PATENT URACHUS AND ENCYSTED URINARY CALCULI.

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THIS case, which both in its clinical and pathological bearings I believe to be of some interest, came under observation on Jan. 27th, 1908, at Rae Bareilly, Oudh.

The patient was a Hindu male, aged about 30 years, apparently healthy apart from his urinary complaint, which dated back some five years or more. Owing to pressure of work I had not seen him till he was on the operating table prepared for litholapaxy. The urine, I was informed, was acid and free from albumin. Several small concretions lay free on the base of the bladder, but on commencing to crush the first the beak of the lithotrite impinged upon what appeared to be a much larger calculus occupying a position at the apex of the half-distended bladder. After the first stone had been crushed the projecting portion of this larger calculus was easily seized between the blades of the lithotrite, but was found to be fixed to the bladder wall.

To crush this calculus *in situ* appeared dangerous, if not impossible, so lateral lithotomy was performed and the forefinger passed into the bladder. The calculus was now found just within reach of the finger. With the forefinger on the tip of the calculus and the other hand on the abdominal wall it was estimated to be of considerable size, and its upper portion seemed very close under the examining hand beneath the abdominal wall in the middle line. It was evidently an "hour-glass" stone, the deeper half being considerably larger than the projecting portion felt by the finger. The projecting portion being steadied in the grasp of lithotomy forceps the perforated end of a long probe was insinuated alongside the neck and gradually manoeuvred round the whole circumference, loosening the retaining tissues till by gentle traction and rotation of the forceps an "hour-glass" calculus was safely delivered. A second calculus immediately dropped from the same pocket into the bladder cavity. It, together with the three small concretions, the presence of which on the bladder floor had already been detected, was now removed, and the debris of the small stone, first crushed, washed out. In case other concretions might still be lying in the pocket its recesses were explored by a probe. Nothing further was found, but the probe passed up in the middle line, easily palpable through the abdominal wall to a point two inches below the umbilicus. At the upper end the pocket seemed to be contracted to a mere sinus. Convalescence was rapid and uncomplicated.

The "hour-glass" calculus weighed over 1½ ounces. Its neck was of about the thickness of a cedar pencil but somewhat flattened. The deeper lobe was larger than the projecting head, which was capped by a pea-sized, rough, dark-coloured concretion easily broken off when dry from the head proper. This terminal concretion resembled exactly in colour and approximately in size the four small concretions which had been found free in the bladder, differing only in being rough and not polished or faceted by attrition. This resemblance strongly suggested that these four also owned the same source from the head of the "hour-glass" calculus. Each weighed about 10 or 12 grains. The second encysted calculus showed a large oval facet corresponding to a like facet on the base of the "hour-glass" calculus. Its longer axis had lain at right angles to that of the diverticulum in which it lay. It weighed just over half an ounce.

Neither in recorded cases nor in museum specimens have I come across any instance in which an encysted calculus has occupied the apex of the bladder. All the records I have found refer to basal or lateral sacculi, such as are commonly associated with enlarged prostate and chronic cystitis. This is so, for instance, in all the cases of encysted calculus included in the late Sir Henry Thompson's series of over 800 cases, the specimens of which are now in the Museum of the Royal College of Surgeons of England. From the position and relations of the diverticulum this case appears to be an example of persistent patency of the lower end of the urachus with calculous formation following, presumably on the accidental lodgement of a small concretion in it.

As showing the free communication which may exist between the bladder and a patent urachus, Marshall's case¹

may be quoted, in which the aperture admitted three fingers, and Garrigues',² in which there was an upward prolongation of the bladder in front of the peritoneum and transversalis fascia without any constriction at all. Both these were discovered accidentally in the course of a laparotomy. Binnie³ found in 12 adult bodies out of 16 examined a slight diverticulum from 1 to 2 centimetres deep at the fundus of the bladder, and Vaughan⁴ quotes Wutz as saying that in most bodies the urachus is permeable for a short distance upwards—that is, that most persons have the condition of "blind internal fistula," but so long as the valve-like fold of mucous membrane (valve of Wutz) which guards the opening remains intact nothing can pass from the bladder into the urachus. Mériel⁵ also says that the urachus is undoubtedly permeable "after some sort" after birth, and Arbuthnot Lane,⁶ in describing the pathological appearances of a case in which a traumatic urethral stricture had existed, records that "at the upper angle of the bladder and apparently at the point of attachment of the urachus was a diverticulum of mucous membrane which had no covering of the muscle wall; it was as large as a small marble with a small orifice of communication with the bladder cavity. *This resembles exactly several others I have seen in this position.*"

While urachal cysts are much commoner in the female than in the male, a patent condition of the urachus leading to urinary umbilical fistula is much commoner in the male (14 out of 16 cases—Marshall¹) owing to the greater liability to obstruction of the urethral outflow from phimosis, stricture, stone, enlarged prostate and bladder tumour, and consequent forcing open of the valve of Wutz (Vaughan⁴ and Weiser⁷). Nevertheless, as Mériel points out,⁵ patency of the urachus may exist without obstruction, just as obstruction frequently exists without urachal fistula.

Several cases are recorded of the association of urinary calculus with an external urachal fistula. In a case of T. Paget, shown by Bowman in 1850,⁸ a uric acid calculus which had formed round a coiled hair was extracted digitally through a patent urachus. In Case 36 of Vaughan's series⁴ an umbilical fistula coexisted with a stone in the bladder and was closed after removal of the stone by suprapubic lithotomy. And in one of Weiser's cases⁷ a calculus weighing 70 grains was removed from a suppurating urachal cyst which was discharging through the umbilicus. I have not, however, found any case showing the exact combination which existed in the present one—namely, urinary calculi occupying the lower end of a blind internal urachal fistula, though the possibility of such an occurrence seems clearly enough indicated by the pathology.

As regards the treatment adopted, it must be admitted that there was considerable risk that the condition found might have proved impossible to deal with from the perineum, although encysted calculi have not infrequently been extracted by this route—e.g., Captain Hugo's case of stone secondary to a gunshot wound.⁹ Also a condition mechanically somewhat similar—namely, a calculus projecting from a ureteral orifice—has been successfully dealt with through the female urethra.¹⁰ The alternative suprapubic operation, however attractive on account of the good access it gives to the interior of the bladder and the ease with which a stone can be extracted, is, under circumstances in which ideal conditions as regards after-care cannot be secured, a much more serious proceeding and apt to be followed, in my experience, by a tedious and very uncomfortable convalescence. I feel sure that my preference for the perineal operation wherever practicable is shared by many surgeons, at all events in India.

Nor is it at all certain that a suprapubic incision would have rendered possible a radical cure by dissection of the diverticulum from the peritoneum, with closure of the bladder, as was done in Marshall's case. For in several instances it has proved impossible to dissect away urachal cysts from their posterior attachments or (a condition pathologically strictly comparable) possible with only great difficulty and danger (Doran¹¹). Failing some future septic condition of the bladder, there seems no particular reason to anticipate that the existence of this diverticulum will cause serious trouble, though recurrence of stone is a possibility to be reckoned with.

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AN UNUSUAL CASE OF OBSTRUCTION OF THE SMALL INTESTINE CAUSED BY A MECKEL'S DIVERTICULUM.

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THE patient, a healthy youth, aged 20 years, who had never previously suffered from any intestinal trouble and whose bowels acted regularly daily, became unwell on Nov. 12th, 1909. He suffered from some abdominal pain and general malaise, but the bowels acted normally that morning. On the 14th the pain became worse and he vomited on several occasions; the bowels did not act and the patient took to his bed. During the next seven days no further action of the bowels took place although purgatives and enemata were administered. Flatus was, however, passed on many occasions. The patient vomited, seven or eight times daily, a dark-brown matter, ill-smelling but not faecal in odour. He slept little and was in some pain. On the ninth day from the commencement of the illness Dr. W. Thornely saw him in consultation and the patient was sent to St. Thomas's Hospital.

On admission on Nov. 21st the patient was pale, with some anxiety of countenance. The tongue was moist, vomiting occurred occasionally, and after the administration of an enema some flatus was passed. The temperature was subnormal; the pulse was 72, small. The abdomen moved little and was much distended, the distension being central and resembling in character that seen with a collection of pus in the pelvis. The flanks were flat, but there was no asymmetry. General tympanic resonance was present, and on palpation there was marked tenderness beneath the lower segment of the left rectus, where also the patient said the chief pain was located. On rectal examination the bowel was found to be empty, and in Douglas's pouch a tender elastic swelling could be felt. There was no abnormal scarring or depression of the umbilicus.

A left para-median sub-umbilical incision was chosen as corresponding to the position of the pain and tenderness. A small amount of free fluid escaped on opening the peritoneal cavity, and highly distended coils of small intestine presented. A finger passed into the pelvis established the fact that no collection of pus existed, and a short search allowed the detection of collapsed coils of small intestine. The latter were traced to the right side of the pelvic brim, and when some of the distended coils had been allowed to escape a Meckel's diverticulum was exposed. The constriction was not very tight, and a finger was inserted beneath the diverticulum, which gave way from its point of attachment to about the centre of the right half of the brim of the pelvis. The adherent area was on the right side of the diverticulum about three-quarters of an inch from its tip. No intestinal contents escaped. The base of the

diverticulum was clamped, ligatured, and sunk by a row of sutures passed in the transverse axis of the bowel. The loaded extruded intestine was emptied by an enterotomy and replaced, and finally the abdomen was closed. The patient made a rapid recovery, only interrupted by some suppuration in the abdominal wound, no doubt due to fouling by the intestinal contents removed.

The diverticulum was situated about two feet from the termination of the ileum and was two and a half inches in length. It contained liquid faeces, and while being examined the end of the rib of a whiting protruded from the perforation in its wall. The lining mucous membrane was inflamed throughout, but there was no ulceration except at the point at which the end of the fish-bone had impinged and caused the perforation.

The case is of some interest both from the points of view of diagnosis and pathology. The history provided none of the special features of obstruction from a Meckel's diverticulum, except the obviously mild nature of the constriction, since flatus was passed throughout. On the other hand, the history of the initial pain and malaise, continuing for two days, followed by the development of vomiting and constipation, suggested an attack of perforative appendicitis, while this theory was supported by the character of the abdominal distension, the tenderness beneath the left rectus, and the fulness in Douglas's pouch, all of which suggested that the obstruction was symptomatic and depended on the presence of pus in the pelvis. The pathological interest lies in the fact that the condition forms another link in the chain of resemblance between the possible accidents to which both Meckel's diverticulum and the vermiform appendix are alike liable.

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Position of curved fish bone and relation to perforation are shown by the dotted line.

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Cagliari: Dr. Giulio Tarozzi has been appointed Extraordinary Professor of Pathological Anatomy, and Dr. Roberto Binaghi Extraordinary Professor of External Pathology.—*Catania*: Dr. Filippo Arturo Foderà of Cagliari has been appointed Professor of Materia Medica and Experimental Pharmacology.—*Kharkoff*: Dr. N. A. Voliashko has been appointed Extraordinary Professor of Pharmacognosy and Pharmacy.—*Marburg*: Professor Schmidtman has been appointed Curator of the University.—*Munich*: Dr. L. Lindemann, *privat-docent* of Medicine, has been granted the title of Extraordinary Professor; Dr. Rudolf Schneider has been recognised as *privat-docent* of Ophthalmology.—*Naples*: Dr. Carlo Gualdi has been recognised as *privat-docent* of Internal Pathology.—*New Orleans* (Tulane University): Dr. Henry Bayon has been appointed Adjunct Professor of Anatomy.—*Padua*: Dr. Luigi Sabbatani of Parma has been appointed Professor of Materia Medica and Experimental Pharmacology.—*Pavia*: Dr. Carlo Bellinzona has been recognised as *privat-docent* of Ophthalmology.—*Zürich*: Dr. Hans von Wyss has been recognised as *privat-docent* of Physical and Chemical Diagnosis of Medical Diseases.