SARCOMA OF THE VAGINA.

By W. ROGER WILLIAMS, F.R.C.S.

Of the organs evolved from the different segments of the Müllerian ducts, only the uterus manifests great proclivity to tumour formation, for the vagina and Fallopian tubes are seldom affected. Thus, of 9,648 consecutive tumours in women tabulated by me, 2,648 were of uterine origin (cancer 1,571, sarcoma 2, myoma 1,073, and cystoma 2); whereas only 54 arose from the vagina (cancer 40, sarcoma 2, myoma 3, and cystoma 9). From this it may be inferred that the biological peculiarities which determine a given part to tumour formation, depend more upon functional than upon genetic considerations. The vagina, for instance, is physiologically more akin to the vulva than to the uterus, and the results of this similarity are apparent in its pathological neoplastic variations. Although sarcoma of the vagina is so much rarer than cancer, yet the number of cases on record is considerable. A special feature of the malady in this locality, is the large number of cases that originate in infancy, many of them being congenital. It is also met with in adults, but less frequently. Of 27 primary vaginal sarcomata tabulated by Gatti, 17 were in infants, and only 7 in adults; and I think these numbers fairly represent the relative frequency of the two types of the disease.

(*a*) The Infantile Type.

Sarcomata of this kind present special features, besides their early occurrence; thus, they are often multiple *ab initio*, and other organs besides the vagina may be concurrently affected—such as the vulva, uterus, bladder, urethra, and even the rectum. These tumours often contain various unusual structures—to wit, striped muscle elements, islets of epithelial cells, leiomyomatous tissue, and telangiectasic bloodvessels, and they are relatively often congenital. These various indications point to their origin from developmental irregularities. It will be remembered that the vagina is formed by the coalescence of two pairs of tubes, which are at first separate; and it is exceedingly probable that during the process of approximation and fusion, fragments of matrix detached from adjacent parts, become included in the developing organ. It is from dislocated cells connected with aberrant sequestrations of this kind that these peculiar tumours probably arise. Heckford* has reported an instance concomitant

* *Trans. Obstet. Soc. Lond.*, vol. x., 1869, p. 224.

with gross vaginal malformation, in which a large vaginal pouch—situated between the rectum and the uterus—was filled with the peculiar polypoid vegetations characteristic of this form of sarcoma.

It will be noted that, of the other structures apt to originate this type of sarcoma, all are more or less involved in the complicated developmental processes concerned in the formation of the cloaca; indeed, it is with the evolution of this structure—even more than with that of the vagina proper—that this curious disease appears to be associated.

Growths of this kind are commonest in early infancy, very few cases being met with after the fifth year. Of the 40 cases in my list, 36 belong to this period. The age distribution of these cases was as follows:

	Cases.
Congenital	6
1st to 6th month	2
6th month to 1st year	6
1 year to 1½ years	9
1½ to 2 years...	3
2 to 2½ years	2
2½ to 3 years	3
3 to 4 years	2
4 to 5 years	3
5 to 6 years	1
6 to 7 years	1
8 to 9 years	1
14 to 15 years	1

The general features of the disease in a typical case are well illustrated by a specimen preserved in the museum of St. Bartholomew's Hospital, which is thus described in the catalogue:*

'A large cluster of polypoid growths removed from the walls of the vagina and from the nymphæ of a child. They were of various sizes and shapes; the largest, about 3 inches in diameter, was attached to the upper wall of the vagina. They were soft and whitish, some being gelatinoid and almost pellucid. Histological examination revealed fibro-cellular connective tissue.'

The history of the patient was as follows: At birth a growth, 'like a bunch of small grapes,' was observed projecting from the vagina, to the right wall of which it appeared to be attached. It was ligatured and cut off when the child was only six weeks old. There was recurrence, but no further operation was done until the

* Vol. iii., 1862, p. 156.

child was three years old, when the mass was again ligatured and cut off. This time recurrence was very rapid, for the tumours above described were removed only six weeks after the second operation. It was then recognised that the whole of the disease could not be extirpated, especially in the vicinity of the urethra. The growths rapidly increased, and the child died of asthenia three months later.

This type of sarcoma generally presents clinically as a polypoid, quasi-papillary, or lobulated mass, projecting from the vulva. Further examination reveals the greatly distended and elongated vagina filled with vegetations of this kind. Connected with some part of the vaginal wall, a firm, solid mass of new growth—the main tumour—may generally be found, which may be sessile or pedunculated. It consists of sarcomatous substance, in which round cells usually predominate, together with a considerable amount of fibrous tissue. Sometimes several tumours of this kind are met with. The rest of the vaginal wall is much thickened and infiltrated with myxo-sarcomatous tissue, its surface being studded with innumerable small polypoid outgrowths of soft, pellucid, grayish or pinkish aspect, which in appearance much resemble the ordinary nasal polypi. Histologically examined, these vegetations consist of œdematous myxo-sarcomatous substance, covered with stratified vaginal epithelium. Where they project externally they may become eroded, but they seldom ulcerate. Being very vascular, they are apt to bleed when handled, and they are easily detachable. Growths of this kind have often been mistaken for ordinary mucosal polypi, as in cases reported by Billroth, Marsh and others.

Quite exceptionally one or more pedunculated sarcomatous tumours may be met with in the vagina, without the usual concomitant diffuse polyposis. These vaginal sarcomata often appear clinically to be much more innocent than they really are, for, as a rule, they recur rapidly after removal, and occasionally manifest other signs of malignancy.

Lymph-gland dissemination is rare, for there were only three instances of it in the forty cases comprising my list (Sänger, Ahlfeld, and Demme). In these cases the adnexa, broad ligaments, ovaries, etc., were also invaded; but there was not a single instance of metastasis in internal organs. Probably, however, this form of dissemination does sometimes occur, for in a case of this type of disease affecting the vulva, as reported by Chauveau,* metastases were met with.

* *Thèse de Paris*, 1895.

His patient was five years old when the vulvar growths were first extirpated. There was recurrence six weeks later, and within a short time two further recurrences were removed; but the disease soon returned and caused death. The whole vulva was covered with polypoid formations. The main tumour was fibro-spindle-celled sarcoma, with islets of epithelial cells embedded in the tumour substance. There were secondary growths in the pelvic and mesenteric glands, as well as in the liver and kidneys.

Although the disease is first noticed at birth in only a comparatively small proportion of the total cases, it seems probable that most of these early-life vaginal sarcomata are of congenital origin. It follows from this that the malady generally runs a somewhat chronic course; but, when recurrence has once ensued, the case proceeds rapidly to a fatal termination. Adjacent parts, such as the bladder, urethra, and peritoneum, are apt to be invaded, causing fatal complications. Hydronephrosis is only occasionally met with, but acute congestion of the kidneys and uræmia are of frequent occurrence. In a few cases the disease appears to have been cured by early and thorough operation. The only operative treatment of any avail is total extirpation of the vagina, together with the uterus, ovaries, and adnexa, by abdominal section.

ILLUSTRATIVE CASES.

The futility of partial operations, and other interesting details, may be gathered from the subjoined abstracts of some of the more important cases:

CASE 1.—A child, two and a half years old, who when first seen—one year previously—had suffered for several months from a watery vaginal discharge, which was at times blood-stained, came under Lea's* care. On examination he found the vulva studded with soft polypi, and masses of firm growth about the introitus vaginæ and the peri-urethral region. There was a median, pyriform, abdominal tumour, which felt elastic and extended from the pelvis to the umbilicus. The patient being anæsthetized, it was found that the abdominal tumour consisted of the enormously distended and elongated vagina, which was filled with softish polypoid masses. At the top of this tumour was a small firm body, which appeared to be the uterus. The recto-vaginal septum and the base of the bladder were involved by the disease. With a curette as much as possible of the morbid mass was removed. Death ensued soon afterwards. There was no necropsy. Histological examination of the fragments removed showed that the growth was round-celled myxo-sarcoma. The tumour substance was pervaded by numerous large, thin-walled bloodvessels.

CASE 2.—In a case reported by Holländer,† the patient was only seven months old when the disease was first noticed. It soon recurred after local ablation. On examination two months later, a sarcomatous

* *Trans. Obstet. Soc. Lond.*, xlii., 1901, p. 143.

† *Zeitsch. für Geburts. und Gynäk.*, 1896, S. 125.

outgrowth was found projecting from the portio and the adjacent part of the vagina. The utero-vaginal mucosa was thickly studded with polypoid excrescences. The uterus and vagina, together with the whole diseased area, were extirpated by the sacral route. The child recovered from the operation. The growth removed was a round- and spindle-celled, fibro-sarcoma, identical in structure with the primary sarcomatous polyp.

Case 3.—In Hauser's* case, a racemose polypoid sarcomatous growth protruded from the vulva when the child was six months old. Symptoms dated from the sixth week. The growth recurred rapidly after local ablation, and the child died eighteen months later. The main tumour was connected with the anterior vaginal wall. Histologically examined it consisted of round- and spindle-celled, somewhat alveolated, sarcomatous structure containing numerous large, thin-walled bloodvessels. In the sarcomatous matrix areas of transversely striped spindle cells and muscle fibres were met with, as well as leiomyomatous cells and islets of epidermoidal cells, including well-marked 'nests.'

Case 4.—In a cachetic infant two and a quarter years old, who died of exhaustion, Pick† found the vagina, cervix, and uterus studded with lobulated masses of sarcomatous growth. The parametrium was also invaded, and there was pyometra. The symptoms were of nine months' duration. Histologically examined the tumour proved to be spindle-celled and myeloid sarcoma.

Case 5.—Ahlfeld's‡ patient was three years and four months old, when she died of this malady, without having undergone any operative treatment. The vulva, vagina, and uterus were affected. The disease had also invaded the base of the bladder, the inguinal glands, and the uterine adnexa. The main tumour was of fibro-sarcomatous structure.

Case 6.—One of the best-recorded British cases is D'Arcy Power's.§ His patient—two years and four months old—came under treatment for retention of urine caused by vaginal growths of this kind. The symptoms were of fourteen months' duration, beginning with purulent vaginal discharge after an attack of measles. On several occasions masses of polypoid growths, which projected from the vagina, had been removed with the curette, but others soon formed. Shortly before Power saw her, she was suddenly taken with severe abdominal pain, retching, and retention of urine, and attempts at catheterization had failed. There was a large, pyriform median, intra-abdominal tumour, which extended upwards from the pelvis to midway between the navel and the xiphoid. This appeared to be the distended bladder. There was puriform vaginal discharge. The introitus vaginæ was blocked by a mass of exuberant grayish outgrowths, resembling œdematous granulations, which readily bled when touched. Digital examination showed that the main sarcomatous tumour consisted of bossed outgrowths, growing from the posterior wall and right side of the vagina, the area of implantation being of much firmer substance than the projecting part. The vagina was greatly dilated and elongated, owing to its distension by the contained growths. The os uteri could be felt only with difficulty. Rectal examination showed that the recto-vaginal septum was infiltrated, and the bowel compressed against the sacrum by the tumour mass. After evacuating the bladder by suprapubic puncture, a pear-shaped intra-abdominal tumour, reaching as high as the navel, still remained. Death took place the next day with uræmic symptoms. At the necropsy the greatly distended and thickened bladder was found to fill nearly the whole of the peritoneal cavity. It was unaffected by the

* *Archiv. für path. Anat.*, Bd. lxxxviii., 1882, S. 165.

† *Archiv. für Gynäk.*, Bd. xlvi., Heft 2, 1894, S. 191.

‡ *Archiv. für Gynäk.*, Bd. xvi., 1876, S. 135.

§ *St. Bartholomew's Hospital Reports*, vol. xxxi., 1895, p. 121.

disease, but the outflow of urine had been obstructed by the projection of the tumour mass in the vagina. The urethra was elongated, but otherwise free from disease. The kidneys were congested, and there was no hydronephrosis. The vagina was greatly distended and elongated. Its walls were thickened and its mucosa congested. The main tumour presented as a lobulated mass, 'like the wattles on a cock's comb.' The rest of the vaginal mucosa was studded throughout, with an immense number of soft, gelatinous polypi, varying in size from a pin's head to a large pea, being most abundant at the upper and lower ends of the vagina. None of the new growths were ulcerated. The uterus and adnexa were congested, but free from the growth. The adjacent lymph glands were also unaffected, and there were no secondary growths in other parts of the body. Histological examination of the thickened vaginal wall showed that it was infiltrated with small, round-celled, and myxomatous new-formation. The polypi consisted of vascular myxo-sarcomatous structure, covered by the vaginal epithelium. The main tumour was a small round-celled fibro-sarcoma.

CASE 7.—In Marsh's* case the child came under treatment, when two years old, with the following history. One year previously her mother noticed 'a pale fleshy substance' projecting from the vulva, which rapidly increased. It was ligatured and left to slough off, but a fresh growth soon formed. Some half-dozen operations of this kind, with the like result, were afterwards done at short intervals. Then incontinence of urine supervened, together with pain, hæmaturia, and offensive discharge, and the child emaciated. On examination under anæsthesia, Marsh found just within the vulva, a large mass of polypoid, grape-like outgrowths; others projected from the urethra, and it was ascertained that the attachment of some of these was within the bladder. The urethra was so distended by these growths, that it was at first mistaken for the vagina. Some outgrowths were as large as grapes, others were quite small. On combined rectal and abdominal palpation a solid mass, the size of a hen's egg, was felt in connection with the posterior wall of the bladder. Death occurred shortly afterwards, without any further operative treatment having been undertaken—sixteen months after the first detection of the malady. At the necropsy a firm, solid mass of new-growth was found in the vesico-vaginal septum, which projected into the bladder and into the vagina, and both its surfaces were covered with multiple polypoid outgrowths. The bladder polypi were limited to its base and neck, and those of the vagina were confined to its anterior wall. The uterine mucosa also presented some similar formations. The main tumour was of fibro-spindle-celled structure, and very vascular; it also included leiomyomatous tracts. The smaller polypi consisted of a fibro-cellular core, lined externally by stratified vaginal epithelium. There were no secondary deposits, and all the other organs were healthy.

CASE 8.—Kolisko† has described a similar case to Marsh's. The patient was eighteen months old, and the symptoms were of two months' duration, the child's mother having noticed a tumour projecting from the vulva soon after their onset. The little patient was brought to Billroth's clinic, having been seriously ill for only a fortnight. The tumour was removed, and the vaginal polypi were curetted. There was recurrence a few weeks later, with retention of urine and peritonitis, of which the child died. The post-mortem examination revealed a dense fibro-sarcomatous tumour of the vesico-vaginal septum, while the mucosæ of the vagina, cervix uteri, and bladder, were thickly studded with polypoid formations.

CASE 9.—In Demme's‡ case, although the patient was five and a half

* *Trans. Path. Soc. Lond.*, vol. xxi., 1874, p. 178.

† *Wiener klin. Woch.*, 1889, Nos. 6-11.

‡ Cited by Kolisko, *Op. cit.*

years old when she first applied for surgical treatment, a tumour was noticed at the vulva soon after the child's birth. On examination, Demme found a polypoid mass at the vaginal orifice, and a tumour springing from the right side of the vagina at its upper part. These growths were freely removed, but they recurred five months later. Numerous other operations of this kind were done every few months, until the child's death, one and a half years after the first operation. The post-mortem examination revealed extensive local recurrence, and besides this there were secondary outbreaks in the inguinal, pelvic, and retroperitoneal lymph glands, as well as in the bladder and ovary. The primary tumour was a fibro-sarcoma.

CASE 10.—Sänger,* in a child two years and eight months old, found a polypoid sarcomatous tumour growing from the anterior columna rugarum, which was surrounded by multiple polypoid outgrowths, and similar formations had also invaded the vulva. The inguinal glands were enlarged. A few months later the disease was freely removed, but it soon recurred, and the child died thus of peritonitis when three and a half years old. The bladder and urethra were infiltrated, the former organ being enormously dilated and thickened. There was double hydronephrosis, and the kidneys were anæmic and fatty. There were signs of general dropsy. A sarcomatous pelvic lymph gland had compressed the left iliac vein, so as to impede the circulation through it. There were secondary growths in the pelvic and lumbar lymph glands, and in both broad ligaments. The primary tumour was a round- and spindle-celled fibro-sarcoma—'sarcoma medullare nodosum et polyposum.'

Appendix on Vaginal Polypoid Formations in Infants.

Several instances of congenital and early-life polypoid formations in the vagina have been met with, and these are often erroneously referred to as examples of congenital 'myoma.'

In Martin's case† a 'fibröser Scheidenpolyp,' which was visible at birth, was removed by ligature, and the patient cured.

Traetzl‡ found a 'fibromatöser Polyp,' growing near the uterus from the posterior vaginal wall, in an infant one year and three months old. It was freely removed and the child cured.

With regard to the occurrence of mucous polypi in the vagina, De Sinéty says: 'Plusieurs gynécologists admittent l'existence dans le vagin, de polypes muqueux. Ces productions, si elles existent, sont en tout cas trés rare, et en l'absence d'examen histologique nous n'avons aucune notion sur leur structure.' Since then Ivor Thomas§ has reported an instance which seems to come under this heading. A lady consulted him on account of her daughter, one year and nine months old, who had 'something showing from her privates.' On examination a soft, friable, reddish tumour was found protruding from the vagina. It was eroded, and had caused dysuria. Under

* *Archiv. für Gynäk.*, Bd. xvi., S. 58.
† *Zeitsch. für Geburts. und Gynäk.*, Bd. iii., 1878, S. 406.
‡ *Allg. Wiener med. Ztg.*, Bd. viii., 1863, S. 238.
§ *British Medical Journal*, vol. ii., 1897, p. 1088.

anæsthesia a 'grape-like,' stalked tumour, the size of a walnut, was found distending the vagina, being attached to its anterior wall high up. This tumour was successfully removed, and on histological examination it proved to be of a myxomatous nature.

Chiari* has reported an instance in which he found a congenital myxo-fibromatous polypus in the vagina of a still-born child. Schmidt† in a child one year old, and Pfaff‡ in a child two years old, have also met with these soft polypi.

Wilson§ found a large polypoid vaginal tumour in a child two and a half years old. The symptoms were of nine months' duration. The day before the child was first seen she experienced pain and difficulty in micturition, and her mother found a large red mass hanging from the vulva. Examination showed a lobulated, reddish, fleshy-looking tumour, the size of a small orange, protruding from the vagina, to the posterior wall of which it was connected by a broad pedicle. The tumour had no connection with the bladder or rectum. Under anæsthesia the pedicle was ligatured and the tumour was cut away. The patient was soon convalescent. Histological examination showed that the tumour 'resembled in structure a mucous polypus.' This case is erroneously cited in many works, as an example of infantile 'myoma uteri.'

Sometimes these polypoid formations are of a very vascular nature, as in a case reported by Waldstein.‖ The patient was eighteen months old, and had been subject to intermittent vaginal hæmorrhage for five months. This was found to proceed from a tumour, the size of a cherry, which was attached to the lower third of the posterior vaginal wall by a broad pedicle. It was freely extirpated, together with the parts adjacent to the area of implantation. Histologically examined it proved to be 'hæmangio-sarcoma peritheliale.'

As the foregoing case shows, these infantile polypi are not always of an innocent nature. Witebsky¶ has met with an instance, in a child six years old, in which a tumour of this kind, which on microscopical examination appeared to be a simple mucous polypus, was nevertheless recurrent for the third time after extirpation.

It appears that polypoid outgrowths sometimes arise in connec-

* *Jahrb. für Kinderheilk.*, Bd. xiv., S. 230.
† Cited by Ahlfeld, *Archiv. für Gynäk.*, xvi., 1880, 139.
‡ Cited by Beigel, *Krank. d. weibl. Geschlechts.*, ii., 1876, 423.
§ *Medical Times and Gazette*, vol. i., 1876, p. 360.
‖ *Monats. für Geburts. und Gynäk.*, May, 1899.
¶ *Monats. für Geburts. und Gynäk.*, May, 1899.

tion with the columnæ rugarum. De Sinéty* has described a case of this kind, in which a pinkish, fleshy structure, resembling a small penis, projected from the vulva. This was found to consist of the great hypertrophied anterior median mucous fold. This condition was first noticed in early infancy.

(*b*) The Adult Type.

This form of the disease presents much the same general features as sarcoma in other hollow organs, such as the uterus. Mucosal and parietal varieties may be recognised, according to the seat of origin of the primary tumour. The mucosal variety is much the rarer. It presents as a mass of softish, bossed outgrowths, projecting from the infiltrated mucosa; or as a solitary circumscribed tumour, which may be pedunculated or sessile. In the parietal variety a well-defined, firm tumour—varying in size from a walnut to an apple—is usually met with; but exceptionally the disease presents as a dense nodular infiltration.

Such growths may become inflamed and sloughy; but it is only exceptionally that they ulcerate. The infiltrated forms are the most prone to be thus affected, and in their clinical aspect they then much resemble cancer. In consequence of septic processes thus arising, such complications as endometritis, salpingitis, pyometra, pyosalpinx, and peritonitis, are apt to ensue. Besides the primary tumour, secondary nodules may sometimes be found in the vaginal wall, vulva, etc., as in cases reported by Schwarz, Morris, Spiegelberg, Steinthal, etc.

Mucosal sarcomata are generally soft and vascular—small, round, and spindle cells predominating in their structure, which often comprises considerable myxomatous areas. In many cases of this kind the vascular development is so pronounced as to merit the special designation of 'angio-sarcoma,' of which instances have been reported by Seitz ('lymphendotheliom'), Schwarz, Klein ('lymphangioendothelioma,' etc.), Alglave, and Kalustow. Gebhard has also described a case of vaginal-'endotheliom' in a girl only fourteen years old. Severe hæmorrhages are common with this type of the disease.

The parietal tumours are generally mixed-celled fibro-sarcomata, in which spindle cells predominate. Large round-celled and myeloid forms have also exceptionally been met with, as well as specimens containing an appreciable quantity of leiomyomatous elements. It seems probable that some sarcomata of this kind may

* *Revue de Gyn. et de Chir. Abd.*, Mars-Avril, 1899.

originate from vaginal 'fibroids,' as in a case reported by Homs. Parietal sarcomata present as firm, circumscribed tumours, which may easily be confounded with fibromata, myomata, and cystomata of the part.

The great majority of these sarcomata in adults, originate from the lower part of the vagina, not far from the introitus; this was the condition in fourteen out of sixteen cases in my list, in which information of this kind was available. Quite as many of these tumours originate anteriorly as posteriorly. As the disease progresses it often involves adjacent structures, such as the vulva, peri-urethral region, bladder, pelvic connective tissue, rectum, etc., but it seldom spreads to the uterus. The pelvic and inguinal lymph glands may be secondarily involved, as in three of the eighteen cases in my list; and several instances of its dissemination in distant parts (lungs, pleura, skin of chest, abdomen, etc.) have been reported (Spiegelberg, Bajardi, Herzfeld, etc.).

The disease generally recurs rapidly after local ablation, but the following exceptions to this rule have been reported:

1. During the accouchement of a multipara, Spiegelberg* noticed a circumscribed tumour—the size of a walnut—in the lower part of the anterior vaginal wall. This was subsequently thoroughly removed, and histologically examined it proved to be a spindle-celled fibro-sarcoma. When the patient was last heard of—four years later—she was well and free from any sign of recurrence.

2. In a recently-married woman, twenty years old, who proved to be about six months pregnant, C. A. Morrist found a firm, nodular, sessile mass of eroded new-growth blocking the introitus and invading the adjacent parts of the vagina and vulva on the right side. The rectum, uterus, and bladder were unaffected. A fragment of the morbid mass—removed for microscopical examination—exhibited the structure of round- and spindle-celled fibro-sarcoma. The whole diseased area was therefore freely removed, without waiting for delivery. She recovered from the operation, and in due course was safely delivered of a healthy child. When last heard of—two and a half years after the operation—she was in good health and free from any return of the disease.

3. In a multipara, aged thirty-nine, who three months previously noticed a lump at the vaginal orifice, Menzel‡ found on examination, a tumour the size of an apple, attached to the lower part of the

* *Archiv. für Gynäk.*, Bd. iv., 1872, S. 348.
† *Practitioner*, vol. ii., 1898, p. 593.
‡ *Cent. für Gynäk.*, 1885.

anterior vaginal wall. This was removed by a local operation, and proved on microscopical examination to be a round- and spindle-celled sarcoma. When last heard of—ten months after the operation—there was no return of the disease, and she was then seven months pregnant.

The disease generally runs a rapid course, for the average duration of life of the fatal cases in my list—dating from the first noticeable symptoms—was only 10·7 months, the longest duration 24 months, and the shortest 1½ months. In three of the above cases the fatal issue occurred shortly after local removal of the disease, the causes of death in these cases being erysipelas, hæmorrhage, and pulmonary embolism respectively.

This type of vaginal sarcoma is often concomitant with pregnancy, and this was so in no less than five of the cases in my list. In none of these cases was the progress of the disease accelerated or otherwise unfavourably modified on this account; indeed, of the three successful local operations, as above described, in two the disease was concomitant with pregnancy.

The average age of the patients at the onset of the disease was thirty-two years, the youngest being fifteen and the oldest fifty-nine years. In sixteen cases the age at onset was as follows:

15	to	20	years	...	...	... 4 cases.
20	,,	30	,,	...	...	... 4 ,,
30	,,	40	,,	...	...	... 4 ,,
40	,,	50	,,	...	...	... 1 case.
50	,,	60	,,	...	...	... 3 cases.

All of these women—save two—were married, and of these only one had never been pregnant—the others were multipara.

In the great majority of the cases, the initial indication of the disease was the discovery of 'a lump' at or near the vaginal orifice; in a smaller number hæmorrhage was the initial symptom; and in a still smaller number discharge, dysuria, painful micturition, etc. Pain was seldom complained of in the early stage. The local affections most likely to be confounded with the adult type of sarcoma are cancer, 'fibroids' (especially when inflamed), cysts, and certain syphilides.

The disease generally recurs rapidly after local ablation; hence early radical removal of the whole diseased area is the treatment indicated, whenever this seems feasible, and the general condition of the patient is otherwise satisfactory. When the disease is limited to the lower part of the vagina, vaginal extirpation by Olshausen's

method (transverse perineotomy, etc.) may suffice; but in other cases abdominal utero-vaginal extirpation—as for cancer—is preferable.

In the event of radical treatment being impracticable, relief may often be afforded by destroying as much of the disease as possible with the actual cautery. In other respects the treatment is the same as for uterine cancer.

Some of these vaginal sarcomata present features of special interest.

1. Thus, in Kaschewarowa-Rudnewa's* case striped spindle cells and muscle fibres were found embedded in the substance of the tumour, which was a spindle-celled myxo-sarcoma. These heterotopic elements were probably the result of some embryonic developmental irregularity connected with the evolution of the Wolffian duct. The patient was a girl of fifteen, in whom the catamenia had not appeared. The disease presented as a small polypoid tumour, which was attached to the lower part of the anterior vaginal wall. The uterus was normal. The tumour was removed, but it soon recurred, and increased so rapidly that in a few months' time, it attained the size of the head of a fœtus at term, and caused the girl's death.

In a spindle-celled sarcoma of the portio vaginalis, removed from a girl seventeen years old, Wirtz found similar rhabdo-myomatous elements.

2. Lindfors† has reported a remarkable instance of so-called 'deciduoma malignum' ('syncytioma') of the vagina, in which the tumour was successfully removed by operation, the uterus being uninvolved. The patient was a married woman, aged twenty-two, who three months previously had a premature confinement. She died seven months after the operation with pulmonary symptoms, there being no obvious signs of recurrence. At the necropsy, the left lung and the adjacent structures, the right lung, the spleen, liver, kidneys, brain, and intestines were found to be extensively invaded by malignant disease, having the characters of 'deciduoma malignum.' The vagina was quite free from any return of the disease; the uterus, ovaries, and tubes were healthy. If we accept the author's estimate of this case, 'deciduoma malignum,' with metastases, may occur without any involvement of the endometrium, as the result of dissemination from the fœtal membranes.

3. Steinthal's‡ case of vaginal 'angio-sarcoma' may belong to the same category, for the affection developed four months after the

* *Archiv. für path. Anat.*, Bd. liv., 1872, S. 63.
† *Cent. für Gynäk.*, No. 21, 1901, S. 557.
‡ *Archiv. für path. Anat.*, Bd. iii.

expulsion of a 'hydatidiform mole,' and there were two separate vaginal tumours. The disease progressed rapidly to a fatal termination. There was no necropsy.

4. Two other cases of this kind have lately been published by Schmit.* His first patient, aged thirty-six, one year and three months after having expelled a hydatidiform mole, developed two nodules in the vaginal wall, which on microscopical examination presented the appearance of 'syncytioma malignum.' As the uterus seemed healthy, these vaginal tumours were simply excised. Eighteen months later she was in good health, and free from any return of the disease. Schmit's second patient, forty-one years old, had aborted at the seventh week on November 30, 1900. The following January she had several severe floodings, which could only be arrested by plugging the vagina. After the last of these, a nodule was noted in the anterior vaginal wall, the uterus being normal. It was excised, and the uterus was curetted. The vaginal tumour was soft, non-encapsuled, and appeared to consist chiefly of coagulated blood. Histologically examined, it was found to consist of chorionic villi undergoing 'hydatidiform degeneration,' lying free in thrombi. In connection with these structures, actively proliferating cells of Langerhans' layer and syncytial masses were noticeable. The thrombi were surrounded by a zone of small round-celled infiltration. Eight months after the operation the patient still remained in good health. The author believes that in these cases the primary chorionic affection was non-malignant, and that it gave rise to metastases during parturition which were also non-malignant. He believes, however, that grafts of this kind are liable, after a time, to acquire malignant properties in their new habitat.

5. Pick† has also described a similar case in which the vaginal tumour was successfully excised, and the patient was still free from any return of the disease three and a half years after the operation.

6. Several other interesting cases of this kind by Schlagenhaufa, Schmorl, Wehle, etc., are referred to by Inglis and Bruce‡ in their valuable essay on 'Deciduoma Malignum.'

Any form of primary melanotic tumour of the vagina is of the greatest rarity, but the two following cases of melano-sarcoma in this situation have been reported:

(*a*) Horn's§ patient was a multipara, aged forty-nine, who two

* *Wiener klin. Woch.*, October 31, 1901.
† *Monats. für Geburts. und Gynäk.*, October, 1897.
‡ *Trans. Edin. Obstet. Soc.*, vol. xxvi., 1901, p. 119.
§ *Monats. für Geburts. und Gynäk.*, November, 1896.

and three-quarter years previously became subject to a fœtid sanious vaginal discharge. Soon afterwards she noticed a tumour projecting from the vulva. Four and a half months later this tumour was extirpated, and some enlarged glands were dissected out from the right inguinal region. The mucosa covering the extirpated neoplasm was found to be pigmented, although the tumour itself, which proved to be sarcomatous, was devoid of pigment. One very large and soft sarcomatous gland contained much pigment. One year later, there was recurrence in the vagina, and in the left inguinal region. The vaginal disease was freely destroyed by the thermocautery, and a mass of sarcomatous glands was removed from the left groin. Many of these were pigmented. Subsequently recurrent disease of the labia and right groin was extirpated. A large intra-abdominal extension of the disease then appeared, which infiltrated the parietes and extended into the pelvis. The patient died thus about three years after the onset of the primary disease.

(*b*) In Parona's* case, a spindle-celled melano-sarcoma invaded the vesico-vaginal septum. It was freely extirpated, together with part of the bladder, with some temporary relief.

In conclusion, it may be mentioned that sarcomatous disease of the vagina may be secondary to a primary focus elsewhere—*e.g.*, in the uterus, vulva, ovary, bladder, etc. Mucosal uterine sarcomata and 'deciduoma malignum' are specially prone to disseminate in the vagina.

ADDITIONAL BIBLIOGRAPHICAL INDICATIONS.

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* *Ann. Univ. Med.-Chir.*, Milano, 1887, p. 241.