TWO UMBILICAL TUMORS OF PROBABLE UTERINE ORIGIN

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On the surgical service of Drs. Munro and Bottomley at the Carney Hospital, there recently occurred within a few weeks of each other two examples of umbilical tumor, the striking similarity and unusual histological structure of which warrant their publication.

Because of the comparative rarity of these cases the clinical histories are set forth in considerable detail.

Case 1. Miss S., a housekeeper, 44 years of age, and born in New Brunswick, entered the Carney Hospital May 22, 1907. Her family and past history have no bearing on her condition at that time. A year previously, during a catamenial period, she noted some redness and tenderness about the umbilicus; two months later at a similar time a small tumor appeared in the abdominal wall close to the umbilicus. This tumor increased in size but slightly and most of the increase came in the two weeks just preceding her admission to the hospital. The tenderness and pain which at first were evident only during the menstrual periods had been constant for some months, though most marked just before, during, and for a week after menstruation. Her menstrual history is not otherwise remarkable. An abdominal bandage, her only treatment, had given her some relief. There had been some little loss of weight and strength. For two months the tenderness had kept her from her usual work. No symptoms referable either to the gastrointestinal or to the urinary tract had been noted.

About and including the umbilicus was a rather deep-seated, spherical, slightly tender, fixed mass of rather firm consistency and about two cm. in diameter. In the navel itself was a thin, yellowish crust; a sinus could not be demonstrated; the skin over the tumor was not red. Examination of the abdomen was otherwise negative. Ex-

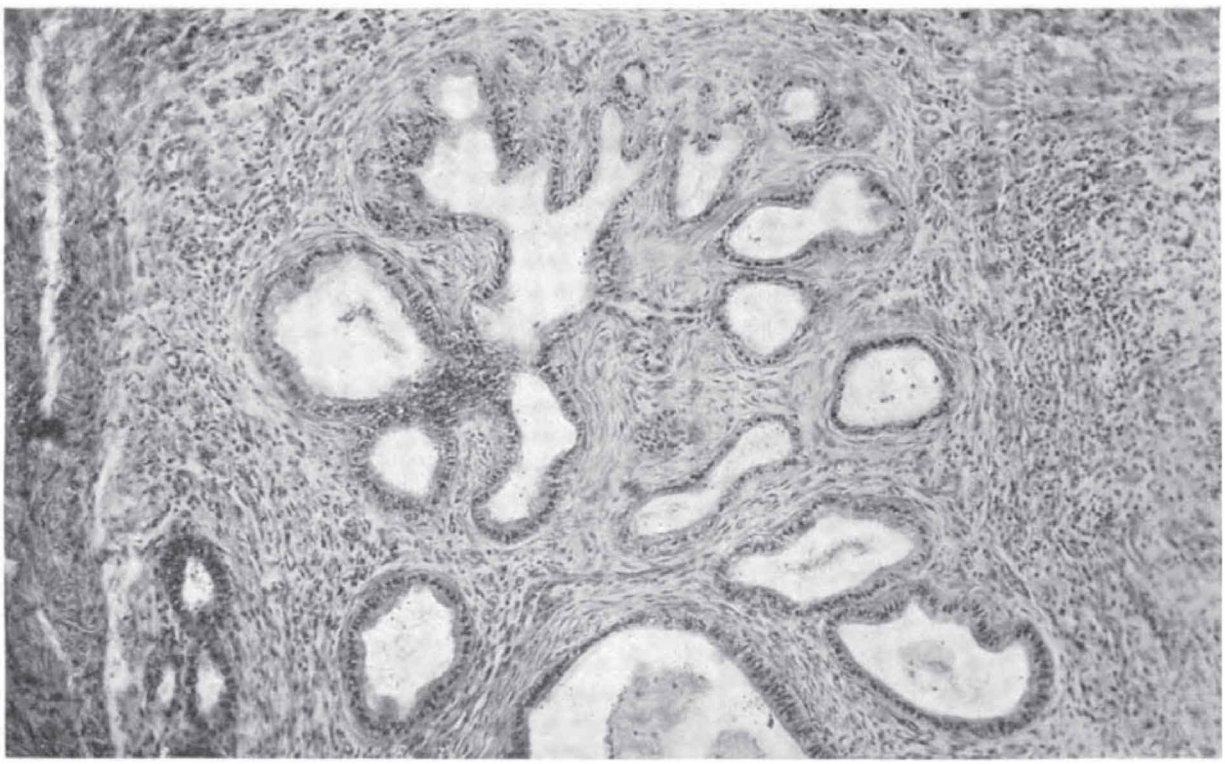

Fig. 1. Shows the general arrangement of the gland structures, and supporting tissues, and varied forms of lining epithelium. X 80 diam.

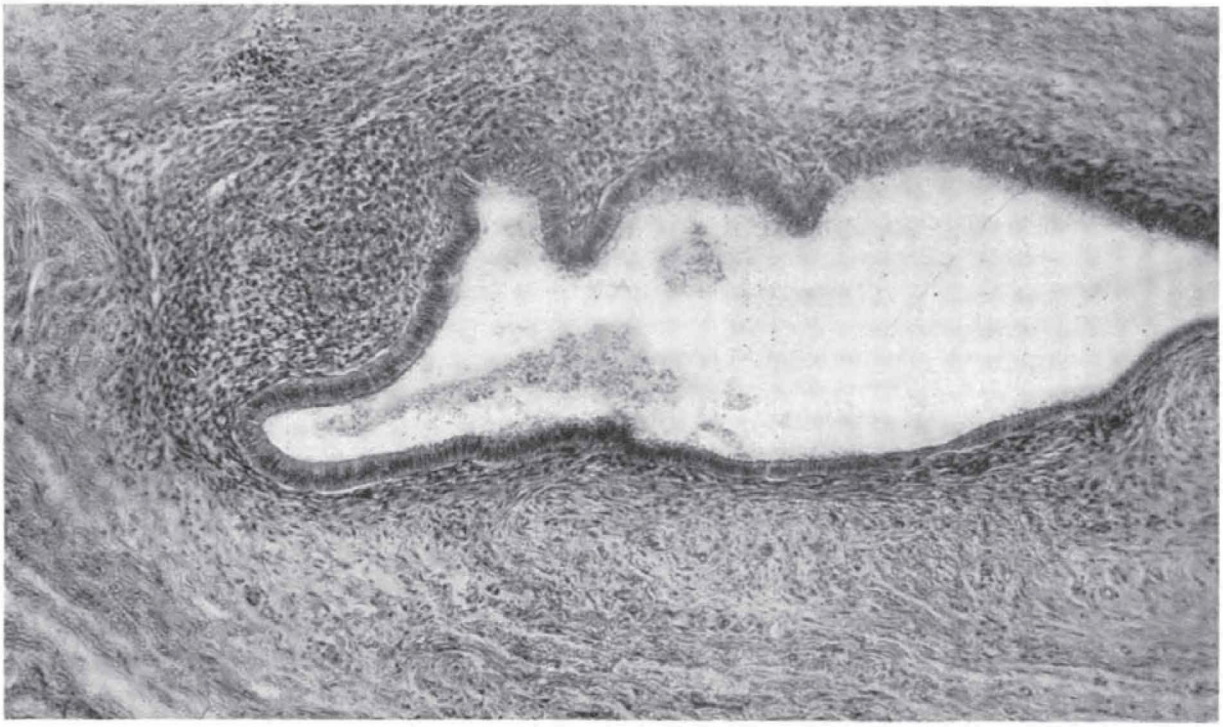

Fig. 2. The outline and arrangement of epithelium of an isolated gland space, its contents and submucous infiltration of dense cellular tissue. Fibrous connective tissue and smooth muscle at its periphery. X 80 diam.

amination per vaginam showed only vaginismus and a moderately retroverted uterus.

On May 23d Dr. Munro excised the growth (including the navel) with a portion of the adjacent peritoneum and sheath of the rectus muscle. The former was not involved in the growth; to the latter the growth was adherent. The convalescence was without note and the patient was still free from recurrence one year after operation.

Case 2. Mrs. D., a housewife, entered the Carney Hospital, June 23, 1907. She was born in Ireland 42 years before that time and came of healthy stock. Her menstrual history previous to her marriage was entirely normal in every way. Married 17 years, she had borne four children. Following her first confinement she had had a "milk leg."

For six years previous to her entering the hospital, a slight bloody discharge from the navel without pain or tenderness had come with each menstruation. The discharge came only at that time. Independent of the umbilical disorder she had had in the past three years attacks of sharp pain beneath the right costal border accompanied by vomiting, chills, and jaundice.

The patient was rather obese, and showed distinct tenderness beneath the right costal border. At the umbilicus was a small, irregularly shaped papillomatous tumor, 2 cm. in diameter, with three distinct projections covered with normal appearing skin. At the top of the largest projection was a pin-hole opening capped with dried blood. The tumor was soft, freely movable, not tender and apparently superficial.

On June 24th the umbilicus with the tumor was excised by Dr. Bottomley. The tumor was confined to the skin and fat outside the aponeurosis. The peritoneal cavity was opened, and the gall-bladder and stomach regions were explored; these were found normal. Convalescence was uneventful except for the development of malaria on the ninth day, which promptly yielded to treatment. The patient was discharged relieved on July 11th, and when heard from one and a half years later there was no recurrence.

For the microscopical study of these tumors, in the laboratory of Dr. Henry A. Christian at the Harvard Medical School, a large number of sections were taken from different planes and four different methods of staining were used for each section.

So closely do the tumors resemble each other microscopically, that no evident difference between them can be determined. The arrangement and construction both in general and particular is nearly identical. For descriptive purposes a median longitudinal section of Case 2 will be used. To the naked eye it presents an irregularly convex surface covered with true skin. Underlying this at either extremity are what appear to be sweat glands, and in another part, chiefly in the center, are numerous vacuolated structures varying in size from a pin point to a pin head. The intervening structure cannot be definitely determined. Microscopically the tumor is seen to be covered with normal epidermis, but varying in thickness. Below this at either end are numerous sweat glands

thickly grouped, and around these is an abundance of fibrous connective tissue. The vacuolated or glandular structures found throughout the tumor vary in size, and for the most part are of rounded contour while some are elongated. Some, especially the larger ones, are discreet, while others are aggregated into small groups. Some are immediately surrounded by fibrous tissue, while others are embedded in cellular tissue. There are none which appear to have any connection with the epidermis. All the gland spaces are lined with epithelium. They are either devoid of contents, or contain a granular structureless material in which are often found groups of red blood cells. The epithelium varies in the different glands and even in the same gland, from the low, flattened variety to the tall, columnar cells with all the intermediate forms. The tall, columnar variety is for the most part closely compacted with long, narrow nuclei and with no visible cell membrane. Most of them have a distinct top plate, and many show cilia of considerable length and uniformity, while others have only a suggestion of striæ. The cilia in some places are from one-fourth to one-third the length of their cells, and in others their extremities end in a globular, deeply staining tip. At irregular intervals among the nuclei of the columnar cells are larger, rounded and more faintly stained nuclei. In some places the epithelium is distinctly cuboidal, the nuclei clear and rounded, and the whole cell clearly defined. There is a larger group of glands which presents the flattened epithelium. The epithelium lining the glands, whether flattened, cuboidal, or columnar is for the most part in single layers. In some places the glandular epithelium is immediately supported by fibrous connective tissue, but in others the underlying structures are decidedly cellular. The cellular tissue is more compact the nearer the glandular tissue is approached, i. e., the most cellular tissue is found in close connection with the gland spaces. The nuclei are rounded or elongated and deeply stained, the protoplasm and cell membrane not being distinct. In the immediate neighborhood of some of the gland spaces are large hæmorrhagic areas in which large quantities of red blood cells are scattered freely, and intermingled with the cellular structures. These areas seem to have no direct relation to blood-vessels, which are not superabundant or enlarged. The fibrous connective tissue shows nothing of interest throughout the section. There is an abundance of smooth muscle which is closely interwoven with the connective tissue.

The accompanying microphotographs will bring out more clearly the structure and arrangement of

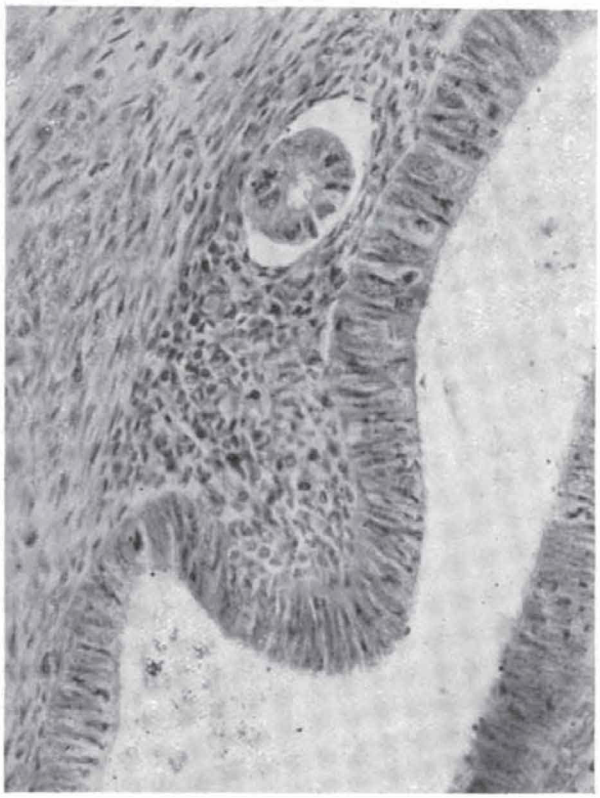

Fig. 3. The character of the epithelial cells and their nuclei become more distinct, also the cellular stroma. Short cilia can be seen above the distinct top plate in places. X 500 diam.

the tumors, and emphasize the points mentioned above.

For the sake of comparison as well as from a desire to know the histological structure of the normal umbilicus, sections from 6 normal umbilici, taken at autopsy at varying ages from infancy to adult life, were studied microscopically. There was found no deviation from the normal structure and arrangement of tissue elements. There were no gland spaces except normal sweat glands, nor were there even visible remains of enlarged vessels or increase of fibrous tissue, nor hæmorrhagic areas.

In a review of the literature of umbilical tumors, we find but one case reported which bears any definite relation to the two herein set forth. It is not a parallel case, and was undoubtedly of different origin. It was reported at length by Wullstein in 1893, and he reviewed all the literature including the work of Pernice who had made a complete summary and a rational division of all umbilical tumors the previous year, but who had not met one similar to Wullstein's.

In brief, the case of Wullstein is a combination

Fig. 4. Shows the cilia more distinctly, and brings out the details of the cell structure. X 1300 diam.

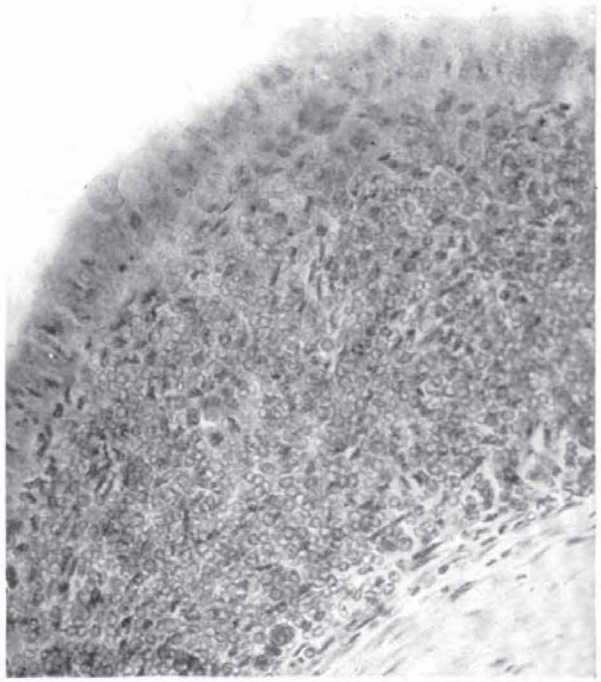

Fig. 5. An area of hæmorrhage into the submucosa. X 500 diam.

of a cystadenoma, and a cavernous angioma. There are two distinct types of gland spaces or alveoli — the first, lined with columnar epithelial cells and containing epithelial cells and secretion in the lumina, is regarded as the result of a backing up or retention of secretion in closely crowded sweat glands. The second type consists of irregularly shaped alveoli lined with endothelial cells, and containing blood closely adherent to their walls. Intimately connected with them are dilated and varicose vessels with marked perivascular cell infiltration. This latter type is looked upon by the author as a result of circulatory disturbance in the tumor, causing varicosities with dilatation of the vessels and formation of large cavernous spaces (alveoli). The old and recent hæmorrhages, found in various parts of the tumor, are thought to be a result of repeated flux hæmorrhages, such as occur at the time of menstruation.

The tumor reported by Wullstein is essentially different both in structure and etiology from the tumors which form the subject matter of this paper. The former showed no ciliated epithelium and exhibited a gland structure that was definite and characteristic; moreover, an entirely satisfactory explanation can be formulated as to the etiology of its two forms of alveoli. Quite the opposite is true of both our cases. As far as can be detected by the microscope the same histological structure appears in both tumors. Furthermore, the clinical picture of one closely resembles that of the other, and though there is no way of proving absolutely their precise nature and origin, both clinical and histological facts point strongly to misplaced uterine tissue as their common starting point.

The type of gland formation, the tall columnar ciliated epithelium, supported by a cellular submucous layer, in which are numerous clusters of red blood cells, and the presence of blood in the lumina of the alveoli, are all very suggestive of uterine tissue. Not alone the pathological findings, but even the clinical stories support our theory. In the first case we find pain, tenderness, redness, and swelling most marked at the menstrual period. The second case is even more convincing with the periodic hæmorrhage at the time of the menstrual period.

Although the tumors in either case did not manifest themselves till middle life, it is safe to assume that they are the recent development of embryonic remains.

The microscopic structure of the tumors, and their periodic change, synchronous with menstruation with actual hæmorrhage in one case, point strongly to their development from misplaced uterine tissue. In this respect these two umbilical tumors seem to be unique.