Length of Stay for Specialized Pediatric Urologic Care

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Background: Pediatric urologic specialists have been excluded from many recent managed care contracts because they are believed to be more expensive and of no better quality than general urologists in managing common urologic problems in children. We believed this to be inaccurate.

Objectives: To compare the length of stay at the University of California, San Francisco Medical Center for 2 common pediatric urologic operative procedures with data from other northern California hospitals and to document our results and patient satisfaction.

Design: Retrospective analysis of HCIA statewide database (HCIA Inc, Orange, Conn).


Subjects: Children younger than 12 years undergoing surgery for repair of an obstruction of the ureteropelvic junction or vesicoureteral reflux.

Main Outcome Measure: Length of stay.

Results: The length of stay in our hospital was similar to that observed in other hospitals in which other full-time pediatric urologic specialists practiced and was significantly less than that observed in other northern California hospitals, even when adjusted for risk. In fact, a savings of 279 hospital days would have been realized if all patients had the same length of stay as that achieved at University of California, San Francisco Medical Center. In the 38 patients operated on at our center, there was uniform surgical success. Of the parents, 92% (11/12) were satisfied with their child's care and 92% (11/12) believed they received enough information to know what to expect and how to care for their child at home. There were no data available evaluating quality from other northern California hospitals for comparison.

Conclusions: Our finding that actual and risk-adjusted length of stay were shorter when patients were treated by full-time pediatric urologists, while excellent quality was maintained, suggests that these specialists achieve their results with more efficiency and lower resource utilization than do general urologists. The implication of these results is that exclusive contracting that prevents patients from receiving care from full-time specialists results in overuse of valuable resources and possibly reduced quality. If our results are generalizable, they have important implications for health care reform in the United States.

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PATIENTS AND METHODS

The data on which this study is based were collected from all California hospitals by the California Office of Statewide Health Planning and Development, Sacramento, and distributed through the HCIA SoleSource Ad Hoc System (HCIA Inc, Orange, Conn). At the time of the study, the most recent data available were for calendar year 1995. We reviewed the data from all patients in northern California younger than 12 years of age with diagnosis related group (DRG) procedure codes 5674 (correction of vesicoureteral reflux) and 5587 (repair of an obstruction of the ureteropelvic junction). In addition, the severity of the illness in these patients was coded by HCIA using “refined DRGs” that account for comorbidities, and we considered this in our analysis. Only 1 patient was excluded because of being classified as having catastrophic comorbid conditions by HCIA.

We evaluated the surgical outcome of patients who underwent these 2 surgical procedures at University of California, San Francisco Medical Center (UCSF). In addition, we evaluated the patient satisfaction as determined by a retrospective questionnaire of the parents of patients who had been examined or had undergone surgery for vesicoureteral reflux (Figure). The questionnaire was sent to the parents of 129 children (14 were returned as undeliverable). Responses were received from the parents of 51 children (12 surgical patients and 39 nonsurgical patients) for a response rate of 44% of the deliverable questionnaires. General satisfaction data also were obtained from a survey of pediatric inpatients. We present our data as the mean ± SD for the length of stay in each group of hospitals. An analysis of variance was used to determine exactly which groups were statistically different.

We also used the refined DRGs determined by HCIA to compare separately the different hospital groups for the patients with no comorbid conditions and patients with moderate comorbid conditions. There were insufficient patients in the groups with major or catastrophic comorbid conditions for comparison.

RESULTS

There were 22 patients at UCSF younger than 12 years of age who underwent surgery to correct vesicoureteral reflux and 16 who underwent repair of ureteropelvic junction obstruction during 1995. There were no short-term operative or perioperative complications. No patients had recurrent reflux or obstruction after the operation. The only long-term complication was a wound hernia in 1 of the patients who underwent repair of an obstruction of the ureteropelvic junction. The hernia required a follow-up procedure and a 1-day hospitalization.

Parent satisfaction for the patients with vesicoureteral reflux was evaluated by questionnaire. Satisfaction with the care received by their child was expressed by 92% (11/12) of the parents of children treated surgically and 100% (38/38) of the parents of children treated nonsurgically. Of the parents, 92% (11/12) were satisfied with the amount and type of information they received from their physicians and, of the parents of surgical patients, 92% (11/12) believed they received enough information to know what to expect and how to care for their child at home. In the inpatient survey, the number of parents of pediatric urology patients describing themselves as “very satisfied” was somewhat higher (95% vs 88.5%) than for all other parents of general pediatric patients surveyed during the same period.

Table 1 gives length-of-stay data for all patients in the database according to the type of facility. For patients who underwent surgery to correct vesicoureteral reflux, there was a statistically shorter length of stay for patients operated on in institutions with full-time pediatric urologists compared with the lengths of stay in the other 3 groups. For repair of an obstruction of the ureteropelvic junction, there was a clear statistical difference between length of stay for patients operated on by pediatric urologists compared with the length of stay for children operated on in children’s centers but not by pediatric urologists. There were dif-
comorbid conditions. In evaluating the length of stay associated with 2 pediatric urologic procedures commonly performed by full-time pediatric urologists and general urologists, we found that our length of stay was significantly shorter than the community for most comparisons, and this trend was equally true when accounting for the severity of illness. Our length of stay was slightly shorter (but not statistically different) than that achieved by other full-time pediatric urologists in northern California. We also found excellent surgical results, minimal complications, and high satisfaction of parents in this retrospective review of patients operated on in 1995 by full-time pediatric urologists.

COMMENT

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Table 1. Hospitals Performing Selected Pediatric Urologic Procedures in Northern California During 1995

<table>
<thead>
<tr>
<th>Category</th>
<th>Hospitals</th>
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<tbody>
<tr>
<td>Children's centers with full-time pediatric urologic specialists</td>
<td>Lucile Salter Packard Children's Hospital at Stanford, Palo Alto</td>
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<td></td>
<td>Mercy General Hospital, Sacramento</td>
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<td></td>
<td>Sutter Memorial Hospital, Sacramento</td>
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<td></td>
<td>University of California Medical Center, San Francisco</td>
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<td>Children's centers without full-time pediatric urologic specialists</td>
<td>Children's Hospital, Oakland</td>
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<td></td>
<td>University of California–Davis Medical Center, Sacramento</td>
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<td></td>
<td>Valley Children's Hospital, Fresno</td>
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<td>Metropolitan hospitals with general urologists</td>
<td>Kaiser Foundation Hospitals, Northern California</td>
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<td>San Francisco General Hospital Medical Center, San Francisco</td>
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<td></td>
<td>Santa Clara Valley Medical Center, San Jose</td>
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<td>Community hospitals with general urologists</td>
<td>Doctor's Medical Center, Modesto</td>
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<td>Dominican Hospital, Santa Cruz</td>
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<td>Feather River Hospital, Paradise</td>
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<td>Kaweah Delta Healthcare District, Visalia</td>
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<td>Mercy Hospital, Bakersfield</td>
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<td>Mercy San Juan Hospital, Sacramento</td>
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<td>Natividad Medical Center, Salinas</td>
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<td>St Joseph's Hospital, Eureka</td>
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<td>St Luke's Hospital, San Francisco</td>
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<td>Salinas Valley Memorial Hospital, Salinas</td>
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<td>Santa Teresa Community Hospital, San Jose</td>
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University of California, San Francisco Medical Center (UCSF), vesicoureteral reflux patient satisfaction survey. The results are given as number (percentage) for surgical patients/nonsurgical patients. An asterisk indicates the question was asked only on the questionnaire for surgical patients. VCUG indicates voiding cystourethrogram.
nia developed in 1 child after repair of an obstruction of a ureteropelvic junction that required operative intervention and an additional day of hospitalization (23-hour stay). Unfortunately, there are no databases that allow comparison of these surgical results with those of other hospitals in northern California; however, it is unlikely that the results from hospitals other than UCSF are as good, since our results are better than those published previously. We attribute our overall success not simply to the skill of the individual surgeons, but to the fact that all procedures were performed by surgeons who were not only experienced in this type of urologic surgery, but also were focused exclusively on the care of children. Furthermore, because we work in an academic teaching facility and regularly attend meetings within the subspecialty of pediatric urology, we are able to take advantage of the latest philosophical and technological advances in the field. We believe that these results can be extrapolated to other pediatric urologic surgeons throughout the country and the world.

Our patient (parent) satisfaction was high. Particularly important to us in an era in which early discharge is being encouraged strongly is the fact that 92% of parents were satisfied that they received enough information to know what to expect and how to care for their child at home. Unfortunately, no data are available on the satisfaction of parents whose children underwent these types of operations in northern California or elsewhere.

Our length of stay in the hospital for these procedures was relatively low. Because we believe it might be misleading to compare outcome data without an index of illness severity, we compared 4 groups of hospitals within severity categories defined by HCIA “refined DRGs.” Again, in all categories in which there were enough procedures to compare, hospitals in which pediatric urologists performed procedures had shorter lengths of stay than did the others. This is important in the context of the number of procedures performed in nonspecialized settings. When comparing our data with those of other institutions in northern California (excluding the patients operated on by other full-time pediatric urologists), it is apparent that the number of hospital days for these patients and their insurers could have been reduced by 279 days (equivalent to a 39.0% reduction), had they been operated on and experienced the same intervention and an additional day of hospitalization (23-hour stay). Unfortunately, there are no databases that allow comparison of these surgical results with those of other hospitals in northern California; however, it is unlikely that the results from hospitals other than UCSF are as good, since our results are better than those published previously. We attribute our overall success not simply to the skill of the individual surgeons, but to the fact that all procedures were performed by surgeons who were not only experienced in this type of urologic surgery, but also were focused exclusively on the care of children. Furthermore, because we work in an academic teaching facility and regularly attend meetings within the subspecialty of pediatric urology, we are able to take advantage of the latest philosophical and technological advances in the field. We believe that these results can be extrapolated to other pediatric urologist surgeons throughout the country and the world.

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in the country. Nevertheless, large teaching hospitals often are assumed to be unfriendly to patients and families, and our data are strongly in contradistinction to that. We believe that the best explanation for the high satisfaction rate among our families is the dedication of our multidisciplinary team to children’s care. In addition to the surgeon’s involvement, the support of outstanding pediatric ancillary services is critical. Adept pediatric anesthesia is important, not only for ensuring patient safety, but also for minimizing patient and family anxiety and postoperative pain. Because of the stress related to having one’s child operated on, experienced pediatric nursing staff and preoperative and postoperative education programs, including brochures, videos, preoperative tours, and puppet therapy, are essential to reduce anxiety, promote early discharge, and assure good outcomes and satisfied patients.

Our shorter length of stay is partly attributable to our relatively high volume of cases relative to that seen in the community. A similar relationship has been demonstrated for cardiac surgery. Another factor is the expertise of our ancillary services, particularly pediatric anesthesia and nursing, and the patient education programs. Interestingly, though, Snow et al16 found that, even within the same hospital, procedures performed by full-time pediatric urologic specialists were associated with a shorter length of stay and lower resource utilization than the same procedures performed by physicians practicing general urology with an interest in pediatric urology. In the present study, both surgical expertise and ancillary services are likely to have a role. Studies of outcomes of patients with nonurologic diagnoses, often cared for in the community by nonspecialists, reveal similar patterns. For example, teaching hospitals had better risk-adjusted quality for the treatment of congestive heart failure, myocardial infarction, pneumonia, or hip fracture compared with nonteaching, small, and rural hospitals in 1 study,17 and for the treatment of myocardial infarction, congestive heart failure, obstructive airway disease, gastrointestinal hemorrhage, pneumonia, or stroke compared with nonteaching hospitals in another.18 Furthermore, resource utilization was lower in teaching hospitals in the latter study, and this also was observed in studies of the treatment of myocardial infarction and gastrointestinal hemorrhage.19 20 Although the explanation is uncertain, it is likely that specialization leads to greater knowledge of and access to state-of-the-art care and more practiced ancillary services, resulting in better outcomes and more appropriate use of resources. For example, in 1 study, generalists were found to be less aware of or less certain about key advances in the treatment of myocardial infarction than were cardiologists.20 Likely this expertise explains, in part, the improved outcome observed for patients with unstable angina treated by cardiologists compared with patients treated by internists.21

It should be emphasized that the only accurate data available to us for comparison with other area hospitals were for length of stay. Surgical outcomes for pediatric urologic procedures in other institutions were not available to us, and there are not good patient satisfaction data for comparison. Although there are data on hospital charges, these are known to be artificial, as no third-party payers reimburse on charges, and charges have only a loose relationship to costs. Cost data are not available. Length of stay is an important outcome variable, but we recognize that it is not a fully accurate surrogate for cost. Costs tend to be front-loaded in hospitalization, particularly for surgical procedures. Similarly, the cost per day of hospitalization likely varies widely among hospitals. On the other hand, we demonstrated a potential savings of 279 days of hospitalization, without compromising the quality of our care or sending patients home from the hospital unprepared or with parents unable to care for their children. At approximately $1000 per day of hospitalization, a savings of 279 days would have been a considerable amount to third-party payers, especially considering this potential savings is limited to only 2 surgical procedures. Furthermore, the patients and their families would have been far less inconvenient, and the parents probably could have returned to work sooner than they likely did. The savings in this regard have not been quantified fully.

Another possible shortcoming of our study is that the most recent length-of-stay data available to us were from 1995. It is possible that other types of hospitals may have improved their length-of-stay performance and that ours may have peaked. This is unlikely, in our opinion, as we continue to take advantage of the rapidly occurring improvements in the practice of pediatric urology. For example, many of the procedures reported in this study are now being performed by other pediatric urologists and by us as 23-hour stay (outpatient) procedures. We would propose that it is equally likely that the gap between the care of patients by full-time pediatric urologic specialists in highly specialized settings and that provided by others may in fact have increased.

Although we used a well-validated technique for assessing severity of illness, it is possible that unmeasured severity of illness could have been higher in other institutions. For example, selection bias in the decision to admit patients to the hospital can alter expected mortality. In our study, it is likely that the indications for surgical intervention differed in the various institutions. If other institutions had operated on only patients with higher degrees of reflux or more severe obstructions of the ureteropelvic junction, this selection bias might account for the outcome differences seen. Unfortunately, no comparison data are available on this subject. However, in reviewing our cases, we believe this is unlikely. For example, we found that 5 patients in the group that underwent surgery to correct vesicoureteral reflux at UCSF had undergone simultaneous bladder neck reconstruction or bladder augmentation. In fact, the data from these patients greatly increased our mean length of stay. It is unlikely that the patients operated on by nonpediatric urologists underwent these types of additional procedures.

Our findings have important implications for health care policy and managed care contracting. The trend in northern California has been to exclude specialists from managed care contracts because of their perceived higher costs and the lack of data demonstrating superior out-
comes. However, our data demonstrate that for these 2 relatively common procedures, both of which can be performed by general urologists, specialists provide high “value” patient care. They have excellent surgical results and satisfied patients and are more efficient than others in their utilization of medical resources. There is no reason to believe these results could not be generalizable to other pediatric urologic procedures, and if so, the care of patients by full-time specialists in centers of excellence would make an important difference to patients, families, and third-party payers. Other studies have shown similar benefits of specialized care provided in tertiary and quaternary care centers.1-3,5-18 If these data are generalizable, the potential exists to make an enormous difference to society.

We found that for 2 pediatric urologic procedures commonly performed by general urologists and pediatric urologic specialists, specialized care provided by full-time pediatric urologists provided excellent value. In addition, this high degree of specialized care results in shorter lengths of stay in the hospital than the length of stay usually observed in northern California.

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REFERENCES