

VAGINAL CYSTS

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Vaginal cysts have received frequent consideration in medical literature. Stokes, Cullen,¹ Breisky,² Winkel,³ Freund,⁴ Veit,⁵ Gebhard⁶ and Bandler⁷ have written important articles on this subject.

Small cysts in the vagina are unusual; a large cyst is rare. One large cyst and two small ones having come under my observation, I take this opportunity to report them.

Vaginal cysts undoubtedly originate from different sources; from inclusions of vaginal epithelium, from vaginal glands, persistent embryonic structures, possibly from urethral epithelium. It is often difficult or impossible to determine their origin. A cyst, originally lined by squamous epithelium, may undergo changes, many layers of cells being reduced to a single layer with the characteristics of a cuboidal cell.

A probable form of vaginal cyst is one that develops from inclusions of vaginal epithelium, crypts or folds adhering as a result of vaginitis, not uncommon in the young. Such an adhesive vaginitis may result from general systemic infections, from a highly irritating discharge, or from the ulceration of a foreign body.

The commonest form of cyst is the inclusion cyst found near the introitus. They are small and result from the inclusion of islands of squamous epithelium in the healing of perineal lacerations or during the repair of a relaxed vaginal outlet.

Such cysts occur in the posterior or lower lateral wall, often in scar tissue. They are relatively small, varying in size from that of a pea to that of a hazel-

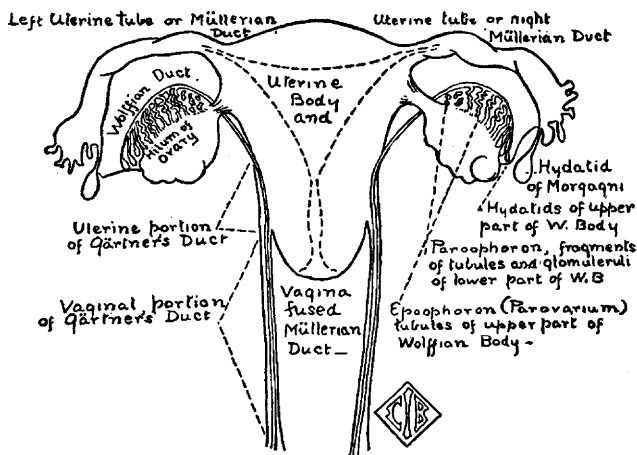


Fig. 1.—Relation of epoophoron, paroophoron, wolffian duct and Gärtner's duct, through their course in the broad ligament, cervix and vagina.

nut, usually single, and yellowish, or whitish, if larger. They are filled with a friable, sebaceous material resembling pus, and representing masses of degen-

1. Cullen: Vaginal Cysts, Bull. Johns Hopkins Hosp., June, 1905.
2. Breisky: Cysten der Scheide, Stuttgart, Pittra and Billroth 55: 131, 1879.
3. Winkel: Die Scheidencysten, Lehrbuch der Frauenkrankheiten, Leipzig, 1886, p. 153; Ueber die Cysten der Scheide, Arch. f. Gynäk. 2: 383-413, 1871.
4. Freund: Beiträge zur Pathologie des doppelten Genitalkanal, Ztschr. f. Geburtsh. u. Gynäk. 1: 231, 1877. Echinococci, Gynäk. Klin., Strassbourg 1: 321, 1885.
5. Veit: Handbuch der Gynäkologie 1, 1897.
6. Gebhard, C.: Cysten der Vagina. Pathologische Anatomie der weiblichen Sexualorgane, Leipzig, 1899, p. 535.
7. Bandler; S. W.: Gynecological Pathology, Abel and Bandler, 1901, p. 206.

erated exfoliated epithelium, detritus, fat droplets and cholesterin crystals. If large, the contents may be a clear fluid. Their walls, from 2 to 4 mm. thick, are of fibrous tissue lined by from two to thirty layers of squamous epithelium, usually thicker at one point than at another. The superficial cells are often devoid of nuclei and filled with vacuoles. The deepest layer is most often cuboidal.

Such a cyst, usually painless, occasionally causes a disagreeable irritation or vaginismus. The treatment is enucleation.

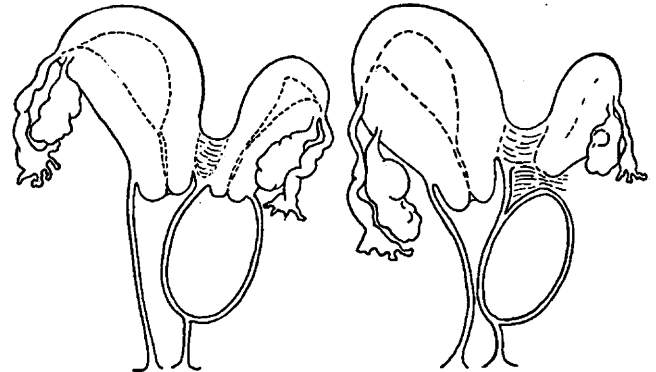


Fig. 2.—On the left, double uterus with cervix communicating with a fully developed vagina, and a rudimentary vagina. The blind vagina is converted into a cyst by the accumulation of menstrual secretion. On the right, the small rudimentary uterus has no communication with its corresponding vagina which through accumulation of secretion has formed a müllerian duct or vaginal cyst.

It is generally believed that there are normally no glands in the vagina. Preuschen,⁸ in 1877, however, carefully made sections of thirty-six vaginas, and found definite vaginal glands in four. The necks of the glands were of squamous epithelium; the deeper portions were lined by cylindric epithelium in which cilia were detected. Hennig had described similar glands in 1870. Meyer⁹ found glandular formations in newborn infants, which on consolidation of the excretory ducts could develop into small cysts. Cullen ascribed vaginal glands as the source of three and possibly a fourth cyst in his series of cases. His careful histologic study seems to substantiate this origin. They are small cysts lined by a cuboidal or almost flat epithelium. The cavity is partly filled with mucus, with no evidence of degenerative changes.

Cysts having as their origin fetal remains, Gärtner's duct, may assume quite large proportions. They have been described as being as large as the fetal head. Klein¹⁰ was able to follow the wolffian ducts in a newborn infant and in an older child from the cervix to the hymen. The ducts may persist as either short segments or, as in a few instances, from the parovarium to the uterus, running alongside, or through the musculature of, the uterus in the substance of the cervix and along the lateral vaginal wall, or in the anterior portion on either side of the urethra to the hymen. Some observers believe Skene's glands to be the ends of Gärtner's ducts.

Gärtner's duct has an inner lining of one layer of cuboidal or cylindric epithelium. Its outer covering is of fibrous tissue with a middle zone of nonstriped muscle, arranged longitudinally, transversely or running in both directions.

8. Preuschen: Ueber Cystenbildung in der Vagina, Virchows Arch. f. path. Anat. 70: 111, 1877.
9. Meyer, R.: Atlas der normalen Histologie, der weiblichen Geschlechtsorgane, Leipzig, J. A. Barth, 1912, p. 97.
10. Klein: Lehrbuch der Gynäkologie, Otto Küstner, 1910, p. 98.

Cysts arising from Gärtner's duct are most common along the anterior vaginal wall just to one side of the urethra, or on the lateral vaginal wall. They are sessile, rarely pedunculated, usually oblong. They may show at one end rudiments of the undilated duct; they are single, or there may be two or more following the course of the duct. The cyst may be small or like the one here reported, it may extend from the introitus to the vault of the vagina. Cysts have been reported which dissect upward between the layers of the broad ligament, or a parovarian cyst may dissect its way downward and encroach on the lumen of the vagina (vaginoparovarian cysts).

Gärtner's duct cysts grow slowly, as in my case, and as reported by others, pregnancy has a stimulating effect on their growth. Often they are first noticed during gestation.

Like the duct, they are lined by a single layer of cuboidal epithelial cells, occasionally cylindrical or almost flat (Cullen). Robert T. Frank¹¹ reported a case in a multiparous patient in whom four large cysts developed along one side of the vagina, reaching from the skin deeply into the broad ligament, and necessitated a cesarean section. The lining of these cysts varied from low cuboidal, ciliated columnar, to a stratified transitional epithelium. The large cysts showed no epithelium; the smaller ones showed the variations reported. No derivation, excepting the Wolffian duct, he states, is plausible, and so he makes the statement that different types of epithelium from a columnar to stratified epithelium exist in Gärtner's duct cysts.

Meyer⁹ states that "Gärtner's duct in the vagina and hymen shows a varied epithelium, single layers, or double and multiple layers; cylindrical, cuboidal, and large squamous cells are occasionally found." The cysts may have squamous epithelium with stretches of cylindrical epithelium between.

Gärtner's duct cysts contain a mucinous material, either colorless or straw colored, or after injury, brownish or reddened semifluid material, from blood pigment.

The walls are thin, usually not more than 0.5 mm. in thickness, and are composed of fibrous tissue with nonstriped muscle cells intermingled. These are difficult to make out in the larger cysts.

Freund,⁴ in 1877, first described the type of vaginal cyst resulting from an accumulation of fluid in a rudimentary vagina or Müller's duct. It is remembered that in fetal life, Müller's ducts fuse to form the uterus and vagina. Fusion may fail to occur and a double uterus and double vagina result.

Two forms of defective development occur which may give rise to Müllerian duct cysts. In the first, a well-developed horn communicates with an apparently normal vagina; the other horn is rudimentary, takes no part in menstruation and has no communication with its corresponding vagina. This incomplete vagina

accumulates fluid and forms a cystic tumor in the lateral wall of the normal vagina.

In the other type, there is the well-developed horn communicating with its corresponding vagina, while the rudimentary horn is sufficiently well developed to give off menstrual fluid which communicates with a rudimentary vagina below. This vagina has no communication with the normal vagina or with the exterior. It becomes filled with a chocolate colored fluid. It is not a true cyst. Tension may cause it to break into the well formed vagina, or becoming infected, it may form a large abscess.

The removal of such cysts occasionally causes serious surgical difficulty. They are often treated by incision and removal of the intervening septum, incorporating the cyst into the vagina.

Graves¹² reports a case in which the septum between the two vaginæ had become the seat of a great plexus of vaginal veins, so that an attempt to remove the septum and connect the two vaginæ into a single canal could not be carried out, hysterectomy with drainage of the infected cyst through the abdomen and vagina eventually dried up the cavity.

Cullen considers the possibility of vaginal cysts developing from the urethral (Littre's) glands. Such cysts are rare, if they ever occur. In two of his cases, the similar histologic picture led to the belief that such might be their origin.

The urethra and vagina are intimately associated. The posterior wall of the urethra is firmly attached to the anterior vaginal wall throughout its entire length. The mucosa of the urethra is longitudinally folded with the formation of club and tubular depressions. Some are simple lacunæ, others are glandular in nature and secrete a colloid material.

Lacunæ form the entire length of the urethra. While some are broad based and open by a narrow channel into the urethra, others are large, tubular, push into the propria, and often branch and run parallel to the urethra. The cysts described by Cullen had a lining of from three to eight layers, the superficial cells being cylindrical and resting on underlying layers of flattened and deeply staining cells, the general arrangement being that of the lining of the urethra.

Dilatations arising from the urethra should not be confused with vaginal cysts. Probably most cysts of this type originate as periurethral abscesses, and pressure will usually cause such a cyst to empty itself through the urethra.

"Occasionally, a small cystic prominence may be met with in the lateral vaginal wall, on opening which there is an escape of urine with a resultant urinary fistula. This is an embryologic abnormality. Brödel and others have pointed out that when there is a double kidney on one side, the ureter from the lower kidney is ordinarily implanted into the normal site, while that of the upper

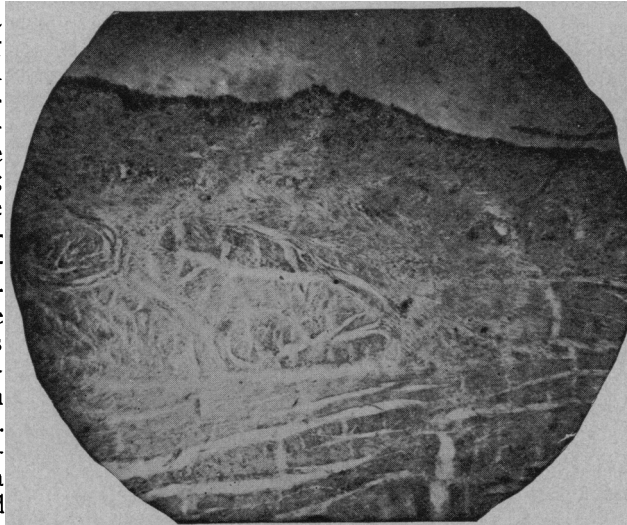


Fig. 3.—Low power photomicrograph, showing columnar epithelial lining of cyst. The muscle belongs to a portion of anterior vaginal wall removed with the cyst.

11. Frank, R. T.: *Am. J. Obst.* 72: 467, 1915.

12. Graves, W. P.: *Text Book of Gynecology*, Ed. 2, Philadelphia, W. B. Saunders Company, 1918, p. 299.

kidney is carried down further by the wolffian duct, and inserted more medialward and nearer the urethral orifice. Were this ureter carried a little lower, the blind pouch described in the vagina would be accounted for." Such an abnormality should be kept in mind when a small cystic protrusion is encountered in the lateral part of the vagina.

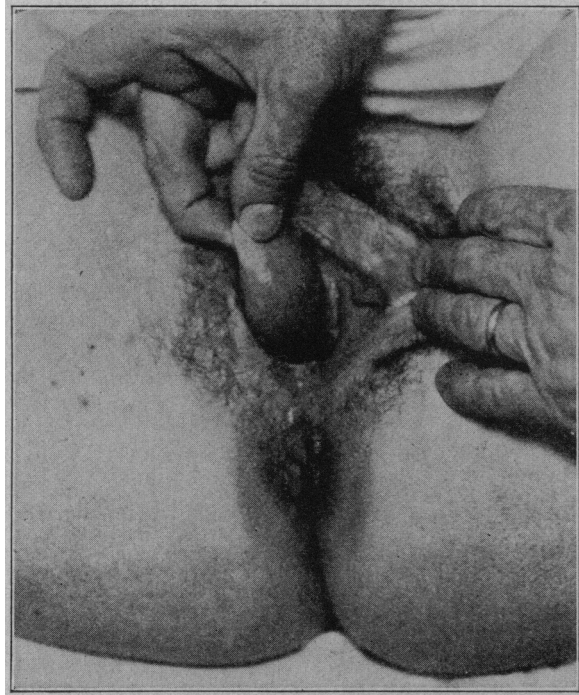


Fig. 4.—Gartner's duct cyst (author's case).

Dermoid cysts have been encountered developing in the rectovaginal septum. In countries where the echinococcus is prevalent, cases of echinococcus cysts of the vagina are reported.⁴ Cysts arising from Skene's glands must be considered under vaginal cysts.

A rare condition is colpohyperplasia cystica, described first by Winckel.³ Small cavities filled with clear fluid or gas, and forming elevations, appear on the vaginal mucosa. Lindenthal¹³ states that it is a condition due to infection with *Bacillus aerogenes-capsulatus*. Others have demonstrated this organism, while Jaeger¹⁴ has produced the cysts experimentally in animals. Though not amenable to treatment during pregnancy, when the disease usually makes its appearance, it usually disappears spontaneously after child-birth.

REPORT OF CASES

The two small cysts were both inclusion cysts, and followed perineal lacerations. They occurred in scar tissue near the vaginal orifice. One measured 1 by 1 cm. and was encountered while doing a perineal repair. The other was removed under cocain in the office. It was described as the size and shape of a bean.

The description of both corresponds to that given for inclusion cysts, and they were filled with white sebaceous material.

The large cyst occurred in a primipara, 23 years of age. In the fifth month of pregnancy, there was a feeling of pressure in the vagina, and a month later a protrusion, resembling a large cystocele, appeared.

It has been said that vaginal cysts grow slowly, and it is often the case that they do not make their appearance until

during a pregnancy, when they fill rapidly. This cyst by the seventh month was the size of a goose egg, extended into the vault of the vagina, was sessile, with the anterior vaginal wall rather lax over the cyst.

When the patient went into labor at term, the cyst was tapped, and so collapsed as not to interfere with the birth, which was normal.

About six weeks after labor, the cyst had refilled, was not so large as during pregnancy, but protruded on walking, was annoying and for temporary relief was aspirated.

When the child was 4 months old, I removed the cyst. It extended from the vulva up into the left vaginal fornix and was the size of a goose egg. The cyst, thin walled, was attached between the anterior vaginal wall, urethra and bladder throughout the length of the vagina. It dissected away easily. The anterior vaginal wall was brought together after removing some of its redundancy, as in a cystocele operation. Its description follows.

The vaginal cyst was elliptic and measured 5.5 by 3 by 3 cm. (the dimensions here given are smaller than the size in situ, as the cyst had been partly aspirated and preserved in liquid formaldehyde. The wall was 1 mm. thick and had a smooth inner surface. Its contents were a colorless mucoid substance.

Microscopic Examination: The outside of the wall is lined by the vaginal squamous epithelium under which is a layer of loose connective tissue with a fairly rich blood supply, and a well developed layer of muscular tissue. The cyst has a thin capsule made up of fibrous tissue; no muscle cells are seen. The lining of the cyst is a single layer of columnar epithelium; no cilia are demonstrated (Dr. Philip Hillkowitz).

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INJURIOUS COMBINED EFFECT OF
ROENTGEN RAYS OR RADIUM,
AND TOPICAL REMEDIES

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Now that roentgen rays are widely employed in diagnosis and therapy and radium is used extensively as a remedial agent, it is essential that physi-

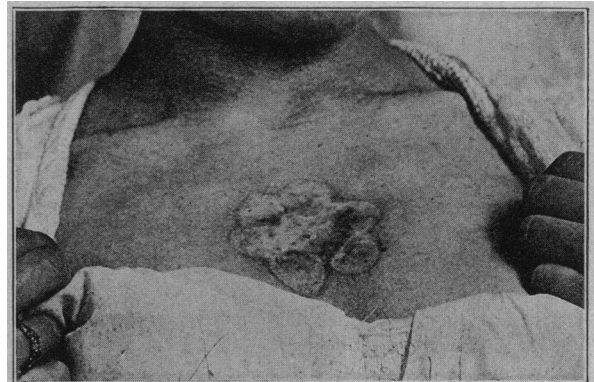


Fig. 1 (Case 2).—Scars resulting from application of solid carbon dioxide following roentgen-ray treatment for keloid.

cians, even those who do not employ these agents, be cognizant of the dangers associated with the topical application in strength of irritating remedies to parts that have been or are to be irradiated. The injurious possibilities of such combined treatment does not appear to be appreciated by the majority of the medical profession. Want of knowledge and judgment in this

13. Lindenthal: Aetiologie der Colpohyperplasia cystica, Wien. med. Wchnschr., 1897, Nos. 1, 2
14. Jaeger: Das Intestinalempysem der Suiden, Arch. f. Tierheilk. 32: 425, 1906.