

THE MATAS OPERATION FOR THE RADICAL CURE OF ANEURISM,

AS APPLIED IN TWO CASES OF RUPTURED ANEURISM.*

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NEW ORLEANS.

The procedure described by Dr. Rudolph Matas¹ has attracted widespread attention, and has been tried in a number of successful cases, recently reported, sufficiently to prove its merit as a permanent and notable advance in the surgical treatment of aneurism. It is still, however, a comparatively new and untried method, and all clinical reports which bear on its application in atypical conditions should be instructive and profitable to the practical surgeon.

Presuming that the reader is familiar with the original procedure described by Dr. Matas, I will limit my remarks to two cases of aneurism of the fusiform type which came under my observation in the Charity Hospital. In each instance, the aneurism had ruptured into the subcutaneous and intermuscular spaces before I was called to operate on the patient. On account of existing conditions, I deemed it expedient to depart in some details from the technic recommended by the originator of the method, while preserving the fundamental principle of using the suture in controlling the bleeding orifices within the sac. The results would show that in adapting ourselves to atypical conditions, variations in technic are permissible and advantageous, as they do not affect the principle of the method, while they expand its application.

CASE 1.—C. P., laborer, aged 40 years, was admitted to Charity Hospital August 1, 1904.

History.—Family and personal history were negative. Three weeks before admission he noticed some swelling about the right ankle. One week later, while at work, he noticed a swelling about the middle and on the inner side of the thigh, which had continued to increase in size since, and became painful after the first week. He had had no chills or fever. Just before applying to the hospital he consulted a physician who punctured the swelling with a hypodermic syringe and drew some blood and advised him to come to the hospital and have the abscess (so he called it) opened.

Examination.—This showed a hard, somewhat fluctuating, irregularly ovoidal tumor tapering to a point above at about the origin of the adductor magnus muscle. It was largest at about the middle of the thigh and extended below to within about four inches of the upper border of the patella. The tumor was well defined except at its upper end. No pain on pressure, no pulsation, no thrill, and no bruit could be discerned.

The skin was freely movable over the tumor and was slightly warmer than the surrounding parts. The femoral artery could be felt to pulsate down to about the middle of the tumor, but was then lost in its substance. There was no pulsation in the dorsalis pedis or posterior tibial arteries. The pain in past three days had been increasing in intensity.

Operation.—He was put to bed and prepared, and on August 4, under chloroform anesthesia an incision was made over the most prominent part of the tumor anteriorly, and after going through skin and superficial fascia, an exploring needle was inserted into the tumor and some dark blood aspirated. Through a second incision, a provisional ligature of stout silk was passed around the femoral artery, just below Poupart's ligament, to control hemorrhage. The incision over the tumor was now completed and a large cavity

fully 12 inches in length and 6 in depth, filled with fluid and clotted blood was exposed. There was some active bleeding and after quickly washing out blood clots and sponging out all fluid, the chief bleeding point was located just above the femoral opening in the adductor magnus muscle. This bleeding was stopped by digital pressure and the cavity inspected. The bleeding point proved to be the lower opening of an aneurismal sac which had ruptured anteriorly and now formed part of the floor of the present cavity which had been produced by the blood extravasated into the tissues immediately surrounding it. On further examination, it was found that there was still some bleeding and that this came from the upper opening of the sac, which was seen about two inches above the lower, bleeding also, but less profusely. Both openings were closed with silk purse-string sutures, over which were inserted a layer of interrupted Lembert sutures; the provisional ligature on the common femoral was then removed, and all bleeding found to have been completely controlled. The removal of the ligature, however, revealed an aneurismal dilatation of the femoral artery for a distance of about one and a half inches above its opening into the sac, with an intervening apparently healthy constriction at its point of entrance. Another silk ligature was applied around the vessel just above this dilatation and tied. The sac was then irrigated thoroughly with hot normal saline solution and washed clear of clots and sponged dry. Two long laparotomy gauze sponges were inserted and the ends pushed up to the upper end and bottom of the cavity and the wound partly closed with silkworm gut sutures, thus allowing free drainage of any secretion that might accumulate in such a large cavity. The upper incision over the femoral artery was sutured with catgut, and after the application of an abundant loose gauze dressing, the whole limb was wrapped in several layers of cotton batting, and a posterior gutter pasteboard splint was applied, immobilizing the knee in extension. The limb was kept slightly elevated and surrounded with hot cans. The foot was warm immediately after the operation and continued so, there being apparently no interference with its circulation, and several days later pulsation could be felt in the dorsalis pedis artery.

After-treatment.—The dressing was removed on the sixth day, it was very much soaked with secretions, and the cavity was washed and repacked. This procedure was repeated every second or third day till the wound finally closed by granulation from the bottom. This took place very rapidly, and he was discharged October 15, with perfect functional result.

CASE 2.—H. W., aged 30, was admitted to Ward 4, November 25, 1904.

History.—Family history is negative. The patient smokes, chews and drinks. Former diseases: Both legs were broken seven years ago at junction of middle and lower third. He was in a railroad wreck one and a half years ago and received general contusions. He had gonorrhea seven years ago, but denies having had syphilis. The present complaint began in June, 1904, with pain in middle third of left tibia, extending to the ankle. This pain constantly increased. About Nov. 1, 1904, the patient noticed a pulsating painful tumor in the left popliteal space. This tumor became smaller under treatment of pressure applied with a cork and bandage. He tried this plan about one week, then he took the bandage off and began hard work in a sawmill. He worked ten days, when he noticed that his left ankle was swollen and he had a severe pain in the leg. The tumor appeared again in the popliteal space and began to grow much larger and became more painful.

Examination.—There is general arteriosclerosis and an aortic obstructive murmur. There was a large, pulsating expansile tumor occupying the left popliteal space, which increased one inch in size (circumference around knee) when pressure had been made above and released. A bruit could be heard over the tumor and over the femoral artery at Poupart's ligament. There was no pulsation in the posterior tibial artery. Pressure below did not increase size of tumor.

Treatment.—The patient was put to bed and ordered potassium iodid, grains 10 t. i. d. and the dose increased one grain daily. On November 27 an icebag was applied to the knee,

* Read at the annual meeting of the Louisiana State Medical Society in New Orleans, 1905.

1. The Radical Cure of Aneurism, Based on Arteriorrhaphy; Trans. Amer. Surg. Assoc., 1902; Ann. of Surg., January, 1903.

codein sulphate $\frac{1}{4}$ grain was given and the leg was elevated. Temperature at this time was 98 F., pulse 96, respiration 24. The patient complained a great deal on that day. About 2 p. m. the pain suddenly ceased. At 4 p. m. temperature was 101, pulse 120, respiration 24. Examination of the knee showed a soft fluctuating mass to outer side of and above the patella. At 7 p. m. a ruptured aneurism having been diagnosed, he was taken to the amphitheater and prepared for operation.

Operation.—Under chloroform anesthesia, ether being substituted later, an elastic constrictor was applied in the upper part of the thigh and a longitudinal incision of about three and a half inches was made over the center of the tumor in the popliteal space, and a large cavity filled with clotted and fluid blood was exposed to view. After washing out the blood and clots the cavity was seen to be about six inches in longitudinal and four inches in transverse diameter. Its upper boundary was not so well defined as the lateral and lower ones, the blood having evidently dissected its way under the hamstring muscles on the outer side, and between them above, where the cavity ran up into a point. On the inner aspect and near the bottom, the wall of the cavity presented an area about one and a half inches in diameter and two and one-half inches in length, which was whiter and more smooth and glistening than the rest of its surface, which was of a dark and bloody hue. This proved to be the original aneurismal sac, there being one opening in it near its upper margin and one near its lower, and about one and a half inches apart. These openings were closed with Lembert sutures of small silk on a curved needle, and, as an additional safeguard, a suture was passed completely encircling the upper opening and tied. On the removal of the elastic constrictor there was no bleeding whatever. The cavity was once more flushed with hot saline solution and packed with gauze and a large dressing applied. The limb was wrapped in cotton batting and a posterior splint of pasteboard applied to immobilize the knee. Hot cans were applied around the limb for two days. The toes were felt to be warm, however, on his return to the ward from the operating room, and the wound healed from the bottom by granulation. He made an uneventful recovery, being discharged from the hospital cured on Jan. 9, 1905.

REMARKS.

In the first case, the diagnosis of aneurism was not made till the sac had been opened, though, fortunately, the common femoral artery had been tied temporarily as a preliminary measure. In the second case, my attention was called to the patient by the appearance of a soft swelling to the outer side of, and somewhat above, the patella in a case previously diagnosed as popliteal aneurism. In both cases, hemostasis was secured by suturing the arterial openings within the aneurismal sac. The sac was not excised nor was it obliterated. The dissection of the tissues by the extravasated blood had created a cavity of such size in each case that it was deemed proper (in view of possible infection of so large a space, which would soon fill with fluid secretion from its extensive surface if not drained), to irrigate thoroughly and to use a long gauze drain; which performed its functions well, as the copious secretion on the dressing later showed. There was little or no interference with the warmth, sensation, or nutrition of the limb beyond the aneurism as a result of the operation. The functional result was perfect on discharge, the healing being complete.

The operation as described by Dr. Matas is probably the simplest and easiest operation devised for the purpose, when temporary hemostasis can be secured by an elastic constrictor, a provisional ligature, or even digital pressure. Any one who has performed the tedious, prolonged operation of ligation above and below and excision of the sac is certain to become a convert to this method the first time he tries it.

The incision required is smaller, the openings in the vessel are easily and very plainly exposed to view, and very easily closed by suture. The number of rows of sutures may be increased at the option of the operator to any number he may deem necessary to insure safety against secondary hemorrhage. The integrity of the sac is not interfered with, and as there is no dissection either around, or above, or below the sac, there can be no interference with collateral circulation so essential to the life of the limb beyond.

There is one point that is brought out by these cases and which makes them especially worthy of record, and that is, that where the aneurism has ruptured some time previously and has given rise to a cavity of such size that its obliteration by suture would become either impracticable owing to its extent, or inadvisable owing to the possibility of interference with collateral circulation by the incision and dissection rendered necessary to expose the whole cavity for the purpose of suturing, it is better to close the incision partly, and to drain, allowing the wound to fill by granulation from the bottom, instead of obliterating the cavity by suture, as is done in the unruptured cases. This can be very materially aided by gentle compression of the sac in the application of the dressing and the use of a gauze drain that will act as a wick rather than as a pack.

In Case 1, for instance, in order to have sutured together the walls of this cavity, it would have been necessary to make an incision of about fourteen inches in length. There is the additional advantage, too, of a saving of time by this method, which is of momentous importance to a large class of patients who stand operation and anesthesia badly.

THE EFFECTS OF THE INHALATION OF THE FUMES OF NITRIC ACID.

WITH REPORT OF CASES.*

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DENVER.

The Denver Fire Department was called to the office of the *Denver Post* Sept. 20, 1904, at 4 p. m. On arrival they were informed that a carboy of nitric acid had been accidentally broken in an attempt to remove the stopper with a hammer. The acid spread across the floor, coming in contact with the zinc used in etching. Sawdust was used to absorb it, and, rapidly oxidizing, burst into flame here and there, resulting in the call for the firemen. Mr. Bradt, foreman of the department, who was at work in the room, states that the fumes and smoke were not especially irritating until the portable apparatus began playing on the fire, the usual carbonic acid-producing solutions being employed.

We find by examination that the acid used contained no appreciable amount of nitrous acid and was of about 38 per cent. strength. About ten gallons of it escaped from the carboy. We believe the symptoms to have been caused by the smoke, made much more irritating and corrosive by the presence of the nitric acid and the products of its union with organic matter. Dr. E. C. Hill states that under these circumstances HNO_2 would arise from decomposition of the HNO_3 , and also nitric peroxid (NO_2), and nitric oxid (NO).

Haines and Peterson¹ state that nitric oxid (NO) is

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.
1. Text-book of Legal Medicine and Toxicology.