

# Paediatric Day Care Inguinal Hernia Surgery in a General Hospital: A Prospective Study on Change in Practice

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## Abstract

**Introduction:** This prospective study was undertaken to observe the prospects of daycare inguinal hernia surgery in general hospital setup in a developing country like Nepal and to assess the advantages, acceptability and safety of this approach. **Methodology:** The study was carried out prospectively for one year from March 2009- Feb 2010. Before surgery, children were examined in surgical referral clinic (SRC). Parents were given verbal and written instructions for pre-operative fasting. Operations were carried out under intravenous anesthesia without intubation by experienced consultant general surgeon or by registrar under supervision. Children were observed in recovery area till conscious. Once awake, the children were handed over to parents for further observation till fully conscious and could tolerate liquid. Oral Paracetamol and homecare instructions were given to parents. Appointment slip was given for follow up visit in SRC within 3-5 days. **Results:** There were 90 children, male 81 (89%), age 2 months to 13 years. Right inguinal hernias were 62 (70%). There were no major complications, mortality or readmission. Saving in terms of less disruption of routine work at home and office was more appreciated by parents. **Conclusion:** We conclude that day care inguinal hernia surgery in children in our setup is safe, economic well accepted by child and parent's both.

**Key words:** Children, Day case hernia surgery, Paediatric inguinal hernia

## Introduction

In infants and preschool children, indirect inguinal hernia is the common surgical problem due to failed closure of the processus vaginalis. Herniotomy is straightforward. However in children, besides technical difficulties, the most important factor is psychological stress on children alien hospital environment. The anxiety and feeling abandoned with disorder in eating and sleeping are not uncommon. Parents even if they wish to, may not be able to stay and sleep in the hospital, most of the time because of responsibility for other children at home<sup>1</sup>.

Paediatric day case inguinal hernia surgery is gaining popularity worldwide, and is now established practice in developed countries. However, there are few reports of such practice in developing countries<sup>2</sup>, and our hospital is no exception.

At our institutions, like many others tertiary hospitals,

still treat paediatric herniotomy as inpatient. Only few individual surgeons practice day-case herniotomy. Thus we felt the need to undertake this study to prospectively observe outcome in our unit, where as another unit in our surgery department continue the existing practice of admission as before.

## Materials and Methods

The study was carried out prospectively for one year, from March 2009- Feb 2010, department of general surgery Patan Hospital. This is a university teaching hospital, with optimum operating, anaesthetic and recovery facilities. Inclusion criteria were general fitness of children and co-operative parents. All patients were examined in surgical referral clinic (SRC), detailed verbal and written instructions for pre-operative fasting were given to the parents. All herniotomy cases were scheduled early in the surgery list to minimize the time

children needed to be kept fasting, and early recovery after surgery to be sent home.

A transverse incision in lowest inguinal crease with medial end lateral and above to the pubic tubercle was used for herniotomy. Operations were carried out by experienced general consultant general surgeon or by registrar under supervision. Operation was carried out under intravenous anesthesia (normally Atropine 0.01mg/kg, Ketamine 1mg/kg) with face mask without intubations. Catgut 3/0 was used to tie the hernia sac proximally, leaving the distal sac in situ. The distal sac was slit longitudinally to widen the mouth and prevent future collection and formation of 'hydrocele' later. Wound was infiltrated with local 'Bupivacaine' (1 ml- below 10 years of age, 2 ml in older, 0.5% Bupivacaine diluted in equal amount of water for injection). Subcutaneous skin suture was applied with chromic 3/0 so as child will not have to undergo the stress of stitch removal. After surgery, the children were observed in recovery area adjacent to operating room till fully conscious. Paracetamol (15 mg/kg) rectal suppository was given in recovery room. Once awake, children were given to their parents for further observation till fully conscious and could tolerate liquid before leaving the hospital.

Before allowing to leave hospital, oral Paracetamol suspension for smaller children (below 10 yr) and tablets for older children (above 10 yr), in the dose of 15 mg/kg 8 hourly was prescribed for post operative analgesia. Parents were advised to feed children as tolerated without restriction to food type, and appointment slip for follow up SRC visit in 4-5 days. Dressing was removed during follow up SRC visit and wound left open if there was no signs of inflammation. Infected wounds were managed as by dressing and antibiotics as required.

## Results

During one year study period, from March 2009-2010, ninety children were operated for inguinal hernias.

Majority of children in this series were male (90%). (Fig 1). Two thirds were right sided inguinal hernia. (Table 1). Majority of our patients were pre school children below six years of age. Average age was 2.9 years, ranging from 2 months to 13 years.(Table 2). We had no case of bilateral inguinal hernia in this series, however 5 children had history of herniotomy on contra-lateral side.

All children were able to go home by early afternoon same day, usually after 3-4 hours of surgery after fulfilling the criteria mentioned above 'material and methods' and discussed later in 'discussion' part. Surgery was cancelled in one case due to upper respiratory tract infection noted by anesthetist before surgery.

Both children and parents appreciated having avoided admission. Overall both children and parents appreciated having avoided admission. We had one children requiring admission because of long surgery time. This was the case of recurrent inguinal hernia. We did not have any single parents who 'wanted' to get admitted. We had no case of re-admission after children were discharged home, except one who had wound infection requiring admission on 8<sup>th</sup> day.

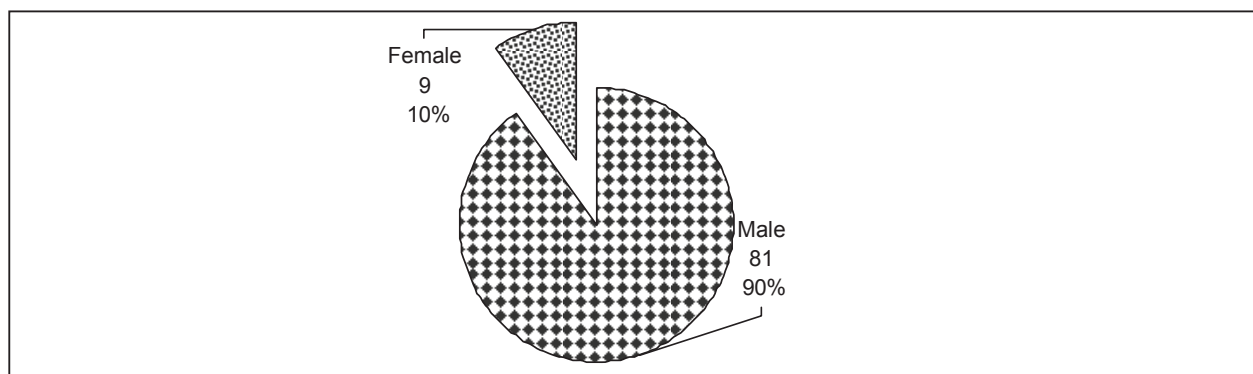
There was no mortality in this series.

**Table 1:** Side of hernia in children (n=90) in this series.

Side of hernia	N	%
Right	62	69
Left	28	31

**Table 2:** Age distribution of children (n=90) with inguinal hernia in this series.

Age in years	N	%
0-1	2	2
>1-5	63	70
6-10	21	23
11-<14	3	5



**Fig 1:** Sex distribution of children who underwent day care herniotomy (n=90)

## Discussion

Once diagnosed, inguinal hernia should be promptly repaired, possibly within weeks to prevent obstruction (12-30%) which may result in testicular atrophy and infertility (up to 30%) once incarcerated<sup>3-5</sup>. This is common in the right side and preterm babies, due to delayed descend of testis<sup>6,7</sup>. However over enthusiasm for a prompt elective repair on tiny infants, less than 6 months of age with delicate tissue must be balanced against the risk of iatrogenic injury in up to 9%<sup>8,9</sup>.

Ours is a general hospital and so in case of elective surgery in children we normally counsel parents to wait at least until after age of six months because of concern of anaesthesia and post operative management. However, with recently added neonatal and paediatric intensive care (NICU, PICU) service at our institutions we will be able to overcome this concern. This could be the reason for only 2% of children below one year of age in this study.

Concept of day-case surgery has been gaining popularity since 1970s because of obvious advantages and convenience to patient and family, savings, and reduction in waiting list. Generally herniotomy is a short procedure with minimal dissection, hemorrhage and postoperative tissue edema, resulting in less discomfort and need of bed rest<sup>10</sup>. Early ambulation and shortest possible stay in hospital decreases hospital acquired infection and morbidity. In children the most important factor is reduced psychological upset in home environment in comparison to hospital. This is not uncommon to find child anxious and feeling abandoned in an alien environment with frequent disorder in eating and sleeping, enuresis. Very often, parents may not be able to stay and sleep in the hospital even if they wish to, simply because of responsibility for other children at home<sup>1</sup>.

All parents were explained about the option of getting admitted in hospital before surgery, and this was no surprise as that all parents, and more so the children, were simply too happy to know that they could avoid staying in the hospital.

One of the measures of quality of day-case surgery is unplanned hospital admission which is reported in up to 4% in various paediatric day-care surgeries, due to nausea, vomiting, drowsiness and occasionally bleeding from wound site<sup>11</sup>.

Later closing of the recovery facility, consideration given to additional anti-emetic therapy and moving the case to the beginning of the list to maximize recovery

time are some of the measures to prevent these complications. In our set up, we always put the paediatric cases early in the list, and as our recovery is adjacent to routine operating room (OR) complex, managed by OR staff in coordination with anesthetist, with virtually no 'closing time' like in day care surgery centers. However when there is need of overnight stay child may be admitted in the ward but we did not encounter such situation.

We believe admission for inguinal hernia is a tradition rather than necessity, because normally we do not admit children for drainage of abscesses, circumcisions and other procedures.

We had set criteria before allowing the children leave hospital same day after hernia surgery which are:-

- No intraoperative complications.
- Normal level of consciousness.
- No vomiting.

- Ability to tolerate oral liquids.
- No bleeding from wound.

At discharge the families were given homecare instructions and SRC follow-up appointment slip.

We do not use prophylactic antibiotic as has been our practice in children undergoing herniotomy since the establishment of hospital as supported by evidence based practice of clean surgery. We had one child who was seen on 3<sup>rd</sup> day follow-up visit in SRC, with no problems. However, this child, from village, poor socio-economic background, presented with frank pus and localized fascitis on day 8<sup>th</sup> requiring admission, debridement and delayed suture. This single isolated incidence was probably due to poor hygiene, nutrition for severe infection. The surgical wound following childhood inguinal herniotomy is classified as clean with a low wound infection rate of 1–2%. However, poor personal hygiene, location of wound in the groin with inherent potential for contamination particularly in young children who are often wet and in nappies may increase the infection rate up to 5% and advocate use of prophylactic antibiotic prior to surgery<sup>12</sup>.

There is no need of stitch removal or dressing. Only few children, if at all, require medical attention post inguinal herniotomy and routine follow up hospital visits are burden to parents and children. This also puts undue demand on hospital resources<sup>13</sup>. Thus we feel, this may be adequate to advise parents to report to the hospital

(out patient or emergency) if they observe pain, redness, or discharge from the wound site on removal of dressing at home. We plan to expand our study further in future.

## Conclusion

Paediatric day-case inguinal hernia surgery is safe and acceptable in local set up to both children and parents. Our satisfactory results shows paediatric inguinal hernia can be safely managed as day-case surgery performed by suitably experienced general surgeons in a general hospital.

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**Conflict of Interest:** None

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