[After the present paper had been written the record of a very interesting successful case, by Dr. E. C. Taylor, appeared in the *Lancet* for June 6th, 1903.]

What has been said will serve to point the moral that unrelaxed vigilance must be observed in every case, and during every stage, of a radical cure of hernia, whether inguinal or femoral, the bladder, as already stated, being occasionally found in the sac of a femoral hernia.

REFERENCES.

¹ *The Radical Cure of Hernia, etc.*, 1893. ² *Med.-Chir. Trans.*, 1894, vol. lxxvii.

THE NECESSITY OF SHORTENING LARGE NERVES WHEN AMPUTATING.

By WALTER G. SPENCER.

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It is usual after tying the vessels, to draw out the large nerves from the surface of the stump and cut off a piece. The following brief notes of cases which have been under me in the Westminster Hospital show that when this procedure has been omitted, there has been an indefinite delay to the patient's recovery. The patient has been hindered from wearing an artificial limb and from returning to work, has had continuous pain in the stump, and has had to submit to minor operations and finally to a resection of the affected nerves.

Amputation is done nowadays only as a last resource, and the patient's condition is generally bad. Therefore, haste is essential, yet the minute or two required for shortening large nerves is indispensable.

In some of the cases described below the flaps were doubtless in a bruised condition owing to the accident, or had beforehand been undermined by suppuration, so that healing by first intention could not be obtained. Nevertheless, all the cases at length definitely healed, and when seen, no case showed a pointed or ulcerated stump. The whole of the chronic trouble was connected with the nerves. Besides the primary amputation scar, all the cases presented several secondary scars, of which the patients could not give an entirely clear account. Some may have been the result of making counter openings, or for removing fragments of bone, or have followed ulceration and sloughing. But others, according to the patients, were made to relieve the pain, presumably attempts to dissect out the ends of the nerves. If so, these operations had failed from being too limited. In all the cases it was clearly necessary to expose the nerves well above the mass of scar tissue in which they were most intimately involved.

CASE I.—A man, aged 54, had had a Chopart's amputation done for a crushed foot two years before. Healing was delayed until two fragments of bone escaped. He had not been able to put the foot to the ground. The stump was extended on the leg, the main scar and several small scars were excessively tender. A Syme's amputation was done and the nerves well shortened. In the stump the posterior tibial nerve and its branches were enlarged and matted together in the scar tissue. Later on I saw the man walking well with an artificial foot.

CASE II.—A young man was playing football when he fractured his patella. The patella was wired, the knee-joint suppurated, and pus extended up into the thigh. The thigh was amputated about the middle, and subsequently the bone was resected. When first seen the man was highly excitable; attempts to handle the stump sent him off in painful convulsions. One could see the main and several secondary puckered scars. I resected the sciatic nerve at the lower border of the gluteus, and dissected its large bulbous end out of the scar. The man's nervous symptoms disappeared, the stump could be freely handled, and an artificial limb could be worn, although I am afraid that it was not of much assistance owing to the shortness of the stump.

CASE III.—A man was shot through the ham and developed a popliteal aneurysm, for which, about ten days after the injury, the popliteal artery was ligatured in the upper part of its course. Gangrene followed, and the thigh was amputated through the lower third. Very shortly after healing he was supplied with an artificial limb. Having been a very muscular man the stump wasted, so that on admission he was wearing full-length trousers doubled up and wrapped round the stump within the excessively large bucket of the artificial limb. This may have aided in the development of the nerve end-bulb, for the scar had become gradually painful, and the pain had spread up the sciatic nerve. About 4 in. of the sciatic nerve was resected; a large bulbous end was densely connected with the amputation scar. After waiting six months the man was refitted with an artificial limb which he could use well.

CASE IV.—A farm labourer, aged 64, had had an amputation through the middle of the right arm three years before. The knives of a chaff-cutter had sliced off the hand and forearm up to the elbow, and the rollers had bruised the arm. The bone was afterwards resected. The stump had been throughout painful, and latterly attacks of pain seemed to

spread from the stump across the chest at the level of the second and third intercostal spaces. The stump presented secondary scars besides the main one, the soft parts were rather in excess and oedematous. The whole was very tender. There was no tenderness above the clavicle. An incision was made along the anterior axillary border, the axillary artery and vein well separated and ligatured, and then the three cords of the brachial plexus were resected just below the clavicle. Tracing them downwards, they ended in a mass of scar tissue, but were quite free from the bone, and all was removed by an oval incision. After healing the stump was painless, and there was no tenderness above the clavicle. But he continued to have paroxysms of pain in the chest, which were relieved by inhalations of nitrite of amyl. The patient had a high pulse tension, and his arteries were tortuous, but not specially so, not more than might be expected in a man of his age and class. There was nothing to be found abnormal in his heart. These attacks were regarded as angina pectoris. As to their connexion with reflex irritation from the stump or with ascending neuritis I remain doubtful.

CASE V.—A girl, aged 19, had injured her knee when about a year old, and eighteen months later an amputation through the upper third of the leg was done. Subsequently, she said, eight further operations were done, and there were numerous small scars on the stump, one in particular was over the course of the sciatic nerve in the lower third of the thigh. The stump had always remained painful, and she had got about on a kneeling pin. I made a Stephen Smith's amputation through the knee-joint, and followed up the sciatic nerve to the middle of the thigh, where it was resected. If the highest scar above mentioned was made in order to expose and divide the sciatic nerve, then the nerve had completely reunited, but was surrounded by fibrous tissue adherent to the scar. Following the nerve down, the external and internal popliteal nerves were traced into the scar tissue, the external popliteal ended in a large bulb about the level of the head of the fibula, and was closely adherent to the primary amputation scar, the internal popliteal nerve ran into a mass of scar tissue continuous with some of the secondary scars.

CASE VI.—A man, aged 20, had a Syme's amputation done for a foot crushed on the railroad about nine months ago. After some ulceration definite healing occurred at the end of fourteen weeks from the operation. The stump had remained painful, and it was impossible to bear weight on it. Besides the main scar, there was a bluish irregular scar from ulceration of the heel flap. Tenderness was felt in the course of the posterior tibial nerve as high as the middle of the leg and up the anterior tibial for 2 in. After amputating through the lower third of the leg by lateral flaps, I shortened the posterior tibial as high as the middle of the leg, and dragged out the anterior tibial for 2 in. In the part removed the much enlarged posterior tibial could be followed down into a mass of scar tissue attached to the scar at its inner end, where it formed a large bulb. On the anterior tibial was a small bulb, and this adhered both to the scar and to the lower edge of the tibia.

The result in Cases v and vi is good, in both a useful painless stump.

BRACHIAL NEURALGIA.

By ROBERT M. SIMON, M.D., F.R.C.P.,

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Up to within the last few years I have never seen or heard of a case of this description, but, since a personal experience, I have met with some half-dozen cases, though I have been unable to find in any book anything like an adequate description of the disease. Neuralgic pains affecting some of the branches of the brachial plexus are sufficiently common in aneurysm, cancerous growths in the thorax or axilla, and in aortic disease; but brachial neuralgia not symptomatic of these causes is a rare condition, and one of such extremely painful nature as to demand more than the very perfunctory attention it has received. It is questionable, however, if the term "neuralgia" is a proper one to employ, for the majority of these cases are not cases of neuralgia, but rather of perineuritis and secondary pain. The brachial plexus is derived from the four lower cervical and the greater part of the first dorsal nerves, and occupies a position amongst the muscles of the lower part of the neck and the upper part of the arm which renders it especially liable to suffer from injury to these muscles or to the fibrous tissue which surrounds them, and in all my cases, without exception, there has been history of some such injury. According to the textbooks, brachial neuralgia may occur in the course of ill-health, especially when associated with a rheumatic or gouty tendency; but I have been unable in my own experience or on inquiry from others to learn of such a case. It is quite possible that a depressed condition of health may predispose to its occurrence, but some violence is always necessary to its development.

CASE I.

An intimate friend of my own—a doctor—who had been much overworked and was in consequence in a bad state of health, became conscious, after playing rounders with some children, of a slight amount of pain near the bicipital groove of the humerus; the pain was not very

severe of its kind, though greatly increased by exertion, but he found an increasing difficulty in such actions as taking off his coat or lifting his arm to brush his hair. It was associated with marked tenderness over the acromion and some tingling down the arm extending along the course of the ulnar nerve to the fingers; the pain gradually became intolerable, and ultimately so exquisite that he could not bear the pressure of his clothes or any pressure such as that induced by movement in bed, and finally so great that he was unable to lie down, and for a fortnight had to get what sleep he could in an arm chair. For three weeks he was unable to lift up his arm or to put on a shirt; any attempt to lift a brush—even a toothbrush—was rendered impossible by the severe pain the movement occasioned. Despite the absence of fever, his health suffered greatly from the continued pain, and he became really ill. The muscles of the arm supplied by the affected nerves wasted rapidly. The pain was specially referred to the bicipital groove and to the acromial process, though a good deal was felt along the ulnar nerve. No treatment seemed to produce any effect, and relief was only obtained in a moderate degree by the use of antifebrin in 10-gr. doses, and by the local application of menthol and chloral dissolved in rectified spirits of wine. In about a month the pain gradually subsided, leaving the patient with a much-wasted arm, and in a state of general debility. During the period of acute pain, leeches and blisters and hypodermic injections of morphine had been used, but except for very transitory relief from the opium withdrawal effect.

This case is typical, though the worst of the kind I have seen. From the chronicity of the pain, from its obstinacy and the absence of intermittency, and from the great local tenderness, it would seem that we had to deal not with a neuralgic condition but with perineuritis and pressure on the nerve, either from the perineuritis or from some inflammatory condition of the sheath of the muscles adjacent to the nerve trunks. The recovery when the pain subsided was quick, and within a month the muscles had regained their volume and power.

CASE II.

A woman, aged about 45, fell upon her back from a tramcar which started as she was stepping from it. She was partially stunned, but quickly recovered, and beyond slight pain in the back was unconscious of having sustained any injury. In about a week she began to suffer from pain in both arms, along the distribution of the brachial plexus, and some tenderness on pressure about both shoulders. This was followed by increasing pain and tenderness, especially on movement of the arms, and great loss of power in both hands and arms, and some wasting of muscles. It was thought that she had sustained some injury to the spinal cord, and as she made a claim for compensation against the tramway company I was asked to see her and report. As I was satisfied that there had been simply bruising of the muscles in the fall, and the nervous symptoms were due to secondary perineuritis and pressure upon the branches of the brachial plexus on both sides, I gave a good prognosis, which was justified by her rapid improvement under no other treatment than that of rest.

CASE III.

About the same time I saw a lady who complained of similar unilateral symptoms due to a strain on the muscles of the arms and neck from lifting heavy weights. This case seems to me to be of precisely similar nature to the others I have recorded; and after a prolonged period of rest, during which no other treatment than that for the relief of pain was attempted, she completely recovered.

These cases cannot, I think, be said to justify the diagnosis of brachial neuralgia, but were clearly traumatic in their origin, and associated with definite pressure upon the branches of the brachial plexus. The other cases I have seen were similar in their origin and their symptomatology, and clearly not due to neuralgia dependent upon constitutional condition, but without exception due to pressure upon the nerves from muscular or nerve bruising.

It must be admitted from the report of these cases that the exclusion of neuralgia as a cause is only an assumption, and has not been demonstrated by positive observation; but in support of this theory may be adduced a variety of cases of sciatica.

Some years ago Sir J. Fayrer recorded a case of sciatica which had obstinately resisted all treatment until he punctured a swelling over the nerve and between it and its sheath; fluid was evacuated with immediate and complete removal of pain. I published in the *Birmingham Medical Review*, about ten years ago, a case of sciatica that had not been relieved by even heroic doses of morphine, but was speedily and effectually cured by free leeching over the most tender spot. I have treated many cases since in the same way, where I have thought the pain was due to pressure within the nerve sheath, and always with great benefit. One of these had been sent to me with the idea that it was a case of aneurysm of the brachial artery. The patient suffered from diabetes, and the tumour proved to be a collection of fluid in the sheath of the ulnar nerve. Its removal was followed by complete recovery from pain.

These cases are so analogous in their clinical feature to

those so-called cases of brachial neuralgia that it has seemed a fair assumption to regard these latter as instances, not of neuralgia, but of pain produced by inflammatory changes either in the nerve sheaths or in the muscular tissue adjacent to them.

HISTORY OF A CASE OF CEREBRAL TUMOUR EIGHT AND A-HALF YEARS AFTER REMOVAL.

By THOMAS OLIVER, M.D., LL.D., F.R.C.P.,
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It is so very seldom there is afforded the opportunity of reporting on the health of a patient eight and a-half years after the removal of a cerebral tumour by surgical operation that, in justice to the memory of my deceased colleague, the late Mr. Williamson, who performed the operation, and, conjointly with myself, recorded the case in the *BRITISH MEDICAL JOURNAL* for November 20th, 1898, as well as in the interests of medicine and cerebral surgery, I gladly place before the profession a short statement of phenomena presented by the patient to-day. Mr. Williamson removed by the surgical methods usual in these cases an angioma from the motor areas of the left side of the brain on November 14th, 1894.

The patient, a female, aged 23, who was a domestic servant and unmarried was admitted into the Royal Infirmary under my care on account of complete paralysis of the right hand and arm, paresis of the lower half of right face, incomplete paralysis of the right leg, headache and sickness. These had developed after an epileptiform seizure which, along with such other symptoms as headache, etc., led me to diagnose a cerebral tumour of the left motor areas of the brain. For a few days after the operation just mentioned patient seemed drowsy and she took no interest in her surroundings. When she came to herself it was noticed that she had lost her power of speech. She could say "yes" and "no"; often, however, letting one of these two words slip out incorrectly, a mistake of which she was at once aware and did her best to rectify. Nine days after the operation she could move the right leg and lift the right arm to her face. By degrees the power of the right arm improved, but her stock of words was limited to "yes" and "no." Later on she could pick out with her left hand the letters of the alphabet properly and reproduce them when asked to do so, showing that there was neither word blindness nor word deafness. She understood everything that was said to her, but she could not repeat words. Eight weeks after the operation when under the influence of emotion and when singing was going on in the ward she joined in the hymn and continued to sing it along with the other patients. For three months after the operation several attempts were made to educate her into the use of a larger number of words but without any immediate result. It was in February, 1895, that she began to use the left hand regularly in the act of printing and writing letters. As she had quite recovered from the dangers incidental to the operation the patient now left the infirmary.

In the month of May, 1895, I casually saw her, and while I found that she had considerably improved in walking, she could still only utter the words "yes" and "no," and I was informed that she had had an epileptiform seizure on the occasion of a recent menstrual period.

When Mr. Williamson and I published the account of her case in the *BRITISH MEDICAL JOURNAL* four and a-half years ago, we made the remark that, apart from coexisting sarcoma, an angioma of the brain pure and simple was a rare form of cerebral growth, but the lapse of time—more than eight years—since the operation has quite justified that remark, and confirmed the microscopical diagnosis then made. Stress was also laid at that time upon the loss of speech or aphemia being entirely motor, and as being in all probability the consequence of the operation. Mr. Williamson was obliged on account of the ramifications of the tumour and the absence of a limiting membrane to remove a larger amount of healthy brain tissue than he otherwise would. It was thus that either the greater portion of the cortical centre for speech was in a sense accidentally removed, or that the communicating paths between it and the motor articulation centres in the bulb were divided. It may be that the motor speech centre was not entirely destroyed, as was shown by the readiness with which the patient could use the word "yes" and "no" shortly after the operation, although usually in a jerky manner, and often wrongly; or the use of these words may have been a consequence of overflow into the uneducated centre in the right side of the brain, and were the result of impulses escaping from them. I lost sight of this patient, as she had removed to the neighbourhood of Berwick-on-Tweed, until September 28th, 1901, when she came to see me at the Infirmary.*

* I saw the patient's sister in November, 1902, and was informed that the subject of these notes was in excellent health.