to decide what to do about work or advised him about the type of work he would be able to do. His arm got in his way and he often burnt it. He had an elective below-elbow amputation 15 months after his injury. He was fitted with an artificial limb and later he was retrained as a welder. While off work he received Social Security benefits and financial help from his family. Ultimately he received compensation. He was bored when off work and built a garage as a hobby while still in plaster. He eventually obtained regular employment as a ship's welder. His pay was comparable to that before his injury and he was proud of his ability to support a wife and two children. In retrospect he thought he should have returned to work three to six months earlier.

PATIENT'S PERSONALITY AND BACKGROUND

The relative importance of personality was difficult to determine in most instances. No formal personality tests were conducted. The following three cases represent obvious examples of the effects of personality.

A 41-year-old plant operator who drove heavy earth-moving machinery had an accident resulting in early below-elbow amputation of his dominant limb. He was sure he could continue his former work working left-handed, and within three months he had returned to it. With his compensation he bought equipment and started his own business, which proved successful. He continued to apologize for not returning to work earlier.

A 20-year-old mushroom grower had an above-elbow amputation 18 months after an injury to his dominant arm. At that time he was seen in a resettlement clinic and on two occasions efforts were made to get him away for assessment at an industrial rehabilitation unit. This was resisted by his parents. Later he received over £4,000 in compensation. In 1969 he was spending his time watching television and doing occasional gardening. He considered himself fortunate that he did not need to work and hoped that it would not become necessary in the future.

An 18-year-old self-employed painter-decorator had an above-elbow amputation of his non-dominant arm 16 months after injury. Independent by nature and with no time for authority he could not tolerate the Ministry of Labour and felt that disablement resettlement officers had a restricting influence on anyone with ideas. Against his wish he was sent to a training college to train as a paint-sprayer. After 10 days he thought that he had learnt all that was required and did not wish to complete a six-month course. He then fell out with the local employment exchange. He would have liked to train as a television engineer or a typewriter mechanic but he decided to restart as a self-employed painter. As he says, "I have nobody to answer to. What I do and what I earn is up to me entirely, and I have nobody to thank for that, especially the employment exchange."

Though many questions were asked about them the influence of social background, the father's work record, and the patient's education could not be evaluated. They were largely submerged in the more powerful factors relating to the injury and its management.

PREVIOUS EMPLOYMENT

We also considered each man's work record—the nature of his last job, overtime, spare-time jobs, pay, and satisfaction with job and with pay—and financial problems before and after injury. Again we could not assess the effect of these factors on subsequent vocational resettlement, apart from the significance of skilled work and jobs that could be done with one hand. A few older men pointed to their advantage in having established jobs which they had been doing for years, and some other patients were helped by being self-employed or working in small family businesses. Of the patients who could do their previous jobs one-handed 58% returned to regular work in under one year compared with only 13% of those who had required to use both hands. Skilled and semi-skilled workers obtained temporary jobs more readily but had no advantage in obtaining settled jobs.

Regrettably, hospital staff had failed to appreciate the importance of skilled work and apprenticeships. Some patients were in danger of losing their apprenticeship if they were away from work too long, and often their position could have been secured by early contact with their employers or instructors.

An 18-year-old apprentice auto-platen setter in the printing trade had paralysis of his dominant limb. Surgery was not required. Despite the patient's apprenticeship a disablement resettlement officer advised a course in mathematics with a view to training for radio and television servicing, which would entail carrying television sets and fixing aerials. If he could do that he

could have returned to auto-platen setting. When he was seen at the Royal National Orthopaedic Hospital eight months after the injury direct contact was made with the employers. They were anxious to have him back without delay and had already looked out three one-handed jobs for him. He was reinstated in his apprenticeship and ultimately returned to normal duties.

CLINICAL PROBLEMS

The nature and extent of the brachial plexus injury had less influence on the speed of return to work than was expected. Whether or not the injured arm had been dominant also had little effect. Obviously patients with almost normal hands presented relatively simple resettlement problems, and most had returned to regular work in less than two years.

We estimated that pain influenced the lives and work of 10% of patients. Head and other associated injuries sometimes had more effect on return to work than the brachial plexus injuries. Perhaps the worst resettlement problems were presented by three patients with serious residual effects after head injuries.

SURGERY

To get a good operative result it may be necessary to delay surgery. This is a major cause of long periods off work and may be completely justifiable. In some cases the patients returned to work early and reconstructive surgery was fitted in without difficulty perhaps a year or more later. Sixteen per cent. of the amputations were delayed until more than three years after the injury.

Several patients reported their emotional difficulties in agreeing to amputation or reconstructive surgery. Some were too disturbed to accept amputation during the first year. Others were obviously upset by the continuing presence of a severely damaged limb and were not content until it had been removed. With the advantage of hindsight it is easy for some patients to say bravely that they wished their arms had been amputated at once, and a few complained bitterly that this had not been done. In most instances amputation was desirable rather than essential, and therefore each patient helped to decide whether his arm should be removed. There were few regrets, but one patient wished strongly that he had kept his arm, and another had to be referred to a psychiatrist after he returned to work with an artificial limb.

PSYCHOLOGICAL FACTORS

There is inevitably a major emotional response and a difficult period of readjustment when a young man loses the use of an arm. Many of the patients were in late adolescence, and relatively few were married and settled in their work or way of life. Compared with an immediate traumatic amputation a brachial plexus injury presents extra problems, because a reliable prognosis may be impossible and important uncertainties may persist for months. It is essential to help patients with their adjustment and to proceed with the explanations and the rehabilitation at a speed suited to the individual. Until they have come to terms with their disabilities patients may not enter wholeheartedly into discussions about work and may later forget that such discussions took place.

Our questionnaire asked: "How did you feel about things?" and "Did your nerves bother you?" This led half of the patients to produce the following types of comment: "I felt awful and didn't know what to do." "I was depressed and worried as to whether I would be able to do my job." "I felt bloody shocking. Some consider that I still nurse a chip." Eight patients were referred to psychiatrists—three because of continuing difficulty with their readjustment, three because of pain, and two because of head injuries.

INFORMING THE PATIENT

Repeatedly patients complained that no one had explained things to them or helped them to plan for work in the future. The following extracts are taken from recorded comments.

"Nobody has bothered about it [returning to work] in the hospitals and it is entirely up to the individual himself when he wants to go back."

"None of the doctors or surgeons discussed my injury with me. It would have helped psychologically, I think . . . I returned to work about six weeks after leaving hospital. I asked to go back to work, nobody suggested to me that I should . . ."

"My period of being out of work, on the sick, really has been a waste of time. It has been boring, and if I had had advice perhaps a year or even earlier I might have been at work much earlier than what I did. I would not waste my time like I have been doing. I would get discharged from hospital and get back to work as soon as possible."

"Thinking back about it in hospital I feel that if only someone could talk to you, say three or four weeks after your accident or when you are fit enough to speak to, about what opportunities you would have and what your position will probably be when you finally are released from hospital, you could then have thoughts about it. In my case I would have preferred to have bettered my education and to have studied things which I now know I shall need."

"They said my arm would take two years to sort out. Supposing they had looked on the black side and said the arm was no good and then tried to find out my future, I might not have wasted two years."

We asked the first 50 patients the question: "When did you first have a serious discussion with a professional person about your work?" Only 16 reported such a discussion during the first year after injury. In no instance was the professional person a doctor. We therefore posed a new series of questions on this subject to all 77 patients. Only 40% remembered a doctor asking them about work or referring them to some one who could help, and usually this was during the second year or later. Only 14% remembered a doctor advising them on the type of work they might be able to do.

Of course the patients may have forgotten what they were told. Some were too disturbed, and some subsequently shifted in their minds the responsibility for their prolonged unemployment. Nevertheless, careful assessment of all the information indicated that some patients undoubtedly had insufficient explanation and advice.

COMPENSATION

Compensation was claimed by 47%, of whom 9% were unsuccessful and 5% were still under review. Sixty-one per cent. of those who claimed were off work more than two years, compared with 40% of those who did not claim, but compensation was not the common, major factor in delaying return to work that is often suggested. Some patients who claimed returned to work quickly. Temporary work was obtained by those who claimed as often as those who did not, but it was more often with a different employer.

VOCATIONAL GUIDANCE

Wise vocational guidance requires knowledge and experience of industry and of the medical problems. Doctors are inexperienced in employment conditions and patients do not expect to obtain detailed advice from them. Ideally, this guidance would have been given by disablement resettlement officers, but some patients seemed to have received poor advice from many sources, including the resettlement officers. Patients who were not quickly or adequately employed tended to blame their advisers rather than themselves, and this makes retrospective assessment difficult.

A 17-year-old apprentice tool fitter had severe paralysis of his dominant limb, and 33 months later an above-elbow amputation was performed. A hospital rehabilitation officer arranged for him to take up his apprenticeship again. He was doing this successfully but was seen by a doctor at another hospital who advised him to train for a new job involving the use of his artificial limb. He was trained as a welder and used the limb, but at the time of writing he was earning £5 a week less than he would as a skilled toolmaker if he had continued in his normal occupation working one-handed.

A 16-year-old schoolboy had paralysis of his upper arm. He completed his schooling and obtained the school certificate. Two years after the injury he had an arthrodesis of the shoulder. He consulted an almoner and was advised to take up a trade such as boot repairing. He still remembered being angry and saying, "Surely I can make a better living doing something else than mending people's boots." On his own initiative he obtained a job as an estimating clerk. He later became sales office manager, was promoted to sales manager, and then was made a company director with the same firm.

Fifty of the patients were seen by Ministry of Labour officials. Some patients who had been unemployed for long periods went to an employment exchange on their own initiative and were placed in satisfactory work. An equal number found the advice unsatisfactory and were obliged to find work without help. Thirty-eight patients were offered training but 10 declined to do the type of work suggested; 28 patients accepted training and 19 use it in their jobs, 11 of them working one-handed.

Some of the failures were partly due to the patients, but at times they were given unacceptable advice stemming from a stereotyped approach to training (usually only welding, paint spraying, or clerical duties) or were persuaded to take unsuitable courses because they were available locally or there was a failure to take advantage of the patient's experience, skill, interests, or psychological make-up; sometimes there was a mistaken view that the patient ought to be trained to do something using his paralysed hand or artificial limb when he would have been better placed doing work with one hand. A few patients reported unpardonable delays waiting for assessment, training, or subsequent employment.

A 22-year-old sheet-metal worker and welder had his dominant arm amputated above the elbow six months after his injury. He went immediately to an industrial rehabilitation unit and then to a Government training centre to be trained as a welder. Having been a welder before he realized that welding with an artificial arm would not give him a good salary. He left after two months and reported to the employment exchange, seeking direct placement in work. After a period of unemployment he was placed as a night-watchman. For a man of 25 this was intolerable, and there followed another long period of unemployment. Eventually, 18 months after discharge from hospital, he found himself a satisfactory job as a machine operator.

A 21-year-old engineer had completed his apprenticeship when his non-dominant limb became paralysed. He had an above-elbow amputation. He attended the employment exchange but during nine months was offered only one job—as a part-time petrol pump attendant. With the impression that the employment exchange was uninterested and was ignoring his apprenticeship, he obtained for himself a good job as a buyer for an engineering establishment.

A 19-year-old apprentice heating engineer with a City and Guilds certificate had a below-elbow amputation. An industrial rehabilitation unit ignored his training as an engineer and after eight weeks offered him a course in car spraying. The next week he went to an engineering factory, where he was offered training as a skilled inspector. With the consent of the disablement resettlement officer he accepted.

A 23-year-old man spent five months in a medical rehabilitation unit and then seven weeks in an industrial rehabilitation unit, when it was decided that he should be retrained for electrical welding. He then waited three months for the training, which lasted six months, and finally waited a further six months before being placed in work. The end result was good, but two years is a long time.

The case reports reports of the five patients who had been injured during the period 1946-9, however, showed how things have improved. Without exception those men suffered prolonged periods of depressing delay during their resettlement. It took nine years before one of them was settled in a clerical job, and he felt strongly that he should have been educated and trained for clerical work from the beginning.

Discussion

We have emphasized some of the poor results because the primary purpose of this review was to collect facts as a basis for reconsidering some aspects of rehabilitation and vocational resettlement and to see what needs to be put right. But it must be stated that the outcome in half of the cases was excellent and a tribute to all concerned.

It is a serious error to think that rehabilitation is a separate process divorced from other medical care. Sometimes a clear separation is possible. For example, a patient who has had an immediate traumatic amputation of a limb and has a well-healed stump may be passed to others by the surgeon with no more than a written report, knowing that the issues are well defined and understood. The same does not apply to most other conditions needing a difficult period of rehabilitation. The doctor most concerned with the patient's care is the only person who knows the patient, his disease, his treatment, his prognosis, and his probable future capacity to work, and this doctor must be a central figure in the rehabilitation process.

In most cases the responsibility is the general practitioner's, and the consultant can pass the patient back to him. But when the disorder is highly specialized and requires regular hospital attention, as with a brachial plexus injury, the consultant must organize the rehabilitation. He must guide the patient, the employer, the hospital staff, and officials of the Department of Employment, otherwise there will be delays owing to uncertainty and lack of understanding.

In helping patients with brachial plexus injuries surgeons have a leading role over a period of many months or years, and yet rehabilitation must start as soon as possible after the injury; it cannot wait until the patient is referred to a medical rehabilitation unit or the employment exchange. At the Royal National Orthopaedic Hospital patients with brachial plexus injuries are referred immediately to the medical social worker and to the hospital rehabilitation officer. Increasing numbers are also being seen by a psychiatrist to help in the assessment. As soon as the hospital rehabilitation officer has interviewed the patient and discussed the problem with the surgeon he visits the place of employment for full

consideration of the possibilities, and he often contacts the disablement resettlement officer. Unfortunately, surgeons at other hospitals have found it difficult to build up a similar service. At the time of this survey disablement resettlement officer posts were usually temporary appointments during a career as a clerical officer in the Ministry of Labour, and communication between surgeon, disablement resettlement officer, and employer was often inadequate.

Because of the inherent difficulties in any study of vocational resettlement we have been reluctant to draw any firm conclusions. We are impressed, however, by the need for more knowledge. For example, it is essential to know the scope of work that can be performed satisfactorily by people with a wide variety of disabilities. We had not appreciated before that men could be successful electricians working entirely one-handed, but in this series there were two men earning good incomes doing electrical work. Any process of resettlement is certain to be restricting if those who give advice do not know fully what can be achieved.

We are also aware that previously we have looked critically at the patients, their attitudes, their intelligence, and their compensation claims and not enough at ourselves. Perhaps it is appropriate for a patient to have the final word.

"If a friend had the same injury I think I would tell him what I have told pals of mine that have asked me about it, and I have said: 'Well now, look mate, when I go to a doctor because I am ill I don't reckon to argue with him. He's the specialist, he's the man that knows, I am only the layman; and if the man says, 'Right, well I'm afraid you'll have to stay off work another three months,' that's good enough for me—I stay off work. He's the expert. And I think the only possible advice you could give anybody in the same circumstances is exactly the same. 'Go to him, and whatever your doctor says must be right. He's the doctor, he's the man that knows. If he thinks your arm will get better he'll tell you; if he thinks it might get better he will tell you that; but he's the only one that can possibly tell you. And if it takes him two years to make up his mind well it's nobody's fault, only his.'"

We are grateful to Sir Herbert Seddon for his advice and encouragement. Dr. John Fleminger, Dr. Franz Morgenstern, and Mr. George Fulford gave much help in planning this study. The medical records department identified the patients and found the notes on many occasions. The patients collaborated fully and with remarkable enthusiasm. To all of them we wish to express our thanks.

Reference

- 1 Brewerton, D. A., and Daniel, J. W., *British Medical Journal*, 1969, 2, 240.