and she most peremptorily desired that the subject should not be mentioned again.

The temperature that night rose to 100° Fahr., and the pulse to 98, which I attributed to excitement, for both subsided to their former rates before the next morning.

From this moment the injections, which had done nothing but wash the rectum, were discontinued, and the patient very gradually and almost imperceptibly sank, until her death, which took place on Sunday, October 11th, 1885, at 11 o'clock P.M., nineteen and a half days after the last natural action of the bowels.

Post mortem examination thirty-four hours after death.—The body was well nourished, not to say fat. The intestines were distended pretty equally throughout their whole length by above a gallon of well-digested fæces, of about the consistency of thick hasty pudding, and very offensive. The right ovary was of a dark purple colour, and about the size of a large orange; it was multilocular, and contained thick dark grumous fluid. The intestines presented here and there insignificant streaks of florid congestion. The rectum, at about six or seven inches from the anus, was almost entirely closed by a firm and most remarkable puckering, caused by a firm membranous band nearly surrounding the bowel, which I can compare only to a wire passed round the intestine with its ends firmly twisted, as you will perceive by the specimen before you much better than I can describe it; this band, which in its centre is round like a whipcord, was firmly attached at both ends to the promontory of the sacrum, thus firmly enclosing the bowel against the spinal column. It is represented by the black band in the diagram.

The membranous band and the puckering of the bowel appear so devoid of any morbid deposit, except organised lymph, that the only explanation which offers itself to me is the following. I think the patient must at some former period have suffered from limited peritonitis, just about where the peritoneum is reflected from the spinal column over the bowel; this inflammation must have led to the effusion of lymph, which, becoming attached by its ends to the sacrum, formed a bridge over the rectum; and this, again contracting in all directions towards its centre, while becoming organised, gradually shortened its length between its extremities, and drew inwards its thin edges, thus slowly and imperceptibly forming the hard and firm stricture, and giving it its remarkable shape.

The opening through the stricture was very small, but it has unfortunately been dilated by handling. The remarkable features of the case throughout were the normal state of the temperature, of the pulse, and respiration, and the absence of anything like constitutional disturbance and of acute suffering, except for the last twenty-four or thirty hours of the patient's life.

PREVENTION OF LACERATION OF THE PERINÆUM IN PRIMIPARÆ.

By J. ALGERNON TEMPLE, M.D., M.R.C.S.Eng.,

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THE issue of the BRITISH MEDICAL JOURNAL for November 21st, 1885, contains an article on the above subject by Dr. David Gaussen, which deserves more than a mere passing notice. Practically, it is of great value.

For many years, I have been greatly disappointed with the means recommended for prevention of laceration of the perinæum; and, after most careful study of the subject, I came to the conclusion that the only method of any value was to prevent extension of the head from occurring, and to compel it to be born in a state of forced flexion.

In primiparæ, the vulval orifice is small and resisting, and the occiput in its descent does not reach the pubic arch (as it does in multiparæ) before extension commences; as a result of this extension, the long occipito-frontal diameter, which measures about four inches and a half, is obliged to traverse the perinæum, to be followed by the fronto-mental, which measures about three inches and a half, making in all part of a circle about eight or nine inches in length. This naturally stretches the perinæum and vulval orifice to its utmost capacity, and it is during this time that rupture is apt to occur.

To guard against this overdistension in cases where I fear laceration, after the head has reached the floor of the pelvis, and just previously to extension, I have been in the habit of applying the short forceps, and then, by carrying the handles backwards, I flex the chin on the chest, while, at the same time, gentle traction is made downwards and backwards. In this way, I deliver the occiput first, keeping the chin close to the chest; this brings the cervico-bregmatic diameter, which is but three inches and a half, through the vaginal

orifice. This plan saves the perinæum one inch or more of distension. I have had the best results from this practice, and have taught it to my class of students for the past three years.

The practice as taught by Dr. Gaussen I think somewhat difficult to carry out with the fingers, though he desires to obtain the same end as I here advocate. With the forceps, it is easy and safe.

I think this subject one of great importance, and worthy of a trial by any who may have any doubt as to its efficiency. In fact, I may say I am doubtful of the propriety of carrying the handles of the forceps forwards, as taught in the text-books, in any case.

THE DIAGNOSIS OF DISTENDED GALL-BLADDER.

By JOHN W. TAYLOR, F.R.C.S.,

Out-Patient Surgeon to the Birmingham and Midland Hospital for Women.

IN the BRITISH MEDICAL JOURNAL of December 19th, 1885, I have read with much interest the lecture of Mr. Wheelhouse on Abdominal Surgery, in which he does me the honour of quoting considerably from a paper of mine on Cholecystotomy.

In this paper, which was published in the BRITISH MEDICAL JOURNAL of January 31st, 1885, I described a diagnostic "line," which I believed would be of considerable service in the detection or elimination of a distended gall-bladder in doubtful cases. "This is to be traced from the normal position of the larger end of the gall-bladder (near the tip of the cartilage of the tenth rib on the right side) to the opposite side of the abdomen, crossing the middle line slightly below the umbilicus. In the direction of this line, a distended gall-bladder will, I believe, naturally lie."

During the past year, I have had the opportunity of testing the value of this aid to diagnosis in nine cases operated on by Mr. Tait, a tabular list of which is here given.

No.	Date.	External Signs.	Condition found on opening the Abdomen.	Operation.
1	March 26	Tumour in line	Distended gall-bladder	Cholecystotomy
2	May 7	Tumour to left of line (tending to cross middle line above umbilicus)	Hydatid tumour of liver	Hepatomy
3	April 1	Tumour to right of line (jaundice)	Solid tumour of liver (probably cancer)	Exploratory incision
4	Aug. 17	Tumour to left of line (jaundice)	Solid tumour (probably cancer of pancreas, gall-bladder felt to right of tumour, slightly distended)	Exploratory incision
5	Oct. 14	Tumour in line	Distended gall-bladder (suppurating)	Cholecystotomy
6	Nov. 11	Tumour in line	Distended gall-bladder (adherent to abdominal wall)	"
7	Dec. 10	Tumour in line (jaundice)	Distended gall-bladder	"
8	Dec. 13	Tumour to left of line (tending to cross middle line above umbilicus)	Solid tumour (probably cancer)	Exploratory incision
9	Dec. 14	Tumour to right of line in position of right kidney	Suppurating right kidney, from which four gall-stones were removed; gall-bladder not felt; probable adhesion of gall-bladder to right kidney, and ulceration of gall-stones into pelvis of kidney	Nephrotomy

In eight of these cases (from 1 to 8) a tumour existed in the neighbourhood of where a distended gall-bladder might reasonably be expected, that is, not far from the junction of the right hypochondriac, right lumbar, epigastric, and umbilical regions; and in all, this sign was associated with symptoms of supposed biliary colic.

Of these eight cases of abdominal tumour, the four tumours which fell in the diagonal line described proved to be distended gall-bladders, while the four which varied from this line proved to be tumours of some other class.

In Nos. 2, 4, and 8 of these cases, a distended gall-bladder was confidently expected by several physicians in attendance on each case, and the general symptoms were decidedly confirmatory of this opinion; but in each of these cases, the divergence of the tumour from the diagonal line, and the result of the operation, proved the diagnosis to be mistaken. It has, therefore, appeared to me that this aid to diagnosis is almost of more value from its negative than from its positive aspect, especially in the case of all tumours lying to the left of the line, and tending to cross the middle line above the umbilicus.

I notice that Mr. Wheelhouse refers to another line which has been

recommended "from the acromion to the pubes." As, in Mr. Tait's first case of cholecystotomy, the tumour had crossed the middle line, and in my own case it was on the verge of crossing, I do not think this can be so reliable as the one I have given. Both, however, would eliminate the class of tumours just referred to.

Case No. 9 is, of course, a very exceptional one. In this case, if the gall-bladder could have been felt, it must necessarily have been altogether to the right of the line which I have described; and I should wish to be distinctly understood as claiming for my "line" nothing beyond a good indication of the direction in which a distended gall-bladder will "naturally" lie. Neither this nor any other extra-abdominal sign can be more than an aid to diagnosis. In any very doubtful case, the diagnosis should be intra-abdominal.

The liver and kidney may be so displaced, and adhesions may so alter the relations of important viscera, that the expectation of the most careful and experienced may often (and occasionally most fortunately) be found wide of the mark.

ON RE-INFUSION OF BLOOD IN PRIMARY AND OTHER AMPUTATIONS.

By JOHN DUNCAN, M.A., LL.D., ETC.,

Surgeon to the Royal Infirmary, Edinburgh.

ON October 21st, 1885, Dr. Lindsay Porteous, of Kirkcaldy, sent to me a case of railway injury. The left leg had been crushed, and amputation was required in the lower third of the thigh. There had been no hemorrhage at the time of injury; but Dr. Porteous, as a measure of precaution, had placed a tourniquet loosely round the limb, with instructions to tighten it if necessary. Bleeding commenced during the journey; the tourniquet was insufficiently screwed up; and a large quantity of blood was lost before the patient reached the infirmary. When I saw him eight hours after the accident, he was pallid and collapsed, with a pulse, when perceptible, quick, irregular, and fluttering. Alcohol, ether-injection, and elevation of the limbs, had a scarcely appreciable and quite evanescent effect; and I came to the conclusion that it was impossible he should lose his leg and live through the operation. Intravenous injection seemed the only hope, and it occurred to me that I might to a certain extent utilise the patient's own blood for the purpose. In a large school like this, there is no difficulty in finding blood-givers during the day, but at night a saline fluid is the imperfect alternative.

The patient was anaesthetised with chloroform, followed by ether. While I rapidly removed the limb, the blood which fell from it (in all about three ounces) was caught by an assistant in a dish containing solution of phosphate of soda. After the arteries had been tied, it was difficult for a time to say whether the patient was dead or alive; but I proceeded to inject the blood and phosphate of soda, mingled with distilled water in the last syringeful to increase the quantity. In all, about eight ounces were thrown into the femoral vein on the face of the stump. The quantities are not exact, because the graduated dish was necessarily flat to catch the blood, but are correct within a drachm, or at most two.

The patient was then quickly put to bed, placed in front of the fire, and teaspoonfuls of weak brandy and water were given to him frequently. The pulse had become quite perceptible by the time he had been got into bed; it steadily improved during the night, and the man is now perfectly well.

The dominant idea in the procedure is to utilise the blood flowing from the amputated limb, which otherwise must necessarily be lost. Especially in shattered limbs, it is difficult to empty thoroughly before amputating; and both at the moment of incision, and also while ligaturing the arteries, a certain quantity of blood may always be caught. The importance of even a few ounces in cases of collapse can hardly be overestimated. No doubt, a simple saline fluid may for a time supply the means of working to the empty heart and vessels; but, in my experience, the benefit is only temporary—for one reason, because it is essential that the blood-forming organs should act; and they require suitable nourishment, like every other part of the frame.

I am convinced that this little operation, so easily performed, will save many lives in the collapse of primary amputations, and will prove beneficial to wasted and anemic patients in the major amputations for disease. I have now performed it in a sufficient number of cases, one of them an amputation at the hip performed by my colleague, Dr. Miller, to enable me to speak with confidence as to its safety and value.

The idea would probably not have occurred to me had I not, during

the previous six months, had considerable experience in transfusion of blood from one human being to another. My colleague, Dr. Brakenridge, having under his care a case of pernicious anæmia, in which the decadence was so rapid that the end could not be postponed many weeks, came to the conclusion that it would be right to try transfusion of blood, and consulted me on the subject. I had tried myself, or seen tried by others, most of the instruments hitherto in use for direct transfusion, and had arrived at the opinion that all were unsatisfactory, either from the risk attending them, or from liability to failure in attaining the desired end. It appeared to me, therefore, that it was necessary to adopt the method of defibrination, or to delay the coagulation of the blood by some of the saline additions which have already been used for the purpose, in order that a sufficient quantity might be injected with sufficient slowness.

In making inquiry as to the experience of others, I was informed by my colleague, Dr. Catterill, that he had on one occasion performed transfusion of blood mingled with phosphate of soda, as recommended by Dr. Pavy, and that the immediate result of the operation had been all that could be desired. As the power of phosphate of soda to delay coagulation is undoubted, I determined to adopt a plan whose feasibility was thus assured.

It is unnecessary now to go into the history of the pernicious anæmia. Dr. Brakenridge will doubtless give the results of his very careful observation, when the case may be regarded as complete. Suffice it to say that, by four transfusions, the quantity of the red corpuscles and hemoglobin was trebled, and that the improvement has been maintained for two months without further operation.

Before describing the mode of operating, I will merely mention another of our transfusion cases, highly creditable to my last house-surgeon, Dr. Carmichael, which he intends to publish more fully, along with some important experimental investigations on which he is engaged. I had operated in a case of empyema by resection of portions of seven ribs. A certain amount of blood was unavoidably lost during the operation, and through the night slow oozing took place into the thoracic cavity, making little show outside the dressings. Next day the patient seemed moribund; and, as he found that I was from home, Dr. Carmichael, who had admirably assisted me in the other operations, had himself bled to six ounces, and injected that quantity with phosphate solution into the patient's veins. The man immediately rallied, and is now quite well.

An operation of this kind plainly requires attention to detail, but its extreme simplicity renders easy the avoidance of mistakes, some of which I committed in the earlier instances. I attach much importance to the perfect fluidity of the blood, and the aseptic condition of all the instruments. In no case had our patients the slightest fever, rigor, or disturbance of any sort subsequent to the operation. Glass was purified by prolonged immersion in a solution of bichloride of mercury, metal in carbolic acid.

For introduction into the vein of the receiver, I use a short glass-tube, of the size of a No. 6 catheter, having a pen-shaped point. To its other end, made slightly bulbous, about two inches of India-rubber tubing is attached. A simple glass syringe, holding four ounces, whose nozzle fits the tubing, is perfectly effective. I keep up the temperature by surrounding it with boracic lint, wrung out of hot water. A syringe which I had made with an outer glass envelope to hold warm water, I find rather cumbersome. A graduated glass vessel, kept floating in warm water, contains the solution of phosphate of soda, and receives the blood.

All are washed with aseptic water after removal from the antiseptic solution, and before being used.

In amputations, the most convenient vein is selected on the face of the stump, the glass point is inserted, and a catgut ligature put round it. While the process of ligaturing the arteries is going on, the blood is caught by one assistant, who adds the soda-solution as required, and is slowly injected by another. There is no time wasted, and the amount put into the circulation is precisely proportioned to what the patient would otherwise have lost, *plus* what amount of saline solution the surgeon may think right and appropriate to the case.

In the case of pernicious anæmia to which I have referred, a vein in the arm of the blood-receiver was exposed, and under it a double thread of catgut was passed. I then drew the blood from the donor into the dish containing the phosphate of soda, with which it was gently mixed by means of a glass rod. While an assistant filled the syringe, I opened the exposed vein of the receiver, the lower thread of catgut being gently pulled upon to prevent bleeding. The tube was now inserted, the upper thread tied round it with one knot, and the lower definitely secured and cut short. The blood was next slowly injected, the India-rubber tubing being pinched when the syringe re-