REVIEW

Sexual Quality of Life after Hormonal and Surgical Treatment, Including Phalloplasty, in Men with Micropenis: A Review

Nina Callens, MA,* Griet De Cuypere, MD, PhD,† Eline Van Hoecke, PhD,‡ Guy T'Sjoen, MD, PhD,†§ Stan Monstrey, MD, PhD,¶ Martine Cools, MD, PhD,*[1] and Piet Hoebeke, MD, PhD**[1]

*Department of Pediatric Endocrinology, Ghent University and University Hospital Ghent, Ghent, Belgium; †Department of Sexology and Gender Problems, Ghent University and University Hospital Ghent, Ghent, Belgium; ‡Department of Pediatric Psychology, Ghent University and University Hospital Ghent, Ghent, Belgium; §Department of Endocrinology, Ghent University and University Hospital Ghent, Ghent, Belgium; ¶Department of Plastic Surgery, Ghent University and University Hospital Ghent, Ghent, Belgium; **Department of Urology, Ghent University and University Hospital Ghent, Ghent, Belgium

DOI: 10.1111/jsm.12298

ABSTRACT

Introduction. The term *micropenis* encompasses a range of congenital and acquired conditions that result in an abnormally short penis. Small penis size may persist into adulthood, becoming a major cause of dissatisfaction.
Aim. To review the literature pertaining to the effects of hormonal and surgical treatment on psychosexual functioning and quality of life (QoL) in individuals with micropenis who were raised male.
Main Outcome Measures. Long-term psychosexual and QoL outcomes after hormonal and surgical treatment, including phalloplasty.
Methods. PubMed search for relevant publications (1955–2012) on the role of hormonal and surgical treatment in sexual QoL in adult men with micropenis.
Results. Multiple variations in the etiology of micropenis make it difficult to draw firm conclusions that fit all of the patients within this disparate population. However, the literature review supports the conclusions that (i) male gender assignment is preferable for most 46,XY infants with congenital micropenis because of the likelihood of male gender development and genitosexual function; (ii) small penis size persisting into adulthood and dissatisfaction with genital appearance jeopardize sexual QoL; (iii) there is no known intervention, apart from phalloplasty, to guarantee that the penis will become normal in size; (iv) early data suggest that the phalloplasty technique considered the gold standard for gender reassignment in the transgender population can also be transferred to 46,XY patients with micropenis; (v) psychological support should be an integral part of management in order to alleviate the distress and impairment of QoL experienced by these individuals.
Conclusions. Further publication of series with large numbers and longer follow-up is needed. Specific outcome kits should be designed to measure more precisely patients' degrees of satisfaction with cosmetic, anatomical, and functional variables. Only if health-care professionals fully appreciate the impact of this condition can optimal care be provided. **Callens N, De Cuypere G, Van Hoecke E, T'Sjoen G, Monstrey S, Cools M, and Hoebeke P. Sexual quality of life after hormonal and surgical treatment, including phalloplasty, in men with micropenis: A review. J Sex Med 2013;10:2890–2903.**

Key Words. Disorder of Sex Development; Micropenis; Male Genitoplasty; Phalloplasty; Reconstructive Penile Surgery; Hormonal Treatment; Sexuality; Quality of Life; Review

[1]Joint senior authorship.

Introduction

The term *micropenis* encompasses a range of congenital and acquired conditions that result in an abnormally short penis with a stretched length of more than 2.5 SD below the mean for age and with a urethral meatus at the tip of the glans penis, i.e., no hypospadias [1–3]. Stretched penile length varies from a mean of 3.5 ± 0.4 cm at birth [4,5] to 12.4 ± 2.7 cm in adults (range 7–18 cm) [6,7] (Table 1). A penis with a stretched length of <2.5 cm in term infants and <7 cm in (Caucasian) adults is by definition a micropenis. Hormonal abnormalities after 12 weeks of gestation can lead to micropenis, either isolated or together with other members of the broad diagnostic category of disorders of sex development (DSD) [2]. *DSD* refers to all conditions in which the development of the chromosomal, anatomical, or gonadal sex is atypical [8]. The causes of congenital micropenis (also called true micropenis) can be divided into three broad groups: hypogonadotropic hypogonadism (pituitary/hypothalamic failure), hypergonadotropic hypogonadism (primary testicular failure), and idiopathic (associated with a functional hypothalamus–pituitary–testicular axis). (For a full overview, see [3] and [9].) An isolated micropenis seems to occur more commonly with gonadotropin deficiency, whereas micropenis associated with a lack of testosterone (first group) is often accompanied by hypospadias and/or undescended testes, suggesting normal placental human chorionic gonadotropin (HCG)-induced testosterone levels during the period of organogenesis [2]. Causes of acquired micropenis include trauma, surgery, infection, and genital cancer.

Controversially, feminization of the small phallus was long considered the ultimate alternative in the penile deficient patient [10–12]. The rationale behind this attitude was that it was considered more feasible to create a penetrative conduit than a penetrating organ and that humans were considered psychosexually neutral at birth [13]. Neurological damage caused by phallic reduction, neovaginal inadequacy, and subsequent (gender) identity crises were reported [8,13]. Moreover, as was shown in a review by Meyer-Bahlburg et al. and a study by Reiner, female gender assignment of 46,XY infants and young children with a medical condition involving severe genital abnormalities of nonhormonal origin (including penile agenesis, cloacal and classical exstrophy of the bladder, and penile ablation) carries a risk of later patient-initiated gender change to male that is considerably higher than the risk of patient-initiated gender change to female in male-raised patients [14,15]. The disastrous physical and psychological effects of this practice led many pediatric urologists to revise their recommendations.

If there is an adequate volume of erectile tissue and normal androgen responsiveness, primary treatment revolves around exogenous testosterone administration or HCG treatment to increase penile length [3]. Although good responses are typically seen in early childhood [16–19], the impact on ultimate penile length remains unknown [3]. There may also be differences in pathophysiological aspects of penile development and response to treatment between patients with micropenis as an isolated condition and patients with defects in the organogenesis of the male genital system (e.g., hypospadias, cryptorchidism) [19]. Moreover, it is not known whether prepubertal hormonal treatment can influence both somatic growth and pubertal penile growth, including penile shaft and skin enlargement, sufficiently to facilitate better surgical results [20]. No data are available on long-term effects of early testosterone treatment, such as negative impact on final height or inappropriate maturation of germ cells during childhood.

In general, surgical treatment should achieve the major goals of (i) correction of chordee and straightening of the penis such that full painless erection enabling satisfactory penetration can be achieved (with or without prosthesis); (ii) urethroplasty enabling functional micturition (including urination from the standing position); (iii) reconstruction of the tissues forming the ventral surface of the glans (glanuloplasty, repair of division of the corpus spongiosum and skin); and (iv) reconstruction of the scrotum and orchiopexy [21].

Table 1 Stretched penile length (in centimeters) by age

Age	Mean ± SD
Newborn (30 weeks)*	2.5 ± 0.4
Newborn (term)*	3.5 ± 0.4
0 to 5 months†	3.9 ± 0.8
6 to 12 months†	4.3 ± 0.8
1 to 2 years†	4.7 ± 0.8
2 to 3 years†	5.1 ± 0.9
3 to 4 years†	5.5 ± 0.9
5 to 6 years†	6.0 ± 0.9
10 to 11 years†	6.4 ± 1.1
Adult‡	12.4 ± 2.7

*Source: Feldman and Smith [4]
†Source: Schonfeld and Beebe [5]
‡Source: Wessells et al. [6]
SD = standard deviation