CASES
OF
UNUNITED FRACTURE
OF THE
H U M E R U S,
TREATED BY SETON AND THE APPLICATION OF CAUSTIC
POTASH.

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IT frequently happens that medical records contain only the successful results of any particular practice or operations, while the less fortunate cases are either wholly suppressed, or but slightly mentioned. This is much to be regretted in the cultivation of a science founded on fact and observation, whose ultimate object should be truth, and the alleviation of human misery. Being firmly persuaded that a faithful narrative of unsuccessful cases would often be most instructive, I have ventured to put together the following facts:—

Mr. C. of Teignmouth, fell from his horse in August 1820, and fractured his left humerus, near the insertion of the deltoid muscle. He felt very little pain at the moment of the accident, and

none at all after the limb had been placed in splints. Nothing worthy of remark occurred during the early treatment of the case; but, at the usual period, on the removal of the splints, it was found that no union had taken place. After a lapse of some months he consulted an eminent surgeon at Exeter, who wished him to submit to an operation, with a view to excite ossific inflammation. This, however, he declined; and the following May he came up to London, and placed himself under my care. His age was about thirty, and he stated that he had generally enjoyed good health. In his infancy he had suffered from fits, which had caused a paralytic state of the right arm, which was wasted, and nearly useless. This circumstance rendered it more important to endeavour to restore the left, which had been fractured. On examining it, I found the broken ends perfectly moveable, one upon the other, and the superior portion was drawn in towards the axilla, and did not appear in close coaptation with the inferior. While I was examining him, I was surprised to find that the integuments of the arm and fore-arm, in the space of a few minutes, became covered with urticaria. On remarking this to him, he stated, that he had been subject to this affection for many years; that he never suffered in his health from it; and that the slightest irritation, and even the friction of his clothes, would at any time produce it. This led me to be very particular in my enquiry into the state of his general health, and

his various secretions. He had an unhealthy sallow aspect, he perspired profusely, and his perspiration had a peculiar foetid smell, and stained his linen of a brownish tint. His appetite was good, and he slept well; but his bowels were very irritable. Fermented liquors, such as beer and cyder, or any irregularity of diet, produced a copious deposit of lithate of ammonia in his urine; although he was not sensible of any dyspeptic feelings, and conceived himself in health. His common beverage was cyder. I recommended him to have a seton passed through the arm, between the ends of the bone; which, on a revision of all the circumstances of the case, I was led to hope might be attended with success. I further recommended him to take the opinion of Mr. Brodie, who concurred with me in the propriety of the measure.

On the 16th of June, the operation was performed. An incision was made down to the bone, along the outer edge of the biceps, when I found that the fracture had been oblique, and that there was a projecting point occupying the outer part of the inferior portion; behind this I passed the needle, directing it through the interval between the ends of the bone. There was but little resistance to its progress. Considerable inflammation and a copious discharge of offensive matter followed; and, for some days, there was a good deal of fever and constitutional disturbance. The soft parts around the fracture became much thick-

ened, and some hopes of union were entertained from this circumstance. After a time, however, this thickening subsided, leaving the limb quite as moveable as before the operation. The discharge became thin and ichorous, and excoriated the surrounding skin. The greatest attention was paid to maintain the ends steadily in contact, and his diet and general health were strictly regulated during the whole treatment of the case. At the end of seven weeks the seton was withdrawn, having totally failed in producing any bony deposit, though it had certainly caused considerable inflammation in the soft parts immediately around the bone. On mentioning the case to some medical friends, and considering with them the propriety of any further attempts to produce the union, Mr. Green suggested an operation which he had seen successfully practised by the late Mr. Henry Cline, which consisted of applying caustic potash to the ends of the bone. On considering the subject, the practice appeared to afford some probability of success in the present case; and the age of the patient and the useless state of his other arm, fully warranted any attempt. The nature of the operation, and the possibility of its failure, were fairly represented to him, and on the 2nd of August he submitted to the trial, on which occasion I was favoured with the assistance of Mr. Green.

An incision, about four inches in length, was

made through the integuments, over the broken part, the broken ends of the bone were laid bare, and were found to be separated by a small detached portion of bone and a fibro-cartilaginous deposit. A small quantity of pus was still in the tract of the seton. The intervening substance was freely removed with a scalpel, but owing to the irregular surface of the bone it could not be entirely separated. A stick of caustic potash was then rubbed upon the ends of the bone until the whole appeared black. I was in hopes, by thus producing artificial necrosis, to call forth into action the ossifying powers of the surrounding bone and periosteum. In performing the operation much caution was required, as the upper portion of the bone lay close to the humeral artery. This rendered the operation rather more tedious, but the patient endured it with much fortitude, and afterwards declared that he would rather submit to a repetition of it, than have another seton passed. Very little constitutional irritation followed, and no more inflammation in the part than was desirable. Considerable thickening took place round the bone, and the patient expressed a consciousness of returning strength and power in the limb. The sloughs of the softer parts came away in about a week, and two trifling exfoliations at the end of about six weeks. The wound granulated kindly, and was only kept from closing by the exfoliations. While there was a very free discharge from the wound the disposition to urticaria

ceased, but it returned as soon as the wound was healed. The thickening round the fracture had a very firm feel, and bore all the character of a callus. The consciousness of returning strength, and the increased firmness of the limb, were very encouraging, and induced Mr. Brodie, Mr. Green, and myself, to entertain very sanguine hopes of success. In the beginning of October I constructed an apparatus, calculated to give very firm and steady support to the limb, which was applied before he left town, at which time there was only a very slight degree of yielding, in one direction, towards the wound. I recommended him to be very careful, and to continue to wear the apparatus for some time. I have since had the mortification to hear from him, stating that he continued to wear the apparatus until Christmas, and on leaving it off, he found that the whole of the callus had been absorbed, and the limb was as weak and useless as before.

On reflecting on this case, the following question suggests itself:—Did the want of union depend on any peculiarity of constitution in the individual, arising from causes over which we have no controul? All the circumstances of the case seem to favour such an opinion. In the first place, although the ends of the bone were not in very close adaptation, and a small piece of detached bone was interposed, the space between them was not sufficient to prevent union in a healthy person, and

the separate portion of bone was not deprived of vitality. Next, although he was certainly not in a good state of health ; yet, any flesh wounds which he had met with accidentally, and those which were inflicted in the operations, healed without difficulty ; which proves that his vital powers were sufficiently active ; of which, indeed, the state of his pulse, his time of life, and his power of enduring fatigue, afforded satisfactory evidence. It was clearly then not from debility that the bones would not unite. How far it may have been connected with the state of his skin, and digestive organs, must be determined by further experience. Another question suggests itself, which may be worth mentioning. Would it have been better to have left off the support earlier ? To employ the language of Hunter, would the stimulus of necessity have called forth greater activity, which was not roused so long as the artificial support was employed ? It is impossible to answer this question confidently ; but I may briefly mention a fact which I have met with in practice, and which rather favours such an opinion.

A gentleman was riding along the streets at a brisk pace, when his horse's legs slipped, and he fell with much force on his side. The gentleman's leg was under the horse at the time, and was very severely bruised, and both bones were broken. The fracture of the tibia was very oblique, extending two inches and a half, and terminating in a very

sharp portion, which nearly came through the skin; there was very extensive echymosis; and on the third day large vesications formed all over the leg, which threatened sphacelation. By great care these vesications were prevented from breaking, and no ulceration or sloughing took place. At the end of five weeks the limb felt strong, but I could still distinctly trace an interval of about two lines in breadth, along the front edge of the fracture, which appeared to be filled with fluid blood, as an evident impulse was felt below, when the upper part was slightly struck with the finger, and an undulation could be distinctly seen. As it was impossible to say to what depth this extended, I was at first unwilling to allow him to bear any weight upon it; but permitted him to move it about in bed. At the end of nine weeks, finding no improvement, I made him a pasteboard splint to envelope the limb, and encouraged him to walk about with crutches. In a short time after this the fluid was absorbed, and bony union took place.

Previously to my hearing the unfavourable result of Mr. C.'s case, and while flattering myself with the expectation of its successful termination, I had an opportunity of making another trial of the operation under the following circumstances:—

M. Parker cohabited with a man for five years,

who, during the whole of this time, was suffering from disease in his bones, supposed to be the consequence of syphilis; for the cure of which he was treated with large quantities of mercury, by the late Sir C. Blicke, under whose care he died, in St. Bartholomew's hospital, having lost his palate and the bones of his nose; and having suffered from affections of most of the other bones in his body. During the period of their connection she bore one child, who died at the age of sixteen months; and, according to the opinion of Sir C. Blicke, the bones of the arm were diseased. Some time after this, she became affected in the pericranium, and an abscess formed between the left eye and the orbital plate; about the same time her left clavicle and right humerus became very painful. She never, however, suffered from any primary syphilitic affection whatever. Sir C. B. thought proper to subject her to a course of mercury, and afterwards sent her to the sea-side. In the year 1811, while she was at Brighton, recovering from the effect of the salivation, when she was in the act of raising a tea-pot, her humerus gave way, about three inches above the elbow. She suffered very little pain from it, and it was very properly treated by a surgeon resident at Brighton, and she was occasionally seen by Sir C. B., but no union of the bone took place. From this time she was constantly suffering in her health, and her other limbs became affected. She was several

times subjected to severe courses of mercury, in St. Bartholomew's hospital, in the Middlesex hospital, and in private; but these rather aggravated than alleviated her sufferings.

In September, 1820, she placed herself under my care, at which time nearly all the cylindrical bones in her body were diseased, there being apparently great ossific deposit, with extreme tenderness and inflammation in the periosteum. Her general health was very bad, and was much impaired by the constant severe pain which she endured, and which deprived her of rest at night. The broken arm was less swollen and painful than any other part, and the fractured bone was very loose, in consequence of the free use she had been obliged to make of the arm in working at her needle. It was bent nearly to a right angle whenever the biceps muscle contracted, and at times she suffered much from the compression of the ulnar nerve. She was put on a course of a strong decoction of sarsaparilla, with very subdivided doses of the oxymuriate of mercury; an issue was made in the leg, which afforded so much relief that she subsequently had issues in her thighs and arms, and always with great benefit. Under this plan of treatment, and great attention to diet, her health gradually improved. She lost the pains in the bones, the thickening of the periosteum subsided, and she gained flesh rapidly. She remained

under this treatment nine months, and quitted the hospital in May, 1821, in better health than she had enjoyed for many years. About two months before she quitted the hospital she had a severe attack of pleurisy, which required very active depletion; but this did not at all affect her recovery from the affection of the bones. She has since remained under my occasional observation, and has not suffered any relapse, being at the present time in perfect health. As she was very anxious to recover the use of her arm, and as all diseased action appeared to have ceased, I thought it worth her while to submit to an operation similar to the one practised in the former case. At the same time I did not feel at all sanguine of success. On cutting down on the outside of the arm, the upper portion of the bone was found remarkably small, and there was a very considerable interval existing between it and the lower portion, the surface of which, being very near the joint, was much broader, and did not at all correspond to the upper one. More than an inch of bone appeared to have been absorbed. Her arm was so fat that the depth of the wound was considerable, and in consequence of the important parts in the immediate vicinity, much caution was required in the operation; the intervening peculiar texture was removed, and the two surfaces were pared with a strong knife, after which the potash was applied as freely as was deemed safe, and apparently both surfaces were blackened

and destroyed. The limb was much straighter after the operation, and the next day it could be extended to its proper length.

I constructed a splint which secured both upper and lower arm firmly to the side of the body; this was made to open at the side, opposite to the wound, with a hinge, which enabled me to dress it without moving the limb. She suffered no pain after the operation, and her general health was undisturbed by it. The wound granulated very kindly, and healed without any exfoliations coming away. The limb was retained ten weeks in this position, at the end of which time it was ascertained that not the slightest degree of reparation had taken place; there being no swelling or deposit at the ends of the bone, and the arm being as flexible as before the operation.

At first I was induced to think that the failure in this case was, in some measure, owing to the great interval which existed between the bones, and that, if they had been kept more closely in contact, the result might have been more favourable; but of this I much doubt, on further reflection, as there does not appear to have been the least effort at reparation.

The operation which was performed in the above cases, has not, I believe, been yet laid before the public. Although, in these instances, the

practice was not crowned with success, I do not consider that the failure can be attributed to the operation, or that it at all militates against the propriety of adopting it in other cases.

In both these instances there were sufficient circumstances connected with the state of the patients' constitution, to account for the want of success: in the former case the seton was tried and it had failed, and temporary benefit was obtained from the second operation. In neither case did the operation at all affect the general health; nor was it so severe as the patients expected; and certainly it was less so than the employment of the seton.

C A S E
OF A
LARGE NÆVUS MATERNUS
ON THE HEAD,
CURED BY TYING THE CAROTID ARTERY.

COMMUNICATED BY
J. WARDROP, Esq.
SURGEON EXTRAORDINARY TO THE KING.

Read April 30, 1822.

IN a paper which was published in the ninth volume of the Transactions of this Society, entitled "Observations on one species of Nævus Maternus," I related the case of an infant, born with an enormous tumor of this description, where I attempted to save the life of the child, by tying the common trunk of the carotid artery.

From the history of that case, it appeared, that not only so large an artery could be safely tied in so young a subject, but the effects of the operation proved, that the measure might, in all probability, be successfully resorted to, for the relief of this formidable disease, when under more favorable circumstances.

A most excellent illustration of the effects of

this practice, appears in the following case, which I now have the honour to communicate to the Society, from Doctor Arenat, of St. Petersburg; and its value seems to be very considerable, as it proves in the most satisfactory manner, how nævi of that bulk, the removal of which by extirpation would inevitably be followed by a fatal hæmorrhage, may be successfully treated, by previously tying the arterial trunk, by which such tumors are supplied.

A man who had from his birth, several nævi on different parts of his body, received a blow on one of them situated on the right temple. It increased rapidly in size, acquiring a prodigious bulk in the space of two hours after the injury. The carotid artery was tied an inch and a half above the clavicle; and two ligatures were placed round it, half an inch distant from each other. The tumor burst during the operation, and the loss of blood was calculated at not less than eight pounds.

On the day following, the tumor was found entirely emptied of blood. A great portion of the skin was now cut away, and about twelve small arteries secured. The ligatures on the carotid artery were removed on the seventeenth day, and the wounds healed rapidly afterwards.