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Phimosis in antiquity

Abstract The medical term *phimosis* has been in use since antiquity, but in contrast to the imprecise definition of the term that is characteristic of nineteenth-century and some controversial modern medical writing, Greek and Roman medical writers imbued it with a clinically precise definition. Using the tools of the history of medicine, an analysis of the medical writings of antiquity reveals that phimosis was defined exclusively as a rare, inflammatory or cicatricial stricture of the preputial orifice consequent to a true pathological condition rather than a disease process in itself. Putative associations between phimosis and diseases such as urinary tract infections or cancer were not made in antiquity and are reflections of modern, geographically isolated social anxieties. The modern European scientific conceptualisation of phimosis, however, represents a return to the precise terminology and conservative therapeutic approach characteristic of Greek and Roman medicine.

Since the nineteenth century, medical writers have argued for the existence of a complex and broadly defined disease construct to which they have attached the ancient Greek word *phimosis*. In this context, phimosis has been conceived of as a morphological deviation from a mythical penile norm. Phimosis has accordingly been described as a foreskin that is "too long"(hypertrophic phimosis), a foreskin whose orifice is not as expandable as the foreskin of most adults (often called "true" phimosis), or a foreskin that has not yet completed the developmental process of physiological detachment from the glans (congenital phimosis). Rather than as a symptom of disease, phimosis has been classified as a disease *sui generis* as well as a cause of disease and, accordingly, for nearly 200 years, presumably responsible physicians, writing in leading medical journals and text books, have further claimed that the results of their research "prove" that phimosis is the cause of such diseases as cancer of the male and female reproductive organs, venereal disease, malnutrition, epilepsy, hydrocephalus, insanity, idiocy, masturbation, heart disease, homosexuality, deafness, dumbness, urinary tract infections, criminality, and death, to name but a few. The drive to cure and prevent phimosis, thus, has been presented as a surgical solution to the most pressing social and moral problems [15].

The European medical concept of phimosis, however, has made a significant departure from its nineteenth-century roots and from the current ideology of American medicine, which still clings to nineteenth-century notions in this respect. The vanguard of European medical experts no longer conceive of phimosis as a disease or as a cause of disease. Phimosis is now defined as a stricture of the preputial orifice caused by lichen sclerosus et atrophicus (LSA), also known as balanitis xerotica obliterans (BXO), a rare dermatological condition of unknown aetiology. In Britain, Rickwood et al. [21] have successfully argued that the definition of phimosis should be divested of any notion of preputial non-retractability, physiological balanopreputial attachment, or preputial length. The new definition of "true phimosis" refers to a condition where "the tip of the foreskin is scarred and indurated and has the histological features of Balanitis xerotica obliterans" [20]. More recently, Rickwood [19] has refined this to the formulas: "phimosis = BXO" and "no BXO = no phimosis". In the historical context the contemporary European refinement of the definition of phimosis represents a return to an earlier definition of the term, one that is found in the classical medical writings of Greek and Roman antiquity.

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The word *phimosis* (φιμωσισ) is derived from the Greek. For this reason, medical writers in the nineteenth century asserted that phimosis, as they defined it, was recognised by the Greeks as a genuine penile defect. An analysis of the corpus of ancient medical literature, however, demonstrates that the nineteenth-century conceptualisation of phimosis does not correspond to the Greek and Roman definition of the term.

Throughout the greater portion of the span of antiquity, *phimosis* as a medical term did not exist. Indeed, Greek physicians of the classical era were evidently uninterested in the foreskin from a medical perspective. Significantly, the word *phimosis* does not appear in the Hippocratic corpus of the fifth century BC. Reference to the foreskin as a distinct part of the penis, however, is characteristic of the corpus. One such reference is found in the Hippocratic aphorism that states:

> When a bone, cartilage, sinew, the slender part of the jaw, or the acroposthion is severed, the part neither grows nor unites [13].

Here we meet the useful Greek word *acroposthion*, which designates the visually defining, tapered, fleshy, nipple-like portion of the foreskin that advances beyond the terminus of the underlying glans penis. The acroposthion, especially in early youth, can run to impressive lengths. Distinguished from the *acroposthion* is the *posthe,* which is the portion of the foreskin that merely enfolds the glans penis, beginning at the coronal sulcus. Although it is not possible to make a definitive interpretation of the above-cited Hippocratic aphorism, one might surmise that the allusion to the severing of the acroposthion confirms that the originator of this aphorism was aware of the foreskin-despoiling blood rituals peculiar to some of the Semitic tribes inhabiting those regions that lay south-east of Greek-inhabited lands.

As demonstrated by their visual art, the Greeks highly esteemed the foreskin as a defining feature of the male body. Indeed, Galen speaks of the foreskin as a brilliantly useful *adornment* [10]. It is not surprising, then, that half a millennium would pass before the word *phimosis* entered the medical lexicon. Although it makes its first appearance in the medical writings of the Roman era, writers first used the term *phimosis* loosely to indicate a condition of being *constricted*, irrespective of the part afflicted. For instance, Galen [14], Heliodorus [12], and Andromachus [1] used the term to refer to inflammatory strictures of the anus or the eyelid, but not the foreskin.

In his *Materia Medica*, the Greek physician Dioscorides of Anazarbus, who flourished under the reigns of Claudius and Nero (41–68 AD), mentioned briefly that a concoction of the juice of the leaves of the herb *cotyledon* and wine would "soften constriction of the genitals, help inflammation, erysipelas, chilblain, and when plastered over, help scrofula and sore throat" [8]. The original Greek wording does not specify what part of the genitals of what sex Dioscorides recommends as the target for the healing powers of this herb. Furthermore, rather than use the word *phimosis*, he uses the etymologically related term *phimos* (φιμοσ), which in this case could, with equal validity, refer to an imperforate anus or a urethral stricture of either sex. Still, the historically portentous association had now been made between the genitals and the idea of stricture.

Even if Dioscorides did not make the association in terms of the foreskin, one or more of his coeval compatriots must have, for Aulus Cornelius Celsus, who in all probability lived during the reign of Emperor Tiberius (14–37 AD), says that they did. In his great work, *De Medicina*, Celsus reports:

> On the other hand, if the glans has become so covered that it cannot be bared, a lesion which the Greeks call phimosis, it must be opened out, which is done as follows: underneath the foreskin is to be divided from its free margin in a straight line back as far as the frenum, and thus the skin above is relaxed and can be retracted. But if this is not successful, either on account of constriction or of hardness of the skin, a triangular piece of the foreskin is cut out from underneath, having its apex at the frenum, and its base at the edge of the prepuce. Then lint dressing and other medicaments to induce healing are put on. But it is necessary that the patient should lie up until the wound heals, for walking rubs the wound and makes it foul [5].

The first surgical treatment that Celsus describes is a ventral slit, a minor tissue-sparing procedure that would have imposed a fairly minimal cosmetic defect. The second procedure, being a variation on the first, involves the removal of a small amount of sclerotic tissue. Here, again, the ventral site of the incision would largely preserve cosmesis and preputial mechanical function.

Elsewhere, Celsus provides a more detailed exposition of his concept of preputial pathology, without, it must be emphasised, using the word phimosis. In this instance he stresses the abnormal induration of the preputial tissue as the primary diagnostic key:

> So then when the penis swells up owing to inflammation, and the foreskin cannot be drawn back, or conversely drawn forwards, the place should be fomented freely with hot water. But when the glans is covered up, hot water should be injected, between it and the foreskin, by means of an ear syringe. If the foreskin is thus softened and rendered thinner, and yields when drawn upon, the rest of the treatment is more speedy. If the swelling goes on, either lentil meal or horehound or olive leaves, boiled in wine, is to be laid on, to each of which, whilst being pounded up, a little honey is to be added; and the penis is to be bandaged upwards to the belly. That is required in the treatment of all its disorders; and the patient ought to keep quiet and abstain from food, and drink water just so much as is justified by thirst. On the next day, fomentations with water must again be applied in the same way, and even force should be tried as to whether the foreskin will yield; if it does not give way, the foreskin is to be notched at its margin with a scalpel. For when sanies has flowed out, this part will become thinner, and the foreskin the more easily drawn upon. But whether the foreskin is made to yield by this procedure, or whether it has at no time proved resistant, ulcerations will be found, either in the ulterior part of the foreskin, or in the glans, or behind this in the penis, and these ulcerations must of necessity be either clean or dry or moist and purulent [6].

Celsus continues this passage with advice on diet, rest, and the application of fomentations. Given the strict emphasis on cankerous ulcerations, it is obvious that Celsus' concept of phimosis is that of a pathological inflammation of the foreskin as a complication of canker. The notching of the inflamed foreskin to release the purulent discharge indicates that a true pathological condition is at work. In contrast to the nineteenth-century medical conception of phimosis, Celsus does not define phimosis as a "redundant", "tight", or "adherent" foreskin. For Celsus, phimosis is a diagnostic description of the effects on the foreskin caused by a real pathological condition, which, in the post-bacteriological era, we might recognise as being of likely microbial origin. Of special relevance is the first description of phimosis as an induration of the foreskin, which neatly matches the modern European medical understanding of the effects of LSA (i.e. BXO) on the foreskin.

The second known use of the word *phimosis* is found in the extant writings of the Greek physician Antyllus, who lived in the second century AD. The writings of Antyllus enjoyed wide currency and were directly copied into the encyclopaedic medical compilation of Oribasus, from which the following passages are drawn, and of Paulus Ægineta [18]. Proceeding where Celsus left off, Antyllus further refines the medical conception of phimosis to include reference to inelastic scar tissue and pathological granulations as the cause of symptomatic preputial non-retractability. The cure that he proposes entails the creation of a series of incisions in the scar tissue so as to expand it and allow the foreskin to function properly.

On phimosis

There are two kinds of phimosis: in one case, sometimes the foreskin covers the glans and cannot be pulled back; in the other case, the foreskin is retracted but cannot be returned over the glans. This second type is specifically called *paraphimosis*. The first type is the result of a scar that has formed on the foreskin, or on a thick granulation in this region. The second type is especially a result of inflammations of the genitals, when, the foreskin being retracted, the glans is swollen and holds the foreskin back. Thus, in the first kind of phimosis, we perform the following operation: after having placed the patient in a convenient position, we pull the foreskin forward and fasten little clips to the extremity of this organ, which we have the assistants hold, advising them to distend and open the foreskin as much as possible. If the stricture is caused by a scar, we make three or four equally spaced straight incisions in the inner fold of the prepuce with a lancet or a sharp instrument. These incisions are only made in the inner fold of the foreskin, for, in the part of the foreskin that covers the glans, it is double-layered. We thus incise the inner fold of the foreskin, for, in this way, after having incised the cicatricial loop, we can retract the foreskin. If the phimosis is caused by a thick granulation on the inner aspect of the foreskin, we make all the incisions in this luxuriant flesh, we retract the foreskin, and we scrape out the thick granulations between the incisions. This done, we cover the whole glans with a lead tube, which we wrap with dried paper. In this way, we prevent the foreskin, which has been returned over the glans, from forming new adherences, since this last part is surrounded by the tube. We maintain the foreskin in a state of dilatation, with the aid of the lead and the paper that envelopes it. If the paper is soaked, it will expand and dilate the skin even more [3].

The thematic and lexicographic connection that Antyllus draws between phimosis and paraphimosis underscores the importance of the existence of an inflammatory process implicit in a diagnosis of phimosis.

In a separate chapter, Antyllus describes a condition in which the previously retractable foreskin becomes adhered to the glans because of ulcerations of either part. The recommended cure entails freeing of the adhesions. Antyllus is careful to avoid calling this condition *phimosis* and instead calls it simply "adherence of the foreskin".

On adherence of the foreskin to the glans

When either the glans, the foreskin, or both organs simultaneously are the site of an ulceration, an adherence is established. Retracting the foreskin as far as possible, one should free the adhesions with the sharp edge of a scalpel, while endeavouring especially to separate rigorously the glans from the part of the foreskin to which it is adherent. If this is difficult, however, it is better to leave a little part of the glans attached to the foreskin rather than do the opposite, for the foreskin, being thin, is easily pierced. After having freed the adherences, one places a thin cloth soaked in cold water between the glans and the foreskin in order to prevent the formation of new adherences [4].

Although in the nineteenth century it was common to use the word phimosis to denote, among other things, both the pathological, ulcerative balanopreputial adhesions of adults suffering the dermatological effects of sexually transmitted diseases and the natural physiological balanopreputial attachment characteristic of youth, Antyllus makes no such error, restricting the term phimosis to inflammatory non-retractability of the foreskin rather than pathological balanopreputial adherence. Neither Antyllus nor any other Greek writer confused the developmental, physiological, and transitory balanopreputial attachment of the juvenile penis with pathological adhesions. Hence, the strict definition of the word phimosis was maintained.

One common misuse of the word phimosis by nineteenth-century and some modern medical writers concerns the length of the foreskin. Penises were and are frequently diagnosed with phimosis because the foreskin has arbitrarily been determined to be "too long", "redundant", or "hypertrophic". The Greeks, however, recognised no such disease. In antiquity the problem was not having too much foreskin, but having too little. Consequently, classical medical writers were concerned with a deformity called *lipodermus* (λιποδερμοσ), a condition in which the foreskin was *not long enough* to cover the glans penis completely. Galen [11], Soranus [23], Dioscorides [9], and Antyllus [2], among others, published lengthy descriptions of lipodermus and made detailed recommendations for its correction. Greek medical writers also devoted considerable space to surgical and non-surgical methods of foreskin restoration following posthectomy [22].

The wealth of classical medical writing devoted to the correction of lipodermus and posthectomy, when considered against the relative paucity of writing on

phimosis as defined by medical writers in antiquity, lends strength to the argument that inflammatory or cicatricial stricture of the preputial orifice was a rare and unusual urological condition.

Conclusions

In contrast to the nineteenth-century conceptualisation of phimosis, which is predicated upon an alleged universality and defined purely in terms of a misunderstanding of preputial development and a biased view of penile morphology, the conception of phimosis in antiquity was based on rarity and on clinically verifiable histological pathology. The nineteenth-century conceptualisation of phimosis was predicated on the pathologisation of the three defining characteristics of the juvenile foreskin: physiological preputial nonretractability, physiological balanopreputial attachment, and generous length of the *acroposthion*. These pathologised, but not genuinely pathological, attributes were believed to be diseases in and of themselves that could cause other diseases. In antiquity, phimosis was defined strictly as a stricture of the preputial orifice that had been caused by a genuine dermatological disease process. The differing conceptualisations of phimosis provide an important example of how nineteenth-century medicine pathologised the natural body and sought justification and legitimacy for this culturally motivated process by asserting a false analogy with classical medical concepts.

Finally, the current European concept of phimosis can be viewed as a return to the original classical understanding of phimosis as a symptom of clinically verifiable pathological conditions. This change is reflected in the increasing move towards establishing evidence-based pharmacological treatments [16, 17] and tissue-preserving surgeries [7] that, like their classical antecedents, are focused on treating underlying pathology, maintaining foreskin function, and preserving natural cosmesis.

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