

Ancient Surgical Treatment of Hypospadias (From Hippocrates (5th-4th century B.C.) to the 12th century A.D.)

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Abstract

Introduction: No ancient Greek and Roman physician and surgeon ever observed, diagnosed or described either cases of female hypospadias and epispadias, or male epispadias, but only cases of male hypospadias. However they devised and practised exceptionally skilful surgeries to correct this anatomical defect in men.

Material and methods: A critical and philological review of the passages of ancient surgical treatises dealing with hypospadias and its surgical treatment.

Results: The medieval physicians confined themselves to inheriting and repeating the surgical achievements of the Greek and Roman surgeons.

Conclusion: The surgical techniques, the skill and the anatomophysiological acumen of the Hellenistic surgeons are still astonishing.

Keywords: Hypospadias; Surgical Treatment; Epispadias

Introduction

No mention of male or female “epispadias” can be found in any of the ancient authors, let alone in any of the treatises of the Corpus Hippocraticum. The only affection they seem to know is male “hypospadias”. In the pseudo-galenic treatise “Definitiones medicae” (Medical definitions) (3rd-4th century A.D.) there are two definitions of “hypospadias” (K., XIX, 445)2: “Hypospadias – writes the anonymous author – is an affection in which the glans is drawn back; or hypospadias is an affection in which the glans is above and the urethral orifice is below”.

Oribasius (325-403 A.D.) quotes a passage from Heliodorus’s and Antyllus’ (I-II century A.D.) treatises on Surgery in *Collectiones medicae*, L, 3. The scholiast of the *Codex Vaticanus Graecus 2885* (14th century) points out that Oribasius took this passage from book II, chapter 2 of Antyllus’ treatise on Surgery and that Heliodorus reproduced the same passage in book VI of his own treatise on surgery. This is why Oribasius entitles the passage “On hypospadiacs. From the works of Antyllus and Heliodorus”.

These two authors are the first surgeons, who describe with an abundance of details this surgery. The passage reads as follows:

“Someone do not have from birth the orifice of the glans in its natural position, but below the so-called “frenulum” of the prepuce, near the balanopreputial sulcus, and therefore they can neither urinate straight forward unless they pull their penis strongly towards the abdomen, nor be fertile because the semen cannot be ejaculated directly into the uterus, but flows along the vagina. Some become hypospadiac owing to an accident, when, though the glans is in its natural position, either ulceration or any other accident has made the

urethra calloused so that the urinary meatus is forced to dig another way. In consequence, the urethral orifice is sometimes far from the glans, at the middle of the urethra or even near the base of the penis, and these patients are incurable. But sometimes the urethral orifice is near the so-called frenulum of the prepuce and this affection can be cured. The best, simplest and surest surgical operation is the method known as “by amputation”, and must be performed this way: lay down the patient on his back, pull the penis firmly with your left hand and cut the glans at the balanopreputial sulcus with the point of the razor. You must not make a cross but a circular cut as if peeling a fruit, so that you leave a glans-shaped prominence”. Obviously any possible haemorrhage has to be stanchied either with bandages and packs soaked with vinegar, or by cauterizing the wound. “But – they add – it is worth remembering that the amputation of the glans in no way prevents fecundity, because the glans does not reach the cervix of the uterus during copulation as coition occurs in the vagina and the sperm flows into the uterus as soon as the cervix opens, and this happens anyway, whether the penis be long or short”.

Galen (c. 119-c. 199 A.D.), writes in *De usu partium* (On the usefulness of the parts), XV, 3, K., IV, 2212:

“Should the urethra be not straight, but either bent or collapsed somewhere, the semen should stop there. Indeed as the so-called hypospadiacs have the urethra bent owing to the frenulum of the prepuce, they cannot procreate not because they have not fertile semen, but because it stops into the bends of the penis and cannot proceed any further. And the surgical treatment proves this: the ligament incised, they procreate! And everyone would always suffer from such damage if nature had not provided a wide and at the same time straight urethra during sexual intercourse”.

The passage is clearly not dealing with a proper case of hypospadias, but with a simple case of hypotrophy of the frenulum, which bends

both the glans and the urethra. In fact, he confined himself to cutting the too short frenulum.

The most astonishing surgery is described by pseudo-Galen's (3rd-4th century A.D.), *Introductio seu medicus*, 19, K., XIV, 787.

"Hypospadiacs are those whose urethra, from birth, opens beneath the so-called frenulum of the prepuce. We cure them by piercing the point of the glans and inserting a tube. Those known as atretics, who have either a small hole or no hole at all in the prepuce, are cured this way: first we insert first the point of a probe into the prepuce and open it; then the fingers are used to detach the foreskin all around".

As for those, whom the author calls "atretics", it is obvious that he is dealing with cases of exceptionally contracted phimosis, which is generally accompanied by hypospadias. In Fact, should a patient suffer from a really "atretic" prepuce, this malformation would be deadly!

Paul of Aegina's (c. 625-c. 690 A.D.) description of the surgical treatment of hypospadias (*De medicina*, VI, 54, On hypospadiacs, i.e., those who have the urethral meatus bent downwards) reads as follows:

"Many people have the glans closed from birth, and their urethral orifice opens beneath the so-called frenulum of the prepuce at the end of the glans. Therefore they can neither urinate straight forward unless they pull the part firmly towards the pubes, nor can they procreate because their sperm cannot be ejaculated straight into the uterus. Moreover this defect is exceptionally shameful. The simplest and surest method of treatment is by cutting off the glans: after having placed the patient on his back, the glans must be firmly pulled upwards with the fingers of the left hand and then cut off with the point of the knife exactly at the crown, not with a cross, but with an oblique and round cut, so that a certain glans-shaped prominence may appear in the middle. But as a haemorrhage generally occurs, we must stanch it with haemostatic medicaments if possible; if not, we must cauterize the wound with thin cauteries".

It is worth observing that the statement "this defect is exceptionally shameful" seems also hinting to a sort of "cosmetic surgery"! This surgical technique was inherited by the Arab Haly Abbas (930-994 A.D.), who writes in chapter 44 (On the treatment of a hypospadiac) of his *Kitāb al-Malikī* (translated into Latin as *Regalis dispositivo*, Royal disposition):

"When dealing with barren men, I have said that some cannot procreate because the urethral orifice is not at the top of the glans, but under it, i.e., on the crown of the glans. Therefore the sperm of such men cannot be ejaculated straight into the vagina and spread over all the parts of the womb, but bends sideways and slides down. And this is why they do not procreate...Moreover he who suffers from such a malformation cannot urinate straight forward and make the urine flow in front. This being the case, when a sufferer from such a malformation wants to be cured, lay down him on his back, grasp the top of the penis tightly with the fingers of your left hand, push it firmly forward and cut it wholly at its crown. This amputation must be oblique all around, to leave something shaped like a glans in the middle of the penis. And should a haemorrhage occur, hasten to treat the wound with haemostatics. But if the haemorrhage cannot be stanchied, you must cauterize the wound with thin cauteries".

In Spite of making himself out to be the author of the treatise *Pantegni* (The compete Art) Constantine the African (c. 1015-1087)

confined himself to translating Haly Abbas' Royal disposition word by word, as *Pratica* (Practice), IX, 49, On the treatment of hypospadiacs clearly proves. Indeed the chapter reads as follows:

"When dealing with barren men, I have said that some cannot procreate because the urethral orifice is not at the top of the glans, but under it, i.e., on the crown of the glans. Therefore the sperm of such men cannot be ejaculated straight into the vagina and spread over all the parts of the womb, but bends sideways and slides down. And this is why they do not procreate. Moreover he who suffers from such a malformation cannot urinate straight forward and make the urine flow in front. This being the case, when a sufferer from such a malformation wants to be cured, lay down him on his back, grasp the top of the penis tightly with the fingers of your left hand, push it firmly forward and cut it wholly at its crown. This amputation must be oblique all around, to leave something shaped like a glans in the middle of the penis. And should a haemorrhage occur, hasten to treat the wound with haemostatics. But if the haemorrhage cannot be stanchied, you must cauterize the wound with thin cauteries" [1-5].

Conclusion

Only Heliodorus and Antyllus seem to have distinguished clearly among "balanic", "penile" and "perineoscrotal" hypospadias and to maintain that only the first case can be treated by surgery, whilst Galen never dealt with real cases of hypospadias and all the subsequent authors till Constantine the African only referred to cases of "balanic hypospadias". At any rate none of the ancient and medieval surgeons took ever into consideration cases of male epispadias, let alone female hypospadias and epispadias that only began being studied when Gynecology became a real special branch of Medicine and Surgery, i.e. in the 19th century. Some of Hippocrates' Aphorisms (mainly Section 5th, XXIX ff.) and chiefly both the pseudo-hippocratic on the diseases of women and Sornus of Ephesus' (I-II century A.D.) and Trotula's (flourished in the 12th century A.D.) treatises deal with female diseases and their treatment, this is true, but no passage of these texts refers to female epispadias or hypospadias.

Notes

1. EAU (2010) 25th International Congress of the EAU, Barcelona, Spain.
2. K. means "Claudii Galeni Opera omnia, editionem curavit D. Carolus Gottlob Kühn, Car. Cnoblochii, Lipsiae, 1821 ff. The Roman numbers refer to the volume; the Arabic ones to the chapters or to the pages.

References

1. Claudii Galeni Opera omnia, editionem curavit D. Carolus Gottlob Kühn, Car. Cnoblochii, Lipsiae, 1821 ff.
2. Oribasii Collectionum Medicarum reliquiae edited by Ioannes Reader, Lipsiae et Berolini, in aedibus B.G.Teubnerii, MCMXXVIII.
3. Paul of Egina, In *Corpus Medicorum Graecorum*, edited by J. L. Heilberg; Lipsiae, in Aedibus B.G.Teubnerii, 1921-1924, Vol. IX, I and II part.
4. Haly Abbas: *Regalis dispositio*, translated by Stephanus of Antiochia (12th century), Venice, 1523.
5. *Constantinus Africanus: Chirurgia*, edited by M Malato & L. Lessona, Rome, 1960.