State on Examination.—His facial expression was typical of abdominal suffering; the pulse was 140 and the hands cold. There was diffused abdominal pain but no particular tenderness, and in the right lumbar and iliac regions there was dullness and a fluid thrill. There had been some vomiting; the urine contained a trace of albumen. After a consultation operation was decided upon.

Operation.—The incision commenced in the right linea semilunaris over the dull area had in the course of the operation to be carried across the right rectus and upwards in the median line. On opening the peritoneum bloody serum escaped and the caecum was found distended. The small intestine was then traced from the ileo-caecal valve to the termination of the duodenum, and the higher it was traced the more evident did the signs of trouble become. At last a longitudinal rent 1 in. long was found just at the duodeno-jejunal junction. The torn edges of the mucous membrane were protruded and everted. Much intestinal fluid was escaping, and the peritoneum in the neighbourhood was strewn with currants and peas. It was impossible to get at the rupture to suture it until the reflexion of peritoneum lying over the duodenum and continuous with the transverse mesocolon was torn through so as to liberate the fourth part of the duodenum. Then the opening could be manipulated and was closed with a double continuous Lembert suture. The abdomen was next washed out and finally closed, except for a Keith drainage tube in the pelvis, and a gauze drain and indiarubber tube leading to the seat of the rupture.

Result.—At the close of the operation the patient was moribund, and he died an hour later.

REMARKS.

A recovery after operation for traumatic rupture of the bowel is always a matter of gratification to the surgeon. Superficially these cases resemble perforation of the bowel by bullet wound, but in reality there is a great difference. In a penetrating bullet wound of the abdomen there is no hesitation as to the proper course to pursue—at any rate in civil surgery. The almost absolute certainty that some viscus has been wounded renders immediate exploration imperative.

But the symptoms produced by abdominal contusion when the bowel has been ruptured are not infrequently insidious in their onset. In some cases the profoundness of the collapse and the urgency of the symptoms leave no room for hesitation, but in others the immediate effect of the accident is recovered from, and the surgeon, having excluded to his satisfaction injury to the other abdominal viscera, spends a period of some anxiety before the development of symptoms justifies an exploratory operation.

It is the time that is lost in this way that is responsible for the great want of success in the treatment of ruptured intestine. Yet it is impossible to prevent it unless a rule be formulated that every severe abdominal contusion should be subjected to immediate laparotomy. But there would be few surgeons who would not feel that such a rule would be quite unjustifiable, for it would lead to much unnecessary operating.

The presence of abdominal rigidity in these cases may appear to the surgeon to be easily explained by the contusion of the abdominal muscles. Indeed the patient's behaviour when the abdomen is gently palpated is often convincing, though there cannot fail to remain an uncomfortable uncertainty that the cause of the rigidity may be twofold. The increasing rapidity of the pulse to which Mr. Makins has attached great importance as an indication for operation is undoubtedly a most important sign, but as it almost certainly indicates the absorption of toxins from the peritoneum it means that valuable time has already been lost. But in not a few cases the occurrence of vomiting, sometimes of a severe character, has begun very early.

I am beginning to attach a great deal of importance to vomiting after abdominal contusion. It is true that, even in cases of rupture of the bowel, it is not always present until unsatisfactory conditions are well advanced, but in doubtful cases where a ruptured intestine is suspected, when the quiescent period following recovery from initial shock—if that has been present—is reached, the occurrence of vomiting, pointing to the probable implication of the peritoneum, may be the first sign upon which a fair amount of reliance can be placed. It may occur some time before the pulse-rate has advanced sufficiently to make it quite clear that the increased frequency is not due to subsidiary causes.

In cases, therefore, where the nature of the injury was such as to make a rupture of the bowel not unlikely, the onset of vomiting, when the patient had apparently rallied from the immediate effects of the accident, would justify, in my opinion, an exploratory operation; nor should I have any doubt as to its propriety if, in addition to the vomiting, the pulse showed a tendency, however slight, to rise.

A NOTE ON PERINEAL LITHOLAPAXY.

(KEITH'S MODIFICATION.)

By CAPTAIN A. HOOTON, I.M.S.,

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ALTHOUGH it is now more than ten years since this most useful modification of litholapaxy was first described,¹ and several surgeons have since published large series of cases² showing excellent results, the operation has not met with that general acceptance which might have been expected.

This may, perhaps, be attributed chiefly to two causes. In the first place, it has suffered by a confusion with the more serious procedure associated with the name of Dolbeau, an operation more nearly allied to perineal lithotomy than litholapaxy; in the second there is, so far as I am aware, no description of the method under consideration in any standard work on surgery. The latest textbooks at my disposal contain no reference to the subject, though they were all published long after Brigade-Surgeon Keith's articles,¹ and it may therefore be of sufficient general interest to review briefly the present position of the operation.

Even in India its employment is by no means universal; it was stated not long ago that no considerable headway had been made in the Punjab, and in the Bombay Presidency it is probable that there are many hospitals where perineal litholapaxy has never been performed. On the other hand, those who have once adopted the method are, without exception, enthusiastic in its praise.² Litholapaxy in children is always a somewhat anxious undertaking, and the relief afforded by this alternative in difficult cases, which would otherwise often have to be relegated to one of the more extensive cutting operations, is necessarily very much appreciated. It is in stone in children that its application chiefly lies; contrary to what anatomical descriptions would lead one to expect the most difficult part of a child's urethra, after the meatus, is often well in front of the membranous portion,³ and in these cases the shorter route solves the difficulty.

Perineal litholapaxy has been steadily performed in Hyderabad. Scinde; in 1900 Lieutenant-Colonel W. H. Henderson, I.M.S., published his series of 110 cases,⁴ with 3 deaths, and the records of the Civil Hospital there (kindly placed at my disposal by Captain T. Jackson, I.M.S.) now show a total of 447 cases, with 18 deaths. From various other sources I have collected a few more cases, which make, with the Hyderabad figures, a total of 458 cases and 18 deaths. It is necessary to remark that the great majority of these represent stones, which, for one reason or another, would have otherwise been dealt with by some form of lithotomy, and that they also include the early operations of a number of surgeons; in fact they may stand for a fair average, and are therefore less likely to prove misleading than the statistics of one peculiarly expert operator. My own experience of perineal litholapaxy is limited to six cases in children, all of which recovered; in two, however, on account partly of prolonged manipulation, partly of the weak condition of the child, the wound did not heal readily, and convalescence was protracted. These were both instances which might have benefited by drainage, and probably a lateral lithotomy would have been preferable for this reason.

The following may be taken as fair examples of uncomplicated cases. It will be seen that recovery is very rapid, and that often only a few drops of urine escape from the wound. Lieutenant-Colonel R. Baker, I.M.S., observes that children used to run about the ward on the day following operation, and I believe Brigade-Surgeon Keith often found that no urine whatever was passed from the opening, and that the sheet on which the patient lay remained perfectly dry. Other advantages which the latter claims for this over the ordinary cutting operations are voluntary micturition, absence of shock, and non-interference with the sexual powers.

CASE I.—A Hindu child, aged 3½ years. The smallest instrument available could not be passed through the penile urethra. The stone weighed 28 gr. Urine ceased to pass through the wound on the second day, and he was discharged cured on the ninth day after operation.

CASE II.—A Hindu child of 6 years. The perineal operation was performed for the same reason as in Case I. The stone weighed 42 gr. Urine ceased to pass by the wound after twenty-four hours, and he was discharged cured on the fifth day after operation.

Indications.

Various authorities recommend perineal litholapaxy under some or all of the following conditions:

1. A large stone necessitating the use of a lithotrite which will not pass easily by the natural route.
2. A very hard stone, necessitating the passage of a similar instrument.
3. Stricture, in conjunction with a large or hard stone, or perhaps with any stone.
4. A difficult or narrow urethra.
5. Imperfect equipment—the absence of the smaller sizes of lithotrite.
6. Cases in which litholapaxy has been commenced in the ordinary way, but cannot be completed satisfactorily owing to swelling of the urethra and deposit of debris.

The Operation.

Perineal litholapaxy may be thus performed: the patient is placed in the lithotomy position, and the thighs held so that the parts are as symmetrical as possible. A curved staff with a median groove is introduced into the bladder and held as in lithotomy, but neither drawn up beneath the pubes nor depressed. The scrotum is allowed to hang down in the natural position, and neither the operator nor the assistant steadies the skin.

A very small incision or stab is now made with the point of a tenotomy knife or double-edged scalpel—in children about 1 in., in adults $1\frac{1}{2}$ in.—in front of the anus, through the median raphe in the direction of the staff; the groove is entered and the urethra incised for $\frac{1}{2}$ in. or more, and the knife withdrawn, slightly enlarging the superficial part of the incision as it emerges. The point of an ordinary director, which should not be too blunt, is inserted through the wound into the groove of the staff and passed into the bladder; the staff is withdrawn, and graduated female sounds or Hegar's dilators introduced up to the required size. Some operators do not pass the dilators so far as the bladder, but there is at all events no harm in doing so.

Dilatation is proceeded with slowly, and each instrument is left in position some little time; when the required aperture has been attained the director is withdrawn, leaving a circular gaping orifice into the urethra. The appropriate size of evacuating catheter is now passed, and the bladder injected, and the lithotrite should follow without difficulty.

If preferred, the director can be guided into the groove of the staff along the knife before the latter is withdrawn. Both cannula and lithotrite are entered point downwards, and carried into the bladder by the usual rotary movement. The operation is completed in the same way as an ordinary litholapaxy, and, as a rule, there is no difficulty in retaining fluid in the bladder; if leakage should occur at the margins of the wound, it is easy to compress them against the instrument.

In order to avoid a valvular aperture (which renders the introduction of instruments difficult) it is most important that the skin should not be displaced when making the incision. Also, it is better to enter the knife too far forward than too near the anus; in the latter case the instruments enter the urethra at an acute angle instead of vertically, and are much more likely to slip past the opening, and there is the added difficulty of working in a deeper wound. The chief danger of the operation lies in the lithotrite or cannula missing the urethral opening, and passing upwards between the bladder and the rectum; the possibility of a small median wound of the bulb, especially in children, need not give rise to anxiety, and so far as I am aware, no cases of troublesome hæmorrhage have been recorded.¹

Most of these points have been previously drawn attention to by Colonel Henderson, to whom I owe any knowledge of the operation. He remarks that it has never been contended that this method would replace lithotomy. There will always remain cases in which, owing to the need for drainage or excessive size of the stone, a perineal or suprapubic cystotomy will be required; but any one who gives Keith's operation a fair trial will find it, under certain conditions, of invaluable service. It appears probable that a restricted knowledge of the procedure, together with the impression in some cases that a cystotomy is involved, may account for its very local employment.

REFERENCES.

- ¹ Forbes Keith, *Lancet*, June 4th, 1892. ² Henderson, *Indian Medical Gazette*, August, 1900; Baker, *ibid.*, and *Lancet*, October 10th, 1896, and September 11th, 1897. ³ Freyer's *Modern Treatment of Stone*, second edition, p. 83. ⁴ *Indian Medical Gazette*, loc. cit. ⁵ See in this connexion Treves's *Surgical Applied Anatomy*, fourth edition, p. 385: "Wounds of the bulb in the middle line do not bleed readily as a rule."

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

PASSAGE OF A RENAL CALCULUS THROUGH A LUMBAR SINUS.

J. M., aged 45, had suffered from stricture of urethra for twenty years, and was in the habit of passing a metal bougie himself.

In November, 1901, he had an attack of retention, but failed to give himself relief. Whilst straining he "felt something give way." On examination I found him with distended bladder, left epididymitis, and a purulent discharge from the urethral meatus. Catheterization revealed several false passages, and I drew off a large quantity of offensive alkaline urine. The cystitis was treated by lavage. Seven days later a periurethral abscess developed, and was opened under ether. A second abscess developed a fortnight later, and was similarly treated. Both healed rapidly after evacuation of contained fetid pus.

In February, 1902, the patient went to a convalescent home, but was sent back suffering from pleurisy, with effusion on right side. The effusion was clear; temperature varied from 99° F. in the morning to 103° F. in the evening. The urine was acid, and contained much albumen and pus.

In October, 1902, a large, painful swelling developed in right kidney region, and was opened in the flank. A large collection of intensely fetid pus escaped. The sinus so made continued open, though patient gradually improved and was able to return to his occupation as a tailor.

In December, 1903, a swelling the size of a hen's egg appeared under skin immediately below the sinus. The patient applied a linseed poultice and the following day found a stone lying on the poultice. The stone is reniform, measures 25 mm. by 15 mm. by 6 mm., and consists of uric acid.

The sinus now (January, 1904) is completely closed, and the patient is free from pain.

REMARKS.—The case is of interest as illustrating an unusual way of passing a renal calculus. The calculus was evidently located in one of the calices without giving rise to symptoms. The occurrence of pyelonephritis (secondary to cystitis) and perinephritic abscess provided a track by means of which the calculus was liberated and discharged direct through the abdominal wall.

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CASE OF BONE CYST OF THE NOSE.

THE number of recorded instances of cystic distension of the accessory air spaces of the nose are sufficiently few to make the following example of nasal bone cyst of interest.

The patient, a woman, aged 36, presented herself at the Glasgow Ear Hospital with a history of gradually-increasing difficulty of respiration through the left nostril, extending over a year. There was no abnormal nasal discharge or evidence of swelling externally, nor was there headache or pain such as is found in chronic suppuration of any of the accessory sinuses. Anterior rhinoscopy showed the following: Blocking almost the whole interior of the nostril, only a very small opening remaining in the inferior meatus, was an ovoid glistening body of a light pink colour. The probe could be passed externally between it and the outer wall of the middle meatus, but internally between it and the septum it could not be passed, as the two were in such close apposition. On probing the swelling a crackling sensation was elicited, and the mucous membrane covering it was quite smooth and thin as if tightly stretched, and it was evident we had to do with a growth having thin bony walls, and not one of polypoid degeneration of the mucosa. In fact it was clearly an enlargement of the middle turbinal, and from its size and the nature of its wall a distension of the air cell of this structure. I attempted to remove it by means of the snare, but during the manipulation the thin wall crumbled and it was impossible to get it away in one piece. However, by the aid of the snare and Grunwald's forceps the whole was removed. It was found to contain rather thick, sticky mucus, but no pus could be detected. The contents did not appear to be under pressure, and this is interesting. It may be that the compression upon it by the surrounding structures had set up a