CASE
OF
AMPUTATION
OF
PART OF THE TARSUS AND METATARSUS
AND
PRESERVATION OF THE SHAPE AND
USEFULNESS OF THE FOOT.

By JOHN DUNN, Esq.

SURGEON AT SCARBOROUGH.

COMMUNICATED BY

DR. ROGET.

Read Dec. 12, 1820.

PREVIOUS to my partnership with Mr. Travis of Scarborough, the following case occurred during my practice at Pickering.

James Padget, aged 14, of the parish of Gillowmore, near Kirby Moorside, a boy of a pale and delicate complexion, and of a scrofulous family, applied to me on the 20th May 1816. He had been accustomed to hard labour as a miner in a

coal pit, where his feet were frequently wet, and exposed to cold. To this cause was ascribed an inflammation of the foot, which gradually increased, and terminated in suppuration. He had been suffering for two years; a small portion of bone had exfoliated; the discharge was offensive; and hectic fever was established, with its usual concomitants, night sweats, diarrhoea, and a very frequent pulse. Several fistulous sores burrowed in different parts of the foot: on passing a probe, it often grated against bone; the least touch produced pain, and all motion was intolerable. The sinuses were laid open with a knife, in order to afford a better view of the parts, and facilitate the removal of any detached portions of bone. After the patient's bowels had been brought into a better state, the powder of bark was given, a healthy residence was chosen for him, and a nutritious diet enjoined. On the 9th of July, a small piece of bone came away; the wound was again dilated, and the muriatic acid, much diluted with water, was applied to promote exfoliation. His health continuing to suffer, and no amendment taking place in the joint, still more active measures became indispensable. As the boy consented to any operation but amputation, I determined upon excision of the carious bones. Accordingly, on the 27th July, I applied the tourniquet to the thigh, divided and reflected the integuments of the instep, which were partly diseased, cut through the extensor tendons of the foot, and after a formidable

dissection, removed the os cuboides, which was so carious as to break in pieces between my fingers during the operation. As the contiguous bone was now discovered to be equally diseased, (for I could only ascertain the extent of the mischief by this dissection,) the external cuneiform bone was next removed. I now thought it prudent to desist, being in hopes that the remaining diseased parts would exfoliate. On relaxing the tourniquet, no serious degree of hæmorrhage ensued ; the edges of the wound were brought as near together as possible, and the limb bound up with a compress of lint and a roller. Powders of bark and the carbonate of iron were given three times a-day. His constitution seemed to bear the foregoing operation extremely well, and his health daily improved. On account of the fœtor experienced on dressing the sore, fermenting poultices were applied, and diluted tincture of myrrh used as an injection. The boy being extremely anxious to get well, and the recovery likely to prove tedious, without an extension of the operation, he resolved to submit to this proceeding, for which his present improved health was deemed favourable. Accordingly, on the 17th of August, by a similar excision to that above described, I removed the os naviculare, and the two cuneiform bones, and sawed away the diseased tarsal extremities of the metatarsal bones of the second and third inner toes. A deluge of blood followed ; the boy fainted ; my assistants, who were only two apprentices of fourteen years of age, a

woman, and two labouring men, were so sick and alarmed as to desert the room. The perplexity was increased by my now finding the anterior portion of the astragalus likewise diseased. On account of the bleeding, not a step could be seen of the operation; the sense of touch was consequently my only guide. I determined, however, not to lose the advantages already obtained; and on my patient's recovering from syncope, I scraped off some of the diseased parts with a large scalpel. He had now suffered so much from the pain and loss of blood, that I desisted from any further interference, trusting that nature would be adequate to the accomplishment of the rest of my intentions. On completely relaxing the tourniquet, a number of vessels bled, which could not be taken up with the forceps or tenaculum; but dry lint, and pressure with a roller, put an entire stop to the hæmorrhage. The sides of the wound were kept as nearly as possible in contact without sutures, which, when applied, cut their way through the edges of the unsound skin. So wide was the breach made in the tarsus, that directly after the operation, the toes might have been turned back to the heel. The dressings having been wetted with a cold lotion, the patient was placed in bed in an airy room, and a dose of opium administered. All appeared to go on well: a little brandy and water soon dispelled his faintness, and he passed a moderately good night. On the 21st, the fœtor becoming extremely offensive, I took off the outer dressings, wetting them with cold water

to facilitate their removal. Some degree of hæmorrhage now arose, which made it necessary completely to expose the wound. The bleeding at first yielded to pressure, but in the night returned ; and as the blood was constantly oozing through the roller the following morning, I was compelled to make search for the artery, which, after some considerable trouble, was secured. Cold water and a roller were re-applied, and a loose tourniquet, ready to be tightened in case of need, was left on the thigh. The boy was kept cool and low, and every thing again proceeded well ; powdered bark, opium, and diluted sulphuric acid, being the principal medicines for which he had occasion. The wound was dressed again, and found to have put on a much more favourable appearance. Suffice it to add, that the part healed up in a short time, with the exception of a deep sinus or two, which were cured in about two months by the pressure of adhesive straps. At the end of September, the boy could walk with a stick, which he soon dispensed with ; and, before the Christmas following, was well enough to be bound an apprentice. He enjoys the soundest health, and walks without the least pain or apparent lameness, having taken a journey of nine miles in one day on foot : and, notwithstanding the above free removal of bone, the natural appearance of his foot is little altered. Indeed, on examining it in March 1817, the place from which the bones, with their ligaments and cartilages, were taken, was so filled up with hard carti-

lagnous matter, that hardly any deficiency was perceptible. At the same period, viz. March 1817, the deformity of the foot was scarcely discernible, the part being of its natural breadth, and only three-fourths of an inch shorter than its fellow. The boy could extend his foot pretty well, but had little power of bending it, not being able to elevate his toes without the concurrent motion of the whole foot. The limb answered for every purpose of business, and at the preceding date was well, except a slight oozing from a superficial sore, which has subsequently healed. Before the operation, there was some difficulty in forming a decision for its performance. In the country, if the patients be not persons of property, we are frequently obliged to make our determinations without having the advantages of another professional man's opinion. On consulting my library, Mr. Charles Bell, in his *Operative Surgery*, mentions having recommended, in one example, the flap operation of the leg for a disease of the foot, to which the patient, who was only a boy, would not submit. Mr. Bell says, "the amputation of the metatarsal bone of the great toe may be necessary, or that of the metatarsal bone of the little toe; but I conceive from what I have seen of the pain and difficulty of extracting any of the intermediate metacarpal bones, and considering the effects of such a torturing and tedious wound among the bones and ligaments of the foot, that it should not be performed." Further on, he seems to think, that the nice extraction

of the spoiled bones in caries might be tried ; but he gives it without any fact, or even his own experience in its favour ; so that, on reading the previous statement, one would pause between the speculative suggestion in favour of, and his positive and practical declaration against, the operation. Besides, even here, the metatarsal and metacarpal bones seem to be those to which the author refers ; and in the operation described by him, the toes are also removed with the metatarsal bones. Mr. Hey does not speak at all of the excision of the tarsal bones ; and he remarks, “ I never yet attempted to take out a single metatarsal bone from the middle of the foot, partly from an apprehended difficulty of taking up the bleeding vessels, but chiefly,” and most truly, “ from an uncertainty respecting the extent of the disease.” He mentions instances where the metatarsal bones were sawn off ; but, here, the toes were removed, the cure was very tedious, and the cicatrix extensive. In his two cases, which are exhibited in plates, the toes were removed with the metatarsus, and the bones of the instep do not seem to have been affected. No guide, therefore, could be had from this work. An inference might have been drawn for a similar operation of the foot, at the arch formed by the astragalus and os calcis. This would have produced a doubtful issue (for I had not then read Mr. Roux’s publication) as to the probability of the patient’s afterwards walking with ease to himself upon the os calcis alone, with a cicatrix

over bones, in a constant state of attrition. But, besides the mutilation necessarily attending the flap operation, this proceeding is liable to as much bleeding as the mere excision of the diseased bones, while there is also an uncertainty of the adhesion of the upper part of the flap ; and in a case of this kind which I have seen, there was a running sore all the patient's life, and a frequent necessity for repose from the ordinary duties of business. Mr. Samuel Cooper had not then published his third edition of the Surgical Dictionary ; and as he only referred in the earlier impressions to the above remarks of Mr. Hey and Mr. C. Bell, it was pretty clear, that, by a man even of his research, no further advice worthy of adoption could be obtained. The toes and most of the metatarsal bones being in a sound state, the sole of the foot unbroken, and the boy determined against amputation, led me to attempt the above very free excision of the diseased parts ; an operation which surpasses, in extent and degree, any thing of the kind which my inquiries led me to believe has ever yet been done upon the foot. Happily the result has fully justified the experiment ; for now, instead of the foot, or a part of it, being left with the hard bones pressing against a tender cicatrix, it is preserved entire, and the cicatrix is on the top quite out of the way of pressure or friction. The soft cushion, naturally made by the sole, is also uninjured ; and the elastic spring and freedom of motion, for which we are so much indebted to the ends of the metatarsus and toes,

is retained, as well as the natural appearance of the limb. The bones taken away were sent, in 1817, to the late Dr. Adams, and were shewn to many of his friends.

Scarborough, June 23, 1820.

P.S. — I have this moment received a letter from Mr. Dowson, a surgeon in Kirkby Moorside, relating to this case, of which the following is an extract. "The sound foot is at present one inch and a half longer than the other. This difference, so much greater than at the time the cure was effected, would appear to arise from the imperfect powers of growth of the diseased foot, and the want of a proper bony basis. The lameness is extremely slight, and is caused solely by the want of flexion in the foot; for he never experiences any pain, even after very great exertion, and is equal to several hours daily labour in the coal pits. His appearance is delicate, but his health at present very good."

These observations of Mr. Dowson, which have been written four years after the operation, furnish the most satisfactory evidence of its lasting success.