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URETHRAL DIVERTICULA.

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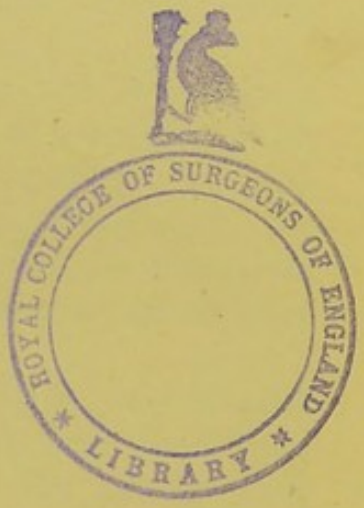
BY

AMAND ROUTH, M.D.



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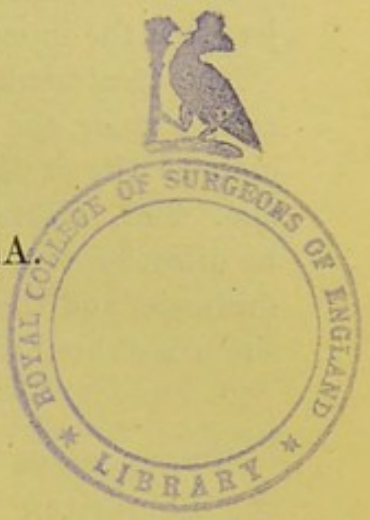
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URETHRAL DIVERTICULA.

By Amand Routh, M.D.

(Received November 6th, 1889.)

(*Abstract.*)

Three cases of urethral diverticula are related, and references to others made. The literature on the subject, though dating from 1847, is scanty and scattered.

The *symptoms* are progressive discomfort and frequency of micturition, dyspareunia, and the formation of a swelling which appears at the vaginal orifice. Pressure upon the swelling causes thin, offensive, irritating pus to pass into and out of the urethra. Cases are recorded showing that if these diverticula are left untreated, retrograde changes occur along the urinary tract.

The physical signs are unequivocal, differing on the one hand from dislocation of the urethra, and on the other hand from simple dilatation of the middle third of the inferior wall (urethrocele).

The diverticulum is essentially a urinary pouch or cyst communicating with a urethra of normal calibre, usually in its middle third, by an orifice relatively narrow.

The ætiology seems to be—1. Closure of the ducts of pre-existing urethral glands, retention-cysts resulting. Suppuration and ulceration into the urethra by a small, often valvular hole follows, and the inflammation is kept up by urine trickling into the sac at each act of micturition. 2. Blood-cysts which have passed through similar changes. 3. The formation of pseudo-cysts by injury to the urethral floor during labour or instrumentation.

Pregnancy, with its increased local activity, seems usually to

induce the formation of these cysts, and parturition appears to be often the immediate cause of the rupture.

The treatment is mainly surgical. 1st. *Where urethritis or cystitis exists*, the cyst-wall should be dissected out, and cut off close to the urethra, and the vaginal wound left open for drainage. 2nd. *Where the urinary passages are healthy* the cyst should be dissected out, the opening into the urethra enlarged to allow drainage, and the vaginal wound at once closed. In either case the urine should be drawn off till union is assured.

THREE cases have recently come under observation at the Samaritan Free Hospital, and as they appear to be not infrequent, and yet have been rarely described, I have ventured to bring them before this Society, hoping to have light thrown upon their ætiology and proper treatment.

These diverticula occupy the urethro-vaginal septum, and communicate with a urethra of normal calibre and position by a small opening in its floor.

Roughly speaking, the *symptoms* are progressive discomfort and frequency of micturition, the appearance and growth of a tender lump projecting at the vaginal orifice, passage of thin irritating pus, either at the end of micturition or on pressure, and sooner or later cystitis, &c.

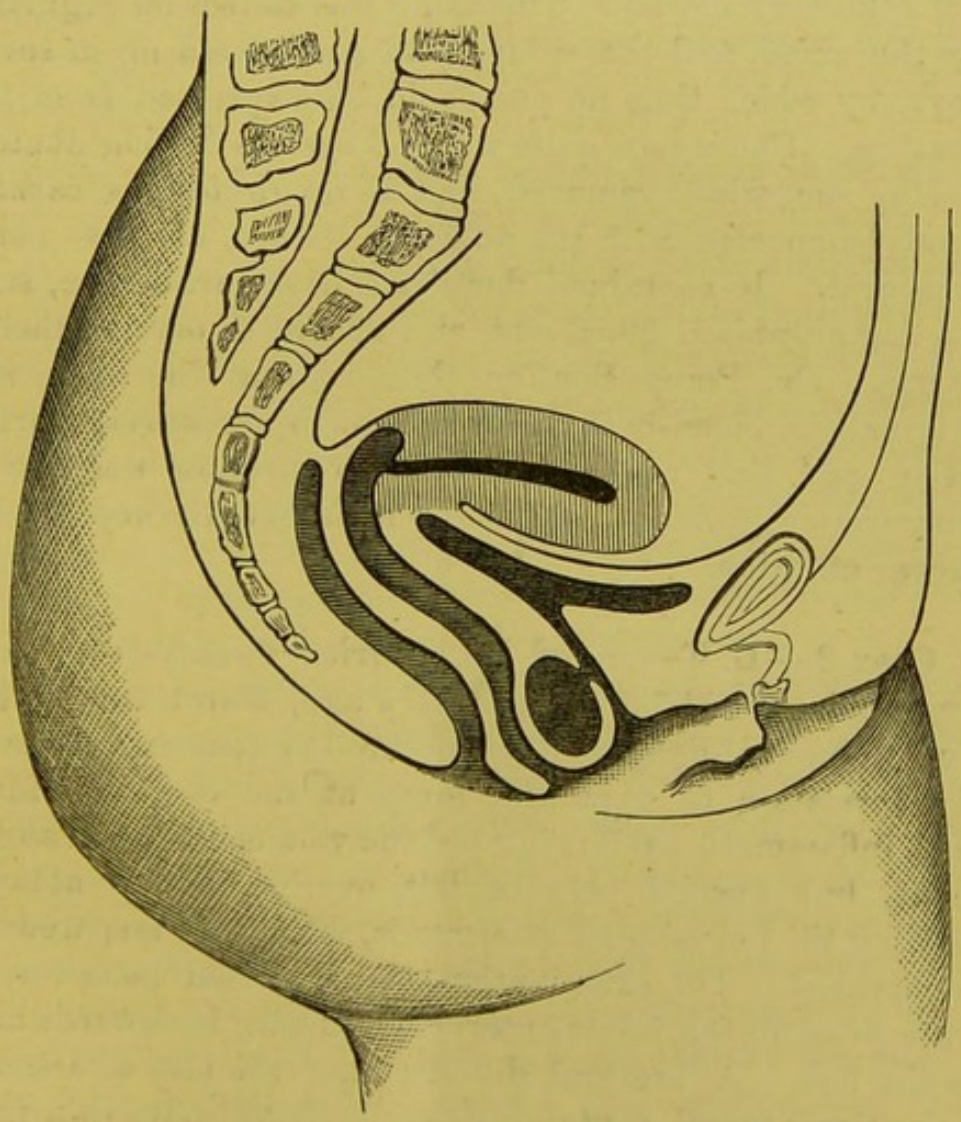
The *physical signs* are as follows:—*Per vaginam* a rounded, tender, tense swelling is found in the urethro-vaginal septum, opposite the middle third of the urethra. Its smoothness and elastic hardness are characteristic, the rugæ of the mucous membrane over it being obliterated. In some cases the mucous membrane moves freely over the underlying sac, in others it is adherent by inflammation. A sound passed along the *anterior* wall of the urethra goes directly into the bladder, proving that the case is not one of urethral dislocation.

As proving further that these cases are not simple dilatations of the middle third of the inferior wall of the urethra (simple urethrocele), it is found that a large-sized sound will not enter the pouch, but will pass on into the bladder, whereas a small sound or probe will find its way through

the narrow opening (which is often valvular), if it be passed along the posterior wall of the urethra. The exact size of the opening (usually from 4 to 8 English catheter) is ascertained by a graduated bulbous sound.

With a bougie lying in the urethra the sac is felt to be quite distinct, and even when emptied by pressure it remains a distinct thick-walled cyst. When full, these cysts vary in size from that of a pea to that of a hen's egg.

After being emptied, it only partially refills at the next act of micturition, taking six or eight hours to become tense by exudation from its own lining membrane.



The first of the three cases which have come under my notice was admitted into the Samaritan Free Hospital by

Mr. Malcolm, under the care of Dr. Percy Boulton, in February last, and he has kindly placed his notes at my disposal.

The patient was a married multipara, aged 33, whose chief pelvic trouble was dysuria.

Examination revealed granular endocervicitis, and a urethral diverticulum the size of a marble. Dr. Boulton treated her by urethral suppositories of lead and bismuth, and with medicines, for three weeks, with no benefit, and on March 11th dissected out the cyst *per vaginam*, using one gut suture to draw the vaginal wound together, which was not otherwise closed. The urine was drawn off regularly by the nurse, and the wound had granulated up in seven days, by which time no pus could be expressed from the urethra. She is now quite well, all cystitis having abated.

The sac, when removed, had a rough fibrous capsule firmly connected with the adjacent tissues, and was not a true cyst. It contained dark red, fleshy trabeculæ, suggesting organised blood-clot, and had no smooth epithelial lining. Dr. Percy Boulton thought that the cyst was originally a blood-cyst, the result of injury during parturition, and that connection with the urethra was due to suppuration, inflammation being subsequently kept up by access of urine.

Case 2.—L. T—, aged 40, married twenty-two years, ten children, last fourteen months ago, March 21st, 1889. Complained of dyspareunia for three or four months, and the formation of a painful lump at the vaginal orifice. Had inflammation following podalic version at last confinement, but beyond pain in left ovarian region noticed nothing till ten months afterwards, when the dyspareunia supervened. On examination, signs of old perimetritis were present, the fundus uteri being drawn backwards and to the left. A urethral diverticulum the size of a small walnut was found, containing extremely offensive thin pus, having physical signs as above described. On June 7th, assisted by Drs. Prickett and Rutherfoord, I dissected out

the cyst, which communicated with the urethra by two openings. These were united along the floor of the urethra, the vaginal wound closed by six wire sutures, and a retaining catheter introduced.

The wound healed, but a pinhole opening remained at the anterior end of the incision, which, however, the patient declared caused her no inconvenience, and she refused to have it closed. She is now free from all pain and discomfort.

Dr. Rutherfoord kindly examined the sac for me, and found it, unlike Dr. Boulton's, with no trabeculæ inside, and with a smooth and somewhat glistening outside surface. On section it was mainly connective tissue, with evidence of an inflammatory process on its inner side, upon which no epithelium was traced.

Case 3.—M. E—, aged 27, married three years and a half; one child, two years and a half ago.

October 1st, 1889.—Complains of a tender swelling in the front passage; pressure upon it causes pain and a discharge of irritating matter; for a time, however, after the sac is emptied the gnawing, throbbing pain, which is otherwise always present, is relieved. She had only noticed the lump a month, and says it followed a feverish attack, with much local pruritus and scalding during micturition, which latter symptom she had noticed off and on since her confinement two and a half years ago.

The physical signs of the diverticulum were identical with those already described, the opening into the urethra being about the size of a No. 6 catheter. Efforts were made to apply caustics to this cavity by dilating the front part of the urethra; but, this failing, I operated as before, removing, however, only a portion of the cyst-wall. The woman was directed to pass water in the genupectoral position, and left the hospital cured on the twentieth day.

But few references are made to these cases in literature. Parish* of Philadelphia quotes Chéron's† views, and

* Sajous's 'Annual of Universal Med. Sciences,' vol. iv, 1888, p. 154.

† 'Gazette des Hôpitaux,' 1887.

Jenks* adopts them, considering these cases to be varieties of urethrocele, which should be divided into two classes: 1st, simple localised dilatation of the middle third of the inferior wall of the urethra; and 2nd, a urinary pouch communicating with a urethra of normal calibre by an orifice relatively narrow.

These three observers view these diverticula as being—(1) congenital; (2) caused by union between the urethra and a pre-existing non-congenital vaginal cyst; or (3) determined by a limited tearing of the urethral floor during labour.

In 1869 Dr. Priestley† described three cases, which he thought were due to distention of sebaceous follicles. His first case, and possibly Dr. Hickinbotham's described below, are the only recorded examples in which the cysts were discovered before rupture into the urethra had occurred. In both of these cases, however, rupture into the urethra occurred during the impending labour, and we may assume that this is the common history in the majority of these urethral diverticula. Dr. Priestley's second case is also interesting, for sebaceous material was discovered passing from the cyst. The opening here was in the middle third of the urethra, but was evidently valvular, pressure upon the cyst causing the contents to pass backwards into the bladder. West‡ refers his readers to Huguier's§ work published in 1847 for notes of some of these cases, admitting, however, that he was then (1879) not familiar with them himself. I cannot obtain access to a copy of Huguier's paper.

Dr. Hickinbotham,‖ of Birmingham, publishes a very interesting case which occurred in a nullipara, daily expecting to be confined of her first child. Cephalotripsy was performed because of a rigidly contracted cervix,

* 'Mann's System of Gynæcology,' vol. ii, 1888, pp. 476, 490.

† 'Brit. Med. Journ.,' 1869, vol. i, p. 6.

‡ West and Duncan's 'Diseases of Women,' 4th edit., 1879, p. 629.

§ 'Mémoires de la Société de Chirurgie de Paris,' vol. i, 1847, pp. 326—394.

‖ 'Brit. Med. Journ., 1882, vol. i, p. 613.

and subsequent events seemed to show that the sac then ruptured into the urethra. At all events the cyst at once began to grow rapidly and become tender, presumably by the entrance of urine causing more inflammation, and on the tenth day after labour the cyst ruptured also into the vagina. At a subsequently successful operation by Lawson Tait, the valvular opening into the urethra, of the size of a hempseed, was well seen.

Lawson Tait* has also described four other cases, one in 1875, the others in 1885. He thinks these cysts may be congenital, like intestinal diverticula, or the result of union between the urethra and a cyst of pathological origin.

Englisch,† of Vienna, has seen such cysts at birth. Santesson‡ arguing from a case seen in 1861, thinks they are due to injury from labour, or to clumsy catheterisation, or to rupture of simple vaginal cysts.

Duplay§ has collected six cases, one of which (Gillette)‖ is a case of simple urethrocele, and two others described by Foucher¶ and G. Simon** contain no new points.

Very few modern English text-books of gynæcology make mention of these cases, and, strange to say, neither Emmet nor Skene alludes to any other form of urethral dilatation than the simple urethrocele, though they enter largely into genito-urinary troubles, one case of peri-urethral abscess being mentioned by the latter.

Those who have studied the anatomy of the urethra describe many varieties of glands, closure of whose ducts would lead to the formation of retention-cysts.

Thus Littré's glands, which are little more than mucous membrane reduplications, are described as being about twenty-five in number, running parallel with the urethral

* 'Lancet,' 1876, vol. ii, p. 625; and 'Brit. Med. Journ.,' 1885, vol. i, p. 982.

† 'Wiener med. Presse,' 1881, s. 599.

‡ 'Nordiskt med. Archiv,' vol. xvi, 1884.

§ 'Archiv. Gén. de Med.,' vol. vii, 1880.

‖ 'L'Union Médicale,' April 12th, 1873.

¶ 'Moniteur des Hôpitaux,' 1857, p. 758.

** 'Monatschrift für Geburtsk.,' xxiii, s. 245.

floor, and opening into its anterior half or two thirds by apertures admitting a bristle.

The follicles of Morgagni, again, are numerous small racemose glands opening by minute ducts at right angles to the urethral floor.

Skene's* ducts, which appear to be the efferent canals of Max Schüller's† glands, are two in number, run parallel to the anterior third or half of the floor of the urethra, and open into it just inside the meatus.

Any of the above ducts or glands may become retention-cysts by closure of their orifices by urethritis, peri-urethritis, or even accidental plugging. As a result of suppuration or rupture the cyst then opens again into the urethra, and the inflammation is kept up by urine finding access to its cavity at each act of micturition, and, owing to the small and often valvular character of the opening, the distention of the cavity increases.

As these diverticula appear to be always opposite the middle third of the urethra, it seems improbable that they can be due to occlusion and distention of Skene's ducts which are opposite the anterior third, unless, as Mr. Alban Doran‡ suggests in his review of Bland Sutton's§ work on Gartner's duct, Skene's ducts are the anterior termination of Gartner's ducts. Though Gartner's ducts are doubtless responsible for vaginal cysts near the cervix, Max Schüller,† Fischel, Dohrn, Rieder,‖ all deny that it ever reaches the urethra. Max Schüller's glands, from which Skene's ducts lead, seem to be the most likely origin of these retention-cysts.

Blood-cysts, as in Dr. Percy Boulton's case, may be another mode of origin, and injury to the urethral floor as suggested by Chéron, Santesson, and others, may also be occasionally productive of a pseudo-cyst, whose sym-

* 'Diseases of Women,' 1889, p. 616.

† 'Ein Beitrag zur Anatomie der weiblichen Harnröhre,' 1883.

‡ 'Lond. Med. Rec.,' 1886, p. 248.

§ 'American Journ. of Obstetrics,' vol. xiii.

‖ 'Lond. Med. Rec.,' 1885, p. 88.

ptoms and physical signs may greatly resemble those of true retention-cysts.

Pregnancy, owing to greater local activity, seems to be a starting-point for the formation of the diverticula, and the impending labour may suffice to cause rupture into the urethra (Priestley's and Hickinbotham's cases), thus anticipating the slower effects of a subsequent suppuration.

As the ætiology of these cases is so distinct from that of simple dilatation, it seems a pity that both should be grouped under the one word urethrocele.

The treatment of these diverticula has been varied. So long as the cysts are not in communication with the urethra they can be treated like Bartholini's retention-cysts, but when urine is obtaining intermittent entrance the problem is more difficult.

Palliative methods have invariably failed. Mr. Alban Doran* has kindly referred me to Santesson's case which occurred in 1861, which seems not to have been described till 1884.† It occurred in a widow, whose dysuria, pruritus, and vaginal swelling dated from a confinement twelve years previously.

The physical signs differed from the typical in only one respect, pressure upon the swelling *per vaginam* causing its contents to go backwards into the bladder. After four years' trial of palliative treatment, pressure, caustics, &c., an elliptical piece was cut from the vaginal wall, and from the wall of the diverticulum, the wound being united by sutures. Some sloughing occurred, the wound taking five weeks to heal, and four years afterwards the sac again enlarged, urethritis, cystitis, and nephritis supervened, the patient dying six years after the failure of the first operation. Santesson now states, after twenty-three years' interval, without apparently meeting with another case, that in any future case he would remove the whole diverticulum, suture the margin of the wound, and keep a

* 'Lond. Med. Rec.,' 1885, p. 93.

† 'Nordiskt med. Archiv,' vol. xvi, 1884; 'Schmidt's Jahrbücher,' cciii, part ix, art. 479.

catheter *in situ* till union was complete; and this method was adopted with success by Lawson Tait in his four cases. In 1868 Dr. Priestley,* in consultation with Sir James Paget and Sir Spencer Wells, proposed to pass a seton through a urethral diverticulum for its obliteration, and, if this proved ineffectual, to lay it open *per vaginam*. The patient, however, shrank from any surgical interference, and her subsequent history is unknown.

Chéron,† in 1887, advocated slitting up the urethra from the orifice of communication to the meatus, and the one case he saw and thus treated was cured. From the experience brought by all these cases it seems that there are two ways of dealing surgically with them, and that if we desire to prevent such retrogressive changes as occurred in Santesson's case, we should promptly adopt one or other, or some operation.

1st. Where urethritis or cystitis already exists the cyst-wall should be dissected out, and the vaginal wound left wholly or partly unclosed to allow of free drainage. In the rare event of union not occurring, a secondary operation would be required later. This was Dr. Boulton's method of operating (Case 1).

2nd. Where the urine is normal, and the urinary passages are healthy, the cyst should be dissected out, the opening into the urethra enlarged to allow of urethral drainage, and the vaginal wound at once closed with wire sutures, which should not enter the urethra itself.

Till union is complete, the vagina should be kept aseptic as far as possible, and the urine should be drawn off either at regular intervals or by a retaining catheter; or, as was adopted in my second case, the woman may be told to pass water in the genupectoral position.

In dissecting out the diverticulum the presence of a large bougie in the urethra is helpful, and the contents of the cyst should not be pressed out lest it become flaccid. Before the sac is separated from the urethra it may be

* 'Brit. Med. Journ.,' 1869, vol. i, p. 6.

† 'Gazette des Hôpitaux,' 1887.

incised, and after its contents have escaped the small opening into the urethra can be well seen.

In my second case I removed only a portion of the sac; but though the cure is complete, it seems safer to dissect out the whole cyst-wall.