LARGE HEMORRHAGIC CYST OF THE PROSTATE GLAND

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Excluding echinococcus cysts, large retroprostatic and retrovesical cysts of the male pelvis are rarely encountered. Of those that have been reported in the literature, none is clear as to the true derivation. It is for these reasons that this case may prove of interest.

REVIEW OF THE LITERATURE

Wesson in 1924 thoroughly reviewed the literature on cysts of the prostate and urethra. He collected 55 reported cases, to which he added 4 of his own. Since that time 11 more cases have been cited, making a total of 70 cases up to the year 1931 (Ryall, Keyes, André, Papin and Verliac, Altman, Mandel, Roberts, and Fritz, quoted by Altman). In none of these cases reported since 1924, and including Wesson's four cases, were the cysts of any appreciable size nor were they located behind the prostate or bladder, with the exception of those of Roberts, Papin and Verliac, Altman, and Fritz. Roberts' case proved to be a cyst within the prostate, originating from one of the glands. Papin and Verliac found a small midline multilocular retroprostatic cyst of a vegetating or papillary adenomatous nature which they believed was derived from the glands within the prostate. In contrast to these two cases, Altman and Fritz each described a unilocular cyst the size of a hazelnut encroaching upon the posterior aspect of the prostate in its midline, its muscular walls intermingling with those of the seminal vesicles.

In 1908, W. Liebi, in presenting his retroprostatic cavernous cyst in the nature of a lymphangioma—the only case of its kind noted up to his time—discussed and classified retroprostatic and retrovesical cysts according to location and type as follows:
I. Epithelial cysts in the prostate
   (a) Those within the prostate
   (b) Those from the prostatic utricle

II. Retrovesical epithelial cysts
   (a) All cysts attached to the prostate, epithelial in
careacter and behind the bladder, except
   (b) dermoid cysts

III. Retrovesical endothelial cysts

IV. Echinococcus cysts

Excluding cysts within the prostate, dermoid, endothelial, and
echinococcus cysts, the rarity of reported retroprostatic and
retrovesical cysts in the male pelvis is marked. Seventeen cases
in all are noted: 8 of these cysts are cited as large cysts, 9 as small.
The derivation of the 8 large cysts is, indeed, not clear in any case.
J. Spence, in 1865, was one of the first to call attention to a large
cyst behind the bladder in the male pelvis. The cyst was punc-
tured and later became infected. After death, upon exploring the
pus-filled cavity, it was found to lead to the floor of the urethra
through the prostate gland. This was believed to be a cyst of the
prostate. N. R. Smith, in 1872, described a "hydrocoele of the
seminal vesicle." He found a very large cyst between the rectum
and bladder in the midline. It has been thought that this was a
cyst of the prostate rather than the seminal vesicle (Belfield).
Rolfe, Guiteras, Fisk, Damski, and Greenberg reported cases of
large retroprostatic cysts which were thought to come either from
the prostate or from the seminal vesicles. Huggins, in 1930,
demonstrated that a diverticulum of the spermatic system should
be considered in some of these cases.

The origin of the small cysts is much clearer than that of the
larger cysts. In 1874 Englsich demonstrated their true nature for
the first time. He presented five historic and classic cases in
which he showed midline retroprostatic cysts, each the size of a
hazelnut, in old as well as young persons. On the dead body he
was able to dissect these cysts out so as to reveal a fibrous attach-
ment coursing through the mid-section of the prostate as far as the
colliculus. Especially in his second case, in a man aged forty, he
cites evidence that midline retroprostatic cysts are usually derived
from mullerian rests. On the basis of these findings of Englsich
and the work of Meyer, Altman presented his case of a small
midline retroprostatic cyst as being derived from mullerian anlage.
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Bosscha (Guelliot), Luksch, Priesel, and Fritz have noted similar cases of small retrovesical cysts.

CASE REPORT

E. C., a young man of Austrian parentage, aged nineteen, entered the Squier Urological Clinic on June 10, 1930. For ten days he had had a watery sanguineous discharge from the urethra following all his bowel movements. A year earlier he had noticed that he had become somewhat constipated and that more straining was required to produce stools than formerly. At this time, also, a sense of pressure had developed in the rectum. He had no urinary symptoms except for the occasional occurrence of a few drops of blood in the urine. The nocturnal emissions were normal in appearance. The patient had lost no weight and had felt exceptionally well for many years.

The family history and past history were irrelevant.

The general physical examination of this patient gave strikingly negative results. He was well developed and nourished and of good color. A rectal examination was the means of localizing the pathology. The prostate felt normal in size, shape, consistency, and position. In the midline, just off and above the prostate, was a round, smooth mass, non-tender and "without heat," about the size of an orange, protruding into the rectum. This mass, palpated bimanually through the abdominal wall, was elastic and semifluctuant in nature. Although freely movable within the pelvis, it was fixed at one point, the middle and posterior aspect of the prostate. The rectal wall was freely movable everywhere. No other masses, as glands or indurated tissue, were felt. The seminal vesicles were identified high up, running along the postero-lateral walls of the mass. They were not indurated or fixed. Occasionally, upon palpation of this mass, a small amount of serosanguineous fluid would exude from the urethra.

Laboratory and x-ray examinations were done to help clarify the nature of this tumor in the pelvis. A complete blood count, including a blood smear, a complete study of the blood chemistry, a blood Wassermann test, three complete stool examinations, three twenty-four-hour urine examinations for tubercle bacilli, and several routine urine examinations showed nothing of significance. An x-ray of the chest showed a flat right diaphragm with obliteration of the costophrenic sinus. Roentgenograms of the upper and lower genito-urinary tract were negative. An x-ray report on the colon, following a barium enema, read as follows: "There is some diminution in the shadow of the barium in the rectum. The colon is well filled with some leakage through the ileocecal valve. There is no defect, and no evidence of a tumor involving the intestinal tract. There is apparent pressure on the contents of the rectum. Following evacuation, the colon empties about half its contents." (Fig. 1.)

The fluid obtained by the patient from the urethra following a bowel movement varied in amount. Sometimes there was just enough
with which to make a smear, at other times as much as four c.c. It was watery in nature, containing a variable amount of blood and mucus. Microscopically there were seen many red blood cells along with old degenerated cells, which were interpreted as epithelial cells. There were no organisms and no tubercle bacilli. A culture of this fluid produced no growth.

A complete cystoscopic examination was done. The floor of the
bladder was found to be pushed up and the ureteral orifices set high upward and well backward. Both renal pelves were catheterized together, and a normal peristaltic flow of hazy urine was obtained from both sides. The laboratory report on the ureteral specimens was the same for both kidneys: appearance, cloudy; reaction, acid; red blood cells, many; white blood cells, occasional; urea, 0.60 per cent; tubercle bacilli, none. Bilateral pyelographic x-rays of the kidneys revealed normal pelves and ureters.

An examination of the prostatic urethra showed a normal verumontanum with normal orifices of the utricle and ejaculatory ducts. No other openings were noted. Even with pressure made by bimanual palpation of the pelvic tumor and a urethroscope in the urethra, no clue could be found as to how or from whence the serosanguineous fluid might have escaped into the urethra.

A preoperative diagnosis of cyst and sarcoma of the prostate gland was made.

The operation for the exploration of this tumor of the pelvis was done by Dr. J. Bentley Squier. A midline suprapubic incision was made
over the bladder, which was exposed and freed on all sides, so that it could be pulled up and out of the pelvis on top of the symphysis pubis. Both ureters and the seminal vesicles with their vasa deferentia were separately identified, freed, and exposed in their entire length within the pelvis. Directly in the midline, lying free within the pelvis, opposite the posterior wall and neck of the bladder, there was found a cystic tumor about the size and shape of a large orange (Fig. 2). When this cyst was separated from the overlying peritoneum, fascia, bladder, and seminal vesicles with their vasa deferentia, it was broken, and a large amount of serosanguineous fluid gushed forth. The main attachment of the cyst, which consisted of a thick fibrous cord, was traced downward directly in the midline to the very capsule and substance of the prostate, where a complete severance was made. This done, the bladder was replaced within the pelvis in its original site and fixed in place by sewing the lateral pelvic fascia to the sides of the bladder and the pelvic urachal fold of tissue to the top and back of the bladder wall, thus forming two lateral attachments and one posterior for the bladder.

The specimen obtained at operation consisted of a spherical sac measuring 15 cm. in diameter. Its wall, 0.5 cm. in thickness, was composed of a fibrous, leathery structure, the inner side of which revealed a smooth and injected surface.

The fluid collected directly from the cyst was found to be identical in every way with that from the urethra, except that the former contained no mucus.

Many microscopic sections were made of the cyst wall, all of which
revealed a structure consisting of two definite layers. The outer layer was composed of compact, interlacing bundles of collagenous connective-tissue in which were scattered many blood vessels, most numerous at the outermost surface. In sections prepared with Mallory's connective tissue stain no muscle cells were differentiated. This fibrous tissue layer was covered on its inside by a low cuboidal, non-ciliated epithelium, the cells of which contained large vesicular nuclei (Fig. 3). There was a distinct basement membrane present. The capillary net underlying this epithelium was quite extensive and in many places formed dilated sinuses engorged with blood cells (Fig. 4).

Serial sections made of that portion of the sac attached to the prostate revealed a duct-like structure lined by non-ciliated epithelium similar to that lining the entire cyst wall. The epithelium, however, was thrown up into papillary folds containing many small blood vessels. The outer layer of the wall of the duct was composed entirely of connective tissue (Fig. 5).

The convalescence of this patient was smooth and uneventful. He left the hospital with his wound entirely healed twenty-five days after
the operation. The serosanguineous urethral discharge, constipation, and sense of rectal pressure have not been present for one year.

**COMMENT**

To prove the true derivation of this large cystic tumor found in a male pelvis is not possible; only an hypothesis may be ventured. The tumor is a cyst arising from some embryonic rest, and, since the number of structures in this region during embryonic life is large, the possibilities for the origin of the cyst are many.

One must consider the müllerian ducts, the wolffian ducts, the mesonephros, an accessory ureter, an accessory seminal vesicle, and an aberrant accessory prostatic lobule. All these structures are microscopically similar in the embryonic stage and differ only in their minute anatomical relationships. The latter are not available in this case. If at operation it had been possible to dissect out the fibrous attachment of this cyst to the prostate, as Englisch did post mortem in 1874, the origin of this cyst could have been determined at least more exactly if not altogether accurately. However, it is known that the cyst, lying free and unattached to bladder, ureters, seminal vesicles and their vasa

![Fig. 5. Low-Power View Showing Duct-like Structure in the Fibrous Attachment of the Cyst to the Prostate](image-url)
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deerentia, in the retroperitoneal space between the rectum and bladder, was exactly in the midline position. Further, it is known that it had one attachment only, and that that attachment consisted of a fibrous band of tissue which buried and lost itself in the very mid-section of the prostate gland on its postero-cephalad aspect. It is for these reasons that one feels justified in believing that the derivation was from a remnant of a müllerian duct.

CONCLUSION

A case of a large hemorrhagic retroprostatic and retrovesical cyst of the prostate gland has been reported. It is believed that this cyst had its origin in a remnant of a müllerian duct.

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