

stitutional disturbance highly unfavourable to the establishing the healthy process of union by the first intention; and that such and even more serious consequences have resulted from the practice, is proved by the unquestionable testimony of MM. Mannoury and Thore, interns of the Hotel Dieu, where M. Roux's operations were performed. They say: "The patient is not to be permitted to swallow his saliva, *he must be submitted to a complete abstinence*, the bad effects of which we may try to obviate by nutritive lavements, *which, however, scarcely ever attain the proposed end*. It must be confessed this abstinence may have disastrous consequences: it is difficult for a man, in all the strength of age and health, to support so rigorous a privation of nourishment. *We have seen in two of the patients delirium and severe nervous derangement ensue*. Perhaps it might be well to relax this severity, and to permit the use of some liquid aliments, the swallowing of which would not have such bad effects as is generally thought."

In both of the patients operated on by Sir Philip Crampton the voice and articulation have been considerably improved; but a considerable time must elapse before the full amount of the benefit which may be obtained from the operation can be ascertained; for the perfection of articulation depends in a great measure on the completeness with which the communication between the posterior nares and the mouth is closed by the soft palate, and soon after the operation the palate has not had time to become sufficiently elongated to discharge this function properly.

ART. XI.—*Aneurism of the External Iliac Artery; Ligature of the Vessel near the Bifurcation of the Common Iliac; Recovery*. By O'B. BELLINGHAM, M. D., one of the Medical Officers of St. Vincent's Hospital.

MATTHEW DALY, æt. 32, a slender and healthy man (in other respects), was admitted into St. Vincent's Hospital August 18,

1842, under my care, labouring under aneurism of the external iliac artery on the right side. He states, that he laboured under venereal about ten years since, for which he took mercury, but has never suffered from any other illness of consequence; he had been in the habit of drinking, but he has given this up for the last two years. His trade is that of a brushmaker, and his occupation consists in constantly turning a lathe with the right foot. He continued to work until three or four days previous to his admission, under the impression that the disease would wear away, as he had been given to understand it was simply an abscess.

The aneurism is of about three months' duration; his attention was attracted to it by the swelling, which at that time (he says) pulsated strongly, it was however quite unattended by pain, and it has increased slowly in size; recently he has begun to suffer pain of a dull, aching kind in the hip and groin, which obliged him to give up work, and to seek admission into hospital. He has never received any injury in the part, or ever strained himself, that he recollects.

The aneurismal tumour is about the size of the section of a moderately sized orange, but more oval in shape, seated above Poupart's ligament, and extending about half an inch below it; a very strong impulse is communicated to the hand placed upon it, but no fremitus; immediately below Poupart's ligament, however, there is a slight fremitus, and on applying the stethoscope a loud single bruit is heard. There is neither swelling nor œdema of the foot, the circulation is perfectly regular and tranquil, and the heart's action natural.

In consultation with Sir Philip Crampton and Mr. Cusack, it was determined to place a ligature upon the common iliac artery on the right side, as it was supposed there would not be found sufficient room between the aneurism and the division of the common iliac, the external iliac being probably diseased above the aneurismal tumour.

A purgative draught was given on the night before the ope-

ration, and a cathartic enema administered the following morning, by which the bowels were well cleared out ; an hour before the operation the patient took forty drops of laudanum.

The patient being placed on his back, slightly inclining to the sound side, having the thorax elevated, and the thigh bent upon the pelvis, I commenced the operation (assisted by Sir P. Crampton, Mr. Cusack, and Professor Porter) by a semicircular incision, beginning on a line with the last rib, and terminating nearly opposite the anterior superior spinous process of the ileum, and about an inch and a half internal to this process; its length was about five inches, the concavity towards the umbilicus; by this the integuments and superficial fascia were divided; the fibres of the external oblique muscle were then incised in the same direction, and next those of the internal oblique; by which the transversalis muscle was exposed. A cautious incision was made through the fibres of this muscle at the lower part of the wound, and a director endeavoured to be introduced under them; this muscle, however, was found to be considerably hypertrophied, being double or treble its natural thickness. On arriving at the transversalis fascia it also was found to be considerably increased in thickness, and presented almost a tendinous character; a portion of it was raised with a forceps, and cautiously incised; a director was then introduced, and an incision made sufficient to admit the finger, upon which this fascia was divided by a probe-pointed bistoury, both upwards and downwards. No artery was divided in this part of the operation requiring a ligature; the bleeding appeared to be altogether venous. The peritoneum was now very cautiously raised from the subjacent iliac muscle, by insinuating the fingers behind it, and this proceeding appeared to give much more pain than was expected. As the peritoneum was detached, Mr. Porter, with his hands in the wound, drew this membrane and the intestines towards the opposite side; the separation of the peritoneum was continued until my finger reached the upper extremity of the external iliac artery; and the expected difficulty from the

protrusion of the intestines was much less than had been anticipated.

After a short time I succeeded in getting a view of the vessel, and as it appeared to be perfectly healthy, its sheath was opened to a small extent by means of the blunt extremity of a director; and Mr. Trant's aneurism needle was then passed under the artery, from without inwards, without much difficulty; and here the advantage of his instrument was fully proved, for as soon as the eye of the needle appeared at the opposite side of the vessel, the ligature was drawn up by it, which owing to the depth of the wound and the distance of the artery from the surface, must have been attended with delay and difficulty had the common aneurism needle been employed: a single silk ligature was used, and as soon as it was tightened the pulsation in the aneurism ceased. The edges of the incision were then brought together by the interrupted suture and adhesive plaster. The operation was completed in little more than thirty minutes.

The patient was then placed in bed, with a pillow under the ham, in order to keep the thigh flexed upon the pelvis; and sixty drops of laudanum were administered. He complained of a sensation of cold in both lower extremities, and to the hand they felt colder than natural; this probably arose from the unavoidable exposure during the operation. Additional covering was employed, and jars containing warm water were directed to be applied to the soles of the feet.

8 o'clock, P. M. Five hours after the operation. Reaction has completely set in; both lower extremities feel rather warmer than natural; some thirst; pulse 80; and he has had some sleep since the operation.

Aug. 27th. Slept well last night; no pain except in wound; no tenderness on pressure over the abdomen; no sickness of stomach; some thirst, but wishes for something to eat; pulse 72; temperature of the ham on right side 88, on left 90.

28th. Did not rest quite so well last night, was annoyed by distention of the abdomen from flatulence, which occasionally

gave him pain; pulse 76; no thirst, nor pain on pressure over any part of the abdomen; the aneurismal tumour appears to be somewhat diminished in size.

29th. Pulse 72; slept well last night; feels hungry, and wishes for some solid food; temperature of both limbs similar. The wound was dressed to-day; the lower portion has united by the first intention; water dressings and adhesive plaster applied; sutures not disturbed. As the bowels have not been moved since the operation, a little castor oil was directed to be administered immediately, and repeated at intervals until it operated.

30th. Bowels moved freely, feels more comfortable since; no tension or uneasiness in the abdomen; the aneurismal tumour appears to be more solid.

31st. Wound suppurating freely; no thirst; appetite good; temperature of both limbs equal; pulse 80; ordered some weak chicken broth.

Sept. 2nd. He complained last night of pain over the middle sternal region, increased on inspiration; a mustard cataplasm was applied, and this morning the pain is much relieved; his pulse was slightly increased in frequency, about 88; in every other respect his condition is satisfactory.

5th. The wound was dressed with charpie to-day; the discharge is abundant, and of a good quality, healthy granulations are springing up from the bottom; the upper and lower portions of the incision have united by the first intention; pulse regular; no thirst; appetite good; has eaten chicken for his dinner the last two days.

8th. The wound has contracted considerably, and the discharge is diminishing; he sleeps well, and says he has not felt so well since the operation; no pulsation can be felt in the femoral or anterior tibial artery; he eats mutton chop for dinner with appetite.

13th. (Nineteenth day). The aneurismal tumour, within the last day or two, has become painful when pressed about the centre,

and its contents at this point are evidently more fluid than before; he also suffers from a feeling of distention in the part, otherwise he is in very good health; eats his breakfast and dinner with appetite, and has been allowed porter for some days. The ligature is not yet loose, and it gives him pain when it is gently pulled.

15th. (Twenty-first day). To-day the dressings were found to be deeply coloured with blood, and on examination a small orifice was detected at the inferior angle of the wound, through which a mixture of pus and blood could be squeezed. The aneurismal tumour is smaller and less tense, a portion of its contents having been evacuated in this way.

16th. (Twenty-second day). The discharge of pus and blood continues, but in diminished quantity, and the aneurismal tumour is smaller. The ligature was gently pulled to-day, when it yielded a little; this proceeding, however, caused apparently very great pain, which was referred to the hip.

17th. A very feeble pulsation detected to-day in the femoral artery high up in the thigh; none in the anterior tibial.

18th. (Twenty-fourth day). The ligature came away this morning without any pain, and was not followed by the discharge of a drop of blood; the wound is very much diminished in size, having filled up by granulation nearly to a level with the skin, except at the point where the ligature presented. His health is very good; he eats heartily, and sleeps well. The aneurismal swelling is diminished in size, but the integuments at one point covering it are discoloured and thinned, and its contents at this part are very fluid.

20th. To-day a coagulum presented at the orifice at the lower angle of the wound (which communicates with the aneurismal sac), and on removing it a large quantity of a mixture of pus and blood, amounting to several ounces, escaped; the aneurismal swelling immediately subsided, and the integuments over it became flaccid.

22nd. Another portion of coagulum was expelled this morn-

ing at the dressing, along with some fetid pus; no pain is experienced now on pressure over the site of the aneurism, and the integuments covering it have nearly recovered their natural appearance and colour.

27th. The wound is very much filled up by granulation, but the edges of the skin at the centre of the incision are somewhat retracted; a little pus daily escapes at the dressing from the orifice communicating with the sac, and but little tumour remains at the site of the aneurism. The patient has preserved the recumbent posture, and no pulsation could be detected to-day in any part of the femoral or anterior tibial arteries, although I thought I had on a former occasion felt a feeble pulsation high up in the femoral.

Oct. 3rd. The skin over the aneurism, within the last few days, has become thin and discoloured, to the extent of about the size of a shilling, and some pus has escaped from two very small orifices which have formed in it; this was laid open to-day, and the pus pressed out. The wound is skinned over, except at the point where the ligature presented, and at the inferior angle, where the sac had formed a communication with it.

13th. The patient (who has latterly rather unwillingly remained in bed) mentioned, that on making some slight exertion this morning, about two or three ounces of dark-coloured and fluid blood escaped in a stream from the opening which had been made into the sac; a coagulum appears to be making its way out, and the blood had probably been confined under it.

18th. The wound is perfectly healed, and the patient was allowed to get up for the first time since the operation; the limb feels weaker than the other.

28th. The patient was discharged to-day at his own request, and was directed to wear a belt, with a pad over the site of the incision. The aneurismal sac has filled up by granulation to a level with the surface, and the opening made into it has nearly closed.

Remarks.—In the operation related in the foregoing case,

the incisions were made with a view to apply a ligature to the common iliac artery ; as it was supposed that the external iliac was not sufficiently sound between the aneurism and the bifurcation of the former vessel, and at the moment I was under the impression that the ligature had been placed upon the common iliac. The aneurismal tumour was not either exposed or felt during the operation ; and not above half an inch of the vessel tied was laid bare, in order to avoid unnecessarily disturbing the peritoneum and the connexions of the vessel with the neighbouring parts.

The external iliac artery appears to be much less frequently the subject of aneurism than the femoral or popliteal, and until within a few years aneurism of this vessel was considered to be almost beyond the relief of a surgical operation. The present case appears to be the only one in which the external iliac has been tied for aneurism of this vessel, or in which a ligature has been placed so close to the bifurcation of the common iliac. In fact most writers lay it down as a maxim (in placing a ligature upon a large vessel) to tie it at a sufficient distance from a collateral branch, to allow of the formation of a coagulum above the ligature ; the internal coagulum being supposed to have a material share in the process by which the artery is closed, and hæmorrhage more frequently following the operation when a ligature is placed close below, than at some distance from a large collateral branch. Indeed Roux (in his parallel between English and French surgery) has related a case which he witnessed in London, where the external iliac artery was tied by Sir A. Cooper, and the patient died of hæmorrhage a fortnight afterwards ; on examination it was ascertained that the obturator artery (which usually arises from the internal iliac) proceeded from the external, and arose immediately above the point to which the ligature had been applied. However, though the nearness of a collateral branch may interfere with the formation of a coagulum, it does not necessarily prevent the adhesive process from closing up the vessel. Mr. Travers, in the sixth

volume of the Medico-Chirurgical Transactions, concludes, from a series of experiments which he performed, "that after the proper application of a ligature the adhesive process is established in an arterial trunk in equal time, whether its branches are contiguous or remote." Indeed the recovery of the patient in this case shows that a large artery may be successfully tied at the distance of half an inch from the point at which a branch nearly of equal magnitude comes off.

The principal difficulty which was expected to have been encountered in the performance of the operation was the protrusion of the peritoneum and intestines, however it did not present at all the obstacle that had been anticipated; which may be attributed partly to the patient's bowels having been well cleared out previously, and to the administration of a full dose of laudanum a short time before the operation; and partly to the good sense of the patient, who struggled and cried out little during the operation. I had prepared several broad spatulas of the kind recommended by Dr. Mott for holding back the peritoneal mass, the hands however appeared to be better instruments, and I was much indebted to Mr. Porter, who undertook this task, for the very efficient assistance he afforded me, by which I was enabled to obtain a view of the vessel previous to passing the ligature.

The aneurism needle is generally directed to be passed from within outwards, in order to avoid the vein; in the present case, however, the vein was not seen at all, and the needle was passed with great facility from without inwards; and, as I have already observed, the hooking the loop of the ligature, owing to the depth of the wound, and the distance of the artery from the surface, would have been necessarily attended with delay and difficulty, had I not employed Mr. Trant's aneurism needle;* the great advantage of which instrument consists in its seizing upon the ligature, although completely out of sight, as it is so constructed that it can take up nothing but the ligature, and it can-

* See note at the end of this paper.

not fail to draw it up, though the wound may be full of blood at the time.

The only unexpected difficulty met with in the operation (if it could be called such) was the great thickness of the transversalis muscle and of the transversalis fascia; the former being double or treble the normal thickness, and the fascia presenting altogether a tendinous character. It has been suggested that this hypertrophoid condition of these parts may have arisen from the occupation in which the patient had been engaged, consisting in constantly turning a lathe with that foot; on a subsequent examination, however, the abdominal muscles upon the opposite side appeared also to be more fully developed, and of greater thickness than natural.

I have already observed, that the separation of the peritoneum from the iliac fossa gave much more pain than I had expected; in fact the patient appeared to suffer as much from it as from the incisions; and the cellular membrane here, as the peritoneum was detached, poured out sufficient blood to obscure the view of the subjacent parts; so that the ureter was not seen during the operation; the bladder, however, was felt, and appeared to be distended; and the motions of the patient caused once or twice considerable contraction and tension of the psoas muscle, which, if he had struggled much, would have necessarily prolonged the operation, and interfered with the passing of the ligature.

The position in which the patient was placed, viz. inclining a little towards the sound side, was that recommended; it appears to me, however, that the most convenient position for dividing the abdominal muscles would have been upon the back, with a small pillow under the loins, so as to render these parts tense; after the muscular parietes had been divided the patient might then be inclined towards the sound side, so as to facilitate the subsequent steps of the operation.

The principal danger which was looked forward to after the operation was peritonitis; indeed from the extent to which the peritoneum was detached, and the handling of this membrane

rendered necessary to reach the vessel, it was supposed to be almost unavoidable. The patient's constitution, however, appeared to be one in which inflammation is not readily set up, as the operation was not followed by a single symptom of peritonitis.

The inflammation and subsequent suppuration of the aneurismal sac were accompanied by much less constitutional disturbance than might have been *à priori* expected, considering the size and situation of the aneurism. And the mode in which the contents of the tumour made its way to the surface by communicating with the lower angle of the wound, is perhaps worthy of remark.

Note.—Through the kindness of Mr. Trant I am enabled to give a figure and short description of the mode of action of his aneurism needle; for a more full account of it I beg to refer to the Medical Press of November, 1839:

"The aneurism needle, when about to be used, is arranged as shown in figure A. The ligature is seen held in a direction parallel to the needle, for about one-fourth of an inch near the point, and at right angles with an imaginary line drawn from the point where the hook issues from the handle, meeting the ligature held in the needle.

"Figure B. shows the instrument as having been passed under the artery; the spring-hook is supposed to have been projected to the point of the needle, and having seized the ligature held at right angles, the operator is understood to be in the act of drawing up the ligature to him by the spring-hook, controlled by a stud made fast to the stem of the hook, and passing through the handle of the instrument."

