MYOMECTOMY: FATAL SECONDARY HEMORRHAGE WITH RISING TEMPERATURE.

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The danger of secondary hemorrhage is necessarily associated with all intra-abdominal work where the removal of any organ or portion of organs contained therein is attempted. First in importance, therefore, is the technique employed to prevent primary and secondary bleeding, and in no class of cases is it more applicable than in the operations of hysterectomy and myomectomy.

The extra-peritoneal treatment of the stump in hysterectomy gave greater security in this respect, but was early reognized as unsurgical and objectionable. The shrinking of uterine tissue within the grasp of the ligature made the intra-abdominal method unsafe, and led to many modifications of technique, until, finally, the adoption of the rule to ligate the vessels outside of uterine tissue. This improvement does not hold good to myomectomy. Here, too, the pedicle was, and still is often, treated by the extra-peritoneal method. Transfixing and tying the pedicle gave bad results, and resort was finally had to exsecting a V-shaped piece of uterine substance and closing the wound with interrupted sutures.

In spite of the close attention given to the subject, deaths from hemorrhage include a large proportion of the fatal cases. It is now recognized that many deaths occurring soon after operation and attributed to surgical shock are in reality due to internal hemorrhage. When internal bleeding has reached

a certain degree, as indicated by pronounced symptoms of loss of blood, the case is considered hopeless. The proper treatment of the complication is clearly defined, and successful interference depends upon prompt action. The importance of early recognition of secondary hemorrhage is, therefore, clear, and the object of this brief communication is to direct attention to this aspect of the subject, and to report a case where the condition was overlooked, or rather the diagnosis set aside because of the absence of a symptom that was looked upon as essential.

The case is briefly as follows :

Miss X. was referred to me by her family physician, in the summer of 1895, for operation on account of a solid tumor filling the left side of her pelvis. The growth was the size of a fœtal head at term, was hard, and freely movable. On opening the abdomen it proved to be, as was supposed, a pediculated fibroid growth. Myomectomy was performed without difficulty, and the patient returned to bed in excellent condition.

That afternoon and night her condition was satisfactory, and at 8 o'clock the next morning her pulse and temperature were 76 and 99°, respectively. From this time the rapidity of the heart's action increased and the temperature became elevated until she died, twenty-four hours later. The pulse was feeble and ranged from 140 to 150. The temperature at noon the second day was 100.8° ; at 8 P.M., 102.2°; at midnight and 4 A.M. the next day, 101.6; and she died at 7 A.M.

The only other symptoms were epigastric pain and distressed breathing. After death the abdominal wound was reopened and the peritoneal cavity was found filled with blood. The shrinking of uterine tissue within the grasp of the silk ligatures had permitted the gradual escape of blood.

There was no evidence of infection or signs of peritonitis.

On the second day after the operation I was apprehensive that some serious complication had arisen. Sepsis and peritonitis were excluded. The existence of secondary hemor-

rhage was the first thought that came to mind, but was rejected on the ground that the temperature was above normal and was slowly rising. The existence of the two conditions could not be reconciled in the absence of any cause for the fever. Subnormal temperature is expected to follow internal hemorrhage when it occurs to the extent of threatening life. This holds true even when the accident occurs during the course of acute febrile attacks, as, for instance, in typhoid fever. In the symptomatology of ectopic pregnancy fall of temperature accompanies rupture and bleeding. If the hemorrhage be fatal, the temperature will remain low. If arrested before the danger-point be reached, slight elevation of temperature occurs from the resultant peritonitis.

In looking over no small amount of literature I fail to obtain much information. Dr. A. H. Buckmaster, a Fellow of this Society, reports a case of death from internal hemorrhage with elevated temperature. He opened the abdomen to remove a thin-walled cyst, dropping the pedicle into the peritoneal cavity after transfixing and tying. On the day after the operation a slight rise of temperature was attributed to bronchial catarrh. On the second day the pulse was more rapid ; on the third it increased still more, and the temperature reached 103°. The patient died the next morning. The autopsy revealed the abdominal and pelvic cavities containing a large amount of blood. The rise of temperature was accounted for by commencing peritonitis.

The writer fails to state whether the existence of secondary hemorrhage had been suspected in this case before death, and there is no evidence to show that the fatal termination resulted immediately from hemorrhage.

In the case forming the subject of my paper, a slow but continuous bleeding ended fatally in twenty-four hours, and was accompanied by rising temperature. The latter symptom prevented that prompt interference which might have saved life, and the autopsy did not reveal any other complication to explain the fever.

I offer this brief history with the hope that some light may be thrown upon the subject by the Fellows present.

The questions presented for discussion are:

First, What value can be placed upon the temperature-range as an index to the existence of internal hemorrhage? and, second, Does the nature of the hemorrhage influence the temperature differently, *i. e.*, whether it be profuse and quickly fatal, or less free and continuous, but slowly fatal?

DISCUSSION.

Dr. Egbert H. Grandin, of New York.—This paper of Dr. Fry's has an important bearing in a certain way. I hope it will not go undiscussed. If I remember, one of the points which he wishes to have discussed is whether the temperature is an index of the presence of hemorrhage or not. Now, in order to give others present a chance for criticism—evidently they do not feel like criticising Dr. Fry, though they may not have the same feeling about me—I am going to take the ground that the temperature is no index to the existence of hemorrhage. In other words, in my opinion temperature should not be looked at so much, but the pulse should be looked at more, and not alone as evidence of existing hemorrhage, but as an index of existing septic infection; this will broaden the discussion a little in order to give more ground for criticism.

I should feel that, so long as the pulse bore a proper relation to the elevated temperature, the patient was neither bleeding internally, nor did she have the other complication, which is a septic one. A very rapid fall of temperature, provided that it be associated with a rapidly rising pulse-rate, is a guide to intra-abdominal hemorrhage. And yet the rule is not a positive one, because I have seen, in connection with ectopic gestation and rupture, normal temperature and normal pulse, and yet on section I have found free bleeding and old clots. It is the pulse which we ought to watch, and not the temperature. I think that I was taught wrong. When I was taught great stress was laid on the thermometer. It has its usefulness, certainly, but I claim that it is

not the temperature which should be our guide, but the pulse. I hope that I have started the ball rolling, for this paper calls for discussion.

DR. J. M. BALDY, of Philadelphia.—Evidently the last speaker has started the ball rolling, but I do not think that he will be criticised as much as he thinks. I am sure that those operating in gynecology have frequently recognized the pulse as the important factor, and that the temperature amounts to nothing. Many times I have been puzzled to know whether the patient was bleeding or not. In several cases in which I have kept my hands off the patient died with an elevation of temperature. On the other hand, even with a weak pulse, it is at times difficult to say if there is hemorrhage. It matters little what the symptoms are; it is difficult sometimes to say absolutely whether we have hemorrhage or not. If the patient is bleeding from a spurting artery and we do not open the abdomen she will probably die. If she is not bleeding and we reopen, it will oftentimes kill her. I leave these patients alone. I have had two lately. They recovered. All of the nurses thought that there was violent hemorrhage. The result showed that they were not bleeding. If I had touched either patient with the knife she would have died. I know well that I have killed patients by reopening under these indications.

I think that the pulse is the best symptom by which to judge, but I know even that will not help us out in some cases, and I believe that the best thing to do is to leave them alone unless we are certain that the trouble is hemorrhage; when in doubt, keep the hands off.

DR. H. C. COE, of New York.—I can hardly subscribe to that last remark, to let patients alone when in doubt. In one obscure case I felt that the patient was bleeding, and once or twice was almost persuaded to open the abdomen. But I did not, and the autopsy showed the abdomen full of blood.

I do not believe in temperature as a sign of hemorrhage. I have seen it go up to 104° F., and have seen it fall to 96° F. in hemorrhage after abdominal hysterectomy. The pulse is a better guide.

I wish that some gentleman of experience would tell us how

to diagnose hemorrhage under these circumstances. I have had a recent disastrous experiment in a patient who had with a rapid, not very feeble, pulse, good color, a strong voice, yet she sank away and died. I suspected that she might be bleeding, as she had been for twelve hours, and might have saved her by operation.

DR. A. LAPTHORN SMITH, of Montreal.—My experience agrees in the main with the last speaker's, that temperature is no guide to hemorrhage, while the pulse is. I think that the pulse becoming rapid is a sign that the artery is becoming empty. If we would pay more attention to the pulse we would be on our guard more. In one case which I lost from hemorrhage the pulse at 8 A.M. was 80; at 8.30 it was 140. It went down to 100, then went up again to 140. Each change meant further hemorrhage. I think that a sudden rise of the pulse, the patient doing well otherwise, is the strongest evidence we can have of hemorrhage.

DR. EUGENE BOISE, of Grand Rapids, Michigan.—It seems to me that one important question to determine is the cause of the rise of temperature. This we may not be able to do, but in the case narrated the hemorrhage was gradual, and the rising temperature accompanying the rapidly failing pulse is perhaps what obscured the diagnosis. In a case of rapid hemorrhage we expect a falling temperature and rapidly increasing pulse. In a case of gradual hemorrhage we expect a gradually increasing rapidity and smallness of the pulse. The temperature we have not been in the habit of taking into consideration. We do not expect any particular change of temperature in a gradual hemorrhage. In this case the three conditions which occur to us for differentiation are shock, sepsis, and hemorrhage.

Now, we hear a great deal about "delayed" shock. I think that it is a term which is used without sufficient grounds. In a case in which the patient has entirely recovered from the anæsthetic, if the pulse is comparatively good, we may exclude the question of shock. If after that time the pulse increases in frequency, then the question arises between sepsis and hemorrhage. If, with increasing rapidity of the pulse the temperature increases, the suspicion of sepsis immediately arises in our minds.

Now, it is a fact—yet I cannot state it as a fact, perhaps because my observation has not been sufficiently extended—that in gradual hemorrhage into the peritoneal cavity there is apt to be an increase of temperature because of the efforts of the peritoneum to digest the blood. Increase of temperature under these circumstances has been noticed in numerous cases, and peritoneal digestion and absorption of the effused blood I believe to be the correct interpretation. The only two questions to be decided in this case would, therefore, be between sepsis and hemorrhage. I do not know that I can throw any special light upon those questions except that if the pulse increases in frequency and in feebleness I think that it would be a safe rule to interfere. That would be the safest course to adopt, especially if other symptoms of sepsis were absent, even if the temperature were increased.

Dr. Edward P. Davis, of Philadelphia.—The pathology of ectopic gestation and post-partum hemorrhage throws a little light upon this question. In rupture of ectopic gestation the extravasation of blood is often accompanied by progressive rise of temperature, which may be accounted for by the effort at digestion of the blood by the peritoneum, or by a beginning peritonitis. Accompanying that there is a corresponding rise of pulse. In post-partum hemorrhage, which is concealed when the cervix is occluded by a large clot, the woman may bleed into her own uterus to a considerable amount, and we have accompanying that hemorrhage progressively increasing pulse and slight rise of temperature. It is only in cases of very sudden hemorrhage that a rapid fall of temperature occurs. And if I might offer a suggestion as to a possible mode of differentiation between hemorrhage and sepsis, it is the fact that in abdominal hemorrhage the pulse tends to increase and the temperature to fall; whereas, in ectopic gestation and concealed post-partum hemorrhage there is a rise of temperature to 101° F., accompanied by progressive rise of pulse. I have in mind a case of rupture of ovarian abscess following an apparently normal labor, in which the abdomen became gradually infected, and in which the temperature steadily fell until the moment of death, from 99° down to 96.5° F., while the pulse steadily rose.

DR. FRY.—I was very much interested yesterday in Dr. Henrotin's remarks on differential diagnosis in connection with internal hemorrhage. My chief object in bringing this case before the Society is that I was completely puzzled at the time. I had counsel, and they were also unable to decide, and it was very unfortunate that such was the case, because it was one of those hemorrhages in which, after the abdomen had been opened, it seemed that the woman could have been saved. I am very glad to hear the remarks made here now, that there is a great deal of uncertainty in regard to the temperature record in hemorrhage, and that it will rise in a case of internal hemorrhage. If that be true, our text-books need revision, because I could not find a single reference to that fact. I looked over all our recent works, and if there is any reference at all to the temperature—some do not refer to it—it is invariably stated that the temperature is subnormal. Of course, if there was profuse hemorrhage we would expect subnormal temperature. In this case there was relaxation of the tissues in the grasp of the ligature, permitting continuous oozing, and it was twenty hours before the patient lost sufficient blood to cause death, and during that time there was marked elevation of temperature. As I had been taught, and as the text-books still teach, I looked for dropping of the temperature as an essential factor in internal hemorrhage, and it was that fact alone which prevented my interfering in this case and reopening the abdomen, and I believe, saving life.

I thank the gentlemen for their expressions of opinion, and I think that the fact ought to be brought more prominently forward that we have a rise of temperature in fatal hemorrhage.

Electrode for Dividing Ligatures.

DR. CLEMENT CLEVELAND, of New York.—I want to show the Society an instrument which I have used during the past few months. It is an electrode which I attach to silk ligatures in vaginal hysterectomy. Of course, for those who use forceps exclusively, or who use catgut, it is not necessary. I use both forceps and ligatures, and for my ligatures I prefer silk. I

almost invariably ligate the uterine arteries. It occurred to me some time ago to use these electrodes to burn the ligatures. They consist of two copper wires which are carefully insulated by silk thread down to the point of the platinum loop which is attached at the end. These electrodes are tied into each ligature at the time of the operation, and thirty-six hours afterward I attach a three-cell battery; sometimes it is not necessary to use more than two cells. Before letting the current pass I put a little tension upon the ligature so as to be careful not to burn the tissue too much. Just as soon as the ligatures become a little loose the current is cut off; so that there is hardly any danger of doing harm by the heat.

I have used them in quite a number of cases during the past three or four months to my satisfaction. I have sometimes applied as many as eight electrodes to different ligatures. I applied eight three weeks ago in a case of large fibroid which I removed by morcellation, and detached the ligatures in this way in thirty-six hours. The electrodes are pliable, can be easily put out of the way, and do not interfere at all with the application of subsequent ligatures.