AN ACCOUNT
OF THE
DISSECTION OF THE PARTS
CONCERNED IN THE
ANEURISM
FOR THE CURE OF WHICH DR. STEVENS TIED
THE
INTERNAL ILIAC ARTERY,
AT SANTA CRUZ, IN THE YEAR 1812.
By MR. RICHARD OWEN, SURGEON.

COMMUNICATED BY
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Read June 1, 1830.

BEFORE entering into the detail of this dissection, it may be convenient to recapitulate some particulars of the case in which this operation was for the first time performed *.

Maila, a negro woman, imported into the West Indies in the year 1790, had, in 1812, a tumour on the left hip, over the sciatic notch, nearly as

* Medico-Chir. Trans. Vol. V. p. 422. Art. XXV.

large as a child's head, and pulsating very strongly. It had commenced about nine months before, and the woman submitted to the operation proposed by Dr. Stevens on the 27th of December 1812.

An incision about five inches in length was made on the left side, in the lower and lateral part of the abdomen, parallel with the epigastric artery, and nearly half an inch on the outer side of it;—the peritoneum was separated from its loose connection with the iliacus internus and psoas magnus; it was then turned inwards to the division of the common iliac artery. The internal iliac being found, and compressed betwixt the thumb and finger, the tumour ceased to pulsate, and began to disappear; a ligature was passed round the vessel, by means of a probe, and it was tied about half an inch from its origin. The tumour disappeared almost immediately after the operation, and the wound healed kindly. About the end of the third week the ligature came away, and in six weeks the woman was perfectly well. The operation was neither very difficult nor very tedious; the woman did not complain of much pain, nor did she lose an ounce of blood. There was no difficulty in avoiding the ureter; when the peritoneum was turned inwards, the ureter followed it.

The woman, after continuing to enjoy a good

state of health for ten years, died of an affection of the chest in the year 1822. Dr. Stevens being apprised of this circumstance, examined the parts within the pelvis, in the presence of Dr. Kerr and other medical gentlemen of the Island of Santa Cruz, and by injection ascertained that the Internal Iliac Artery had become impervious at the part where the ligature had been applied; and he also found, that the ischiatic artery was continued in the character of a ligamentous chord to the place of its exit from the pelvis; but that the glutæal artery was pervious at its origin.

With this proof of the successful result and due effect of his operation, and having detected the vessel that was the true seat of the aneurism, (which until now had been supposed to be of the glutæal artery,) the pelvis was removed with a view to a future and further examination.

Accordingly, soon after his arrival in this country, Dr. Stevens, at the suggestion of Mr. Lawrence, deposited the preparation in the Museum of the Royal College of Surgeons, and the dissection being intrusted to me, he requested me to communicate the particulars to the Society in whose memoirs the case originally appeared.

As a preparatory step, I threw in some fine injec-

tion by the arteria profunda, in order to facilitate the tracing of anastomosing channels; it ran out very freely by the opening which had been made in the origin of the glutæal.

Within the pelvis, the external and internal iliac arteries were given off in the usual manner. An incision being made into the left common iliac, and continued down to the part where the internal iliac became contracted, it was found there to have become completely obliterated. The ilio-lumbar artery appears to have arisen just above the part where the ligature had been applied, and the obliteration in consequence has not extended to the origin of the external iliac*.

In the state of a ligamentous chord, the internal iliac descended towards the ischiatic notch for the space of an inch, and then suddenly resuming its natural diameter, it again became pervious, and so continued for the extent of half an inch; the glutæal artery arising from the lower part of this space; a sacro-lateral vessel from about the middle; and the obturator artery from the upper part of it. The latter vessel was, however, entirely obliterated, but the sacro-lateral artery was pervious,

* This open state of the artery above the ligature has been observed even where no artery has arisen in that situation. See Hodgson, *Dis. of Arteries and Veins*, p. 199.

of the size of a crow-quill, and passed inwards to the second sacral foramen; whilst the glutæal artery, of its natural size, received close to its origin two vessels as large as the preceding, given off from the sacro-lateral artery, near the third and fourth sacral foramina of the left side.

The anastomoses of the sacro-lateral arteries with each other, and the sacro-median were large and tortuous. Immediately after the origin of the glutæal artery, the ischiatic, obliterated and chord-like, passed on to the lower part of the ischiatic notch;—the sanatory processes set on foot by the application of the ligature being uninterrupted by the enfeebled current of blood passing from small canals to a large one.

Many vessels met with in the course of the dissection of the glutæus maximus and medius, were found to have received the injection last thrown in, and were preserved. The glutæal artery was in a healthy condition, and of the natural size; but an elongated tumour, situated between the tuberosity of the ischium and the great trochanter, indicated the true seat of the original disease. This tumour, in length three inches and a half, and about two-thirds of an inch in breadth, was of the sciatic artery*, and consisted of layers of

* The branch which seems to continue the course of the artery, and accompanies the ischiatic nerve.

condensed cellular membrane, and the peculiar fibrous arterial coat.

It contained a quantity of dark-coloured, granular, not lamellated, coagulum, which, when removed, shewed the internal surface of the sac to be somewhat irregular, and raised in small patches by the deposition of soft matter. In some places it appeared to retain the smooth character of the arterial lining membrane. From the ischiatic notch to the tumour, the artery was completely obliterated, its texture altered, and the remains of its cavity filled with indurated and partly calcareous matter. From the lower part of the tumour the sciatic artery was continued down the posterior part of the thigh of an uncommon size, nearly as large as the femoral artery in front; its calibre did not however correspond with the apparent magnitude, for its coats were thicker, by at least one half, than any artery of the same size with itself. It was obliterated for about the space of an inch below the sac, and became pervious after receiving an anastomosing vessel from the *arteria profunda*.

A vessel ramifying between the *glutæus maximus* and *medius*, and distributing branches to these muscles, was connected to the commencement of the sac, from which it had probably arisen: it did not, however, open into the sac, but after becoming contracted near the point of attachment,

it there gave off a small artery to the quadratus femoris, and received its blood by anastomosing near the crista ilii with a superficial branch of the glutæal artery. A smaller vessel was similarly attached to the lower part of the aneurismal sac, but neither did it communicate with that cavity; for the blood which it received from branches ramifying in the neighbourhood was diverted from the sac by a small branch given off at the point of attachment.

The notice of these circumstances may, perhaps, be considered unnecessarily minute, since sufficient has been observed to place beyond doubt the existence and cure of an aneurism situated as originally described, and the obliteration of the internal iliac artery in consequence of the application of the ligature at the part stated in Dr. Stevens's Memoir.

The structure of the sac, and the circumstances of the strong pulsation observed in it before the operation, and its rapid subsidence after, lead to the conclusion that the aneurism was of the true kind, consisting of an uniform dilatation of the coats of the vessel without any partial rupture. The subsequent condition of this aneurism must also be considered an exceedingly rare occurrence: ten years after the operation for its cure, it still exhibits a cavity containing loose coagula, and in its parietes the structure of the arterial coats are

distinctly visible. Another circumstance noticed in this dissection, viz., the open space maintained by the collateral circulation in the trunk of the artery between the ligature and the aneurism, is, however, in accordance with observations made in various dissections after the operation for aneurism. In the account given of Mr. Hunter's method of performing the operation for the cure of the popliteal aneurism *, on examining the limb of the patient, who died fifteen months after the operation, it was found that the femoral artery was impervious above the ligature as far as the origin of the *arteria profunda*; but that "below this part the femoral artery was pervious down to the aneurismal sac, and contained blood, but did not communicate with the sac itself, having become impervious just at the entrance." I have attentively examined the preparation, which, from the interest attached to it, has been repeatedly figured; the artery becomes much diminished in size as it approaches the sac. In the valuable paper by Sir Astley Cooper, "On the Anastomosis of the Arteries at the Groin" †; a circumstance more nearly resembling the appearances in this dissection is described ‡. In a case

* By Sir Everard Home, in *Trans. of a Society for the Improvement of Medical and Chirurgical Knowledge*. Vol. I. p. 138.

† *Medical and Chirurgical Transactions*. Vol. IV. p. 425.

‡ See also on this subject, Hodgson, *Dis. of Art. and Veins*. p. 277. *et seq.*

of aneurism of the femoral artery, which was cured by tying the external iliac, about an inch of the femoral artery, just below Poupart's ligament still remained open, allowing a partial current of blood through it, the artery having become a simple ligamentous chord above and below this part.

The operation of securing the internal iliac artery appears now to have been performed five times; and the practicability and propriety of the operation in certain circumstances is placed beyond doubt. But even when the present was the only recorded case, it was not wanting advocates; who, after having made themselves acquainted with the professional character of its originator, gave him the credit he so justly deserved. Sir Astley Cooper, many years ago, spoke of it in his lectures in the following terms:—"This operation, one of extraordinary difficulty, has been performed by Mr. Stevens, of the West Indies; none but a man endowed with the knowledge Mr. S. possessed, would have dared to undertake such an operation: but Mr. Stevens was educated by Mr. Burns of Glasgow, he was brought up in his dissecting room, and this it was that led Mr. S. to the idea of doing it."

Sir Astley has subsequently examined the preparation, and having himself laid open the remains of the sac, he immediately addressed the following note to Dr. Stevens.

“ MY DEAR SIR,

“ I have examined your preparation in the presence of Mr. Clift, and Mr. Owen, and am perfectly satisfied of the existence of the aneurism for which you operated, and of the obliteration of the internal iliac artery which you had tied.

“ ASTLEY COOPER.”

Royal College of Surgeons,
May 12, 1830.

The second operation on the internal iliac was performed by Mr. Atkinson, of York, at the County Hospital in that city. This case is detailed in the 28th volume of the Medical and Physical Journal; and an analysis of it is also given in Cooper's Surgical Dictionary. The patient, a muscular man, æt. 29, underwent the operation on account of a glutæal (?) aneurism, on the 12th of May, 1817; he continued many days entirely relieved from the distressing pain of the tumour;—about the 10th day after the operation, coagula began to be extruded from the wound, and, as his dissolution approached, the discharge had a more florid and fluid appearance. He died of complete exhaustion on the 31st of May, nineteen days after the operation.

Upon dissection, the ligature was found to have been disengaged, the knot including a small frag-

ment of (apparently) the artery ; the internal iliac was completely separated * ; the upper orifice presenting an appearance of slight thickening and adhesion ; “ the sides of the internal iliac above where the ligature had been applied, on separating them, had a granulous and greyish coagulated appearance.”—“ A certain space of separation was visible betwixt the upper and lower parts of the internal iliac artery.”—“ In the lower part of it, the artery was wider, and the coats evidently *more diseased* ; and a coagulum of grumous blood was manifest at the mouth of the lower artery, which, being gently removed, exposed this (now more open) mouth, which again, after a short interval, was filled with more fluid ichor from the sac below.”—“ A bougie, passed into the lower diseased artery, within the pelvis, in a line with the superior one, was slowly introduced, and easily made way into the exposed sac, from whence the blood had been cleared ;—so that it became obvious that a regurgitation of blood might easily happen, and which no doubt was the case, from the sac up the artery into the pelvis, at a given time after the ligature had separated.” p. 271.

That the internal iliac was actually secured in this case there can be little doubt ; and if the vessel had been in the same healthy condition as in the negress Maila, the operation might have

* Severed.

been attended with equal success. It is to be regretted that the nature of the disease in the coats of the vessel is not mentioned; and with respect to the seat of the aneurism, as it does not appear that the vessel from the distal side of the sac was traced in this dissection, nor any of the sound branches of the internal iliac artery, and considering the direction in which the bougie was passed down the internal iliac into the aneurismal sac, I am inclined to suppose that the aneurism in this case was also of the ischiatic artery.

The third case is noticed in Averill's *Operative Surgery*, p. 39, and in Cooper's *Surgical Dictionary*, Ed. 5, p. 155, in the following terms: "The internal iliac artery is also said to have been tied, with success, by an army surgeon in Russia, upon whom the Emperor Alexander has settled a pension, as a reward for the skill displayed in the treatment of the case."

The operation has also been performed by Mr. Thomas, of the island of Barbadoes. The preparation has been sent to this country, and deposited by Sir Astley Cooper in the Museum of Guy's Hospital.

The fifth and most recent case is detailed in the *American Journal of the Medical Sciences*, No. II. February, 1828, Art. V. p. 304. The interest of the subject induces me to make a copious

extract from this case. The article is entitled "Successful Case of Ligature of the Internal Iliac Artery, for the Cure of Glutæal Aneurism. By S. Pomeroy White, Surgeon, Hudson, New York."

"In the early part of October last, (1827,) Jacob Van Volkenberg, aged 60, by trade a tailor, came to Hudson for the purpose of obtaining surgical advice. He presented to our view a tumour about the size of a child's head, located upon his left hip, directly over the sciatic notch. He stated that it was of ten months' standing, and that he experienced no pain from it. His general health had been good, except that he suffered from rheumatism. Upon making an examination of the tumour, the skin was found not discoloured, fluctuation was perceptible; but there was no pulsation. The absence of the last symptom rendered it difficult to decide upon the nature of the case; and accordingly we postponed giving an opinion until a consultation could be held with his family physician, Dr. Hicks, of Columbiaville. The doctor stated that the tumour could be removed by pressure, when small;"—he presumed that it contained pus, and proposed opening it; "and as that was the only way of ascertaining unequivocally the nature of the disease, we acquiesced. He accordingly punctured it, and nothing but florid blood made its appearance. A probe was passed in, and an aneurismal sac was found, about five inches deep. It was also discovered, that the

parietes of the sac were very firm and unyielding, which accounted for the absence of pulsation. After allowing a pint of blood to be discharged, the orifice was closed with a suture and adhesive plaster. It was observed that after this, and also subsequent discharges of blood, that the sac would fill again, and the tumour resume its usual dimensions." Having unanimously concluded that the disease was aneurismal, and with "*an encouraging although a solitary precedent, in the case of Mr. Stevens, of the Island of Santa Cruz,*" "the operation of tying the internal iliac was accordingly concluded upon, though the patient's age was considered a circumstance that would operate against its success. He at first declined having the operation performed, but as profuse hæmorrhage repeatedly supervened, he became weak and alarmed, and requested us to pursue whatever course we deemed most expedient.

"On the 23d of October he was laid upon the table, and an incision was made of a semi-circular form, commencing two inches to the left of the umbilicus, and ending near the external ring. It was seven inches in length, and the convexity of it was towards the ilium. After dividing the skin, cellular substance, and superficial fascia, it became necessary to secure a few small arteries. The tendon of the external oblique being exposed, was next divided, and then the internal oblique and transversalis with its fascia. The peritoneum which

now presented, was detached from the iliacus internus and psoas magnus muscles with the fingers, and was pressed with its contents towards the right hypochondriac region by the assistance of my father. The external iliac was immediately felt, and by passing the finger towards the sacro-iliac symphysis, the internal iliac was distinctly recognized. The artery was then exposed with the handle of the scalpel, and the ligature passed under with the Philadelphia needle, one inch from the bifurcation. Instead, however, of drawing up the needle-part with the hook, I found it more convenient to take it with the dressing forceps. One ligature being passed, it was found necessary, from the great depth of the parts, (being about five inches,) to pass down the knot with Dr. A. E. Hosack's knot-applicator. The ligature was then firmly tied, and the parts were brought together with sutures and adhesive plaster. In this operation the same difficulty existed as in the case of ligature of the common iliac by my distinguished friend, Dr. Mott of New York, viz. the constant protrusion of peritoneum from abdominal compression, created by the struggles of the patient. Some pain in the bowels and fever came on a few days after the operation, which was removed by venesection and a laxative. Union, by the first intention, had taken place to a considerable extent at the first dressing on the eighth day. A considerable quantity of pus was discharged during the first four weeks, at the expiration of

which time the ligature came away. The tumour has discharged its contents gradually, and the parts have assumed their natural appearance. The patient has so far recovered his usual state of health, as to be able to walk about his neighbourhood."

"Hudson, New York.
Dec. 1, 1827."

Although the patient is said to have suffered no pain from the tumour, it is afterwards stated that he was lame in his left limb from rheumatism, and being a man of rather intemperate habits, was liable to falls upon his left nates.

Whilst in the United States, Dr. Stevens had opportunities of knowing that the unimpeached character of Mr. Pomeroy White obtained for his Memoir the unequivocal credit of his professional brethren; but he is of opinion that in this case also the aneurism was of the ischiatic, and not the glutæal artery.

Description of the Plates.

- I. The remains of the aneurismal sac.
- II. The vessels within the pelvis.
 - a. Internal iliac artery laid open.
 - b. Origin of the ilio-lumbar artery.
 - c. Part obliterated where the ligature was applied.

- d. Open part of the internal iliac artery below the obliteration.
- e. Obturator artery obliterated.
- f. Glutæal artery laid open.
- g. g. g. Sacro-lateral arteries communicating with the glutæal artery, and internal iliac.
- h. Ischiatic artery obliterated.
- i. Outline of a bag or pouch of the common integument formed in the left hypogastric region, in consequence of a hernial protrusion of intestines subsequent to the operation, and chiefly attributable to neglect on the part of the patient in not wearing the proper bandage. She suffered no material inconvenience from this circumstance.

END OF VOL. XVI.—PART I.