and may be continued until the membranes are seen to protrude; the scalpel can then be laid aside, and the incision rapidly enlarged with scissors, or the whole incision may be completed by the scalpel; personally I prefer the former method. If the membranes are already ruptured, care must be taken that the fetus is not injured by the scalpel in making the uterine incision. In two cases I enlarged the incision by tearing with the fingers, and I found that the resulting wound presented no difficulties in suturing. When the incision is completed the membranes should be opened by scalpel or scissors and the fetus seized, preferably by the feet. If the placenta is encountered in the incision it should be rapidly separated by the fingers.

A most valuable manoeuvre at this stage is for the assistant to hook up each end of the incision by passing an index finger into it during the extraction of the child; this prevents the uterus falling back into the abdomen as soon as it is emptied, and enables it to be readily brought out through the abdominal incision.

It is well to arrange beforehand that some one shall take charge of the child, otherwise, in the excitement of the moment, it may not receive proper attention. As soon as the child is removed the cord should be clamped in two places with long-bladed pressure forceps, and divided between; this saves time, and the tying can afterwards be done by the person to whom the care of the child is entrusted.

The placenta and membranes should be carefully detached and peeled off the uterine wall, and while this is being done the uterus should be enveloped in sterilized hot cloths, and gently kneaded to ensure contraction. This is usually sufficient to arrest haemorrhage, but if it continues, the assistant should grasp the broad ligament on each side with the finger and thumb whilst the operator continues to knead the uterus. Although the haemorrhage during the uterine incision and the extraction of the child looks very alarming, good contraction usually ensues as soon as the uterus is completely emptied and kneaded by the hand, and I have had no really dangerous haemorrhages in any of my cases.

We have now to decide the question of sterilization; it is particularly in cases of contracted pelvis that this question arises, for in cases such as my third, in which the cause of obstruction can be effectually removed, sterilization is, of course, not required. Even in cases of contracted pelvis many authorities are now opposed to sterilization, and several cases have been published in which Caesarean section has been repeated two or more times on the same patient.

This is a question in which the wishes of the parents should be allowed to have weight, and the prospects of the offspring from the eugenic point of view should be taken into consideration; this last point of view seems to have been entirely overlooked in a case operated on by Sir William Sinclair, and published in the *Journal of Obstetrics and Gynaecology of the British Empire*, January, 1904; the patient, who was extremely deformed by rickets and hip-joint disease, was of a low order of intelligence and had spent nearly all her life in workhouse infirmaries. Caesarean section was performed three times, a living child resulting on each occasion.

In my own cases the following course was pursued as regards sterilization:

In two of the cases, Nos. 3 and 7, the operation was performed for other conditions than contracted pelvis—in No. 3 for labour obstructed by a dermoid cyst; in this case sterilization was not performed, and the patient has since been delivered successfully of a live child, *per vias naturales*. In No. 7 labour was obstructed by a fibroid; the tumour was situated low down on the posterior uterine wall, and had a wide attachment, and, as myomectomy seemed inadvisable, supravaginal hysterectomy was performed.

This leaves eight cases of contracted pelvis. In two, the first and fifth on the list, supravaginal hysterectomy was performed, purely to obtain sterilization; in No. 2 the same operation, partly because there was evidence of commencing rupture of the uterus. Sterilization by excising a piece of each tube was performed in three cases, Nos. 4, 6, and 8, and in the last two cases, Nos. 9 and 10, no sterilization was performed.

The following methods of obtaining sterilization have to be considered: Oophorectomy, hysterectomy, ligation of the Fallopian tube, excision of a piece of each Fallopian tube.

Oophorectomy is not a method to be recommended.

Hysterectomy is a method which has the approval of Mr. Bland-Sutton, but in the opinion of most operators it is too severe a proceeding when sterilization alone is aimed at. Tying the tubes has been proved to be quite ineffectual. Excision of a portion of each tube appears to be, on the whole, the method which is to be preferred and most in favour. I have met with a case in which pregnancy occurred in a patient who had undergone Caesarean section, with excision of a portion of each tube, in Queen Charlotte's Hospital eight years previously; and other cases have been recorded, though the instances must be very rare. Sterilization is made more certain if the uterine end of the tube is excised and the incision in the uterine wall closed by sutures.

Hysterectomy is indicated in cases in which there is reason to think that the uterus is already infected, or in which there is rupture of the uterus. If the operation is performed, the supravaginal amputation with intraperitoneal treatment of the stump should be considered the operation of selection.

For suturing the uterine wall I used silk in all my cases, except the last, in which I used chromic gut for the deeper sutures. I have not met with any ill result from the use of silk, and I prefer it to any other material. I have in every case sutured in two layers, the deeper one including the peritoneum and muscular wall, but not penetrating the mucous membrane, and the superficial layer taking peritoneum only and being applied in Lembert's fashion.

Drainage was not used in any of the cases. The abdominal wall was closed in layers in every case. The abdominal wound healed by first intention in all except one; the case which suppurated was No. 2, the case which had been longest in labour, and the only one in which prolonged attempts at forceps delivery had been made.

The danger of Caesarean section increases enormously with the length of time the patient has been in labour and the amount of manipulation she has undergone, and when performed on a patient who has been infected by septic hands or instruments, the death-rate is high, but in uninfected cases the operation gives most satisfactory results.

ON THE TREATMENT OF THE EXCESSIVE VOMITING OF PREGNANCY.

BY

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DURING my term of residence as senior house-surgeon in the Glasgow Maternity and Women's Hospital seventeen cases of the excessive vomiting of pregnancy or hyperemesis gravidarum were sent in for treatment, and in each case the diagnosis of the family doctor was confirmed by observations at the hospital.

All the patients before admission had for several weeks been treated with the usual "stomach drugs," and in two cases rectal feeding had been tried for some days without any improvement. One case was admitted very ill and died. On admission she could retain nutriment neither by the mouth nor the rectum. She was in that hopeless condition described by Dubois, "characterized by increased prostration, constant headache, impairment of vision, tendency to somnolence, and derangement of the intellectual faculties. To operate in these circumstances would only bring obloquy on our art and perhaps hasten the patient's end."

On referring to textbooks regarding the treatment of this distressing complication of pregnancy, one is struck by the number and variety of drugs that are all strongly recommended. I doubted the efficacy of this drugging, and it seemed to me that other treatment should be adopted.

On admission the patient's history was carefully gone into. A thorough examination of all the symptoms was made, particular attention being paid to the condition of the alimentary canal, vagina, uterus, and appendages.

In view of the recent writings on appendix-dyspepsia, this point was investigated, but the result was negative in all. Bad teeth and chronic constipation were found associated in every case.

The patient was strictly confined to bed, and was assured

that her disorder was only temporary, and that under treatment she would entirely recover. By means of the stomach tube the stomach was washed out thoroughly with warm water at a temperature of 100° F. No alkali was used in the washing, as I did not wish in any way to disturb the gastric secretions until I had examined the result from the test meal. In every case the large quantity of mucus obtained was surprising. Sips of cold water were allowed that night, and an enema of soap and water (3xxx) was administered. A test meal was given next morning, and withdrawn one hour after by the stomach tube. In no case was the test meal returned, and in one patient no vestige of the test meal was obtained even by again washing out the stomach.

The filtrate from the test meal was examined, free HCl was present in every case, and, except in three patients, the free HCl and total acidity were normal; in these three exceptions the free HCl and total acidity were slightly below normal. The motor activity of the stomach was tested in five cases by the salol method and was found normal. Microscopic examination proved negative, and the reaction for lactic acid was never present.

I therefore came to the conclusion that the drugs bismuth carbonate, cerium oxalate, etc., recommended in textbooks were not required for these 16 cases of hyperemesis gravidarum. For several days the patients were put on peptonized milk and milk and soda, and were thereafter given light diet. No hard and fast rule was laid down as to the day of treatment on which the patient was advanced to a light or a full diet; each case was considered separately and dieted accordingly. The patients were not allowed up until they had been on light diet for two days. A powder containing 1 grain of mercury-with-chalk powder and 3 of sodium bicarbonate was given thrice daily. For chronic constipation, in conjunction with the above powder I found magnesium sulphate in hot water every second morning the best aperient. If a satisfactory motion was not obtained, then a soap and water enema (3xxx) was given. The septic condition of the mouth was treated with a mouth wash of carbolic acid solution 1 in 80, used frequently and always immediately before and immediately after food. The patients were encouraged to drink copiously of milk and soda, weak tea, and imperial drink.

This treatment was quite successful in the 16 cases, the average duration of residence in the hospital being seventeen days. One patient was treated in hospital for about ten days with the textbook drugs without improvement. She was then treated as above and at once improved. She was dismissed well within three weeks thereafter. She had no return of vomiting, went to full term, and was delivered of a healthy child. In another case there was retroversion of the uterus with tendency to prolapse; the uterus was not interfered with, and she made a complete recovery. Five cases presented a well marked acetone odour. Several cases returned to hospital at full time in labour, and had had no return of the vomiting.

A point worthy of notice is that 15 of these cases were admitted to hospital during the months of November and December, 1909, and January and February, 1910. The weather in Glasgow and neighbourhood during the first three months mentioned was extremely inclement, and did not conduce to out-of-door exercise. The continuance of fog and excessive cold was such that the death-rate in the city was on several occasions over 30 per 1,000 a week. With improved weather 2 cases only were sent into hospital from March 1st to May 31st, 1910. I am of opinion that in hyperemesis gravidarum, as in eclampsia, prophylactic treatment is of prime importance, and recommend the following as the important points:

1. Bowels to be moved at least once per diem.
2. Prevention of oral sepsis.
3. Good plain well-cooked food, daintily served at regular hours.
4. Kidneys and skin to be kept active.
5. Gentle exercise in the open air daily if weather at all suitable, and a good supply of fresh air night and day.

Summary of treatment when hyperemesis gravidarum has developed:

1. Wash out the stomach.
2. Bowels, kidneys, and skin to be kept active.
3. Nutrient at regular hours.
4. Fresh air night and day.

THE TREATMENT OF AORTIC ANEURYSMS.

BY

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AORTIC REFLEXES.

IN 1904¹ I demonstrated that, if one made forcible concussion of the seventh cervical spine, the normal aorta could be brought to contraction (aortic reflex of contraction), and that, if the last four dorsal vertebral spines were struck a series of sharp vigorous blows, a dilatation of the aorta (aortic reflex of dilatation) ensued. A like response was observed in aortic aneurysms.

It occurred to me that the aortic reflex of contraction could be utilized in the treatment of aortic aneurysms. Forty cases of aneurysm of the thoracic and abdominal aorta have thus far been treated, and have all been symptomatically cured in a brief period of time. Some of the patients were seen after a period of four years with absolutely no recurrence of symptoms.

I desire to emphasize the following facts:

1. Aneurysm was only diagnosed when the classic symptoms of the disease could be demonstrated by physical and skiascopic methods of examination.

2. Pressure symptoms were present and the disease was in an advanced stage in all the patients.

3. The only treatment employed was concussion of the seventh cervical spine. Not even rest was enjoined, although the patients were instructed to avoid straining at stool and exertion.

In the therapeutic elicitation of the aortic reflex of contraction an apparatus which gives a percussion stroke must be employed; all other motions, such as oscillations, shaking, and friction, interfere with results. The pad of the apparatus can be applied directly to the seventh cervical spine, or indirectly if the skin is sensitive, by interposing a piece of lint or linoleum. The daily sittings of concussion last about fifteen minutes, but the treatment must be interrupted to avoid irritation of the skin. If a suitable apparatus is not available, a pleximeter of rubber, wood, ivory, or linoleum is applied to the seventh cervical spine and struck a series of rapid and moderate blows by means of a strong percussion hammer. I use the plexor of Déjerine.*

The subsidiary centre of the vaso-constrictor nerves of the aorta is in the spinal cord, in proximity to the spinous process of the seventh cervical vertebra (third dorsal segment of the spinal cord); and by stimulation of this centre by concussion the normal as well as the abnormal aorta may be brought to contraction. Other stimuli have been tried, but the most effective stimulant to elicit the reflex is concussion. The aortic reflexes are mediated through the vagus; they are accentuated after a hypodermic injection of pilocarpin (0.0065 gram) and inhibited by atropin (0.001 gram).

To illustrate the rapidity of results achieved by this method, three cases will be cited:

*Patient of Dr. L. St. John Hely.*²—Aneurysmal tumour which protruded from the chest measured 2½ in. in diameter at the base. After the fourth treatment there was an absolute disappearance of all symptoms (incessant dyspnoea, cyanosis, choking, cough). At the end of a week the size of the tumour was reduced 25 per cent., and further treatment was discontinued, inasmuch as the patient regarded himself as cured. This patient was observed after fourteen months with no return of subjective symptoms.

Patient of Dr. Hubert N. Rowell.—Pronounced pressure symptoms. Before treatment could not get more than three hours' sleep at night, owing to paroxysmal attacks of coughing and choking. After the first treatment he could sleep the entire night, and after two weeks' treatment the patient was practically well, and had gained 10 lb. in weight. This patient was seen after three years, with absolutely no return of symptoms.

Patient of Dr. Wm. Clark.—In addition to the conventional objective signs of aneurysm, there was a pronounced exophthalmos. The subjective signs were dyspnoea, incessant cough, dysphonia, and the patient was subjectively conscious of the aortic bruit. All the subjective symptoms disappeared within several days after treatment was commenced, and after five weeks' treatment the patient was practically discharged. After a lapse of more than two years the patient is absolutely well.

* The method of treatment is discussed in detail in the author's book, *Spondylotherapy*, 1910, Philopolis Press, San Francisco.