Effect of hypospadias on sexual function and reproduction

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ABSTRACT

Hypospadias is a highly prevalent congenital anomaly. The impact of the defect and operative interventions on sexual and reproductive function has been addressed by few publications. It is essential to know the possible outcomes of intervention for appropriate counseling, operative planning, and follow-up. English articles indexed in Pubmed dealing with the long-term sexual and reproductive outcome following hypospadias repair from 1965 to 2007 were reviewed. To our knowledge, there was no prospective trial comparing the impact of various techniques on sexual outcome. There is considerable discordance in literature regarding the effects on sexual function. A few publications report patient and partner dissatisfaction with the appearance of genitalia. Sexual dissatisfaction is often attributed to penile size. Ejaculatory disturbances range between 6 and 37% of operated individuals. There is no convincing evidence for impaired fertility. The long-term follow-up is essential to identify problems and to address them appropriately. Literature documenting the outcome of specific operative procedures and analysis based on severity of hypospadias will be informative. The long-term follow-up of the newer techniques which are more commonly used are awaited.

Key words: Hypospadias, reproduction, sexual function

INTRODUCTION

In hypospadias, the inherent difficulties to reconstruct the urethra, straighten the penis, and to restore the appearance of the penis are evident from the number of techniques and modifications described in the literature. However, the impact of the deformity extends beyond the realms of a structural defect, by virtue of the diverse functions of the penis. To counsel parents and patients appropriately, it is essential to know the effect on sexual function and reproduction. Literature on the long-term outcome, impact on sexual function and reproduction continues to be sparse. We reviewed the published literature on the sexual and reproductory outcome of hypospadias.

GENITAL PERCEPTION

Publications on the psychological, social, and sexual development of patients operated on for hypospadias are still rare and the results are somewhat discordant. The possible explanations for these discrepancies are mainly methodological, with too small series, low rates of response to questionnaires, study populations of different ages and above all the absence of a control group, which prevents any comparison of the results with those of a reference population.[1] Another possible reason for difficulty in long-term follow-up is that the patient, after growing up to be an adult, often does not follow up with the initial surgeon. Moriya et al.[2] observed that the rate of dissatisfaction with penile appearance was slightly higher in the hypospadias group than in age matched controls which was not statistically significant (40.9% vs. 34.2%; P = 0.809). The single reason for dissatisfaction in hypospadias group was smaller penile size. Mureau et al.[3] interviewed 116 hypospadias patients and 88 controls who underwent hernia repair, between 9 and 18 years of age. They noted that approximately 25% of the patients reported dissatisfaction with penile appearance compared to only about 5% of the controls. Scars, penile size, and glanular shape were the most spontaneously reported reasons for dissatisfaction. Weber et al.[4] used a genitalia perception score (GPS) that ranged from a minimum of 1 to a maximum of 10 to evaluate self-perception of genitalia. Sixty-four patients between the age of 6 and 17 were asked to rate the appearance of their penis with regard to the following criteria: Meatus, glans, penile skin, penile straightness, and general appearance. Their GPS was almost as high as that of a control group but similar rating done by urologists on the same population was significantly less favorable. Liu et al.[5] observed that a
higher percentage of those with proximal hypospadias were
dissatisfied with the penile appearance than those who were
operated for distal hypospadias (40% vs. 19.2%).

**PSYCHOSOCIAL AND SEXUAL DEVELOPMENT**

Berg et al.[6] in the early 1980s noted that adult men operated
on for hypospadias more frequently recalled depression and
anxiety in addition to poorer adjustment with peers during
childhood. The information pertaining to the childhood
development of this group was based upon adult recall of
childhood events. Hence these data might be distorted by
adult experiences. Mureau et al.[3] compared the psychological
adjustment following hypospadias surgery with a control
group who underwent hernia repair. They noted that
psychosocial adjustment did not significantly differ from
the control group. Lesma et al.[2] assessed the psychosexual
outcome in 30 patients using Center for Epidemiologic Studies
Depression Scale (CES-D) and Self-rating Anxiety Scale
(SAS) and an original structured questionnaire. Absence of
depression and anxiety traits was noted in both populations.
Sandberg et al.[8] compared 175 boys, 6- to 10-year old who
underwent hypospadias repair with a community sample.
Though boys with hypospadias were slightly lower in social
involvement, they did not perform more poorly in schools.

**Sexual sensation**

Sexual sensation has not been well documented in most
articles. Bubanj et al.[9] noted that self-reported strength of
libido was slightly better for controls compared to patients
with hypospadias but without a statistically significant
difference. Moriya et al.[2] noted that only about 10% of both
patients and controls reported that their libido was low.

**Sexual life**

The social and sexual life of adults operated for hypospadias
during childhood has been studied by a few authors. Aho
et al.[10] compared those who underwent hypospadias repair
and circumcision. There was no significant difference in
sexual and social life. Almost the same proportions reported
that they were not inhibited in seeking sexual contacts. All
participants reported exclusive heterosexual orientation
and they were mostly satisfied with their body image.
Conversely, Liu et al.[5] observed that 49 out of 102 patients
complained that their penis had been ridiculed by partners.
There was no control group in this study. They also observed
that those with proximal hypospadias (60% vs. 36.5%,
$P < 0.05$) and those with complications had been more often
ridiculed than those in the distal group and those without
complications (78.9% vs. 29.7%, $P < 0.05$). In a comparative
study, Mureau et al.[11] compared 73 who underwent
hypospadias repair in childhood with 50 controls. Though
hypospadias patients reported a more negative genital
appraisal than the controls, they did not have a different
sexual adjustment. Higher patient age at final operation had
a negative impact on sociosexual development.

**ERECTION AND SEXUAL SATISFACTION**

The erectile problems in hypospadias may be attributed
to surgically correctable and noncorrectable causes. More commonly encountered correctable causes include
persistent chordee, torsion, inadequate cosmetic outcome,
etc. Commonest surgically uncorrectable cause is the size of
the penis. Achieving a straight penis is one of the objectives
of hypospadias correction. With a constant move toward
achieving a normal-looking penis, the results of contemporary
repairs are likely to be different. Sommerlad[12] reviewed 60
adults who underwent hypospadias repair, half of which
were Ombrédanne repair and the unsightly redundant
skin was a frequent source of complaint. Kenawi evaluated
the sexual function in 82 subjects who underwent surgery
for hypospadias and he noted that incomplete or incorrect
surgery resulted in sexual dissatisfaction.[13] Bubanj et al.
observed that though the frequency of intercourse during 4
weeks was significantly lesser for those who were operated
for hypospadias, there were no significant difference
between patients with hypospadias and controls regarding
inhibition in seeking sexual contacts or patterns of sexual
relationships. Those with distal hypospadias were more
satisfied with their sexual life.[3] Of the 76 sexually active
adults, Liu et al. noted that the commonest sexual complaints
included short penis, increased curvature, painful erection,
and no erection. The erectile problems were more in those
who had proximal hypospadias.[5] They also felt that the
main reason for dissatisfaction was penile size. Mureau et al.[8]
studied noted that the lesser size of the penis was noted
to be a major cause for dissatisfaction. Similar observation
regarding penile size was made by Moriya et al.[2] Zaontz
in his editorial comment of this article has underscored the
importance of penile size. Sexual function and satisfaction
in 10 adult patients who underwent oral buccal mucosa
graft urethroplasty was studied using International Index
of Erectile Functioning (IIEF-15) by Nelson et al. They
noted that the long-term sexual function and satisfaction
were excellent, in spite of them having undergone multiple
procedures.[14] The long-term efficacy of dorsal plication
was evaluated by Chertin et al.[15] Six of the 28 in whom the
erection test was repeated later required further plication.
Yucel et al. noted that 10 out of 25 who underwent re-
operation for hypospadias had recurrence of chordee.[16]
Bubanj et al. followed up patients following hypospadias
repair after puberty. They found that higher number of
study patients had ventral curvature during erection (40%
vs. 18%) compared to controls.[9] This underscores the
importance of long-term follow-up to ensure that there are
no significant deformities when they become sexually active.
Whether the generous utilization of procedures on the
dorsal aspect of the corpora in order to preserve the urethral
plate has any effects on penile length, deformity, and sexual
function will be known when the long-term results of these
procedures are available. A few techniques, like the one
described by van der Meulen have a tendency to produce
penile torsion.\textsuperscript{17} With a decreasing trend toward using long tubularized prepuce island flaps for proximal hypospadias, penile torsion, and associated difficulty in intercourse is likely to be less. Studying whether any particular technique has an increased propensity to difficulties in erection will be informative. Tubularized incised plate (TIP), meatal advancement and glanuloplasty (MAGPI), and glanular reconstruction and prepuceplasty (GRAP) have a lesser incidence of penile torsion and the mechanical difficulties are likely to be less.

**Ejaculation after hypospadias repair**

Inability to achieve satisfactory ejaculation is documented in almost all publications. Reported incidence ranges from 6 to 37%. Problems reported include weak or dribbling ejaculation, having to milk out ejaculate after orgasm, quantity of semen passing after intercourse, anejaculation with or without orgasm, etc.\textsuperscript{[1]} Liu et al.\textsuperscript{[5]} observed that the rates of ejaculation problems in the distal and proximal groups were 19.5% (8/41) and 48.6% (17/30), respectively; in the one- and two-stage groups were 16.7% (7/42) and 52.9% (18/34), respectively. Olofsson et al.\textsuperscript{[18]} assessed the perspective of young men 20 years after surgery and they noted that 8 out of 22 had attenuated ejaculation. All these men underwent Byars' two-stage technique. Bubanj et al.\textsuperscript{[9]} documented spraying or dribbling of ejaculate in a third of patients. Miller et al.\textsuperscript{[19]} studied the sexual and urinary function of 19 men who had undergone reconstruction for perineal or perineoscrotal hypospadias. Though 15 of them had normal sexual function, only seven had satisfactory ejaculation. In the proximal hypospadias, the neo-urethral tube is devoid of smooth muscle and corpus spongiosum. Hence there may be little room for improvement in this group with the operative techniques being used now. With the utilization of TIP, urethral plate mobilization and spongiosplasty for proximal hypospadias\textsuperscript{[20]} whether there will be an improvement in ejaculation remains to be seen.

**Fertility**

Literature is scant on the fertility of men who had hypospadias. Aho et al. found that men who had hypospadias during childhood were less likely to live with a partner and that they had fewer children (0.8 vs. 1.1).\textsuperscript{[10]} The difference was not statistically significant. Bracka evaluated the semen analysis of 169 men who were operated for hypospadias in childhood.\textsuperscript{[21]} Of the 32 who had fathered a child and only one had sperm count of $<20$ million/ml. But 40 of the 137 (29%) whose fertility was not proven had sperm counts $<20$ million/ml. Two recent publications on sexual function following hypospadias have not assessed fertility.\textsuperscript{[22,23]}

**CONCLUSION**

Genital perception is mostly unaffected, especially in those with distal hypospadias operated in childhood. An adverse effect on sexual life has been noted, but the results are discordant. Disturbance in sexual performance seems to be attributed to small penile size. Ejaculatory disturbance has been noted in almost all series. There is no convincing evidence for impaired fertility. The operative procedures based on which these studies were conducted have mostly been replaced by modern techniques which are more anatomical. Furthermore, the operations are being performed at an earlier age. When hypospadias reconstruction is performed in early childhood, it essential to keep in mind the possible long-term sexual and reproductive implications and to choose options that are least likely to impair sexual and reproductive functions. The long-term follow-up of newer operative techniques are awaited. Evaluation of psychosexual, erectile, ejaculatory and reproductive function of specific techniques, and for varying degrees of hypospadias will give a better idea of the outcome of various procedures. Using a validated objective scoring system will help compare the results of various techniques.
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How to cite this article: Chandra Singh J, Jayanthi VR, Gopalakrishnan G. Effect of hypospadias on sexual function and reproduction. Indian J Urol 2008;24:249-252.

Source of Support: Nil, Conflict of Interest: None declared.