

One day surgery selection and preparation of pediatric patients

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1. Introduction

One day surgery (ODS) has been performed for many years in our pediatric surgical department. In 1975 we began to discharge children the day after surgery, but they were hospitalized one day before to perform preoperative routine laboratory tests and the anesthetic visit. From 1980 to 1984 the tests and the anesthetic visit were performed some days before scheduled surgery in the consulting room. Since 1984 laboratory tests have not been required routinely, but only when justified by clinical evidence of disease [1–3].

Therefore, there has been a very gradual introduction of this practice, which has since gained wide application, and further expansion may be expected.

Beside the benefits for children and their families, the increasing demand for minor surgery, and the costs of hospital stay have promoted the natural evolution from ODS to outpatient surgery. This practice is particularly suitable for children, who rarely suffer from systemic diseases and recover earlier after surgery. Furthermore, most surgical procedures in children are simple and require less complicated surgical techniques.

In our pediatric surgical department ODS has been applied since 1975, whereas outpatient surgery (with discharge from the hospital within the same day of surgery) has been adopted more extensively only in the last year. Table 1 shows the procedures commonly performed on an outpatients basis at our department.

The anesthetic techniques are based on loco-regional anesthesia combined with sedation or on general intravenous anesthesia.

The accurate selection of the patients is a necessary condition to the successful outcome of surgery performed in an outpatient setting [4–7]. Other primary factors which we have to consider are the preparation of the parents and the choice of the anesthetic technique, in order to minimize complications which may prevent the discharge from the hospital.

Our operating room is in function from 8 a.m. to 8 p.m. and the morning is preferably devoted to major surgery, so very often procedures which would be potentially performed as outpatient surgery end late in the afternoon, compromising discharge. For this reason in our department of all the children who might benefit from an outpatient procedure, the discharge on the same day of surgery was possible only in 40% of the cases and on the following day in 60%. The most frequent causes of hospitalization were the time of surgery (late in afternoon) and the wish of parents for a longer hospital stay.

No children submitted to an ODS procedure have been readmitted because of postoperative complications.

2. Selection of patients

In order to assure the successful outcome of ODS it is important to have an organizational program to accurately select both patients and surgical procedures.

A complete history and physical examination of the child are the best preoperative screening, as many studies confirm [3,8]. On the basis of our experience, we can affirm that the clinical assessment is much more impor-

Table 1
Procedures in ambulatory surgery in 1995

Procedures	No. of patients
Inguinal herniorrhaphy	120
Hydrocelectomy	30
Orchidopexy	64
Circumcision	14
Colonscopy	5
Esophagoscopy	5
Surface surgery	91
Tracheo-bronchoscopy	4
Incision and drainage of abscess	7

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tant than routine laboratory tests, which are often only sterile data neither adding nor modifying anything to the patient's treatment [9,10].

Since 1984, laboratory tests, X-ray examination and ECG are not routinely required for healthy pediatric patients scheduled for ODS in our hospital.

Investigations are requested only if the child's history and/or the physical examination reveal abnormalities that might benefit from further probing. This occurs in an extremely small number of cases (< 5%); therefore more than 95% of our children undergo minor surgery without any preoperative tests. We consider the anesthetic visit as very important for both the clinical assessment of the patient and for the psycho-emotional approach with the child and the family [11].

The visit is planned about a week before the scheduled surgery. On the anesthetic record the anesthetist writes the answer to a few specific questions which are addressed to the parents and which concern possible risk factors, such as previous and underlying diseases, predisposition to allergies and current pharmacological therapy. Then a careful physical examination is performed, in order to assess the child's health status, with particular attention to his/her chest, neurological system, muscle tone and anatomical shape of both the skull and the oral cavity in order to identify any difficulties with tracheal intubation. If the clinical examination does not reveal abnormalities no further tests are required and the child is considered suitable for ODS. Any child in good general health (ASA physical status 1 and 2) is considered suitable for ODS with the exception of children suffering from a respiratory infection. They are considered suitable for outpatient surgery only if they can undergo loco-regional anesthesia or general anesthesia without tracheal intubation. Children suffering from respiratory tract infections and requiring tracheal intubation, are hospitalized overnight, whereas children with fever or mucopurulent secretions have their surgical procedure delayed.

Children of ASA 3 class whose systemic disease is well controlled (diabetes, leukemia) particularly benefit from outpatient treatment. These children undergo frequent and repeated hospitalizations because of their underlying disease and thus an earlier discharge is more convenient both for psychological reasons and for their peculiar predisposition to infections.

As far as infants are concerned, we consider suitable for ODS those of ASA 1 and 2 classes, if older than three months for full-term infants, and older than six months for preterm infants.

The literature does not support outpatient surgery in younger infants, particularly if they are ex-premature infants, because they are more disposed to complications following surgery [12–15]. These infants are admitted to hospital overnight and we are awaiting the results of a study, still in progress in our department,

on the incidence of postoperative complications in infants during the first months of life.

The parents of pediatric outpatients must warrant their reliability in the postoperative management of their children and must be able to understand and to apply the instructions.

The distance from hospital is not a reason for exclusion, since there is a high density of hospitals in our country.

The planned surgical procedure must induce only minimal physiologic derangement, it must not involve the abdomen, thorax or central nervous system and must not be prone to perioperative bleeding.

3. Preparation of children

The preparation of children and their families begins with the anesthetic visit in the consulting room.

The informed consensus of parents is essential. During the visit, parents are given verbal information about the admission and the surgical procedure and written instructions about fasting, premedication, anesthetic technique, postoperative awakening, control of pain and resumption of feeding. The informed consensus about the anesthetic technique is also important.

The approach to children older than four years is made easier by the projection of a videotape, where a child explains his experience with admission to hospital and surgery.

The parents of younger children are supported in their task by a story which explains to the child his future experience, using words suitable for his age and comprehension.

Admission to hospital is scheduled for 7.30 in the morning. If there is enough time before surgery, the child is allowed to drink clear liquids (up to 2 h before) or to take a light breakfast (up to 6 h before), and to spend his/her time in a play room provided with toys, drawing material and a video-recorder showing a wide choice of cartoons. The child is not restricted to bed during the waiting time.

In our practice the premedication is an integral part of the anesthetic procedure [16]. The time of administration is established by the anesthetist responsible for the operating room so that we have the maximal effect when the child arrives in the operating room. Nowadays the main purpose of the premedication is not the vagolytic effect but the child's emotional protection and amnesia.

In our department premedication is given to all children older than 10 months.

The premedication is different according to age (rectal fentanyl 5 μ /kg and droperidol 0.125 mg/kg up to 5 years and oral diazepam 0.4 mg/kg and droperidol to children older than 5 years) and is administered from

45 to 60 min before entry to the operating room. For less invasive procedures we administer rectal ketamine (10 mg/kg) which can be enough for the whole operation or can be supported by local anesthesia. EMLA cream (Astra) under an occlusive dressing is used to obtain painless venous access.

One of the parents accompanies the child into the operating room and remains there during the induction of anaesthesia. The parental presence reduces the psychological trauma and the stress in children.

Whenever possible, we consider loco-regional anaesthesia as a first-choice technique because it has the advantage of a prolonged postoperative analgesic effect. Most of our procedures are performed with loco-regional anaesthesia and deep sedation. When necessary, a general intravenous anaesthesia is carried out with neuroleptic analgesia, non depolarizing muscle relaxants and tracheal intubation.

At the end of surgery, the needle used for the venous access is withdrawn and the patient is brought to the room still asleep.

He/she will start drinking about 2 h later. After 3 h from surgery he/she is assessed by the anaesthetist for discharge according to the Steward criteria. When maximal score is obtained the patient can be discharged. Otherwise he is reassessed 2 h later.

4. Results

Out of 1675 children who underwent surgery during 1995, 867 (52%) responded to the criteria established for ODS. 347 (40%) of them were discharged on the same day of surgery. 520 (60%) children required overnight hospital stay for the following reasons:

- 102 on parental request;
- 358 because the operative procedure started late in the day;
- 31 for persistent vomiting;
- 29 for postoperative fever.

3.2% of ambulatory patients were cancelled after arrival in the hospital for medical reasons.

Among 347 children discharged within the same day, 167 (48%) were discharged after the first assessment 3 h after surgery and 180 (52%) were discharged during the following 3 h. No child discharged within the same day or on the next day reentered the hospital afterwards.

The doctor on duty was called on the phone 37 times because of minor problems, which were solved by instructions dictated on the phone. No major complications occurred in the involved children and minor complications were not related to the absence of routine laboratory tests.

5. Discussion

On the basis of our experience we can affirm that ODS represents clear progress because of the several advantages and the total absence of complications, if patient selection criteria are strictly followed by surgeons and anaesthetists [17–19].

In order to apply ODS the availability of appropriate hospital facilities and of a skilled staff are essential. It is important to obtain the trust of both patients and parents by providing adequate information about the procedure and by maintaining the same level of safety as offered by traditional in-patient surgery.

Even though ODS implies minor surgery, nothing must be overlooked, from the selection of patients to the anaesthetic-analgesic aspect, up to the discharge criteria. The choice of avoiding, when possible, any routine preoperative investigations has proven to be a safe practice with clear advantages: reduction of the social costs for health care and less trouble for children and their parents. Nevertheless, it requires more attention from the anaesthetist, who evaluates the child only by way of history and clinical examination.

The importance we attribute to premedication is largely confirmed by the child's reaction on approaching the operating room and the venous cannulation.

The choice between loco-regional anaesthesia and general anaesthesia must be suitable for the child and for the type of procedure. Not only a quick recovery but also a complete analgesia must be assured, in order to avoid any psycho-physical stress. According to our experience, even children submitted to general anaesthesia with neuroleptic analgesia and muscle relaxants recovered rapidly (within 4 h) so that it was possible to discharge all of them within the day.

Among the major advantages of ODS is a more efficient utilization of hospital beds, facilities and staff for those patients who need them because of severe diseases. At the same time, ODS limits long waiting lists without compromising the safety or the quality of care, offering at the same time a brief hospital stay, which is appreciated by the children and their families.

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