

THE
Journal of the American Medical Association.

EDITED FOR THE ASSOCIATION BY JOHN B. HAMILTON.

PUBLISHED WEEKLY.

VOL. XII.

CHICAGO, JANUARY 19, 1889.

No. 3.

ORIGINAL ARTICLES.

RESULTS IN ELEVEN CASES OF A NEW
METHOD FOR ARRESTING BLEED-
ING IN SURGICAL OPERATIONS
AND CONDITIONS, AND FOR
THE TREATMENT OF
ANEURISMS.

Read in the Section on Surgery and Anatomy at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

BY C. S. MUSCROFT, M.D.,
OF CINCINNATI, OHIO.

No complication in operative surgery has occupied the mind of the surgeon with so much interest, responsibility and anxiety, as the prevention and arrest of hemorrhage.

It is unnecessary to recapitulate the different methods adopted by the profession from time to time, as there are none in this Section of the Association who are not familiar with them all.

This importance was never so strongly presented to the mind of the author as on the 10th day of August, 1886, when about to perform, for the first time, an amputation at the hip-joint in a patient 58 years old. The literature of the different methods for preventing hemorrhage in this operation was carefully examined, but none promised the security to the patient that could be wished. It is not astonishing that the dread of the patient dying on the operation table from hemorrhage, (an accident which has so often occurred) haunted me for days and nights previous to its performance.

Having on several occasions arrested hemorrhages from small arteries by means of the introduction of a pin under the artery, and compressing it by the figure-of-eight ligature, in the same manner as those applied for the purpose of treating varicose veins of the extremities. From the satisfactory results obtained, it was decided to apply the same treatment to the femoral artery, for the purpose of shutting off the supply of blood at the time of amputation. It was done as follows: A long needle, no pin large enough being at hand, introduced to the inside of the femoral vein, at the distance of half an inch from the sheaths of the combined vessels and nerve.

The distance from the groin an inch and a half. It was directed perpendicular to the front of the thigh, pushed backward until the sheaths containing the femoral vessels were passed, then turning the point under them toward the external side of the femur, then forcing the point to the front through the integuments and skin. The figure-of-eight ligature fastened the needle firmly in its place. Pulsation of the artery below the needle could be distinctly felt before the ligature was tightened, but after none could be perceived. Of several medical gentlemen present some had confidence in the procedure, others not. Should the plan fail, an able assistant stood ready to seize the vessel if need be. To prevent the patient or assistants from being injured by the needle small corks were applied to the point and heel. After the last cut was made entirely severing the limb, the femoral artery was found perfectly closed, and standing out from the surrounding tissues for a distance of three-fourths of an inch with its mouth wide open. Some two or three small arteries required attention. These were tied with a very small loss of blood. Then the femoral artery was held between the finger and thumb, and a permanent ligature used. The flaps were brought together and stitched, and the patient put to bed. The only dressing applied to the stump was a compress saturated with a solution of dried sulphate of iron 3ss to the pint of water. No drainage tube was used. The patient recovered rapidly and is now quite well.

On August 12, two days after the amputation at the hip-joint, an amputation was made at the shoulder joint. The same form of compression was adopted with equally good results. The patient did not lose a drop of blood from the brachial artery—he also had a good recovery, and is now well. The needle in this case was passed from before backward, parallel to the axilla. In neither of these cases did the introduction of the needle cause the slightest bleeding from the puncture.

In all other operations where this hæmostatic has been applied a pin was used in the place of the needle. It was used to arrest a secondary hemorrhage after an amputation of the leg below the knee. The application was in the precise manner, and in a similar part of the thigh to

the other. It was introduced on Sunday morning and removed the following Thursday, having remained *in situ* four days; its presence causing no inconvenience, nor producing any local soreness or neuralgia of the limb.

The application of the pin and its freedom from any irritating effects suggested its promise of great usefulness in the treatment of aneurisms, more especially in those of the extremities. In the lower extremities there is no doubt any aneurism below Poupart's ligament would be amenable to this management. In the upper extremity any aneurism could be treated by this process, including the axillary space, and even the axillary artery itself below the clavicle. Aneurism of the sub-clavian arteries would also be proper situations where cure could be effected by this form of compression below the clavicles. This treatment does away with the necessity (in many of the cases surgeons are called to treat) where those terribly dangerous cutting operations are required, which formerly was the only resort left to them. It does away with the necessity of manual compression, which so seldom succeeds. What great advantages attend treatment by compression in this way when we reflect that aneurisms have been cured in nine hours by the less certain plan of manual pressure. Then let us reflect how much less the patient is exposed to the chances of surgical fever, or of septic troubles. As the introduction of a pin is nearly always a bloodless procedure, the opportunity for the introduction of any form of germ is next to impossible.

Since the experience of the three cases already attended to, nine others have occurred in which the pin and ligature alone were depended upon as the hæmostatic agent. Two for amputations of the leg near the knee, three for amputations of the thigh, and one for amputation of the arm. In another case of railroad injury where the right thigh was torn off at the lower third, and the remaining leg the subject of compound comminuted fracture with great loss of tissue below the knee. The pins and ligatures were applied to each thigh below Poupart's ligament. The patient being in a moribund condition, no radical procedure was resorted to. The hemorrhage was perfectly controlled. As was expected, the patient died in a few hours.

In the last case operated upon, a boy 9 years of age, where the thigh was amputated at the upper third, the lower portion having been torn off, instead of introducing the pin near the inside of the vessels of the thigh, as in former cases, it was introduced outside of them (external to the femoral sheath). The result was perfect. The operation was performed at night, by artificial light, the assistants being one medical gentleman, who administered the chloroform, and the stepfather of the boy. But one artery had to be tied. The boy is perfectly well.

On three occasions only has any bleeding followed the introduction of the pin. One was in the case of a boy, the bleeding being very slight and venous in character. After the ligature was applied, the bleeding immediately stopped, nor did it return after the pin was withdrawn. Another case was similar to this in all respects. Both patients are well. In the case of the patient where pins were applied to both thighs, in one it was accompanied by a slight arterial flow. The result of the patient (who was too weak to bear the use of an anæsthetic) making a sudden movement of the thigh, which caused the pin to be partially withdrawn after it had passed under the vessels. It was pushed through, thinking it was sufficiently deep to pass them in safety; a slight flow of arterial blood followed, but whether it came from the femoral artery or only a small branch, could not be determined. After the ligature was applied, all bleeding ceased. No opportunity for an examination of the parts was allowed after death. In this instance a compress was placed over the track of the artery before the ligature was tightened.

In a few cases a compress was applied over the track of the artery before the ligature was tightened, but whether it added to the efficacy of the compression is very doubtful. In very fat subjects it might be better, and could do no harm in any case. The last case operated upon no compress was used, and the artery (femoral) was found to be perfectly closed and the only vessel requiring a ligature. The patient recovered.

Should an accident occur such as has been recorded, where the pin has been partially withdrawn, it ought to be at once removed and introduced *de novo*.

The following case was treated with success: While passing on the street, a horse had just received a severe penetrating injury in the lower part of the left side of the neck, near the shoulder, causing a wound of the left primitive carotid artery. The thumb was thrust into the wound, the end penetrating the artery. This restrained the blood until a piece of moistened sponge, half the size of the fist, was thrust under the skin. It acted as a compress, and caused quite a large tumor under the skin. A large pin was passed through the skin and sponge near the base of the swelling, and the figure-of-eight ligature fastened over it, which arrested the bleeding perfectly, not even a drop appearing on the surface. The stream of blood which had flowed from the artery was three-fourths of an inch in size. This form of compression of arteries as a prophylactic can be adopted in any operation upon the extremities, whether from traumatic origin for the removal of tumors or other surgical requirements, and also for arresting arterial hemorrhage as the result of operations or any form of injury. The pin in each case to be applied to the most appropriate

and convenient source of arterial supply. It may also in some cases be used in the neck, head or face.

The utility and adaptability of this procedure in military surgery, particularly after a battle, is very apparent. All surgeons serving in the army will at once see and understand its great worth on the battle field. At such a time surgeons have neither the time or convenience for performing final operations. They see many wounded who are fast losing their lives from the effects of hemorrhage, especially in the extremities, with or without fractures. These cases can only be cared for temporarily. There a tourniquet, the only means now in use is applied, and the bleeding temporarily arrested. This would, however, take up considerable time, and, after its application, is frequently apt to slip. The tourniquet also shuts off the return of the venous blood, produces much pain and swelling, and if left too long will bring on gangrene of the limb. The application of the pin would not be followed by any of these bad effects. It could remain for days, as has already been proved without pain or swelling, nor could it slip out of its situation or arrest the venous circulation, but would leave the parts in a very much better condition for repair to take place. Its application would require but a few minutes, five minutes would give ample time for its adjustment, the pain produced would pass off at once. Patients treated could be left with perfect safety and security for days, until a permanent and proper place could be provided. Cases of this kind have occurred under the observation of the writer during our recent war, and he feels confident if the pin had been used in place of the tourniquet that more lives would have been saved.

Let us now look into the adjustment of the pins. In the first application of this procedure a needle was used, and after it was introduced, the ends were protected by corks, for the protection of the patient or assistants. Now that pins are used one protection for the point is only necessary, and in most cases the pin lay so close to the surface as to be entirely out of the way.

In all twelve experiences have been had with this new application of a pin used as a prophylactic and treatment for hemorrhage, it has proved perfectly successful in all. Its simplicity and ready application, as well as its safety, are some of its strong claims for general adoption. It also does away with the most needed skilled assistant. For instance, compare this with the former plans for security against hemorrhage in amputation at the hip-joint, such as the tourniquet applied to the aorta, the introduction of the hand into the rectum, the application of the internal compress to the external iliac artery, through the rectum, or the Davy lever or any form of ligature or tourniquet applied to the upper part of the thigh

at the groin, all of which are sure to give way when the head of the thigh bone is destroyed. Some of these are nearly as dangerous as the amputation itself and have led to fatal results. The author claims his method in hands of any surgeon or medical man of the slightest anatomical knowledge can perform this little operation of introducing and adjusting the hæmostatic pin with perfect ease.

A few words as to the treatment of aneurisms. No case has come under the care of the writer, but he feels it promises better results than any so far put in use, and one of its greatest virtues is (in this day of the germ theory) that it gives no opportunity, or nearly none, to their introduction into the system.

The same principle can be applied should we at any time meet with an abnormal distribution of arteries, as was the case of a division of the external iliac into two femorals in the case of Val Mott, when he successfully amputated the hip-joint. If the profunda be found it could be compressed in the same way as the femoral.

The results which have followed the application of this mode of suppressing bleeding have been so eminently successful that the author feels conscious that it cannot fail to come into general use. Its first application in the grandest and most dangerous amputation known to surgeons, illustrates its influence for good by converting its most dangerous complication into the simplest part of the operation.

THE SUCCESS OF REPEATED OPERATIONS UPON THE SAME NERVE, IN FACIAL NEURALGIA.

BY EDMUND ANDREWS, A.M., M.D., LL.D.,
SURGEON OF MERCY HOSPITAL, CHICAGO, ETC.

Neurectomy performed for *tic douloureux* permanently cures some patients, and effectually stops the pain of nearly all the rest for a period of from six months to two years, yet the majority sooner or later relapse. Clinical experience has demonstrated to me the somewhat surprising fact that these relapsed cases may be freed from their pain over and over again by repeated operations at exactly the same spot, even though the surgeon fail utterly to get away any more tissue from the stump of the nerve.

This result was unexpected to me, for Ross and others who speak of repeating the neurectomy in relapsed cases seem, like myself, to have supposed it necessary to find the stump of the nerve and operate directly upon it. Clinical experience also shows the important fact that operations performed in the old cicatrix cause little or no shock or hemorrhage, and, while arresting the pain for months or years, become a mere trifle in point of severity.

The numerous examinations thus made with