

ATRESIA AND STRICTURE OF THE VAGINA*

BY JAMES E. KING, M.D., F.A.C.S., BUFFALO, N. Y.

ATRESIA and stricture of the vagina are problems that not infrequently confront the gynecologist. They lay claim to his attention not because they of themselves are a source of suffering, but because they prevent the woman so affected from fulfilling her mission as a wife and mother. There is a voluminous literature on various phases of the subject. Most writers have confined their discussion to congenital absence of the vagina and the operative procedure for rectifying it. A review of the literature seems also to indicate that certain of the acquired forms have been regarded and described as congenital.

Atresias of the vagina may be divided into the congenital and acquired forms. Of the congenital atresias, imperforate hymen is the most frequent type. Absence of the vagina, strictly speaking, is not an atresia, inasmuch as in such cases a vagina never existed, but for convenience it may be placed under this heading. Finally transverse septa may also be found as a congenital anomaly. These defects are rarely discovered until puberty, when presence of the menstrual molimen with absence of flow, prompts an examination.

Congenital absence of the vagina is a rare anomaly and it is almost invariably associated with either a very rudimentary uterus or its complete absence. Indeed, cases that show an apparent absence of the vagina but in which there is found a well developed cervix and uterus, should be studied carefully, as it is very probable that they belong to the acquired rather than to the congenital type. Congenital types present no etiologic problem and they are interesting mainly from the viewpoint of their surgical treatment. It is not the purpose of this paper to enter into the discussion of these forms.

The acquired types of atresia are much more interesting. It is convenient to classify them in three groups, based upon the time of life when they occur; namely, those cases that develop during infancy and childhood, those that develop during the childbearing period; and those that develop after the menopause. This classification finds justification not only by reason of the different clinical aspects presented by each of the three groups, but more especially because of the distinct etiology found to cause the atresia during each of these three periods. Considering the etiologic factors in the three groups of our classification, we find the atresias produced during infancy and childhood to

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be due to trauma and vaginal infections. During the reproductive period they result from injuries and infections of labor, and very rarely to other vaginal infections, while after the menopause almost the sole cause is an atrophic vaginitis with a superimposed infection. Although the atresias produced during the childbearing period and after the menopause are interesting and worthy of discussion, only those atresias that develop during infancy and childhood will be discussed.

Atresias due to trauma during childhood present no question as to their etiology. The history of an injury, and the evidence of malformation and scar tissue about the vulva, clearly determine the causal factor. On the other hand, in the cases of atresia resulting from infantile vaginal infections, it is often impossible to obtain a history of the vaginal discharge and it may thus be difficult to establish the real cause of an atresia discovered in adult life.

Undoubtedly by far the most common cause of an atresia developing during childhood is infantile vaginitis. The bacterial cause of vaginitis in childhood is generally conceded. Grouped broadly, these infantile vaginal infections may be classified under two headings; those due to the gonococcus, and those due to other bacteria. With regard to the miscellaneous infections there seem to be many views, having but little foundation in scientific observation, that have found their way into many text books unquestioned. Most text books, for example, give first place to the exanthemata as a cause of vaginitis in children. The writer has never seen vaginitis associated with or following any of the exanthemata. Such cases he believes to be rare, and if they do occur, to be of short duration. However, children exhausted by any severe or long illness, or those suffering from malnutrition, are not infrequently subjects of vulvitis when cleanliness is not maintained. The possibility of a severe streptococcus ulcerative infection, or of a true diphtheritic infection of the vagina, is conceded. In such instances the great severity of the constitutional symptoms dominates the picture. A chronic purulent discharge in young children that bacteriologically shows no gonococci is not infrequently considered to be due primarily to a mixed infection. As a matter of fact, this mixed infection finds its origin in a gonorrhea and the persistence of the discharge is due to the pathology caused by, and remaining after the disappearance of, the gonococcus itself.

That the gonococcus causes a very large majority of vaginal discharges in children must be generally admitted. A committee representing the American Pediatric Society attempted by means of a questionnaire sent to hospitals and physicians, to obtain information on which might be based some definite data on this important subject. The result emphasized the fact that there existed among a considerable proportion of those approached, a failure to appreciate the real seri-

ousness and importance of gonorrhea in childhood, and it made it clear that there still remains much to be done in placing squarely before the general profession the real truth concerning vaginitis in children.

A discussion of the atresia due to gonorrhea in childhood necessarily comprehends a consideration of certain features of gonorrheal vaginitis. It is well established that gonorrhea of the vagina is a disease of infancy and early childhood. The stratified epithelium of the glandless membrane of the adult successfully resists attacks of the gonococcus, while the more delicate vaginal tube of the child offers a field easily infected by, and difficult to rid of, these germs. The epidemics in institutions are now well understood to be due to contact infections, through the media of a large variety of agents. A discussion of the various means by which the gonococcus may find entrance to the vagina of a child is not pertinent to this paper.

Of the clinical manifestations following infection it may be said that as in adults, they vary in different individuals. Certain cases present but a moderate discharge, that attracts little attention and soon subsides. In other children the vaginal discharge may persist for months. To understand the variation in the clinical course in these little patients, one has only to keep in mind the fact that the gonococcus is a pyogenic organism that causes ulceration, and that in any gonorrheal inflammation mixed infection is the rule. The clinical manifestation of a gonorrheal vaginitis in the period just following the infection, often proclaims the severity of the process, and makes easily understood some of the sequelae which are seen later in life. Other things being equal, the amount of discharge and its persistence will depend upon the extent of ulceration. A discharge will continue until the ulcerated vaginal areas have been replaced by healed scar tissue, or until apposing granulating surfaces become united, and the obliteration of those surfaces is thus accomplished. It is doubtless just as true in gonorrheal vaginitis in children, as it is in urethritis in the male, that the less marked lesions may heal, leaving no trace. In every case, however, in which ulceration and mixed infection are pronounced, sequelae are certain to result. It is obviously quite impossible to estimate with any degree of accuracy the percentage of permanent structural changes that follow vaginitis in children. Probably, however, it is not high, inasmuch as some men of large experience have never encountered a case. That these changes do not occur more frequently is rather surprising, when one considers the delicate vaginal membrane of the child, and the indifference and difficulties encountered in the treatment of these infections.

The structural changes found in the adult vagina as a result of gonorrhea in early childhood, may be divided in two groups: a narrowing of the vagina due to scar tissue involving to a greater or lesser degree its circumference, and a more extensive condition, consisting

of partial or complete obliteration of the vagina, brought about by the fusion of vaginal surfaces. It is seldom that either of these types is discovered until the woman marries. The first type may be found during a vaginal examination prompted by other conditions, or the stricture may interfere with normal married life to an extent that will lead to the discovery of its presence.

In cases belonging to the first group a wide variation in the extent of scar tissue is found but usually it is not sufficient to produce trouble. The examining finger comes in contact with a cord-like process felt in the vaginal wall. The lateral walls are the most frequent location. In view of the fact that such conditions do not interfere with normal processes, they possess but little clinical interest. The writer has met with a number of such conditions that were presumably the result of gonorrhea, but in only one could a definite history of a vaginal discharge in childhood be obtained.

In the cases belonging to the second group, the obliteration of the vagina naturally prompts an examination after marriage. In this group the vaginal defect is marked and the vagina is found almost completely closed, with the exception of the lower one, or one and a half inches. The vagina is represented by a pouch an inch or two in depth. Somewhere along the line which marks the fusion of the vaginal walls, is located the opening connecting with the uterus. This external opening may be extremely small and difficult to locate, and when found may admit only the smallest probe. Beyond this point the fusion of the vaginal walls will vary in extent. The fornices of the vagina in some instances may not be involved, while in others the vaginal walls may closely encompass, and be adherent to, the cervix.

The union that takes place between the vaginal walls is very firm. In the cases described, and in those seen by the writer, there has always been the small pouch representing the vagina just inside the vulva. This rather constant lower limitation to the vaginal adhesions may possibly be explained by the fact that the lower end of a child's vagina is gaping. If the labia be separated, and if the opening of the hymen be not too small, one may easily see the portion of the vagina just above the hymen as a cavity. At puberty the development of the levator muscles and the vaginal constrictors bring the lower part of the vaginal tube closely in contact. The fact of the imperfect vulval closure in the child may possibly explain why the bath tub commonly acts as the medium of infection in some of the institutional epidemics of vaginitis. The water of the bath finds ready entrance to the vagina, and if germ laden, infection is accomplished.

The writer's experience with acquired vaginal atresia as a result of infantile vaginitis, is confined to three cases.

The first was a young woman of nineteen who began menstruating at sixteen. With each period she experienced much pain, and the flow came very slowly. The

feeling complained of was that of pressure in the vagina. Increasing discomfort with each month's flow, prompted an examination. It was found that the vagina was closed an inch and a half from the hymen by the firm union of the vaginal walls. No attempt was made at this time to find the opening along the line of union. Later, under anesthesia, a small opening was found that admitted only a probe. The union of the vaginal walls was dissected for about one half inch. Above this was the vaginal cavity where an adhesion of much lesser extent was found and corrected. Following this procedure menstruation occurred without pain. A year later the young lady married, and although no examination was permitted, her married life was reported normal. The discomfort at menstruation in this patient was due to the small opening not permitting a sufficiently rapid discharge of the menstrual fluid. During the time when the discharge from the uterus became greater than could be drained by the fistula through the atresia, the accumulation produced pain and pressure. Based upon the best of circumstantial evidence the cause of this atresia was an infantile gonorrhea. The mother stated that when the girl was four years old a persistent vaginal discharge required treatment for nearly a year. The mother herself gave a distinct history of pelvic inflammation, following which she had had years of pelvic symptoms, and finally she was operated upon by the writer for a chronic gonorrheal pelvic pathology.

The other two cases of atresia may be briefly cited. A Russian Jewess, twenty-six years old, four months after marriage consulted the writer because intercourse was impossible. Examination showed the vagina to be represented by a shallow pouch. The opening connecting with the uterus could not be found. The patient was requested to return during her menstruation, at which time it was possible to locate the lower opening of an apparently tortuous channel. At operation extensive vaginal adhesions were found to almost completely obliterate the vaginal tube. Following this attempt to open the vagina, although there was much improvement, in two months a second operation was undertaken, followed by vaginal dilatation. Shortly after the second operation pregnancy occurred. The labor was terminated by a difficult forceps delivery in the hands of a competent obstetrician. The baby died. Examination three months after this labor showed considerable scar tissue in the vagina, but a lumen that admitted two fingers comfortably. Pregnancy again took place and at term the woman was delivered by abdominal section with happy results. No history could be obtained here of any discharge during childhood. The patient could not, however, give any information concerning her early childhood in Russia, and there was none of her family who could supply such information. While in this case all direct evidence of infantile gonorrhea was wanting, the atresia was in the writer's opinion undoubtedly due to such a cause.

The third case was a young woman of twenty-three, married three months, referred because intercourse was impossible. Examination showed that the vagina was closed an inch and a half beyond the introitus. At operation, after dividing the lower union, a small vaginal cavity was encountered, and above this the vaginal walls were found closely adherent about the entire cervix and united in front of it, in such a manner that it was with considerable difficulty that the os was finally located and the cervix freed by a careful dissection. Very shortly after the patient left the hospital she became pregnant. At the seventh month of pregnancy examination showed the cervix free of adhesions. The obstetrician in whose hands this patient was placed deemed it wisest to deliver by abdominal section. This patient was able to secure the information that in early childhood she had had a profuse discharge that persisted for many months. Although positive evidence proving the source of this discharge to be a gonorrhea is wanting, our knowledge today of such conditions justifies an assumption that the gonococcus was the exciting germ.

If we grant that all such cases of atresia and stricture are due to a gonorrheal vaginitis that existed in childhood, it presents a strong argument for more prompt and active treatment of these discharges.

The operative technic for the relief of atresia of the vagina must depend naturally upon the needs of each individual case. There are a few general principles that can be applied, however. In atresia due to the union of vaginal surfaces, the dissection should be most carefully done, and when possible it should be accomplished by the finger. The sharp knife, unless great care is used, will penetrate into the deeper layers of the membrane, thus favoring the development of a scar in the deeper structures. A denuded vaginal surface in contact with a similar denuded area, will result in their union. If, therefore, after separating an area of vaginal union, it is possible to do on one wall a plastic procedure that brings an area of normal epithelium opposed to the denuded area of the opposite side, the denuded area will in due course be covered by a modified epithelium, such as is seen in the scar of the lacerated perineum. Where this cannot be done, the surfaces separated must be kept apart by frequent packing with iodoform gauze heavily impregnated with vaseline.

The atresia due to stricture seems to present greater difficulties than the atresia due to vaginal adhesions. As a rule the scar of these strictures is deep and its base broad. Before proceeding with the operation itself the strictures should be most thoroughly stretched with dilators and finger, until sufficient dilatation is obtained to permit one to determine the limits of the scar. Good dilatation also affords greater room for any plastic work. Plastic procedures are difficult. If the scar be not too wide, a resection of a part of the circumference of the stricture should be done, substituting for the resected portion, a union of membrane drawn from above and below the scar. This procedure was helpful in one of the writer's cases. Whatever operative plan is adopted, the vagina should be systematically dilated as soon as possible following the operation. In two of the writer's cases pregnancy took place within four months after operation. It would seem that the vaginal congestion accompanying pregnancy renders contractions of scar less prompt.

The question as to how such patients are to be delivered must of course be decided in each case by the condition of the vagina. If a delivery through the natural passages can be terminated with safety to mother and child, there can be no question as to the advantage derived from the dilatation. It would seem that such cases might also present a valid indication for the induction of premature labor. If however, considerable resistance is offered to the progress of the head, the chances that a premature infant will survive the labor are rather remote. For the safety of the child abdominal cesarean section undoubtedly is the best procedure.