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Survey of pediatric urologists on the preoperative use of testosterone in the surgical correction of hypospadias

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KEYWORDS

Hypospadias;
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Abstract *Objective:* To better characterize the current state of testosterone use in the surgical correction of hypospadias among pediatric urologists.

Methods: An email was sent via the pedsurology research listserv through the American Academy of Pediatrics, inviting members to participate in an anonymous survey regarding their use of preoperative testosterone in hypospadias correction.

Results: Twenty-seven responses were obtained for a response rate of 53%. Almost all responders practiced in North America, had exclusively pediatric patients in their practice, and had been in practice for 30 years or less. 55% were classified as high-volume surgeons, completing >50 cases yearly, 87% of whom use preoperative androgen therapy currently, compared with 67% of low-volume surgeons. Testosterone was prescribed primarily for a small appearing penis, reduced glans circumference, reduced urethral plate width, and/or proximal hypospadias. The effect of testosterone was determined primarily by evaluating penile appearance (59%). However, the majority (56%) of physicians stopped giving testosterone when they completed a predetermined regimen.

Conclusions: While many pediatric urologists use testosterone prior to hypospadias repair, the practice patterns are variable. It appears that the use of testosterone is primarily limited to patients with proximal hypospadias, small appearing penis, reduced glans circumference or reduced urethral plate.

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Introduction

Hypospadias repair remains an important yet challenging surgical repair for children with genital abnormalities.

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Preoperative testosterone has been described and used as a method to allow for increase in available foreskin, penile length, glans circumference and neovascularity of the tissues. However, its use in clinical practice is not well known. The objective of our study is to better characterize the current state of testosterone use in the surgical correction of hypospadias of pediatric urologists primarily in the USA. Specifically, their use of preoperative androgen, indications for treatment, dosing, and administration schedule.

Methods

An email was sent via the pedsurology research listserv of the American Academy of Pediatrics Section of Urology, inviting all members to participate in an anonymous survey regarding their use of preoperative testosterone in hypospadias correction. The institutional review board-approved survey consisted of 20 questions administered through Google Docs. The initial survey was sent with a follow-up reminder survey 2 weeks later. No financial incentives were offered to respondents for their participation.

Ethical approval was not required for this study.

Results

A response rate of 53% was obtained with 27 respondents. Almost all responders practiced in North America and had greater than 95% pediatric patients in their practice. Length of time in practice varied with the majority in practice from 10 to 20 years (Table 1). Of all respondents, 78% used testosterone preoperatively. Eighty-seven percent of high-volume surgeons (55%), defined as those who completed >50 cases yearly, used preoperative androgen therapy, compared with 67% of low-volume surgeons (45%). For those who used testosterone previously and discontinued ($n = 2$), reasons for discontinuing included an increase in postoperative complications and difficulty in obtaining/giving testosterone.

Indications for preoperative testosterone included a small appearing penis, reduced glans circumference, reduced urethral plate width, and/or proximal hypospadias. The effect of testosterone was determined primarily by evaluating penile appearance (59%). However, the majority (56%) of physicians stopped giving testosterone when they completed a predetermined regimen (Table 2) regardless of the final penile appearance.

The administration schedule for testosterone use is described in Table 3. Sixty-seven percent of providers used intramuscular testosterone, the majority of which began therapy 1–3 months prior to surgery, dosed the treatment monthly, used a standardized dose, and ceased treatment 2 weeks prior to surgery. Those who used topical testosterone, started at variable times prior to surgery. However, all used standardized dosing and the majority (83%) ceased treatment 1 week prior to surgery.

Discussion

In this study we sought to better characterize the practice patterns of pediatric urologists in regards to the use of

Table 1 Demographics of survey respondents.

| Region | N (%) |
|---|---------|
| North American | 26 (96) |
| Europe | 1 (4) |
| <i>AUA Section</i> | |
| Northeastern | 1 (4) |
| New England | 1 (4) |
| New York | 0 (0) |
| Midatlantic | 1 (4) |
| Southeastern | 5 (19) |
| North Central | 9 (33) |
| South Central | 6 (22) |
| Western | 3 (11) |
| <i>Percentage of pediatric patients in practice</i> | |
| >95% | 25 (93) |
| 75–95% | 1 (4) |
| 25–50% | 1 (4) |
| <i>Length of time in practice</i> | |
| <5 years | 8 (30) |
| 5–10 years | 4 (15) |
| 10–20 years | 10 (36) |
| 20–30 years | 4 (15) |
| >30 years | 1 (4) |
| <i>Hypospadias repairs per year</i> | |
| <10 | 1 (4) |
| 10–30 | 3 (11) |
| 30–50 | 8 (30) |
| 50–75 | 11 (41) |
| >75 | 4 (15) |
| <i>Preoperative testosterone use</i> | |
| Yes | 21 (78) |
| No | 6 (22) |
| <i>If No, previous use in past?</i> | |
| Yes | 7 |
| No | 5 |
| <i>Reason stopped using testosterone</i> | |
| Cost | 0 |
| Ineffectiveness | 0 |
| Difficulty in obtaining/giving the testosterone | 1 |
| Increase in postoperative complications | 1 |

preoperative testosterone prior to hypospadias repair. In a recent international survey given to evaluate trends in hypospadias surgery, only 13% of providers regularly used preoperative testosterone [1]. However, this study only included 25 (6.4%) US participants and 26% pediatric urologists. Our study revealed a much higher rate of testosterone use (78%) among pediatric urologists in the USA. Our findings indicate a variation in practice among US and international surgeons and possibly among pediatric surgeons and pediatric urologists. Although testosterone use appears to be more common, it is not ubiquitously accepted.

Multiple studies have shown an advantage with a statistically significant increase in penile length and glans circumference, as well as an induction of neovascularization, with no significant side effects [2–4]. Luo et al. found that use of parenteral testosterone 25 mg IM once monthly for 3 months preoperatively in patients with a “significantly smaller than usual penis” prior to surgical repair has increased penile length and glans circumference

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