Surgical Outcomes and Cultural Perceptions in International Hypospadias Care

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Abbreviations and Acronyms

HIC = high income country

LMIC = low or middle income country

TIP = tubularized incised plate

U.S. = United States

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Purpose: This study was designed to assess perceptions of untreated hypospadias and quality of life in culturally disparate low or middle income countries, to highlight the demographic and care differences of patient groups treated for hypospadias in the surgical workshop context, and to evaluate the long-term outcomes achieved by these workshop groups.

Materials and Methods: Family member perceptions of hypospadias, perioperative process measures and urethrocutaneous fistula rates were compared between 60 patients from Vietnam and Senegal treated for hypospadias through training workshops by local surgeons and pediatric urologists from the U.S. between 2009 and 2012, of whom approximately 42% had previously undergone repair attempts.

Results: More than 90% of respondents surveyed believed that untreated hypospadias would affect the future of their child at least to some degree. Patient cohorts between the 2 sites differed from each other and published high income country cohorts regarding age, weight for age and frequency of reoperation. Telephone based outcomes assessment achieved an 80% response rate. Urethrocutaneous fistula was reported in 39% and 47% of patients in Vietnam and Senegal, respectively.

Conclusions: Family members perceived that the social consequences of untreated hypospadias would be severe. Relative to patient cohorts reported in practices of high income countries, our patients were older, presented with more severe defects, required more reoperations and were often undernourished. Urethrocutaneous fistula rates were higher in cohorts from low or middle income countries relative to published rates for cohorts from high income countries. Our study suggests that outcomes measurement is a feasible and essential component of ethical international health care delivery and improvement.

Key Words: hypospadias; fistula; urologic surgical procedures, male

Surgical mission trips and educational workshops are increasingly used to address unmet surgical need in low and middle income countries.[1,2] The primary purpose of the majority of organizations is to provide care to the maximum number of patients and, often, to educate local providers

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to perform more complex surgeries with greater independence.[1,3,4] Many organizations report followup of the complication rates and outcomes of the patients they treat. However, these data often cover only a short term.[5–7] Few studies deal with long-term outcomes of patients treated on surgical mission trips.[8,9] This deficit is due to the difficulty in reaching low income patients in remote areas, who are unlikely to return for followup, and to the limited time, funding and human resources associated with international collaborations.

Hypospadias occurs in approximately 1 of every 150 to 300 male births and may arise more frequently in developing countries.[10,11] While not life threatening and concealed by normal clothing, the potential consequences of uncorrected hypospadias include social stigmatization and urinary or sexual dysfunction.[12] The most common complication of hypospadias repair is urethrocutaneous fistula, which occurs in 10% to 22% of patients in LMICs, with mixed severity and range of followup.[13,14] The purpose of the present study was to 1) assess perceptions of the effect of untreated hypospadias on quality of life in culturally disparate regions, 2) highlight the demographic and care differences of patient groups treated for hypospadias in the surgical mission context, and 3) evaluate the long-term outcomes achieved by pediatric urology specific, international surgical training workshops.

METHODS

Subjects

This cohort study included patients in Vietnam and Senegal surgically treated for hypospadias by pediatric urologists from the U.S. in cooperation with local surgeons between 2009 and 2012. Patient data were collected retrospectively from operative notes before 2012 and from detailed quality improvement forms in 2012. Patients were screened by the U.S. pediatric urologists with local surgeons and scheduled for surgery based on greatest need, operative scheduling and estimated recovery time to maximize care delivery in the time constraints of the weeklong workshop. In Senegal 27 hypospadias surgeries were performed in 26 patients between 2009 and 2012. In Vietnam 33 hypospadias surgeries were performed in 29 patients between 2011 and 2012.

Procedures and Techniques

In Vietnam the visiting team included a pediatric urologist, a pediatric surgeon, 2 pediatric anesthesiologists and 2 nurses. The Senegal team included 2 pediatric urologists, 2 pediatric anesthesiologists, 2 nurses and a pediatric urology fellow. All necessary equipment, suture material and other disposable supplies and medications were supplied by the visiting team, and corresponded with those used in the U.S. for similar operations. Single dose antibiotic prophylaxis was administered for all patients, and no patient received preoperative hormonal treatment. Postoperative antibiotics were not routinely administered for patients undergoing hypospadias repair.

Definitions and Criteria

For the purpose of this study preoperative meatus position was characterized by the operating pediatric urologists into 1 of 3 categories, ie distal (including subcoronal), mid shaft and proximal (including perineal). The type of urethroplasty performed was categorized as Thiersch-Duplay, tubularized incised plate or other (including Mathieu, onlay island flap, and meatal advancement and glanuloplasty). Urethrocutaneous fistulas and staged repairs were also performed. The first stage procedures were recorded separately and the second stage repairs were categorized based on type of urethroplasty performed. The primary outcome of the survey was development of urethrocutaneous fistula, defined as a survey participant responding "Yes" to the question, "Is there an extra hole along the bottom of the penis where urine leaks out?" Family members were also asked to rate the improvement of the meatus position and curvature compared to preoperative status, to report pain with urination and to rank overall satisfaction with the repair.

Data Collection and Validation

For the 24 surgeries performed in 2012 volunteers recorded patient height and weight, type of anesthesia used, coverage flap used, postoperative length of stay and duration of catheterization. For the 36 patients treated between 2009 and 2011 information on age, meatus position, previous hypospadias surgery and type of urethroplasty was extracted from operative notes written by the U.S. surgeons. Retrospective data were complete, except where the category of "unknown" is included in the tables.

All parents or guardians within the 2012 cohort were administered a survey on the perceived impact of untreated hypospadias on the future quality of life of their child. Surveys were translated into Vietnamese or French and verbally administered at the hospital wards by a local resident or faculty member who spoke English and the local language. Surveys were conducted postoperatively so that respondents could be sure that their answers would in no way impact the likelihood of their child undergoing surgery.

Outcomes were collected for patients treated by IVUmed teams between 2009 and 2012. The parents or guardians of the patients were contacted by telephone (83%) or when they returned for reoperation (17%) and administered a survey by a surgical resident or faculty member who spoke English and the local language. The minimum time for followup outcome assessment was 6 months.

As no formal research ethics board existed at the international sites, approval was obtained through the institutional review board of Children's Hospital Boston. Written permission for this study was obtained from the chief of the department of surgery and chief medical officer at both local hospitals.

Statistical Tests

Weight for age z-scores were calculated excluding patients older than 10 years using WHO Anthro (http://www.who.int/childgrowth/software/en/). Wilcoxon and Fisher exact