Paediatric Day Care Anaesthesia – Our First Two Years Experience at the Paediatric Institute, Hospital Kuala Lumpur

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Summary

The first two years anaesthetic experience of paediatric day care surgery is reviewed. Four hundred and three patients underwent 447 general surgical procedures. The mean age of the patients was 5.4 years with the youngest being 5 months old. The commonest procedures performed were herniotomy, circumcision, correction of hydrocoele and orchidopexy. The overall postoperative admission rate was 2.5%. No major complications were seen. Anaesthesia for paediatric day care surgery is safe provided patients are carefully selected and evaluated, appropriate anaesthetic management instituted and proper discharge criteria adhered to.

Key Words: Paediatric anaesthesia, Day care anaesthesia, Day care surgery

Introduction

The practice of paediatric day care surgery is not new. As early as 1909, Nicholl in Glasgow had reported the results of operating on over 9000 children, all as day cases[1]. But it has only become fully accepted within the last 10-15 years.

Paediatric patients are excellent patients for day care surgery as they are generally healthy, and the surgical procedures they commonly require are uncomplicated and of relatively short duration. Day care surgery offers benefits to the patient and his/her family. These benefits include minimization of separation anxiety, decrease emotional stress for the child, less disruption of family life and decrease risk of acquiring nosocomial infection. However, there are still some reservations about the safety of anaesthesia for children undergoing day care surgery. In this paper, we report our first two years experience (June 1993- May 1995) in anaesthesia for paediatric day care surgery in the Paediatric Institute, Hospital Kuala Lumpur.

Materials and Methods

Day care surgery in the Paediatric Institute started in June 1993 with the set up of a Day Care Unit (Unit Rawatan Harian) which catered to both paediatric surgical and paediatric medical cases. It has a reception area, play area cum parent waiting area and 2 rooms, one to cater for medical cases and one as postoperative room. The postoperative room can take up to 4 to 6 patients. It is staffed by nurses from 7 am to 9 pm. Paediatric day care surgery is only performed once a week, on Tuesday, in the operating theatre suite of the Paediatric Institute.

Patient selection

Patients were selected by the paediatric surgeons according to the following criteria:

1. Age: Initially patients one year and above were selected. This has since been relaxed to include younger patients.

2. Physical Status ASA I and II, with no history of apnoea, prematurity, previous ventilation.

3. Parents should be capable of understanding and willing to follow instructions.

4. Surgical procedure should be superficial surgery with minimal bleeding and pain.

5. Must stay within 20km of Kuala Lumpur.

Preoperative preparation

Instruction leaflets were given to the parents after the Day Care Ward nurse had explained the instructions and familiarized the parents with the ward. Instructions given included time of arrival on day of surgery, preoperative fasting and transport arrangement. For patients less than 3 years old, parents were instructed to give the last milk feed at 4 a.m., and those above 3 years old, no solid food to be given after midnight and last clear fluid at 6 a.m. Parents were contacted by the Day Care Ward nurse 3 days before the scheduled date of operation to remind the parents of the operation and to check on the status of the patient.

On the day of surgery, the patient was brought to the Unit by 7 am. where initial assessment was done by the nurses who checked for signs and symptoms of upper respiratory tract infection, time of last drink/ meal, and vital signs of patients. Patients were then seen by the Anaesthetic registrar where a preoperative assessment was done. EMLA cream was applied to the hand where intravenous access would be established. Premedication was not routinely ordered.

Anaesthesia

Anaesthesia was induced with either inhalational or intravenous agent depending on the age of the patients. Intravenous induction was used in bigger children and those with obvious veins. The intravenous induction agent used were either sodium thiopentone or propofol. Inhalational induction with halothane was employed in smaller children and in those where venepuncture was difficult. Endotracheal intubation was performed when indicated with the aid of a non-depolarising muscle relaxant usually atracurium. Anaesthesia was maintained with oxygen, nitrous oxide and halothane or isoflurane or total intravenous anaesthesia (oxygen, air and propofol infusion).

Intraoperative and postoperative analgesia was provided by intravenous fentanyl, rectal diclofenac or local blocks like ilioinguinal nerve block, penile block, wound infiltration. Caudal block was not used so as to avoid delay in discharge due to urinary retention.

At the end of the surgery, patients were observed in the recovery room of the operation theatre until fully awake, after which they were transferred to the Day Care Unit. They were discharged home when they were alert, had stable vital signs, could ambulate with minimal assistance (appropriate for age) and were able to tolerate fluid with minimal nausea and vomiting.

Results

Over the 2 years period, there were 403 patients who underwent 447 general surgical procedures. 44 of the patients had 2 operations performed at the same time. In 8 patients the surgery was canceled due to the presence of upper respiratory tract infection.

The mean age of the patients was 5.4 years, with the youngest being 5 months old. Figure 1 shows the age distribution of the patients. Table I shows the distribution of patients according to age, sex and race.

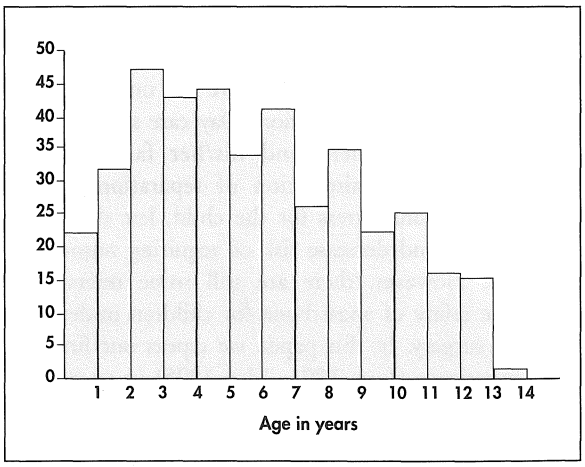

Fig. 1 : Age distribution of patients

Table I
Distribution of patients by age, race and sex

	Number	%
Age		
1 year & <	22	5.5
> 1 – 4 years	166	41.5
5 – 10 years	183	45.4
11– 13	32	7.9
Race		
Malay	287	71.2
Chinese	66	16.4
Indians	47	11.7
Others	3	0.7
Sex		
Male	300	74.4
Female	103	25.6

Table II
Surgical procedures done as day care surgery

Surgical procedure	Number	%
Herniotomy	204	45.6
Circumcision	91	20.4
Repair Hydrocoele	50	11.2
Orchidopexy	40	8.9
Excision (lumps, lipoma etc.)	53	11.9
Lymph node biopsy	11	2.5
Release tongue tie	9	2.0
Miscellaneous (OGDS, Sigmoidoscopy, EUA, etc)	9	2.0
Total	447	100.0

The commonest procedures performed were inguinal herniotomy, circumcision, correction of hydrocoele, and orchidopexy (Table II). 15% of the patients were intubated, 45% had laryngeal mask and in 40% anaesthesia was maintained with face mask. Postoperative analgesia was provided by the use of ilioinguinal nerve block, dorsal nerve block, wound infiltration or diclofenac suppository.

Table III
Reasons for overnight admission

Reason	Number
Bleeding	4
Severe nausea & vomiting	2
Unexpected complicated surgery	2
Post-extubation stridor	2
Total	10

Ten patients (2.5%) were admitted to the hospital for overnight stay. Reasons for admission were bleeding, severe nausea and vomiting, unexpected complicated surgery and postextubation stridor (Table III).

Discussion

The success of a paediatric day care surgery unit depends on careful patient selection and preparation, with the provision of adequate preoperative and postoperative instructions to the parents. The patients must also be given the same standard of care as for inpatients. Studies[2,3,4] have shown the safety and efficacy of day care anaesthesia and surgery in paediatric patients.

Our initial selection criteria only included those one year and above but as we gained more experience, we included those younger than one year. The age when infants can be safely anaesthetized on day care basis is unknown. However it would seem prudent to exclude expremies with postconceptual age of less than 60 weeks. Healthy full term infants are not usually excluded from day care surgery but in our centre, we have not operated on any infants less than 5 months old as day care cases.

The preoperative preparation and assessment of paediatric patients for safe conduct of anaesthesia for day care surgery are the same as those for inpatients. A full history and physical examination are usually done at the Day Care Unit before patients are sent to the operation theatre, in order to minimize delays and cancellation.

There is no single ideal anaesthetic technique for day care surgery. However, the technique chosen should ensure minimum unpleasantness and morbidity compatible with safety for patients and good operating conditions for the surgeon. Recovery should be rapid to allow early discharge. In our series, propofol is our drug of choice for intravenous induction and isoflurane is the inhalational agent of choice for maintenance, because of their rapid recovery properties.

It is inevitable that some patients will need to be admitted overnight . Common reasons for admission include bleeding, severe pain, severe vomiting. The overall admission rate is usually about 2%[5], various figures have been reported by different authors: Stewart 0.1%[6], Patel and Hannallah 0.9%[7], Ahlgren 1.7%[2], Davenport 5.3%[8]. Jones and Smith 8%[9]. Our figure of 2.5% is comparable to what has been reported.

Conclusion

We have demonstrated that anaesthesia for paediatric day care surgery is safe provided patients are carefully selected and evaluated, appropriate anaesthetic management instituted and proper discharge criteria adhered to.

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