CASE OF ANEURISMAL VARIX IN A STUMP, AFTER AMPUTATION AT THE ANKLE JOINT.

By WILLIAM CADGE, Esq., F.R.C.S. Eng., Demonstrator of Anatomy in University College, London.

THE following case is worthy of record, less as a pathological rarity, than on account of the clinical instruction it affords.

The patient was afflicted with several complaints besides that which I wish now to describe; but to carry the history of the case through the whole of these, would be not only tedious and unnecessary, but would occupy too much time and space. I shall, therefore, simply select such passages from my case-book, as will complete the history of the disease I desire to illustrate: viz., Aneurismal Varix occurring in a stump, after amputation at the ankle joint.

CASE. G. K., a young man between thirty and thirty-five years of age, consulted the late Mr. Liston, in the spring of 1847, on account of strumous disease of the tarsal joints of the right lower extremity, resulting from a neglected sprain of the foot. There was pain, lameness, and chronic thickening of the synovial membrane. Lateral leather splints were applied; a strong solution of iodine was painted on the part; ferruginous tonics were prescribed; and he was sent to the sea-side. These measures failed to improve his health; on the contrary, abscesses formed and opened, and sinuses were established. The health beginning to give way, he returned to London. The question of amputation was raised; but the previous history of the patient gave rise to some difference of opinion.

A few years before, the patient, then a lieutenant in the navy, had suffered from an attack of pleuro-pneumonia, which ended in phthisis, and threatened to prove speedily fatal. By great skill and care, however, the disease was arrested after it had reached its third stage; and he recovered so far as a patient, having large cavities at the apices of both lungs, can ever be said to recover. At the time when the question of amputation was raised, he was in apparent health; the phthisical symptoms were latent; he had scarcely any cough or expectoration, and was but little emaciated. Under these circumstances, Mr. Liston recommended the operation, as the only means of saving him from a lingering illness and certain death; while the late Mr. Key rather dissuaded him from any operation, on account of the condition of the lungs. The former opinion was acted on, and then another question arose. Was the disease so located as to admit of the performance of Chopart's operation, or was it necessary to go higher and remove the whole foot? This point was settled at the time of operating.

The patient having been rendered insensible with chloroform, administered by Dr. Snow, Mr. Liston, assisted by Mr. Field and myself, first made a transverse incision over and into the astragalo-scaphoid articulation, which was examined by the finger, and found to be rough and scabrous. Chopart's operation was, therefore, relinquished; and it was determined to remove the foot at the ankle joint. With this view, the incision already made was continued upwards, on both sides, to the tip of the malleolus, so as to form a slightly convex anterior flap; the

knife (a strong bistoury) was next drawn across the sole of the foot, from one malleolus to the other. The anterior flap having been raised, and the joint opened and separated, it only remained to divide the tendo Achillis, and dissect out the os calcis from the posterior flap—rather a tedious and troublesome proceeding. The tips of the malleoli were clipped off on a level with the lower end of the tibia, by means of strong bone pliers; two or three small arteries were secured, and, in the evening, I brought the flaps together, with a few sutures and strips of isinglass plaister. Union by the first intention occurred, save where the ligatures escaped; and the stump required no second dressing.

About ten days or a fortnight after the operation, I visited the patient with Mr. Field, during Mr. Liston's illness; and my attention was at once drawn to a swelling over the inner side of the stump, apart from the wound, about the size of a large walnut, red, tender, and fluctuating; in appearance it was an abscess, and I was about to open it; but hesitated, on finding that it pulsated violently at every part. There was also a loud whirring murmur, audible with each beat of the pulse. At first, I doubted whether I had not a false aneurism to deal with; but a more careful examination led to the conclusion, that it was simply an abscess seated over or under the posterior tibial artery; accordingly, I opened it on one side where the pulsation was least violent, and evacuated a quantity of well formed pus; poultices were applied, and in a few days the discharge and swelling disappeared, and the wound healed. The remarkable pulsation and bruit continued as strongly as before. The patient himself was quite aware of the pulsation, but, as it caused no pain or inconvenience, it attracted no further notice. A small sinus formed at the back of the stump, which allowed a probe to enter and pass upwards about an inch. As there was no pain nor tenderness, and scarcely any discharge from it, firm pressure was made over the whole stump, and I put an issue in the arm. The sinus quickly healed, and the whole part became sound and consolidated, and the chest symptoms also were better than they had been for many months. An artificial foot of admirable construction was made by Mr. Gray of Cork Street, and the patient was able to walk several miles daily, with scarcely any lameness; and to use his own expression, he could "go through a quadrille very creditably." The whole weight of the body could be borne without uneasiness by the naked stump; indeed, the case proved, in an eminent degree, the superior advantage of this operation. In January 1849, about fifteen months after the amputation, he fancied that the pulsation was stronger than usual, and that, in addition, there was some swelling of the inner side of the stump. He consulted Mr. Key, who regarded the case as one of false aneurism, and, without giving a positive opinion, hinted at the necessity of some operation: either a fresh amputation, or ligature of the vessel above. This advice caused a good deal of alarm; and, on the following day, I was requested to visit the patient. There were the same pulsation and bruit, both somewhat increased in intensity, as had existed a year ago; but there was also—what had not been before noticed—a pretty distinct elastic swelling, about two inches long and of two fingers breadth, over the inner side of the stump. Every part of this swelling pulsated forcibly, and the loud whirring murmur could be heard at some little distance. When the

posterior tibial artery was compressed above, the pulsation ceased, and the tumour became flaccid; and both returned when the finger was removed. What was the nature of this swelling? That it was aneurismal, there could not be a doubt: if it was a common false aneurism, then it had existed at the time of the operation, or very shortly after; but the progress, during the interval, had been very unlike that which usually obtains in false aneurisms.

I advised him not to submit to any operation for the present, both because of the long duration and uncertainty of the nature of the disease, and because he was doubtful whether the swelling was undergoing any increase in size. I proposed that he should refrain from using the stump for a time, and permit me to attempt a cure by means of pressure, both on the swelling and on the artery above, by two of Signorini's tourniquets. Should this plan fail, and the swelling increase, it would then be time enough to decide what operation to perform; but if no increase in size occurred, firm pressure should be made on the whole stump with an elastic bandage, and he should continue to use it.

On the following day, Mr. Fergusson met Mr. Field and myself in consultation, and fully concurred in the plan of treatment by compression; and it was, accordingly, commenced at once. While we were applying the tourniquets, the patient complained to me of constipated bowels. The usual purgative medicines were prescribed, but without the usual effect; stronger medicines and injections were ordered, but no evacuation could be procured. Pain, flatulence, and distension of the abdomen ensued; and, in a day or two, it became evident, that there existed some internal mechanical obstruction, but at what particular part, there were no signs to indicate. I need not describe in detail the progress of this unfortunate case; suffice it to say, that all our remedies were unavailing. The abdomen grew immensely distended, and the patient died, eight days from the commencement of the attack.

An anatomical examination was made thirty-six hours after death: and the abdomen was first examined. The obstruction was seated in the sigmoid flexure of the colon, close to the rectum, where it was so twisted as completely to close the canal. This part of the large intestine was of greater length than usual; and, instead of making its ordinary curve in the iliac fossa, it reached upwards as high as the xiphoid cartilage, where it doubled on itself, and returned to end in the rectum at the margin of the pelvis; this coil was of amazing size, resembling the stomach when distended. The mucous membrane, for some distance above the obstructed part, was of a purple colour, very soft, and easily raised; the cæcum and colon were much distended; the small intestines were empty; the diaphragm was pushed up to a level with the upper border of the third rib on the left side, and fifth on the right. I have, in one instance before, discovered the sigmoid flexure of the colon to be of inordinate length, reaching nearly to the right iliac fossa; and Dr. Yelloly¹ has given numerous instances of the same kind. He regarded it as a natural conformation, and not, as Dr. Wells thought, the result of disease; in the present case it seems most probable that it was the cause, and not the consequence, of the obstruction. The lungs were adherent

¹ Edinburgh Medical and Surgical Journal, No. 64, p. 476.

to the parietes of the chest at every part, the connecting false membrane being at some places fully a quarter of an inch in thickness and as tough as fibro-cartilage. There were large dry cavities in the upper lobes of both lungs, surrounded by dense non-crepitous lung, which sank in water; the lower lobes were healthy, and contained not a trace of tubercle in any stage. I was permitted to remove the stump about six inches above the extremity; and, some injection having been thrown into the arteries, a careful dissection was made.

The first thing which attracted notice was, that the two companions veins of the posterior tibial artery were filled with injection. On tracing the artery downwards, a large branch, probably the internal plantar, was found to arise from it at the inner side of the stump; this branch, about the size of a crow-quill, ended, within a quarter of an inch from its origin, in a bulbous enlargement, about the size of a horse-bean, which communicated, by means of a large short branch, with the posterior tibial vein, and thus formed an Aneurismal Varix. The tibial artery and veins were continued onwards to about the centre of the lower end of the stump, where they ended abruptly, being of full calibre to their termination; there was no distinct tumour of any kind. In the leg, the vessels were bound down deeply by the strong fascia which passes between the tibia and fibula; close to the ankle, this fascia had been interfered with by the operation, and the vessels escaped from beneath its lower border and mounted over the root of the inner malleolus, separated from the bone by the bulbous extremity of the tibial nerve; and thus at this point, where the Varix existed, they were close beneath the skin, and both artery and veins beating strongly, gave the elastic feel and appearance of defined swelling, which had been mistaken during life for the sac of a circumscribed false aneurism.

The dissection of the stump showed how well adapted it was to bear pressure. The plantar fascia, where it had been cut from the os calcis, had become attached to the tendo Achillis behind, and in front, to the cut ends of the extensor tendons; between it and the lower end of the tibia there was merely some reddish loose cellular tissue; but, between the fascia and the skin, there was a great thickness of dense granular fat, much more than is usually found over the heel, and this not only served as a most efficient pad, but also reduced the difference in the length of the two limbs to less than two inches.

REMARKS. The diagnosis of Aneurismal Varix from circumscribed false aneurism, is generally clear and plain; and it may be thought that in this case the true condition of the parts ought to have been appreciated. But a little consideration will show, that the differential signs were few and imperfectly marked, while all the symptoms of false aneurism were present, viz., a pulsating tumour, situated in the course of an artery, apparently slowly increasing in size, and attended by a marked bruit as the blood flowed into the supposed sac,—the pulsation, swelling, and bruit, all disappearing when pressure was made on the vessel above, and returning when the finger was removed. That which tended most to throw a doubt on this view of the case was, that whatever the true nature of the disease might have been, it had existed upwards of a year, and the increase in size of the tumour, if indeed it enlarged at all, was very slow,

and wholly unlike the usual behaviour of an aneurism. This slow progress and long duration led me to recommend the patient to pause before submitting to any operation; and I need scarcely say, that the dissection has shown that, in all probability, no surgical interference would have been necessary, had he continued to live.

The unprecedented occurrence of Varix in a stump contributed not a little to mislead the diagnosis. Since the first discovery of the disease by Dr. W. Hunter, in 1757, the records of surgery contain numerous cases, showing that it may occur in various parts of the body besides at the bend of the elbow; thus, the carotid, subclavian, temporal, radial, femoral, and popliteal arteries, have all been the seat of Varix; and Mr. Syme¹ has met with a case of varicose aneurism of the aorta and vena cava, which occurred spontaneously. Next to the bend of the elbow, the most frequent situation of Varix is the thigh, between the femoral artery and vein, and it is generally produced by the sudden closure of the thighs to catch a falling sharp instrument, the point of which passes between the artery and vein, wounding both. Mr. Liston² has described a case of this kind, which I had an opportunity of examining; there were varicose veins and ulcers of the leg, and a tumour on the front of the thigh, caused by venous dilatation, thrilling pulsation, and loud systolic murmur, together with weakness and numbness of the whole limb. Firm pressure from the toes upwards diminished the pulsation and reduced the swelling, and no operation was required.

I have, however, met with no instance of its having occurred in any part of the body as a consequence of amputation, and it is not easy to understand how it was brought about in this particular case. Most probably, the point of the bistoury passed between the artery and vein, wounding both at the point where they lay in apposition. The communication thus established at the time of the operation, would require but very little pressure to prevent all outward hæmorrhage, and this was afforded by dressing the stump.

It was remarked by Dr. Hunter,³ that in Aneurismal Varix at the bend of the elbow, while the pulse at the wrist was weakened, the brachial artery was enlarged and dilated; this he attributed to the diminished resistance to the circulation from the aperture in the artery, which had almost the same effect as if a branch as large as the opening had been added. Mr. Hodgson explained it by saying, that as part of the blood was diverted from its usual course, it was necessary for the artery above to enlarge and carry more blood, in order to keep up the nourishment of the lower part of the limb; the former is the law, and the latter its application. The case I have described affords a negative proof of the correctness of these explanations, as there was no limb below the point at which the Varix existed, so there was no necessity that the vessel above should dilate; accordingly it was found, on dissection, to be of ordinary calibre.

University College, January 1850.

¹ SYME. *Edinburgh Medical and Surgical Journal*, No. cviii, p. 104.

² LISTON. *Elements of Surgery*, p. 676.

³ HUNTER, Dr. Wm. *Medical Observations and Inquiries*, vol. ii, p. 390.