CHOLECYSTOGRAPHY BY THE ORAL METHOD WITHOUT THE USE OF CAPSULES.

WITH A REPORT ON FORTY CASES.

BY

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OWING to the objection which many surgeons still have to the use of tetraiodophenolphthalein intravenously, it is often necessary to administer the salt by the mouth. Much has been written on this subject, and various methods have been devised to allow capsules containing the salt to pass through the stomach with their outer coats intact. In this hospital, as in others, results were good with the aid of capsules which had been freshly coated with keratin, but after a short period of storage the capsules passed through the bowel undissolved. Realizing that this is a great disadvantage, especially in the smaller hospitals, or in private practice, where not many cases are examined, an attempt was made to dispense with the use of capsules altogether.

Sproull¹ examined a series of 23 cases, giving the salt mixed with cream of wheat, and this method was tried here in several cases. Whether the wrong patients were selected, or the wrong method of cooking the cream of wheat was employed, is not clear, but, at any rate, all the patients (five) on whom this method was tried developed sickness, and one had headache. An alternative vehicle was therefore sought for, and on the suggestion of Mr. Adamson, pharmacist to this hospital, the salt (grains v per 10 lb. body weight) was first mixed with white of egg before being added to the cooked cream of wheat (about 4 ounces). The idea underlying this was to fix, or partially fix, the salt until it should have passed through the pylorus, and, whether or not this effect was produced, the method has been satisfactory, as is shown by the following table and by the operative findings.

	Normal.	Patho- logical.
Number of cases where no unpleasant effects were produced	18	13
Number of cases where unpleasant effects were produced	7	2

The unpleasant effects produced were as follows: headache (1), nausea (5 cases, of which 3 were slight, and were due to the appearance of the mixture, which is certainly an objectionable feature of the method), diarrhoea (2 cases, one of which proved later to be a carcinoma of the caecum), and vomiting (one case, in which similar attacks had previously occurred, "but not so severe"; vomiting ceased after the administration of sodii bicarb. gr. xx, liq. morph. hydrochlor. $m \times$, aq. ad ss.).

It is no longer necessary to attempt to demonstrate the value of Graham's test, but the following figures show that this method of administering the salt is satisfactory. Of the "pathological" cases 12 have been operated on up to date, and 11 were definitely abnormal. The remaining case showed an apparently normal gall bladder; the report on this case was "doubtful pathological—gall bladder appears to throw a faint shadow." Three of the "normal" gall bladders were examined at operation, and were normal, at least to palpation and to the naked eye. In several cases the test was repeated, owing to the large amount of free salt which was present in the bowel, but in each of these cases the finding was the same at the second as at the first examination.

No attempt has been made to reproduce films of gall bladders; this has been done too often already, but the density of the gall-bladder shadow in this method was as intense as that obtained in any other oral method which has been employed here.

The cases examined were nearly all out-patients, and the address of the patient was noted on the first attendance at the x-ray department. Later, the following form, which

explains the technique employed, was sent, examination being arranged on a day to suit the convenience of the department, and the form being sent five or six days before the day of examination.

SPECIAL X-RAY EXAMINATION.

Instructions to the Patient.

- (1) Take a dose of castor oil on.....night.
- (2) Attend at the dispensary of hospital on.....between 2.30 and 4 p.m. If desired a messenger may be sent—personal attendance is not necessary.
- (3) Take the material provided by the dispenser at 9.30 that night, as instructed.
- (4) Take nothing but water after this.
- (5) Attend at x-ray department at 9.30 a.m. on....., having taken *nothing but water* since taking the special meal.
- (6) Still having taken *nothing but water*, attend at the x-ray department again at 2.30 the same afternoon.
- (7) Have a meal, with as much fat in it as possible.
- (8) Attend for final x-ray examination at 4.30 p.m.
- (9) Report to the doctor who attends you in out-patient department on his next day for seeing patients.

The blank spaces are filled with the names of three consecutive days—for example, Monday, Tuesday, and Wednesday, if the examination is fixed for Wednesday.

I am indebted to the physicians and surgeons of Salford Royal Hospital for so kindly helping by providing cases, and for their useful suggestions at various times. I am also indebted to Drs. Bythell and Higgins for permission to publish these cases.

REFERENCE.

- ¹ *Amer. Journ. Roentgenol.*, March, 1927.

THE OPERATION OF EVERSION OF THE SAC FOR HYDROCELE.

BY

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It has always been a puzzle to me why the simple and efficient operation of eversion of the sac for hydrocele is not practised more frequently in England. Of all operations for hydrocele it is perhaps the easiest, and achieves its object with least disturbance of tissue. It is, I think, much preferable to Bergmann's operation of excision of the sac, which, apart from the element of time involved, entails much stripping of tissue and tying of vessels, and is fairly frequently followed by post-operative haematoma; whereas eversion of the sac may easily be done within five minutes (I have often done it in two) and without tying a single vessel, the only buried suture being that holding together the edges of the everted sac.

One objection frequently urged against eversion is that it is apt to be followed by recurrence; but this need never be if the operation is correctly performed.

I do the operation under local anaesthesia as follows: An injection of morphine is given half an hour beforehand. The inguino-scrotal fold is seized with the fingers of the left hand and the cord imprisoned; into the substance of the cord 5 c.cm. of a 1 per cent. novocain-adrenaline solution is injected. This renders the testicle insensitive to manipulation. The assistant now grasps the tumour with both hands, gathering up the loose scrotum beneath, in such a way as to make it protuberant and tense. Along the line of the proposed scrotal incision 10 to 20 c.cm. of a 1/2 per cent. novocain-adrenaline solution is injected. (I prefer the scrotal to the inguinal incision, as there are few or no vessels to tie, and access is direct to the best part of the sac to incise.) An incision 2 to 3 inches long is now made over the tense tumour, and deepened layer by layer along the full length of the cut until the translucent sac becomes evident. Lane's forceps are clipped on to the edges of the scrotal wound on each side. The point of the knife is plunged into an avascular part of the tunica and the fluid evacuated into a tray, but the blade is not removed from the rent until the cut edges are secured with forceps, otherwise their retraction makes them difficult to define. The assistant now releases his hold of the scrotum and takes up one of the forceps on the tunica, the surgeon the other.

The opening is enlarged with scissors along the anterior surface of the sac, avoiding blood vessels. The testicle is drawn through the ample hole and the tunica everted like a cuff. The assistant holds up the testicle while the operator, introducing forceps or fingers into the scrotal wound, eases it out so as to form a roomy bed in which the testicle may lie when it is returned, without tension on the sac. Two pairs of Lane's forceps are now used on either side, one to embrace the cord (c), the other the gubernaculum (g), or rather what remains of it, which

FIG. 1.—Eversion of sac.
T, testicle; E, epididymis;
C, cord; G, gubernaculum
remains; M, mattress suture.

is very little. The two forceps are held apart, displaying a web of tissue between them partly covered by the everted sac (Fig. 1). To this web the sac is secured by a through-and-through mattress stitch of catgut, or an opening is made in it with pointed forceps and the edges of the sac are approximated and secured through the rent with a single mattress suture. If the sac is very redundant an additional pleating stitch may be applied to it on the outer side of the cord, as is done in the usual operation. The testicle is now

replaced and the scrotal wound closed with an intradermal or a running mattress stitch, which, better than any other, obviates the tendency to incurvation of the edges. A scrotal suspender secures a gauze dressing in place.

The whole operation is very quickly performed. The points I would recommend as safeguards against recurrence are: (1) the making of a new bed for the testicle by easing out the depths of the scrotal wound; (2) the securing the edges of the sac to the web of tissue behind the testicle.

In the operation as it is usually done the everted sac is merely constricted by a stitch or two beside the cord, and no new cavity is made for the testicle. There is thus a tendency—though not as often as is supposed when the technique is careful—for the sac to retrovert when returned. Most recurrences, I feel sure, occur at the time of replacement, or very shortly afterwards, for “the endothelial surface of the serous sac faces the scrotal fibrous and cellular tissues to which it becomes adherent in a short time” (Jacobson).

FIG. 2.—Jaboulay's operation.

Jaboulay in his original operation released the testicle by ligating and dividing the gubernaculum testis, and then folded the two sides of the divided sac behind the testicle and fixed them there with a few sutures (Fig. 2), one of which included the superficial tissues of the cord (Binnie); or he even cut away, in addition, part of the redundant sac before stitching them together behind the testicle (Thomson-Walker). No recurrence can follow such a procedure, but I think that in the usual class

of case it involves unnecessary interference with structure, though when the sac is thick and eversion difficult it is best to open it up, and then to peel off the parietal tunica from the thickened adventitious coverings, and thus, having released the testicle, to evert round it and the cord the now membranous tunica, as in the Jaboulay operation. In Wylls Andrews's “bottle” operation a small opening is made in the upper pole of the sac and the testicle is displaced through this and the sac inverted and drawn up the cord—a procedure which gives no absolute safeguard against recurrence.

Eversion of the sac is, generally speaking, contraindicated when the sac is very much thickened and calcified, for the main reason that it does not then reduce the size of the tumour to any extent; but in these cases, and even in the leathery sacs of infected haematocoeles (and incidentally in pyocoeles), I have often saved testicles that might otherwise have been sacrificed by everting the sacs, swabbing out their roughened inner surfaces with zinc chloride

solution, packing them with iodoform gauze and leaving the wound partially open, and instituting in a day or two Carrel-Dakin drip until the cavity gradually obliterated itself. It is remarkable what a degree of pliancy and shrinkage the sac eventually attains.

A METHOD OF MAKING A BLOOD FILM.

BY

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THE following method of making blood films is one of several tried in an attempt to get a more even distribution of the red and white blood cells. In an ordinary blood smear most of the leucocytes are found at the margins of the film, but the method about to be described leaves the majority of these cells in the centre of the film. This may be a step in obtaining the result originally aimed at—namely, even distribution of cells in a film.

A piece of glass about the size of a half-plate negative (*a* in the accompanying diagram) is cleaned, and on one side white paper is gummed so that the quality of the film can be more readily observed in preparation; *b* and *b* are each two glass slides stuck together with Canada balsam and mounted two inches apart on *a*; *c* is a single glass slide mounted in the position shown.

A drop of blood is taken on the end of a slide and placed between *b* and *b*, and a second slide is made to rest on *b* and *b* at right angles to the first, so that there is the thickness of a slide separating the glass surfaces between which the drop of blood lies. Contact of blood between upper and lower slides is made by raising the latter,

which is then allowed to fall back on the stage. The upper slide is now passed over the lower, the drop of blood following and leaving a very thin film behind, the time taken to traverse the slide being about thirty seconds. The margins of such a film consist mostly of red blood cells, while in the central zone numerous white blood cells and blood platelets are deposited. This arrangement is so striking that after using Leishman's stain the bluish tint of the central zone, due to the basophil elements of the blood, can be seen by the naked eye; the margins are stained pink. Under the microscope the numerous white blood cells and blood platelets in the central zone immediately arrest attention, and in some specimens there will be fields where not a single red blood cell is to be seen. The number of white blood cells in a given field varies considerably, but fifteen to thirty cells are quite commonly observed, and I have counted over sixty.

Differential counts are rapidly made, but since occasionally the white blood cells in a field are very numerous confusion is likely to arise at first in counting; after a little practice large numbers can be dealt with, or the difficulty may be met by using a higher magnification.

The results of such “drop smear” preparations compared with ordinary blood films may be enumerated as follows:

1. In drop smears most of the white blood cells are found in the centre of the film, while in ordinary films they gather at the margins.

2. There is a tendency for the various white cells to occur in groups—for example, numbers of polymorphonuclears are found together, and so with the other kinds of cells.

3. In comparing differential counts I find almost invariably an increase of about 8 or 10 per cent. polymorphonuclears and 4 per cent. eosinophils over the counts made with films prepared in the ordinary way. This is possibly explained in the next paragraph.

4. In an ordinary blood film basophil masses are sometimes observed. These I take to be detritus from ruptured cells,