AFTER OFFICE HOURS

Vesicovaginal Fistula

An historical survey

VESICOVAGINAL FISTULA is a palpable and particularly obtrusive lesion. The patient, her physician and her social intimates become aware of its presence almost immediately. One would believe that such a disease should be among the first to be described in recorded medical history, and yet it is not. This may be due to one of several factors.

First, there is the possibility that vesicovaginal fistulas did not occur until a relatively late period in the history of medicine. Proponents of this theory believe that dystocia is the primary cause of postpartum fistula and a concomitant of advancing civilization. They postulate that the abnormal pelvis is a result of hybrid marriage, and that a "racially pure" pelvis results in a relatively normal labor. The rachitic pelvis is a relatively new lesion, the first authoritative report on rickets having been made by Glisson in 1650.

However, it is more likely that vesicovaginal fistulas have occurred since the beginning of recorded time. In support of this thesis are the findings in an Egyptian mummy dating back to the year 2000 B.C. Professor Derry of the Faculty of Medicine of Fouad I University of Egypt[10, 20, 35] discovered a large vesicovaginal fistula in the mummy of Henhenit, a lady in the court of Mentuhotep of the Eleventh Dynasty, who reigned about 2050 B.C. Derry described the pelvis as dolichopellic and considerably contracted in the transverse diameter. Mahfouz[19, 20] examined the same mummy, and, in addition to the fistula described by Derry, he described a complete tear of the perineum.

A second factor which may explain the delayed recognition of vesicovaginal fistula as a clinical entity was the position of the woman relative to society in the early medical eras. As a result of the secondary status of women, the practice of obstetrics was left to the care of midwives who contributed little to our scientific knowledge.

A third factor might be the prolonged influence of Arab medicine from 600 to 1600 A.D. The Arabs regarded postmortem examinations as sinful, and the practice of obstetrics and gynecology by men was forbidden by their religion. As late as the seventeenth century, Roderic deCastro in his book on gynecologic pathology, quoted by Freund, concluded that the art of obstetrics was beneath the dignity of man.

It was not until the art of obstetrics was placed in the hands of skilled physicians, who were trained as observers and reporters, that we begin to find mention of this problem. This situation eventually led to the surgical cure of the disease. Thus we must conclude that vesicovaginal fistulas undoubtedly existed early in medical history, and the lack of knowledge of their existence was based on early social and religious mores.

In an attempt to trace the history of vesico-

vaginal fistula, the earliest periods of recorded medicine were reviewed. Imhotep, an Egyptian, about 2700 B.C., was the earliest known physician. The earliest gynecologic references may be found in the Kahun papyrus,[23] which was translated by F. L. Griffith in 1893, and refers back to the year 2000 B.C. These records contain no reference to vesicovaginal fistula. The Eber's Papyrus[23] about 1500 B.C. and other known writings of the ancient Egyptians make no mention of this lesion. Occasionally there are sentences which are suggestive of the existence of urinary incontinence.

The Talmud, in both its scriptural and interpretive portions, fails to give any evidence that the ancient Hebrew physician was aware of this lesion, although vaginal discharges are mentioned.

Actually the first record of the lesion is to be found in the writings of ancient Hindu medicine. The Vedas and Upavedas were written in 800–600 B.C., and, in discussing lithotomy for bladder calculi in women, it is noted by McKay that "eare must be taken not to thrust the knife too far forward, as it will wound the uterus and the urine will pass through the vagina, forming a fistula." It is most interesting to note that the Hindu physician was not inhibited by social or religious custom from the examination and treatment of the female genitalia.

Unfortunately there was no continuity between Hindu medicine and our own so that, by the time the Greek schools of Cnidos and Cos became world leaders in medicine, the meager advance of the Hindus was lost.

Hippocrates, whose real and spurious writings certainly covered all phases of disease, is nowhere credited with mentioning vesicovaginal fistula. Polybos, about 360 B.C., was Hippocrates' son-in-law, and two of Hippocrates' spurious volumes were attributed by Galen to him. These were the first known texts on diseases of women and on infertility. Neither volume contains any reference to vesicovaginal fistula.

There must have been many gynecologists of note in classical times, but unfortunately their writings have not come down to us. Only Soranus of Ephesus,[20] who lived in the second century A.D., wrote a textbook on midwifery and gynecology. Although universally accepted as the ablest member of that specialty in classical times, he makes no mention of vesicovaginal fistula.

The Byzantine period[23] was noted for its excellent compilations of early Greek and Roman knowledge, but added very little to the original knowledge of the day. Oribasius, about 400 A.D., compiled his *Collectio Medicinalis,* in which the gynecologic section was no more than an abstract of the work of Soranus. Aetius of Amida was the first eminent Christian physician, and his compilations of the Greek and Roman eras stood for 1000 years. Paul of Aegina was the link that brought the classics through the era of compilation into the period of Arab leadership. In none of the works of the famed Byzantine compilers can reference to a vesicovaginal fistula be found.

The Moslem era of medicine extended from the seventh century to the twelfth century. While Arab medical writings in general were voluminous, those pertaining to gynecology were either nonexistent or based on Greek and Roman writings handed down through the Byzantines. As said before, social and religious customs impeded any further advance in the knowledge of the female genitalia during this period.

Interestingly, it was a Perso-Arab physician, Avicenna (980–1037), who was the first known writer to mention the occurrence of a vesicovaginal fistula. He realized, too, the relationship between such a lesion and labor. Mahfouz[20] quotes from Avicenna's chapter on "Prevention of Pregnancy" as follows, ". . . the bulk of the fetus may cause a tear in the bladder which results in incontinence of urine." Avicenna's book *Al Kanoun* was famous as the leading gynecologic text through the seventeenth century, and

may be found in a place of prominence in Middle Eastern libraries today.

The descent of the Dark Ages had its effect on medicine, as it did on all other phases of art and science, so that we find the problem of vesicovaginal fistula, almost unknown prior to the Renaissance, awaiting the rebirth of art and science to achieve recognition. In 1597 Israel Spach published his *Gynecia*. This volume begins with a monograph by Felix Plater, in which 2 cases of vesicovaginal fistulae are described. Both occurred following difficult labor, and one in particular is worth quoting. "Following a difficult delivery, her first, the orifice of the bladder of a young country girl was lacerated so that a long and deep opening into the bladder was created. I recognized the lesion and placed a probe into it in order to delineate its extent. From this lesion, the involuntary flow of urine continued and the surrounding parts became eroded and inflamed and bound down in adhesions from which issued forth a thick creamy pus."

The *Gynecia* ends with a monograph by Mercato. This eminent Spanish physician is the first to apply the term fistula to the lesion which was previously referred to as a rupture. He devotes an entire chapter to "Fistulae of the Uterus" (sic), from which the following is taken: "What an empty and tragic life is led by the affected victims and how great are their embarrassments; for the bladder and the intestines move at the same time, and the uncontrolled urine and feces run from the fistulae with ease; and even those who because of their natural resistance tend to improve somewhat, may in future deliveries have a recrudescence or even a total breakdown, for the only alleviation results when a fistula tends to become adherent to surrounding tissues, but even here the drawn-out period of recovery is so fraught with thousands of bodily miseries and weaknesses, as to render life very grim." Mercato later proposes a definite operation for the relief of these symptoms, but case reports and results are lacking.

Other men writing in this same era mention further cases of this affliction. Among them are Severinus Pinaeus and Fabricius Hildanus. Thus we see that the late sixteenth and early seventeenth centuries brought with them a genuine awareness of the lesion, and it is extremely difficult to know where credit should fall for the earliest description.

In 1663, Hendrik Von Roonhuysen published his *Medico-Chirurgical Observations about the Infirmities of Women*. Commonly thought of as the first textbook on operative gynecology, this excellent volume was translated into English in 1676. The fourth section of the text is entitled, "Rupture of the Bladder; the Signs, Causes, Prognostics and Cure Thereof." In this chapter, Von Roonhuysen gives a clear description of a vesicovaginal fistula and proposes a scientific method of therapy for this lesion. His innovations include proper exposure by the use of a speculum, marginal denudation exclusive of bladder wall, and approximation of the denuded edges with "stitching needles made of stiff swan's quills." Unfortunately he gives no figures or postoperative results. Johann Fatio, whose work was published posthumously in 1752, refers to 2 cases performed in 1675 by Von Roonhuysen's technic which resulted in a cure. These are the first reported cures by modern surgical technic.

Völter, in 1687, suggested that the sutures be interrupted, and he introduced the use of a retention catheter. During this same period, Pietro DeMarchettis strenuously urged the use of the actual and the potential cautery for these fistulas and obtained a complete cure. In later years Monteggia, Dupuytren,[24] and others again recommended the cautery.

Thus we see a spurt of writing from the late sixteenth through the seventeenth century that consolidated knowledge concerning the existence of vesicovaginal fistulas and early attempts at surgical cures, most of which were unsuccessful. The eighteenth

century may be considered an incubation period. Very little was written about vesicovaginal fistula, and the disease seems to have been forgotten. Freund, who wrote a history of the lesion in 1860, states that despite the knowledge of the earlier era "there is a surprisingly complete absence of any description . . . in the larger pathologico-anatomical works of Morgagni and Lieutard."

A new era in the surgical cure of vesicovaginal fistula occurred in the nineteenth century. In 1834, Jobert de Lamballe, using a procedure which, according to Freund, was first proposed by Velpeau, obtained several cures. He was the first to realize the need to avoid tension in his repair. His work attracted the attention of the entire continent, and rapid progress was soon to follow. Jobert de Lamballe noted that recently acquired fistulas might be cured by indwelling catheters alone. However, when induration of the edges of the fistula already existed, a cure without surgery was impossible. This point of view is still recognized as correct. Jobert de Lamballe also made attempts to cure fistulas by using pedicle flaps from labia, buttocks, and thigh.

Simon of Darmstadt had worked with Jobert de Lamballe and adopted his methods. He suggested transverse colpocleisis in those cases which defied previous attempts at closure. This procedure was almost universally condemned as it caused transvesical menstruation, stone formation, diverticula of the bladder, and terminated normal sexual life for the patient. However, partial transverse colpocleisis was later adopted with great success by Latzko to cure those fistulas which followed total hysterectomy.

In 1834, Gosset used silver-gilt sutures, the knee–elbow position, and an indwelling catheter. Chelius, who was primarily noted for treatment of fistulas by cautery, according to Agnew, suggested a modification of the knee–chest position. Von Metzler, in 1846, described a speculum similar to that subsequently used by Sims. Unfortunately he made no drawing, so his innovation probably escaped notice. His description is an interesting one, "A silver vaginal dilator consisting of a guttered conical blade 5½ inches long, whose lower ⅓ is turned outward; and an 8-inch-long steel staff, fastened at a right angle to the lower ⅓, and provided for 5 inches of its length with a large wooden handle."

In 1852, Marion Sims published his monumental work, and while none of Sims' "innovations" were actually new, he deserves immense credit because it was he who removed the cure of vesicovaginal fistula by surgery from the category of probability to that of an established procedure. His personality helped give the treatment of diseases of women a major place in American medicine.

Subsequent to Sims, the only real advance in the treatment of fistulas was the separation of bladder from vaginal mucosa and suturing each as an individual layer. Credit for this usually goes to Mackenrodt. However, in 1857, Collis[3] described the flap-splitting method. It is remarkable that Collis goes unmentioned in English and American texts except that of Lawson Tait in 1889. Mackenrodt in 1894 then developed Collis' idea.

In 1881–1890, Trendelenburg made a radical departure by opening the bladder suprapubically, freeing the bladder wall, and closing the defect. In 1906, Forgue, according to Farsht, was the first to open the peritoneal cavity, detach the bladder from the uterus, and close the fistula in what is now known as the Legueu procedure.

Thus, by the early twentieth century, all approaches and methods of repair are at our disposal, and this disease which may cause so much discomfort has been almost completely conquered.

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