WHAT SHALL WE DO WITH THE POST-OPERATIVE HEMORRHAGE OF CELIOTOMY?

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"If the patient, having rallied from her ether, with a good pulse and practically normal temperature, be found in the course of the next twenty-four hours to be showing the indications of collapse, together with a rising pulse and falling temperature, hemorrhage will almost always be found to be at the bottom of the trouble. The pulse under these circumstances becomes feeble and is rapid and running in character. The temperature and pulse, together with the general condition of lassitude and growing indifference, are almost pathognomonic of the condition. If the bleeding be allowed to continue these symptoms gradually deepen, and the more advanced indications of collapse, such as great pallor, sighing, and cold surface, supervene. . . . The symptoms of shock may readily be mistaken for hemorrhage, the difference being that in hemorrhage the indications do not begin for some hours after operation, while in shock they are present from the first. Otherwise the two present so many points of likeness that it is at times difficult to say which is present."

The above, taken from one of our leading text-books, is a very fair exposé of the prevailing knowledge regarding the symptomatology of internal or concealed hemorrhage. I believe it to be practically correct. Still I must say that there are few questions onnected with gynecic surgery that have given me more concern and upon which I have been more at sea than the one under consideration. Could we always be sure of our diagnosis, matters would be much simplified; but even this would not solve it, for we have to deal with other factors, such as the source and amount of hemorrhage and our ability to control it by other than surgical measures.

To make a long story short, I will say that my experience with the post-operative hemorrhage of celiotomy and conditions simulating the same has not been of a character to confirm me in my earlier and more radical views as to treatment. Time was when I could have answered this question with alacrity, when I should have smiled pityingly on the man that hesitated. My motto was: "Open up and secure the bleeding vessels." I believed that all the dictates of reason and conscience demanded it, that surgical instinct demanded it. I believed then, as many believe now, that surgical instinct was the synonym for bold, active interference. Thanks to the tempering influence of age and experience, I have attained a higher conception of the term and its significance. As I stood by the bedside of the patient in whom I suspected internal hemorrhage, surgical instinct whispered: "Open up and seek for the bleeding vessels." When, some hours later, I looked upon the lifeless form of this self-same patient and witnessed the outcome of my uncalled-for interference, I began to question the identity of my monitor. A little later and I stood at the bedside of an apoplectic, and I asked myself why surgical instinct did not prompt me to lift the calvarium and go after the bleeding vessel. Then it dawned upon me that surgical instinct no more implies active surgical interference than practical medicine implies active purgation. True surgical instinct conserves the best interests of the patient.

As has been said, the diagnosis, the prognosis, the natural tendency, and the amenability to treatment all play a rôle in the management of these cases. That the diagnosis is sometimes beset with difficulties insurmountable is the testimony of all experienced observers. The subnormal temperature, which, in connection with the rapid pulse, blanched surface, and great prostration, is depended upon as being specially significant of hemorrhage, may, and sometimes does, depend on something else. It is a physiological fact that the vessels of the portal system alone, when distended, are capable of containing all, or nearly all, the blood of the body; that when so distended they form a reservoir into which may be drained the blood of the brain, the vital centres, and of the heart itself. It is well known that patients sometimes perish from the accumulation of blood in the enormously distended vessels of this region. It is known, furthermore, that certain

vasomotor disturbances are responsible for this condition. When such is the case the temperature falls, the pulse runs riot, and all the indications point to an internal hemorrhage; and while there has not been the loss of one drop of the vital fluid, this diversion serves to kill as quickly and effectually as though a trunk vessel had been severed. These are the cases of which authors speak as bleeding to death in their own veins. There are other conditions that influence the temperature, the exact nature of which we cannot determine, but which nevertheless produce a symptomatology so essentially like that of internal hemorrhage as to be indistinguishable from it. Some of these conditions are illustrated in the following cases.

The first was a case of bleeding fibroid for which I did hysterectomy. The patient was greatly exsanguinated, nervous, and depressed. The operation was without incident, and before closing her up it was noticed that the pelvis was exceptionally dry. This was the first of a series of four abdominal operations for that morning, and owing to the very favorable trend of affairs, and the excellent condition of the patient when lifted from the table, one of the assistants remarked that he believed the patient could walk down town. Four hours later I was summoned to the hospital and found the patient in collapse with the characteristic symptoms of internal hemorrhage. Examination revealed about four ounces of blood in the vagina. She was lifted on the table, and with an aneurism needle two stout ligatures were introduced, one on either side of the cervix, and firmly tied. Fearing, however, that internal hemorrhage might be going on, I made hasty preparation and opened the abdomen. I found about two ounces of blood in the pelvis, every ligature in place, and not a sign of hemorrhage. She was closed up and returned to bed, but, despite all efforts, sank and expired four hours later from shock. It may be contended that the loss of six ounces of blood was sufficient to bring about the fatal issue in this delicate and bloodless woman, but I do not believe it, for she had been habitually losing much more at short intervals, with little appreciable effect except to keep her pale and weak.

But, lest there should be some misgivings on this score, I will cite another case, about which there can be no question. This was a delicate and neurotic woman on whom I had performed

hysterectomy for a troublesome fibroid of small size. The patient left the table in good condition. A few hours later I was summoned to the hospital and found her collapsed. She had every indication of internal hemorrhage. I pursued the same tactics as in the preceding case: first tying the vessels on either side of the cervix, and then opening the abdomen. There was no blood in the vagina and none in the abdomen; nevertheless she gradually sank, and expired within twenty-four hours, never having rallied from the shock.

Some time after this, and while the painful remembrance of these cases still haunted me, I had an experience after ovariotomy that in many of its features tallied closely with the last-described case. I contented myself in this case in using such restoratives as are usually resorted to in shock, such as strychnine hypodermatically, hot applications to the surface, elevation of the foot of the bed, stimulating rectal injections, and hypodermoclysis of the normal salt solution, all of which had been used in the preceding cases; and to my great relief, after several hours of anxious effort, I had the satisfaction of seeing my patient well out of danger. I firmly believe that both of my first patients would have rallied and probably survived the operation had I not opened the peritoneal cavity. I could add to this list two other cases with a fatal issue in which internal hemorrhage was strongly suspected, but in one of which a post-mortem by myself revealed a clean abdomen, and in the other, according to the statement of the embalmer, there was no evidence of hemorrhage. I could also adduce several additional instances in which, profound shock coming on several hours after operation and characterized by rapid pulse and subnormal temperature, the patients rallied and recovered.

As will be seen from the above, the presently received indications of internal hemorrhage are not infallible, and, if implicitly relied on, may lead to grave mistakes, as in two of the cases cited above. I do not deny the great value of these diagnostic criteria, nor that as a rule they may be relied on, but the numerous exceptions, taken in conjunction with other features yet to be developed, should make us chary of precipitate surgical interference.

The prognosis of internal hemorrhage is another factor that should claim our attention. In the earlier days of my abdominal work, when the drainage-tube constituted a necessary and fre-

quently utilized part of my armamentarium, I had numerous instances of quite free internal hemorrhage, but which recovered without surgical intervention. One case in particular gave me great concern, and I was several times on the point of radical interference, but, happily for the patient and myself, refrained. The patient was a single lady, about thirty years of age, the sister of an army officer. I had removed the appendages. Soon after the operation blood began to appear in the tube in inordinate quantities, so that, at intervals of half an hour to an hour, from one to three ounces of blood were withdrawn. This continued several days, and the patient's pulse mounted to 135, accompanied with marked prostration. At this juncture, and as a last resort before the use of the knife, I gave ergotol hypodermatically and the hemorrhage ceased. But the most notable case of internal hemorrhage succeeding operation, with ocular proof and spontaneous cessation, that has ever come under my observation, was that of a minister's wife upon whom double ovariotomy had been performed by a colleague assisted by myself. The operation was done in the morning, and at 2 o'clock the following morning I was called for by the doctor, saying that his patient was bleeding. Arrived at the house, I found that the blood had forced itself through the incision and had saturated the dressings and bedding. She was lying in a pool of blood. My colleague gave the anesthetic, and, by the dim light of a smoking lamp held by the reverend husband, I proceeded to open her up. I found a large quantity of blood in the cavity. The patient was at no time fully under the anesthetic, and for the most part very much alive, and when the husband observed me bailing out the abdomen with my hands, he exclaimed: "She cannot live; she will surely die." To which she responded: "Oh, no, George; I will not die." Later, as I was bringing up the stumps to examine the ligatures, she complained bitterly of pain in the hypochondrium corresponding to the pedicle being handled. I mention this as an illustration of reflected pain. Examination of the ligatures showed them to be intact and not a drop of blood escaping from the pedicles. I was not able to determine the source of hemorrhage, and, after completing the toilet of the peritoneum as best I could with the means at hand, I closed her up. Several days subsequently she died of peritonitis without a recurrence of hemorrhage. Thus

it will be seen that, with ocular proof of profuse internal hemorrhage, the prognosis is not always bad, even where the case is left to nature.

Aside from the diagnosis and prognosis, which, as has been seen, are often obscure and sometimes misleading, there are other considerations which cause us to hesitate before resorting to surgical intervention in cases of suspected hemorrhages following celiotomy. I refer to the inherently dangerous character of the intervention. If one were to look up the statistics on this subject, I feel assured that the death-rate would be found appallingly high—that it would far exceed that of the recoveries. Now, this occurs not only in the practice of the untrained, but in the hands of the most careful and expert among us; hence I say that the work is inherently dangerous. If it were only a question of making section in suspected intraperitoneal hemorrhage, I should not hesitate long; or even if it involved the reopening of the wound immediately or soon after its closure, I should not greatly fear the issue; but when it comes to the reopening of a wound that has been closed for several hours, I confess to an unconquerable aversion. It is not because we cannot be as clean, as careful, as in the primary operation; it is because of an essential difference in the attendant danger. Why this is I have not been able to make out, but suspect that it depends largely on the fact that the vital energies have been pretty well exhausted at the primary operation. It would seem that following the primary operation, especially after the lapse of a few hours, all the reparative machinery of the economy has been put in operation; that there is a marshalling and massing of all the vital forces for a supreme effort. If you go in there now you carry confusion into the ranks of your allies and cripple the resources of the economy to a most dangerous degree. Doubtless the time at which such secondary operations are performed has much to do with the result. Owing to the obscure symptomatology there is little or nothing to indicate the presence of internal hemorrhage until evidences of shock are so pronounced as to force themselves on the attention of the nurse. In the majority of instances the surgeon, who has done his morning's work, is far away busily engaged in the daily routine which follows his hospital duties. By the time he is found and arrives at the bedside of the patient the shock has

deepened into collapse and the patient is *in extremis*. He takes desperate chances for a desperate condition, and as a rule the patient succumbs.

In conclusion, I have little to offer in the way of suggestion. As a burnt child dreads the fire, so my most painful experience in the tragic cases cited above has imbued me with a wholesome dread of delayed interference after celiotomy.

This, of course, refers to intraperitoneal interference, for I have on several occasions opened up the abdominal incision down to the peritoneum for hemorrhage from the walls, without untoward result. This latter class of cases can usually be easily distinguished from intraperitoneal bleeding by the puffed and discolored appearance of the tissues along the line of incision. If I were satisfied that a large vessel had let go, as indicated by the rapid development of symptoms indicative of hemorrhage, I should go into that abdomen with the utmost celerity. But this paper was not inspired by any hope or expectation of being able to suggest any line of action, my sole object being to elicit an expression of the prevailing views of my Fellows. Still, I would like to make one suggestion with reference to the medical treatment of such cases, and that is in the use of atropine. Some time since I had in charge a young lady who was subject to the most violent and persistent uterine hemorrhage of unaccountable origin. She had passed through many hands before coming to me, and had tried many of the vaunted remedies without avail (as she could not make up her mind to curettage), when in one of her spells she fell into the hands of my brother, Dr. Charles F. Gilliam. He placed her on atropine, with the result that, after the physiological effects of the atropine became manifest, the bleeding ceased. Since then her attacks have been less frequent and always promptly amenable to the atropine treatment. Other cases followed in his and my practice, among which were some intractable cases that had been curetted, and in every instance so far the hemorrhage has been controlled by the atropine. I am nothing of a therapeutist, and in fact am something of a therapeutic nihilist, but the results have been so convincing in the cases that have fallen under my observation as to force conviction. As to the *modus operandi*, I can only speculate. We know that atropine increases the cutaneous circulation, producing a general and marked hyperemia of the

surface; we know that the cutaneous vessels are capable of containing nearly one-half of the blood of the body, hence by derivation it diminishes the amount of blood circulating in the internal organs. It is not altogether improbable, indeed, I think it quite likely, that the vasomotor action that dilates the cutaneous vessels coincidently and by way of equation constringes the visceral vessels. The duodenal ulcers resulting from extensive burns of the skin would argue in favor of compensatory vascularity. It is not expected that this or any other medicinal agent will arrest the torrential hemorrhage of the larger vessels, such as the uterine or ovarian arteries, but is especially applicable to that troublesome form of hemorrhage which emanates from numerous vessels of smaller caliber. As to the vital question, when we shall interfere surgically and when refrain, this paper ends where it began—in an interrogation point?

DISCUSSION.

Dr. Charles A. L. Reed, of Cincinnati, Ohio.—I have rarely listened to a paper so well written and excellently read as the one just contributed by our confrère from Columbus. I plead guilty of the same sense of dread in reopening the abdominal cavity, and I regret that he closed his paper as he did, with an interrogation point, rather than an exclamation point, following the word "Eureka!" Because if there is one thing for which I pray more than another, it is some safe rule for our guidance under these circumstances. Things were different when we used to put a drainage-tube in every case, because we could then see what was going on, particularly if any hemorrhage was taking place, and this stands a potent argument in favor of drainage. I do not employ drainage as frequently as I formerly did, and I think there are outweighing considerations. The discrimination between shock and hemorrhage is not in any manner or means an easy one, particularly in the case in hand, because we are liable to be dealing with both conditions. Indeed, purely surgical shock as a single factor in the cause of death is, to my mind, the rarest possible occurrence. I must confess that where I observe symptoms unmistakably indicative of internal hemorrhage I want to get at the bleeding-point, and I want it quick. I recall some cases in which I have to deal with post-operative hemorrhage following laparatomy. I recall a case that was sent to me some years ago by my neighbor, Dr.

Fackler, from whom I removed extensively diseased appendages and enormously distended pus-tubes. I put on my ligature satisfactorily; put the patient to bed in such a good condition that I hesitated to put in a drainage-tube. Fortunately, I did insert a drainage-tube, and presently the nurse began pumping out considerable quantities of blood. The patient began to show loss of blood. I reopened the abdomen, found the pedicles perfectly satisfactory, but in the course of the enucleation I wounded a branch of the mesenteric artery away up under the mesocolon, a circumstance which had eluded my attention at the time of the operation. The woman rallied without untoward symptoms; there was no extreme exacerbation of shock; no great prostration, and my patient seemed to get along as well as if the accident had not occurred.

I recall another case that happened during my experience at the Cincinnati Hospital, in which the patient, in a moment of delirium, immediately after operation jumped out of bed, the result of which was a hemorrhage. Whether it was this violent action on the part of the patient that produced displacement of the ligature or not I do not know, or whether it was some fault of mine in its original application. At any rate, the ligature had slipped and the patient was a victim of hemorrhage. I happened at the time to be out of town—I had gone to a hospital somewhat distant—and my interne called me by telephone and reported the condition the woman was in. He asked what should be done under the circumstances, and whether it was necessary to summon another surgeon. He reopened the abdomen himself, tied the pedicle which had slipped, and saved the patient.

On the other hand, I recall the most melancholy case that has happened in my experience for a long time—one that occurred last year. The patient came from Kentucky, for whom I extirpated the uterus, doing a panhysterectomy. I closed the operative wound in the peritoneal cavity very carefully; it was absolutely dry; there was no appearance of hemorrhage whatever, and the patient was in splendid condition. I closed the abdomen entirely, went about my work, did not visit the patient that evening, went out of town the next morning, and shortly after she was dead. There was an insidious hemorrhage in this case, as was revealed by post-mortem examination, from the posterior vaginal artery, which simply kept leaking away until she was practically *in extremis*. Hypodermoclysis was resorted to without avail. I felt sure that if the condition had been detected in time and I had been summoned early the patient would have been saved. For one, I am not disposed to trust to symptoms of

bleeding, yet I recognize their confusing character when there are certain conditions which may mask that of a leaking vessel.

As to the therapeutics of this question, it is very important. I have noticed in the literature that there is a tendency, on account of the failing powers of the patient in one of these leaking vessels, to pump in strychnine. I do not think it is advisable to do this, because the strychnine is apt to increase the hemorrhage. I look upon hypodermoclysis as exceedingly important.

Dr. H. W. Longyear, of Detroit, Mich.—The subject raised by the paper is certainly one that interests all of us who do abdominal surgery. There is nothing more puzzling to me than to know just what to do in cases which show this condition of collapse, which has been described by the doctor as indicative of internal hemorrhage; and yet there are other conditions which produce much the same symptoms, and thus it is necessary to use fine discrimination, so that unnecessary operative work may not be done. If we know there is a bleeding vessel it is our duty to reopen the abdomen and tie the vessel. It makes little difference, then, what condition the patient is in; the line of duty is plain, just as in a case of ruptured tubal pregnancy, when we know there is internal hemorrhage taking place, it is our duty to reopen the wound and do the best we can. But if we do not carefully analyze the symptoms we will not always find hemorrhage present when we open up. I have had experience with two cases in the last two years which brings this forcibly to my mind. In one I reopened and found no hemorrhage; the woman died soon afterward. Post-mortem examination revealed an antemortem heart-clot, which was evidently the cause of death. In the other case, simply a curettement, the patient died with the same symptoms. Post-mortem examination showed an antemortem heart-clot. What causes that condition is a question. I have seen the theory advanced somewhere (I do not remember just where now) that there is some change produced in the intima of the bloodvessels by the anesthetic, which allows coagulation of the blood within the blood-channels. This may possibly be the explanation. Certainly a case which dies after a curettage would indicate that something of that kind was the cause of death. We have to make our examinations with these points in view before we determine to open the abdomen.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I did not have the pleasure of hearing all of this paper, but it occurred to me in listening to the discussion, that in many of these cases the question of hemorrhage or shock can be determined largely by the operator himself. We are pretty well aware when we put a patient to bed after an

operation whether there is great danger or not of her having a secondary hemorrhage. If the operation has been a complicated one, if there has been a condition left where we might have great risk of hemorrhage, this would aid us a great deal in determining whether or not the patient was suffering from hemorrhage. I fully agree with one of the speakers in saying that patients die from surgical shock but very seldom. My way of spelling shock is hemorrhage; yet I am aware that patients may die from shock. But I would not hesitate a moment to take out a stitch, if the abdomen has been closed without drainage, and without very extensive exploration we could determine readily whether there was hemorrhage going on or not. If there is no hemorrhage it adds very little to the risk by this. If hemorrhage is taking place, it is our duty to give the patient a chance for her life by tying the bleeding vessel. It is true that some of them will die, but others will not. If you allow the hemorrhage to go on until the woman has lost a large quantity of blood she will surely die. In my judgment, much depends upon prompt interference in these cases. I would reopen the abdomen of every one of them just as early after I discovered the hemorrhage as possible. I would give them a chance for their lives by so doing that they could not have otherwise. The main object is to obtain the sentiment of the Fellows as to what is the correct thing to do. When we are certain that there is a bleeding vessel we should reopen, seek for the bleeding-point, and tie it.

Dr. Lewis S. McMurtry, of Louisville, Ky.—I do not think that the surgeon can be found, after having done very many abdominal sections, who has not had a post-operative hemorrhage from slipping of the pedicle. But I desire to call the attention of the Fellows to the fact that this is very much less frequent than it was formerly. In the early days, before our operative technique was as much improved as it is to-day, the drainage-tube was in universal use, and it was common to see twenty-four or forty-eight hours after operation great quantities of blood pumped out of the drainage-tube. Hemostasis was not as thorough then as it is now. Surgeons did not include the small vessels. Now, these are ligated carefully. The fan-shaped pedicle tied *en masse* is a most unsurgical procedure. Vessels should be tied separately, and whenever possible the ovarian artery should be secured well over to the side of the pelvis in operations for removal of the uterine appendages, and ligatures should not be left where it can be helped. I have pursued the course of securing the ends of vessels with small ligature, which gives additional security. The method of securing vessels, and the method of hemostasis, and the details of operative procedures are so much better to-day than they were for-

merly, that these accidents do not occur so frequently in the practice of those who have had an extensive experience.

Dr. J. Henry Carstens, of Detroit, Mich.—It is not my desire to speak on every subject, but this matter is so important that I am compelled to say a few words. Last week I had two cases of sarcoma of the ovary. The woman did not have much shock when placed in bed. She had a pulse of 74, and the next time it was taken, an hour or an hour and a half later, it was 78. When I reached the hospital two hours later she had no pulse that was perceptible at the wrist. She was in collapse. I did not reopen her abdomen and search for a bleeding vessel, because I knew there was no blood there. It was simply a case of shock, and the whole question is one of diagnosis. If I put my patient to bed, and at the end of an hour or two the pulse is 110, and then suddenly drops, it is not hemorrhage. Hemorrhage comes on with a gradually increasing pulse. We can diagnosticate the case without any trouble. As Dr. McMurtry has said, if we follow the modern improved surgical technique, and tie each vessel separately, we will very rarely have post-operative hemorrhage. Formerly, as he says, we used to have many cases of post-operative hemorrhage.

As to medication, I believe in the efficacy of it, and I think atropine or belladonna is a good thing. I would use either of them in preference to strychnine. I would use it to stimulate the sympathetic system.

Dr. James F. W. Ross, of Toronto, Canada.—Just a word or two with reference to this subject. There are two classes of hemorrhage—hemorrhage which occurs shortly after operation and hemorrhage which occurs from three or four to five days subsequent to operation. It has been my lot in a couple of pus cases in which a drainage-tube was left, after a violent attack of retching, occurring several days after operation, to have a hemorrhage. I have remained with the patient two hours or more, observing the condition carefully, hesitating whether to reopen the abdomen or not. In another case I reopened, and in each case the patient made a complete recovery.

In cases of thick pus-tubes, with a very edematous pedicle, we are liable to have hemorrhage from the pedicle and a rotten condition of the tissues afterward.

Regarding immediate hemorrhage, I want to emphasize what Dr. Hall has said. We are too much afraid of making a little opening in the abdomen. If we have a case in which we have a hematoma of the ovary that has ruptured and flooded the peritoneal cavity with its contents, we are liable to have sepsis occurring within a short period of time. With the sepsis we may have some elevation of temperature,

but at any rate a rapid acceleration of pulse, and it is therefore necessary to diagnosticate between septic infection and hemorrhage. To do so we can take out a stitch and introduce a flat-ended, long silver probe in different directions after it has been thoroughly sterilized, and if there is blood it will escape and show itself. I have had one that thus stimulated hemorrhage, in which I did not reopen the abdomen of the patient, and she died of peritonitis. No hemorrhage was found. In another case I found hemorrhage, tied the bleeding vessel, and the woman recovered.

DR. L. H. DUNNING, of Indianapolis, Ind.—I rise to call attention to a valuable diagnostic sign in differentiating between shock and hemorrhage. I am forced to believe in shock in some instances. I have seen it occur in twelve, twenty-four, and thirty-six hours after operation. I have seen patients recover from it who would not have recovered from hemorrhage. This diagnostic sign is an irregular capillary circulation or congestion here and there. I recall three or four cases in which I have stood for hours at the bedside of patients hesitating between shock and hemorrhage, and on the appearance of localized spots I have decided it was shock. I did not reopen the abdomen in these cases, and the woman recovered. A purple ear or purple lip, a spot occurring upon the face, is a diagnostic point of great value between shock and hemorrhage. If you have a purple ear you know you do not have internal hemorrhage. It is shock, and you can best use non-operative measures for relief.

DR. X. O. WERDER, of Pittsburg, Pa.—I wish to call attention to some observations in cases of this kind. There is one rule, and it is this: Patients suffering from secondary hemorrhage, as Dr. Gilliam has stated, have a rapid pulse, lowered temperature, restlessness, etc. On two occasions I have seen evidences of returning hemorrhage five or six hours after operation with a rise of temperature. At the time the abdomen was reopened the temperature was over 102°, pulse 140 or more. I believe, therefore, that the temperature is of no great consequence, and should not interfere with our reopening the abdomen. The pulse, in my opinion, is a very important indicator. As Dr. Carstens has said, if there is a gradual rise of the pulse you have a hemorrhage, no matter what the temperature may be. Another important sign is the respiration. In a patient who has internal hemorrhage the respirations will increase in the same proportion as the pulse increases. Those two symptoms—a rapid and increasing pulse, with a rapid increasing respiration—are the most important signs.

In regard to the treatment, the sooner the abdomen of the patient is reopened in these cases the better. I would not even think it necessary

to give an anesthetic. My rule is, as soon as I suspect an internal hemorrhage, to take out a stitch, run my finger around the cavity, and I invariably find my diagnosis confirmed. Then I reopen the abdominal wound and tie the bleeding point without an anesthetic. The patients will stand the operation very well without being anesthetized. The patients will not suffer very much by this interference without anesthesia. In one instance the patient survived the operation; other patients lived for three or four days and died of sepsis.

Dr. Edwin Ricketts, of Cincinnati, Ohio.—Whenever ligatures are made use of there is one procedure that I desire to refer to, one that is always resorted to by Bantock—that is, crushing the tissues for half or one-quarter of a minute with a heavy jaw clamp, and after the removal of the clamp the ligature is applied. The angiotribe, which is being advocated a good deal by some operators, in which the ligature is not used at all, is permitted to remain for two and a half minutes, and the appendages are removed. It is claimed that there is no hemorrhage following its use. The plan suggested by Bantock, however, is one that should not be lost sight of in applying the ligature.

Dr. William H. Humiston, of Cleveland, Ohio.—Dr. McMurtry has hit the nail on the head, and I agree with him that it is unnecessary to have a secondary hemorrhage, provided the surgeon takes proper care of the bleeding vessels during the operation. I do not believe in the use of the *en masse* ligature for the appendages. Each vessel should be caught separately and tied with fine catgut or silk, re-enforced by securing the ovarian artery as it comes from the pelvic wall. It is not necessary to crush the tissues after the manner mentioned by Dr. Ricketts. If you do, it leaves the dead product there, which nature must take care of, and there is great danger of sepsis following.

Dr. Gilliam (closing the discussion).—I am gratified at the free discussion which my paper has elicited from the Fellows. As I stated, my object was not to impart information on this subject but to obtain it, and I must confess that I have received a great deal of benefit from this discussion. The question remains, however, that there are cases in which we will be much in doubt as to whether we have hemorrhage or not. By the Hall method of opening up the wound and introducing the finger we can tell whether we have hemorrhage, but we cannot tell the amount of it. Blood in the drainage-tube is not a criterion of a dangerous hemorrhage. The amount of blood in the drainage-tube is no certain index of the activity of the hemorrhage or the amount of blood in the peritoneal cavity. One may insert the tip of the index finger into the abdominal cavity and obtain blood where there is but

very little bleeding going on. But when we have cases in which the blood wells up through the wound it is an entirely different matter.

Then, again, where the abdominal wound is closed by continuous suture in tiers you cannot take out a single stitch. When you break the continuity of the suture you might as well open the wound in its entire length. This you will have to do, and it is not a trivial matter.

The suggestion made by Dr. Dunning as to the irregularity of the capillary circulation is something new to me. I shall look for it hereafter with a great deal of interest. The fact remains that opening the abdominal wound a certain number of hours after a hysterectomy is dangerous. We cannot be sure whether we have a dangerous or a life-destroying hemorrhage taking place. If we do not reopen the abdomen in these cases the patients are liable to die, and if we do they die, but there is a possibility of saving lives by so doing. The mortality arising from reopening the abdomen is appalling, and I hope we shall be able to get something more definite to follow in dealing with this class of cases.

I am thankful to the Fellows for the manner in which they have considered this subject. I have received some new points, but there is yet very much for us to learn.