occupies a length of five centimetres. We determine this by bringing our tube down upon a piece of white paper upon which we have marked off a length of five centimetres. If we cannot find upon our tube a length which conforms to conditions of our standard we discard the tube. If, on the contrary, we find a length of tube which answers our requirements we mark off the upper and lower limits of this with a glass writing pencil. We now, for a purpose which will presently appear, displace our column of mercury in the direction of the orifice of the capillary stem for a distance of from one to two centimetres. We again mark off the points indicated by the upper and lower limit of the mercury, and, finally, we break off our tube at the point last mentioned. Before actually doing this we free the orifice of our pipette by breaking off its fine-drawn extremity, and transfer the mercury to the next tube awaiting a calibration. After calibrating a series of from six to eight tubes, we number these, inscribing the serial numbers with a glass writing pencil upon the wide upper extremities of the tubes.

Method of employing the tubes.—We draw blood from the finger near the nail either by means of a prick with a hypodermic needle or by a series of pricks made with a sharp spicule of glass obtained by drawing out a piece of capillary tube. It is to be observed that the prick or pricks that we make must be generous enough to give us all the blood we require with an absolute minimum of adventitious aid. If such aid is required we obtain it by winding a handerchief round the finger and making gentle pressure upon the finger pulp. The pressure must be gentle so as to avoid obtaining a mixture of lymph and blood which would coagulate more rapidly than the unmixed blood from the capillaries. As soon as a drop of blood has issued from the wound a coagulation tube which has been broken off, as indicated above, at the lowest pencil-mark is applied to the blood. This last is allowed to flow in by capillary attraction until it reaches the penultimate mark—i.e., the mark which indicates that five cubic millimetres of blood have been filled in. The orifice of the tube is now withdrawn from the blood and the tube is tilted in such a manner as to bring the column of blood into position between the two marks which delimit the portion of the tube which conforms to the standard calibre. The time of filling in each tube is noted down, both minutes and seconds. The blood is now kept at the temperature of the air, if this temperature conforms approximately to the standard temperature of half blood heat (18·5° C., 65–66° F.). In the case where the temperature of the air is sensibly warmer or cooler than the standard temperature the tube is placed upright[16] in a vessel of water of the appropriate temperature. After the usual interval (about three minutes in the case where the blood-flow from the finger-prick is normal; about five minutes where that flow is somewhat more free) the testing of the first tube is undertaken by blowing down the expanded upper end, the orifice being meanwhile held over a piece of white filter paper in order to detect the first shreds of fibrin. The coagulation time—i.e., the minimum time occupied by the blood in forming a definite coagulum—will normally approximate to five minutes.

Netley.

CASES OF GASTROTOMY FOR RECENT GASTRIC ULCER.

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IN two of these cases the immediate cause for operation was recurrent hæmatemesis.

CASE 1.—The patient, a woman, 26 years of age, who was admitted into the London Hospital on May 14th, 1900, had suffered severely from attacks of indigestion for the previous 18 months. Of late the pain had been intense, coming on immediately after meals, or within half an hour, and radiating through from the epigastrium to the back. Until the week before admission actual vomiting had only been of occasional occurrence. Since then it had been almost constant. There had been a slight attack of hæmatemesis four months previously, and other attacks, becoming more severe, seven days, five days (twice), and four days (twice) previously, and on the morning of admission. On the last occasion the quantity was said to have amounted to more than a pint. Shortly after admission she vomited six ounces of almost pure blood. There was no history of melæna, but an enema given the day before she came to the hospital brought away a considerable quantity of blackened blood. The pulse was 140 to the minute, very small in volume and of low tension, and the patient was decidedly blanched. My colleague, Dr. F. J. Smith, under whose care the patient had been admitted, thinking that it was not advisable that she should be allowed the chance of losing any more blood, very kindly had the case transferred to my wards, and an operation was performed as soon as it could be arranged. The abdomen was opened in the middle line, and the serous coat of the stomach was carefully examined. As there was no scarring or other sign of inflammation the stomach itself was packed round with sponges and was opened by a vertical incision midway between the pylorus and the cardiac end. The angles of the incision were held open by pressure-forceps and the mucous surface was systematically everted and examined bit by bit, that covering the posterior wall being brought into view by introducing the hand through an opening in the great omentum and lifting the wall of the stomach into the wound. A large vaginal speculum introduced through the opening in the anterior wall enabled the cardiac orifice and that part of the mucous surface which could not be brought up to be inspected without difficulty. A small ulcer was found on the anterior surface near the greater curvature. It corresponded fairly well with the ordinary description of a simple ulcer and had evidently been bleeding recently. There was no induration about its edges and no vessel was visible on its floor. An incision was carried round the ulcer and the whole of it was excised down to the muscular coat, the gap that was left being closed by fine silk sutures which served at the same time to stop the bleeding. The wound in the stomach was closed by a double set of sutures, and the opening in the abdominal wall was secured with silkworm gut. Convalescence was uninterrupted except for a slight attack of parotitis on the second and fourth days. The patient vomited once after the anæsthetic. Small quantities of hot water were given by the mouth the same evening and continued at frequent intervals for the relief of thirst, but for the first four days the feeding was carried out entirely by means of nutrient enemata. Solid food (fish) was given 10 days after the operation and a few days later the patient was placed on ordinary diet. She soon regained her strength and since the operation she has been perfectly free from the pain and indigestion which troubled her so much before.

CASE 2.—A married woman, 28 years of age, was admitted into hospital on April 25th, 1900, for hæmatemesis. She was sent up in an ambulance with a history of having vomited blood at frequent intervals for four days. Shortly after admission she was sick, bringing up 15 ounces of dark-coloured blood and she became very much collapsed. An operation similar to that already described was performed as soon as could be arranged. When the stomach was exposed an old cicatrix was seen near the cardiac end. This was excised and then a recent but chronic ulcer with indurated edges was found by its side. In the floor of this ulcer was a bleeding branch of the gastro-epiploic artery. The ulcer was included in the incision and the opening in the stomach-wall, which was nearly three inches long and ran almost up to the cardiac orifice, was secured by a double set of sutures. The patient was very much collapsed but she rallied under injections of strychnia and caffein and rectal enemata. For the first three days vomiting was very troublesome. Then it ceased and she appeared to rally. She was able to take small quantities of jelly by the mouth. The bowels acted at first after enemata and then spontaneously. The tongue became moist. The abdomen was soft, not distended, and moved well with respiration. But, as in the former case, parotitis set in, first upon one side and then upon the other. Suppuration followed and though relief was obtained when the abscess was opened the patient died on the ninth day after operation.

At the post-mortem examination the opening in the stomach was found to be merely held together by the sutures. The edges were sloughing and there was an entire absence of repair. The kidneys were markedly granular and contracted. It is worthy of remark that parotitis occurred in both these

[16] It will be found that it is unnecessary to seal up the orifice of the tube, the intervening column of air which is provided by the projecting portion of the tube suffices to keep the blood and water apart.

cases though there was suppuration in only one. As there had not been any case of post-operative parotitis in my wards for at least five years before and there has been none since it almost seems as if there must have been some connexion between them; but the patients were not on the same floor or in the same ward and the one died 10 days before the other was operated upon, so that in all probability it was merely a coincidence, but it was a curious one.

CASE 3.—In this case, that of a patient who was under the care of Dr. H. J. Capon, the immediate cause was uncontrollable pain and vomiting. The patient was a married woman, 32 years of age. For some months she had suffered in a very severe degree from all the symptoms of gastric ulcer with the exception of hæmatemesis and melæna. These had never occurred. All the ordinary remedies, including prolonged rectal feeding, had been exhausted without obtaining the least permanent benefit. The patient had lost more than a third of her weight and was so weak that she could scarcely raise herself from her bed. The pain came on within a few minutes after swallowing food and was especially severe at the ensiform cartilage. The skin over this region was exceedingly sensitive. Vomiting shortly after food was the rule. This relieved the worst of the pain but it usually continued with more or less severity for some hours after anything had been taken. After consultation with Dr. T. J. Maclagan it was decided to explore the stomach and on opening it a long, narrow ulcer with slightly thickened edges was found lying at the bottom of one of the rugæ on the anterior surface close by the incision. It was about three-quarters of an inch in length and extended down to, but not into, the muscular coat. No other lesion of any kind could be found though the whole of the interior was carefully explored in the way already described. The ulcer was excised, the mucous and submucous layers were sutured together and the stomach and abdomen were closed in the usual way. In this case, also, vomiting continued for some considerable time. The pain disappeared completely and finally, but owing to the sickness it was some time before the patient could take sufficient food to enable her to regain her strength. Recovery finally was complete.

I may mention that in addition to these cases I published in THE LANCET in 1900[1] a series of three others in which I had operated for hæmatemesis, all of which terminated successfully, the patients recovering completely without any drawback. Of five cases, therefore, in which I have operated directly for hæmatemesis four patients have been cured, and I have little doubt myself that the fifth patient would also have survived had not her condition been so desperate.

It is usually held that the advisability of operating in these cases can be settled at once by comparing the actual mortality of hæmatemesis in cases of gastric ulcer with that which it is supposed might follow gastrotomy performed under these conditions. The former is put down at from 3 to 5 per cent; the latter is estimated very variously, according to the kind and severity of the cases selected. No such comparison, however, is possible under the present conditions. On the one hand, the whole number of cases of hæmatemesis, trivial and severe alike (and the trivial ones are much the more numerous), is taken and the mortality percentage is calculated from that. On the other hand, only those cases which are absolutely desperate, in which the operation is performed as a last chance after everything else has been tried and has failed, are reckoned at all. No one suggests, or has ever suggested, operating upon slight cases of hæmatemesis. They should be placed entirely on one side and not be taken into calculation. The only comparison that can be made with any pretence at fairness is between those cases in which surgical measures are advised and declined and those in which they are advised and accepted. I have no doubt as to the result. In three of my five cases the patients were already so bloodless that transfusion had to be performed. In two others I had to decline to operate altogether; they were beyond even transfusion. The mortality of such cases, left to themselves without operation, is certainly not 3 per cent., or even 5 per cent.; it is much nearer 100 per cent. And they are the cases with which the only comparison can be made when the result of operation is the subject in question.

As no paper of this kind appears to be complete without statistics, and as the statistics of the mortality from gastric ulcer, and especially from hæmatemesis, vary a good deal according to the authority from whom they are taken, I asked the medical registrar at the London Hospital, Dr. R. C. B. Wall, kindly to tabulate for me all the cases of hæmatemesis from gastric ulcer which had been admitted into the London Hospital in the five years from 1895 to 1899 inclusive. All cases of hæmatemesis from cirrhosis, malignant disease, &c., were carefully excluded. The result is of decided interest. The total number was 246, 202 women and 44 men, and taking one year with another the numbers were very much the same in each. The total number of deaths from hæmatemesis was 10, or 4 per cent. But the incidence of the deaths according to age was very singular. Under the age of 30 years there were 153 women with only one death. Over that age there were 49 women with three deaths, or 6 per cent. Taking the men there were only five under 30 years of age with one death, and 39 over 30 years with five deaths. In other words, the mortality from hæmatemesis among the men over 30 years of age is 12½ per cent., and taking all the men together regardless of age nearly 14 per cent. So far, then, as the question of operation for hæmatemesis is concerned there must, it appears to me, be one rule for women under 30 years of age and another for women over 30 years, and especially for men. But in considering the advisability of operating in general cases of gastric ulcer there is another point that must not be forgotten. These figures are only concerned with the mortality caused by hæmatemesis. There are other causes of death in gastric ulcer besides this, and these causes must also be taken into consideration. When the percentage of deaths due to these is added to that due to hæmatemesis it must be acknowledged that the death-rate due to gastric ulcer, especially in the case of men or of women over 30 years of age, is much higher than is usually believed.

I am fully aware that the treatment of gastric ulcer is, and must remain, in the hands of physicians. But it is becoming more and more evident every day that there are certain contingencies or accidents which may occur in the course of a case of gastric ulcer which, if the consequences are to be avoided, can only be met by the adoption of prompt and decisive surgical measures. This is admitted so far as perforation is concerned, but I maintain that the principle should be carried much farther. It should include all those cases in which, in spite of rectal feeding and other remedies, the pain after food is taken continues with severity, as it did in Case 3; in which vomiting after food obstinately persists; in which the patient is steadily losing ground; and in which medical treatment has been tried thoroughly for a sufficient length of time, say for some months, and has failed.

So far as hæmatemesis is concerned it is clear that age and sex make a very material difference. A much greater risk may be run in the case of a woman under 30 years of age than in the case of those over 30 years, and especially in the case of men. My own figures stand at only one death in 153 cases of hæmatemesis due to supposed gastric ulcer occurring in women under 30 years of age. (I may say that I have reason to believe that that particular period of five years was an exceptionally lucky one.) Surgical treatment can rarely be required in them. But if there is one single severe hæmorrhage in a case in which the previous history suggests the presence of a chronic gastric ulcer (when the bleeding is probably due to an opening in an artery of some size and is not merely capillary); if in any case there are two separate attacks of severe hæmatemesis at a short interval; or if there are frequent small hæmorrhages, so that the patient is becoming seriously anæmic, I believe that the risk of operation is very decidedly less than is the risk of leaving the patient alone, and that the best interests of the patient would be consulted by giving him or her the chance of operation before the condition becomes desperate.

Wimpole-street, W.

[1] THE LANCET, Oct. 20th, 1900, p. 1125.

A FEW OBSERVATIONS ON THE BLOOD PRESSURE IN MENTAL DISEASE,

WITH A NOTE ON THE TREATMENT OF MELANCHOLIA.

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THE sphygmometer of Hill and Barnard was used in the following observations and in order to ensure accuracy a duplicate of the instrument was utilised. The readings were taken morning and evening at a fixed hour and the usual