

Outpatient Pediatric Urologic Procedures

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OUTPATIENT SURGICAL TREATMENT IS NOT A NEW IDEA

Fractures and lacerations were cared for on an outpatient basis in the Temples of Egypt 5000 years ago.⁸ The first outpatient facilities in the United States were established in Boston at the beginning of the nineteenth century at the Marine Hospital by Dr. Benjamin Waterhouse and at the Massachusetts General Hospital.⁸ The first pediatric ambulatory surgery unit was established by Nicoll in 1909 at the Royal Glasgow Hospital for Children. He eventually reported on 7000 pediatric surgical procedures, stating "treatment of a large number of cases at present treated indoor constitutes a waste of resources of a children's hospital or a children's ward. The results obtained in the outpatient department at a tithe of the cost are equally good."² In the last decade, 50 years after Nicoll's experience, there has been an explosion in interest in activity in outpatient pediatric surgery. Kroovand and Perlmutter,⁷ Cloud,⁴ Caldamone and colleagues,² and Shepard and colleagues⁹ recently documented that outpatient pediatric urologic surgery is safe and effective.

PREOPERATIVE EVALUATION

Outpatient surgery requires a close working relationship among urologists, anesthesiologists,

office personnel, and hospital staff. Education is important, because the patient and his family are relied upon to perform functions that previously were done by hospital personnel. This includes fasting preoperatively, arriving at the staging area on time, pointing out postoperative problems to the surgeon, administering pain medications and other appropriate therapeutic agents, and in some instances, taking care of wounds. In general, we prefer to delay elective outpatient surgery until the child has reached 6 months of age because of the risk of sudden infant death syndrome (SIDS) associated with general anesthesia.³ Some authorities, however, feel that this risk is negligible after 3 months of age. Also, we prefer to complete elective surgery, particularly on the genitals, before the age of 18 months because there is some evidence that surgery between 18 and 24 months of age is psychologically traumatic.

Routine preoperative evaluation is done at a visit to the physician's office or outpatient center reasonably near to the time of surgery. At this time, a complete history and physical examination are performed and a complete blood cell count and urinalysis are obtained. If other tests are indicated because of the findings on history or physical examination, they are, of course, obtained. The parents of the child are given a detailed explanation of what to expect and, when possible, a tour of the outpatient surgical unit.

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Individuals with special training and sensitivity should be utilized to answer questions and provide information. Booklets describing the procedure and what to expect are particularly useful.

At Children's Hospital of Philadelphia, the screening history and physical are done by a member of the department of anesthesia. This is ideal because there are more anesthetic contraindications to outpatient surgery than surgical contraindications. At the University of Virginia, service is not available from the department of anesthesia; therefore, the screening history and physical are done either by the urology staff or, when the patient lives a long distance away, by the patient's personal pediatrician or physician. In the latter case, it is, of course, important that the preoperative educational services have already been provided by the surgeon or outpatient facility staff. The day before surgery a telephone call is made to the parents to be certain that they understand the instructions and also to ascertain whether the child has an upper respiratory tract infection or some other contraindication to surgery.

The patient and parents are instructed to arrive an hour or two before the proposed procedure at the outpatient facility. Older children are given nothing by mouth after midnight and younger children are kept fasting 4 to 6 hours prior to the surgery. At Children's Hospital of Philadelphia, the urology resident repeats a history and physical examination and obtains informed parental consent. At the University of Virginia, the anesthesiologist does the history and physical at the outpatient facility because the anesthesiology department has not yet seen the patient.

Preoperative medication, of course, is individualized depending on the patient and the anesthesiologist. The standard medications at Children's Hospital of Philadelphia are atropine sulfate, 0.02 mg per kg orally, for an infant less than 1 year old, and a combination consisting of meperidine (Demerol), 1.5 mg per kg orally, diazepam (Valium), 0.15 mg per kg orally, and atropine, 0.02 mg per kg orally is used in the child older than 1 year. The premedication and preoperative waiting are done in a holding area where parents are welcome. Modern outpatient facilities are designed for this and, therefore, have a distinct advantage over the classic inpatient operating room.

ANESTHESIA

Some outpatient surgical units have the family present during induction, although this is not

universally done. Younger children usually prefer mask inhalation, whereas older children may select intravenous induction. The unpleasant odor of a rubber mask can be hidden by using flavored extracts. At Children's Hospital of Philadelphia, halothane is typically used for induction because of its potency and smooth effect. Isoflurane (Forane) is frequently used for maintenance because there is less lipid storage and more rapid recovery, resulting in less nausea. An intravenous infusion is usually started, although this is not absolutely necessary for short procedures. Most anesthesiologists feel that endotracheal intubation is appropriate in an outpatient setting.

We find that regional blockade with bupivacaine HCl (Marcaine) is very useful for doing inguinal and penile surgery. At Children's Hospital of Philadelphia, the block is applied immediately after the induction of anesthesia because it is thought that this decreases the need for intraoperative anesthesia. Also, in penile procedures, there is a lower incidence of erection. At the University of Virginia, the blocks are done at the completion of the procedure to prolong the postoperative effect. We routinely use 0.25 per cent bupivacaine HCl because we had one patient who had a severe reaction to the 0.5 per cent concentration. Although the reason for this reaction is unclear and the patient was not a urologic patient, nevertheless since that event we have routinely used 0.25 per cent bupivacaine.

OPERATIONS

During a 10 month period from January to October 1984, 62 per cent of the pediatric operations at Children's Hospital of Philadelphia were done on an outpatient basis, 12 per cent with a one-night stay, and 25 per cent on an inpatient basis (Table 1). The distribution of outpatient procedures is listed in Table 2.

It is beyond the scope of this brief communication to go into the details about the surgical technique for all the procedures listed in Table 2. A few words about special needs relating to hypospadias repair as done at Children's Hospital are appropriate. First, simple hypospadias with a glanular, coronal, or slightly subcoronal meatus, without chordee and in the absence of an overly large meatal opening, is repaired with a MAGPI procedure. With this technique, no tubes are needed. A compression dressing is utilized. All more extensive repairs done as outpatients utilize some form of vascularized flap.

Table 1. Case Distribution (January–October 1984)

PROCEDURES	NO. OF PATIENTS	% OF TOTAL
Outpatient	420	62.3
One night stay	84	12.5
Inpatient	170	25.2
Total	674	100.0

Usually, a transverse preputial island flap, as described by Duckett,⁶ is utilized. On rare occasions when a vascular flap cannot be utilized (for example, a secondary operation), outpatient surgery is probably not advisable.

The patients with more complicated repairs also require urinary drainage. Currently at Children's Hospital of Philadelphia, a 6-French silicone rubber stent is placed through the urethra to the bladder neck and allowed to drip into the diaper. The stent is sutured in place with a prolene stitch through the glans penis. The stent is left in place 7 to 14 days. This technique works particularly well in young infants and facilitates the outpatient approach to these more complicated hypospadias repairs.

IMMEDIATE POSTOPERATIVE CARE

When the surgical procedure is completed, the patient is transported to the recovery room. At Children's Hospital of Philadelphia, he stays in this area for approximately 45 minutes, after which he is taken to a second postoperative area where he is reunited with his parents. At the University of Virginia outpatient facility, the parents are allowed in the recovery room as soon as the immediate postoperative routine is completed.

When the patients are fully recovered from anesthesia, they are discharged in the care of a parent after having been cleared by a member

of the anesthesia team. It is very important to provide the families with written instructions regarding postoperative care. It is also absolutely imperative that they have telephone numbers where they can reach a physician at any time of the day. Younger children need very little postoperative pain medication. After hypospadias repair in which a stent is used, belladonna and opium suppositories are often useful. Older children may benefit from Tylenol and codeine preparations.

COMPLICATIONS

The reported complication rate for ambulatory surgery is low. At the Phoenix Surgery Center, more than 70,000 surgical procedures have been reported without a death.⁵ The postoperative hospitalization rate at the Phoenix Surgery Center was 0.2 per cent of 17,000 children.³ The complications encountered in the Children's Hospital of Philadelphia experience are listed in Table 3. Nausea was the most common problem but cleared very quickly. The second most frequent problems were low-grade fever and sore throat. The most common surgical problems as distinguished from anesthetic complications were bladder spasms, which occur most often in older children, and stent blockage. Not listed as having a complication are those children who were admitted after surgery because of stridor, low hematocrit, or other findings that were con-

Table 2. Outpatient and One-Night Surgical Procedures (January–October 1984)

PROCEDURE	NO. OF OUTPATIENTS	ONE-NIGHT STAY	MORE THAN 1 DAY
Hypospadias	130	55	0
Standard orchiopexy	99	4	0
Hernia/hydrocele	51	0	0
Cystoscopy	29	8	0
Circumcision	25	1	0
Testes biopsy	16	0	0
Orchiectomy/prosthesis	13	0	0
Fowler-Stephens orchiopexy	11	2	0
Urethrocuteaneous fistula	11	0	0
Internal urethrotomy	6	5	0
Meatoplasty	5	0	0
Scrotoplasty	4	3	0
Miscellaneous	20	6	0

Table 3. *Complications of Ambulatory Surgery*

	NUMBER	INCIDENCE (%)
Anesthesia		
Nausea/vomiting		20
Minor fever		5
Sore throat/cough		5
Urologic		
Stent problems	8	2
Minor hemorrhage	2	0.5
Urinary retention	1	0.25
Wound hematoma	1	0.25
Readmissions	0	

sidered a contraindication to immediate discharge. The decision to admit a child, of course, depends on the judgment of the surgeon and the anesthesiologist and the social situation such as the distance between the hospital and the patient's home. Obviously, when there is any doubt, the child should be admitted overnight. Parents readily understand and are always agreeable to admitting a child when the physician emphasizes that it is for safety.

It is noteworthy, but not unexpected, that the incidence of nosocomial infections is lower in outpatient settings. It should be pointed out that for outpatient surgery to work, cooperation with anesthesiologists is essential. In a teaching institution, they may require that more senior residents give the anesthesia in the outpatient facility. This is indeed the case at the University of Virginia.

ECONOMIC CONSIDERATIONS

The economic advantages of ambulatory surgery are obvious. Of course, there is a decreased need for hospital beds, facilities, and personnel. In addition, there are savings in hotel and restaurant expenses for families who come from out of town to obtain their pediatric urologic care. This is particularly common at the University of Virginia and Children's Hospital of Philadelphia. It is estimated that the saving in charges to the patient is approximately 50 per cent.²

At Children's Hospital of Philadelphia, two

commonly performed pediatric urology procedures, orchiopey and hypospadias repair, were used as representative examples for cost analysis (Table 4). In the peer group hospitals, the average length of stay incurred for an orchiopey and for a hypospadias repair is 1.8 and 2.5 days, respectively. The savings resulting from these procedures being done on an outpatient basis at Children's Hospital versus on an inpatient basis at the peer group hospitals were \$190 and \$1268, respectively, for orchiopey and hypospadias repair. These savings achieve significance when the total number of children undergoing these procedures is considered. In the 10-month reference period, the savings resulting from performing orchiopeies and hypospadias repairs on an outpatient basis were \$19,000 and \$165,000, respectively, or 9.2 per cent and 33.8 per cent.

SUMMARY

Outpatient pediatric urologic surgery is not a new concept. However, it has recently become extremely popular. The general experience nationwide and particularly the experience at Children's Hospital of Philadelphia and the University of Virginia Hospital indicate that outpatient surgery can be very safe and satisfactory for patients. The outpatient approach requires close cooperation among anesthesiologists, surgeons, and outpatient personnel. Excellent communication with the patient and family is essential. This includes extensive educational printed ma-

Table 4. *Cost Analysis of Two Commonly Performed Urologic Procedures*

PROCEDURE	NO. PERFORMED AS OUTPATIENT JAN-OCT 1984	AVERAGE PEER GROUP HOSPITAL STAY (Days)	SAVINGS IN 10-MONTH PERIOD	PERCENTAGE SAVINGS
Orchiopey	99	1.8	\$ 19,000	9.2
Hypospadias repair	130	2.5	\$165,000	33.8

terial and 24-hour availability by telephone. Once the infrastructure is in place, outpatient pediatric urologic surgery results in efficient use of facilities and a more pleasant surgical experience for the patient. The psychological, social, and economic benefits of outpatient surgery make it imperative that a large percentage of pediatric procedures be done on an ambulatory basis. We do not, however, intend to suggest that all minor procedures can be done on an outpatient basis, as certain special situations will mandate hospitalization.

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