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CONGENITAL EROSION AND SPLIT OF THE CERVIX UTERI¹

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I PRESENT this paper to the College of Physicians in order to direct attention to a condition of the cervix uteri in virgin and sterile women which I think is not by any means generally recognized, and to obtain from the members of the College some information from their own experience; for since my attention has been directed to this subject I have talked of it with several physicians in general practice, and a few of them had seen cases which puzzled them and which they thought belonged to the class of cases which I am about to describe—under the name Congenital Erosion and Split of the Cervix Uteri.

A few text-books on gynæcology refer to this congenital condition. The only papers upon the subject of which I have any knowledge are by Leopold in 1872 and by Fischel in 1880.

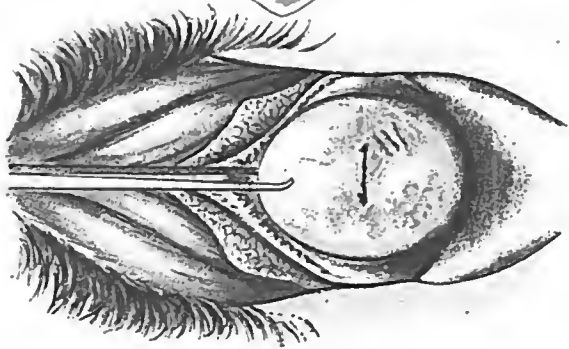
Fischel's paper is called a contribution to the morphology of the cervix uteri. As the explanation of the cases which have occurred in my own experience is furnished by this paper, I have added a short abstract of it which Dr. Lawrence S. Smith has very kindly made for me.

A CONTRIBUTION TO THE MORPHOLOGY OF THE CERVIX UTERI.

During the course of a series of investigations on the cervixes of infants who had been stillborn or who had died soon after birth the author's attention was called to a condition which, so far as he knew, had never been described by any anatomist or gynæcologist that had undertaken the study of this part of the anatomy, namely, the occurrence of erosions. A short time before he had discovered by accident in the *Transactions of the Gesellschaft für Geburtshülfe* in Leipzig, July 15, 1872, a communication by Leopold stating that he had seen such an erosion of the cervix, and declaring it to be an anomaly in the newborn child heretofore unrecognized. In the debate

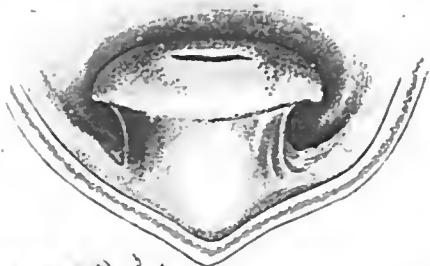
¹ Read before the College of Physicians of Philadelphia, February 5, 1896.
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Fig. 1.



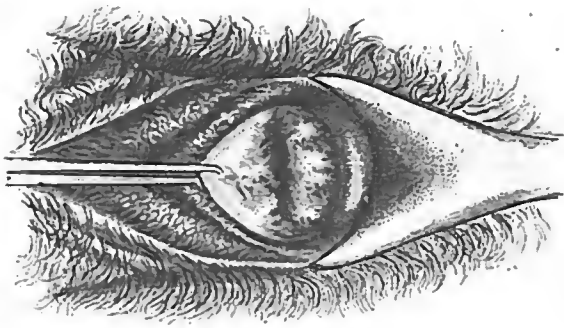
Congenital eversion, Case 1.

Fig. 2.



Congenital eversion, Case 1.

Fig. 3.



Congenital split of the cornea, Case 11.

that followed Ahlfeld stated that circulatory congestion in the uterus and, apparently also, erosions of the mucous membrane were a frequent occurrence in asphyxiated infants. (*Archiv f. Gynäkol.* B. v. S. 162.)

From this short notice Fischel judges that neither Leopold nor Ahlfeld had ever subjected these erosions to a microscopic examination. He therefore publishes the investigations he made and also the conclusions he reached as a result of them.

"On twenty-eight cervixes examined he found ten erosions of varying character and size; of these ten cervixes, four were from fetuses stillborn at term, two from infants a few days old, one from an infant fourteen days old, and three from infants three, four, and five weeks old, respectively. From the eighteen cases in which no erosion of any kind was found, five were still-born at term, one a few days old, one nine weeks, one thirteen weeks, two eighteen months, and one two and one-half years old. The others came from fetuses in the sixth, seventh, eighth, and ninth month of intrauterine life."

From these cases he found that the assertion of Ahlfeld (see above) had no value as far as cause and effect between asphyxia and erosion were concerned, since, of the five children born asphyxiated, none showed any erosion, while some did that died at varying periods after birth.

"The appearance which the erosion on the infantile cervix presents varies both in extent and in the form of the change. In most cases the external os forms a rather narrow transverse opening surrounded by a reddened, velvety area 3-4 mm. wide. In other cases the erosion extends onto the lateral surfaces of the cervix higher up than on the anterior and posterior aspects. In other cases still, and these bore the nearest resemblance to erosions in the adult, the change was limited to the under surfaces of the lips of the cervix as far as they came in contact with the posterior vaginal wall."

He points out that with the naked eye two forms of erosion may be distinguished: one with a satiny appearance, another of a rougher, more granular character, recognized as papillary. Microscopically, the papillæ, instead of being protected by an even covering of squamous epithelium, stand out separately in a more or less irregular arrangement. Covering the uneven surface thus formed is a single layer of cylindrical epithelial cells. On the ends of the papillæ the cylindrical form is replaced by a flatter, more cubical one, but everywhere the layer is single. There is no transition-form between squamous and cylindrical epithelium; but the hue of demarcation is always sharply defined, so that, for example, one side of a papilla may be lined with stratified squamous, the other with simple cylindrical epithelium. In many places compound glands, acinous in character, open into the depressions between the papillæ, and into these glands the simple columnar epithelium dips down. The mucosa itself is composed, as usual, of a connective tissue rich in nuclei.

To sum up, he concludes "that in almost 36 per cent. of newborn infants the vaginal surface of the cervix from the external os toward the vaginal fornices is covered more or less extensively with a mucous membrane, which, from the form of its epithelium, from its less papillary character, and from its possession of mucous glands and crypts, must be regarded as a direct continuation of the cervical mucous membrane."

"The dividing-line between the epithelium of the vagina and that of the uterus does not lie, as we are led to believe by all previous investigators, even the latest—Klotz, at the outermost end of the cervical canal, but may be situated even on the external vaginal surface of the cervix more or less high toward the vaginal fornices. For this condition I adopt the name congenital histological ectropium."

"This dividing-line between the two forms of epithelium lay, in the greater number of cases, within the cervical canal 2-3 mm. above the external os, and coincides with the external os in only a minority of cases."

The degree of development of glands in the cervical canal and on the outer surface of the cervix varies greatly in different individuals, as does also that of the palmar plicæ within the cervix. In some these glands were

exceedingly well developed, but where the surface was covered with squamous epithelium he found no trace of glands of any kind.

He accounts for the formation of this ectropium by the theory that, after the formation of the uterus and vagina by the union of the lower segments of the ducts of Müller, which are lined with a simple columnar epithelium, a change begins at either end in the mucous membrane. In the uterus this change consists in a development of a glandular system, while in the vagina, beginning at the urogenital sinus, the columnar epithelium gradually changes into the squamous variety. At the termination of intrauterine life this change should have reached the external os, but owing to the varying rapidity with which it progresses in different individuals the point which it reaches varies, being sometimes higher, sometimes lower than normal. If the squamous epithelium reaches the cervix before any glandular development has taken place in its mucosa, no glandular openings are found on its surface, nor are any glandular formations found beneath it. If, however, the columnar epithelium has already begun to send down processes into the mucosa before the squamous metamorphosis overtakes it, these glandular structures persist and may develop further. This theory accounts for the histological ectropium, and also the presence of glands in the vaginal wall that Preuschen has described.

In regard to the connection between the histological ectropium and erosions and other pathological conditions he says: "It must be acknowledged as possible that erosions occur in adults when the individual has received a predisposition to it during the period of her development. It is, furthermore, to be conceded that this congenital histological ectropium of the cervix may be covered over by squamous epithelium, but still retain under this covering the glands and other attributes of a cervical mucous membrane. If now, through some inflammatory process, the tissues become congested and infiltrated with round-cells, the acquired superficial (squamous) epithelium will be shed, and the original columnar epithelium be brought to light, presenting the complete picture of a true oedematous or papillary erosion, a condition that differs from the normal cervical mucous membrane only in its greater succulence and in the richness in cellular elements."

"However, I will admit that, as I have stated in my paper on erosions, the formation of the erosion may occur on a spot normally covered with squamous epithelium. But when I consider that even in adults the erosion never passes beyond the limits which we have recognized as originally those of the cervical mucous membrane (the highest boundary in my cases lay approximately midway between the external os and the fornix vaginæ), it becomes more and more evident to me that of women whose cervixes are intact, those only will have erosions who are predisposed to them by this congenital condition which I have described."

He believes that the persistent and almost incurable forms of catarrh, for which Schröder has advised excision of the mucous membrane, are the result of a predisposition seated in the congenital hypertrophy of the "arbor vitae" and its glands.

After a description of the normal cervix with its transversely oval os and its anterior and posterior lips united by the lateral commissures, he alludes to the injuries usually inflicted on it in labor and to the changes that these injuries produce in its form and appearance until the laceration ectropium described by Emmet is formed.

"I am now able," he says, "to show a photographic representation of the cervix of a newborn infant which presents an inferior degree of this condition. The separation of the lips does not extend all the way to the vaginal junction, but concerns only the lower two-fifths of the lateral corners. Nevertheless, the two lips deprived of their commissures gape open, the crest of one being 9 mm. from that of the other, exposing the cervical surface of both lips for a distance of 5-6 mm. This case shows that a peripheral notching of the cervix is not always a sign of a previous labor,

but may represent a condition of the cervix in pregnant women whom we were forced to consider primiparæ not only through their own statements, but also from the condition of the external genitalia. This case is of great forensic importance in that the proof of a former labor can no longer be claimed for such a condition of the cervix."—*Archiv f. Gynäkologie*, 1880, Bd. xvi. S. 192.

It will be observed that there are two distinct conditions described by Fischel—a congenital erosion and a congenital split of the cervix, and the former is much the more frequent lesion, occurring to a greater or less degree in 36 per cent. of the infantile cervixes which he examined.

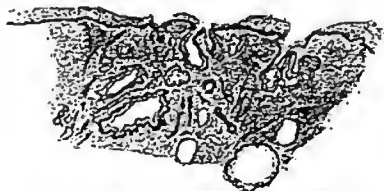
I have had no opportunity of studying the cervixes of infants, but I have met one undoubted case of congenital split of the cervix in a virgin, and three cases of disease of the cervix in young women, which I think may be explained by the presence of the congenital erosion described by Fischel.

I have described the first case in detail, because in it the cervix was amputated and submitted to microscopic examination.

CASE I.—N. S., white, aged twenty-five years, single. Menses began at fourteen years, occurred every twenty-eight days, and were of four days' duration. She had suffered for five years with profuse leucorrhœa, headache, and slight left ovarian pain. She was a well-developed, strong woman. Careful questioning and observation rendered it most probable that she was virtuous.

She had never had local gynecological treatment.

The ostium vaginae was vaginal. On the posterior margin there was a crescentic hymen, which was not, however, sufficient to prevent coitus. The vagina was small and vaginal. The vaginal cervix was mushroom-shaped (see Plate, Fig. 1). The face of the cervix was flat, or very slightly evenly convex. The face of the cervix projected (like the top of a mushroom) on all sides beyond the upper portion which corresponded to the stalk of the mushroom. The face (see Plate, Fig. 2) of the cervix was round and about one and a half inches in diameter. In the figure



Microscopic section of vaginal cervix in Case I.

it is oval on account of the traction from the tenneulum. The external os was transverse—one-third of an inch broad. Upon the face of the cervix were several scattered patches of erosion.

The cervix was amputated and microscopical examination was made by Dr. Lawrence S. Smith.

The cervix was covered with squamous epithelium, except on the small patches of erosion, where cylindrical epithelium was present. Rosaceous glands (like the normal glands of the cervical canal) opened all over the face of the vaginal cervix, in front, behind, and to the sides of the external os. They were found as far as one half to three-quarters of an inch from the external os. These glands opened on the vaginal aspect of the cervix, where it was covered with squamous epithelium, and this epithelium extended to the ducts of the glands, which were lined with cylindrical epithelium. The vaginal cervix was, in fact, a glandular structure.

It will be remembered that normally no glands whatever open on the vaginal aspect of the cervix uteri.

The erosions which are usually seen in practice are those which accompany no inflammation of the mucous membrane of the body or neck of the uterus, and which are caused by the irritating discharge, and those erosions, by far the most frequent and pronounced, which are due to laceration of the cervix with eversion of the lips. In the cases of the first class there is no alteration in the general shape of the cervix. There are no glands discharging upon the vaginal aspect of the cervix, unless there be present a prolapse of the cervical mucous membrane.

In the cases of the second class, those due to laceration, the shape of the cervix is altered and there is a marked erosion, which is caused by the exposure of the normal mucous membrane of the cervical canal, and perhaps by some proliferation from irritation of the cellular and glandular elements of this mucous membrane.

The differences between the condition found in the case which I have described and that present in a case of bilateral laceration with ectropion of the cervix uteri may be stated as follows:

In the laceration there is a history of pregnancy. The face of the cervix is oval, the antero-posterior axis being the longer. The angles of laceration are marked either by a depression on each side of the apparent external os or by a palpable plug of cicatricial tissue. The ectropion is antero-posterior; there is no lateral ectropion.

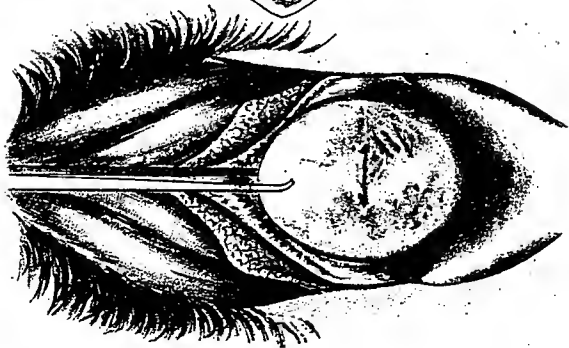
In the condition in Case I. there had been no pregnancy. The face of the cervix was round, plane, or very slightly uniformly convex. There was no indication of any angle of laceration, macroscopically or microscopically.

The cervix is mushroom shaped. The ectropion is lateral as well as antero posterior.

It seems probable that the condition which I have described is distinct and congenital, and is due to the development upon the vaginal aspect of the cervix of those structures which are normally confined to the cervical canal.

It will be remembered that Fischel found such a condition in 36 per

Fig. 1.



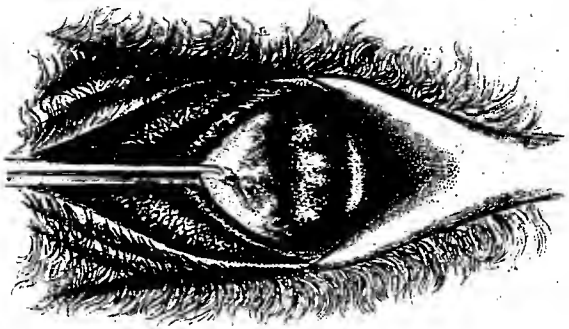
Congenital cataract, Case I.

Fig. 2.



Congenital cataract, Case I.

Fig. 3.



Congenital split of the cornea, Case II.

os. The uterus was in the second degree of retroversion. The integrity of the hymen was not regarded, because it was thought that the retroversion would require correction. There was no leucorrhœa.

The appearance of the vaginal cervix is well shown in Fig. 3 of the Plate, which was made from life. The macroscopical appearance of the cervix is in all respects similar to that seen after laceration from abortion, miscarriage, or labor; though the case reported was an undoubted case of congenital split of the cervix.

As pointed out by Fischel, the importance of such cases is very great from a medico legal point of view.

A STUDY OF THREE CASES OF TUMOR OF THE BRAIN IN WHICH OPERATION WAS PERFORMED—ONE RECOVERY, TWO DEATHS.

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NOTWITHSTANDING the brilliant results obtained in single cases of tumor of the brain operated upon with success, the general results of surgical interference in this class of cases, it must be admitted, are not as encouraging as we would desire them to be, especially when we compare them with the splendid showing of the operative treatment of certain pyogenic diseases of the brain.¹

From *Chipault's* very complete table in his recent admirable work on the *Surgery of the Nervous System*, I find that 63 of 123 cases of brain-tumor operated upon died from the effects of the operation (51 per cent.). Forty-nine cases in which a tumor was removed recovered from the operation—it is impossible, however, to state exactly how many of these cases were cured of their disease, or even greatly benefited by the operation, which is the salient point of the whole subject.

The difficulties which beset the successful surgical treatment of tumors of the brain are of threefold character:

¹ See Macewen: *Pyogenic Infectious Diseases of the Brain and Spinal Cord*, 1893.