Are general paediatric surgery outcomes comparable between district general hospital and regional referral centres?

MC Hart Prieto, PA Jones

Morrison Hospital, Swansea, UK

ABSTRACT

INTRODUCTION This study recorded the complication rates for general paediatric surgery undertaken in our district general hospital (DGH) and compared them with the limited amount of data published in this field. There has been a gradual diminution in the numbers of general paediatric surgeons throughout the UK. The Royal College of Surgeons of England has produced guidelines to safeguard the provision of paediatric surgery in DGHs. There are minimal data on the acceptable outcomes and complication rates for elective general paediatric operations.

METHODS The following operations undertaken by the paediatric urologist in our unit between November 2006 and May 2010 were scrutinised: orchidopexy, laparoscopy for undescended testes, herniotomy and circumcision. The results were compared to those in the literature and current guidelines. Complications were recorded via audit records, clinic letters or records of attendance at the accident and emergency department.

RESULTS A total of 306 paediatric operations (125 orchidopexies, 28 laparoscopies, 41 herniotomies and 51 circumcisions) were undertaken over the 42-month study period. Only 4.5% of cases experienced post-operative complications. The majority of these were testicular atrophy and infection. There were no intra-operative complications.

CONCLUSIONS In our DGH the complication rates for general paediatric operations compare favourably with those set out by the literature and guidelines, which support the training and delivery of general paediatric surgery within DGHs.

KEYWORDS

Paediatric – General surgery – Complications – Retrospective

Accepted 6 June 2011

CORRESPONDENCE TO

Paul Jones, Consultant Urological Surgeon, Department of Urology, Morrison Hospital, Heol Maes Eglwys, Morrison, Swansea SA6 6NL, UK
E: paul.jones9@wales.nhs.uk

General paediatric surgery (GPS) describes non-specialised children's surgery undertaken by surgeons who primarily operate on adults but who also have expertise in paediatric surgery. The Royal College of Surgeons of England has produced guidelines detailing the provision of GPS in district general hospitals (DGHs).¹ These guidelines were instigated as part of workforce planning in recognition of an existing shortfall of surgeons undertaking GPS and a further predicted progressive decline owing to retirements.

Children account for nearly 25% of the UK population. Approximately 90% of paediatric urology comprises GPS, the majority of which involves circumcision, orchidopexy and inguinal herniotomy. This significant workload ensures potential exists to train urologists and general surgeons to perform these procedures in a DGH environment, thereby offloading GPS from the specialist paediatric surgical centres.

The General Medical Council released a statement in October 2010 stating that medical revalidation was expected to start late in 2012.² This stipulates that doctors will need to demonstrate they are undertaking audit of their clinical

work to ensure that their outcome measures are comparable to defined standards of care.

No national data or outcome measures exist at present for GPS. These procedures are often performed by a single surgeon in a DGH and there are few internal or external comparators currently available for individuals to measure outcomes against to enable them to verify that their service is safe and to a high standard.

The aim of this study was to assess whether the complication rates for GPS undertaken at our DGH were equivalent to those few comparators cited in the available literature or in the British Association of Paediatric Surgeons (BAPS) guidelines and, subsequently, to identify outcome measures for GPS as a preliminary benchmark for outcome measurement.

Methods

The study was retrospective over a period of 42 months between November 2006 and May 2010. Patient data were collated from theatre lists, outpatient follow-up, accident

Table 1 The number of cases performed of each procedure and the number analysed

Procedure	Number performed	Number analysed
Circumcision	57	51
Inguinal herniotomy	44	41
Orchidopexy	131	125
Laparoscopy	38	28

Table 2 Complication rates for circumcision at our district general hospital (DGH) compared with the literature^{3,4}

Complication	DGH	Literature
Bleeding	0%	1.5%
Infection	0%	8.5%
Oozing	3.9%	36.0%
Delay to urination	0%	13.5%

Table 3 Complication rates for inguinal herniotomy at our district general hospital (DGH) compared with the literature⁵

Complication	DGH	Literature
Haematoma	0%	0.8%
Infection	0%	0.8%
Recurrence	0%	0.6–4.0%
Atrophy	0%	6.0%
Other	2.4%	

and emergency department records and morbidity recorded at monthly audit meetings. All complications following orchidopexy, laparoscopy, circumcision and inguinal herniotomy were compared with complication rates cited in the literature. A literature search of complication rates was undertaken using PubMed and Google, in addition to publications cited in definitive urological textbooks.^{5–6}

Results

Over the 42-month study period, 306 procedures were undertaken in our DGH by a consultant urologist with subspecialty training in paediatric surgery, of which 25 were excluded from the study owing to lack of patient data (Table 1). The 25 patients did not attend follow-up appointments and therefore could not be analysed. The age range of the patients included in the study was 3 months to 15 years, with the majority being under 2 years of age. Only eight of the patients were female.

Table 4 Complication rates for inguinal orchidopexy at our district general hospital (DGH) compared with the literature^{6,7}

Complication	DGH	Literature
Bleeding	0%	
Infection	1.6%	
Atrophy	1.6%	0–12%
Other	0.8%	

Table 5 Complication rates for laparoscopy at our district general hospital (DGH) compared with the literature⁷

Complication	DGH	Literature
Bleeding	0%	
Infection	3.6%	
Atrophy	7.1%	0–26%
Success rate	92.9%	76–100%
Visceral injury	0%	

Circumcision

The main complication rates for circumcision were taken from those quoted in the BAPS guidelines,⁷ the literature⁸ and *Pediatric Surgery and Urology*.⁵ These are shown alongside our complication rates in Table 2. Two patients (3.9%) attended the accident and emergency department, owing to oozing, where no surgical intervention was required as opposed to active bleeding, which would require resuturing. One of these patients was unable to remove his dressing because of adherent blood. The dressing came free later that same day in the shower.

Inguinal herniotomy

There is a paucity of literature detailing complication rates after inguinal herniotomies. *Pediatric Surgery and Urology*⁵ and Yeung *et al*⁹ quote primarily the recurrence rate and testicular atrophy rate (Table 3). We had a single complication (2.4%) in which a patient developed a seroma post-operatively. This had settled by the three-month follow-up appointment.

Orchidopexy

The literature for complications following inguinal orchidopexies^{5,10,11} was similarly scarce in quantifying complication rates, citing only the testicular atrophy rate, which varied between 0% and 20% (Table 4). We had two patients (1.6%) with superficial wound infections and two patients (1.6%) were found to have an atrophied testis at their three-month follow-up visit. We had one patient (0.8%) whose suture had become loose who required GP review and placement of an adhesive sterile strip on the scrotal wound. This then healed uneventfully.

Laparoscopy

The data on complication rates for laparoscopy were also scarce, citing only testicular atrophy and viability rates (defined as a healthy testis noted to be intrascrotal at the three-month follow-up appointment), and were taken from Elder.¹²

The testicular atrophy rate at our hospital after intra-abdominal mobilisation (7.1%) is comparable to that in the literature with two patients having atrophied testes at the three-month appointment and one patient with a superficial umbilical wound infection (Table 5).

Discussion

We have shown that GPS complication rates in a DGH practice compare well to those cited in the limited available literature.

Limitations in our own complication data are that they are self-reported and incomplete in a minority of patients who did not attend follow-up clinics or whose notes were lost.

There is a marked disparity between our perceived complication rates in circumcision and those higher rates cited in the literature. One reason for this may be that some studies determine complications via a postal questionnaire sent one week after surgery (which we did not undertake). We explain to patients and their parents that there may be some slight oozing that is usually self-limiting and this may also account for our low reattendance rate.

All circumcisions at our DGH were for pathological phimosis (since no provision for cultural circumcisions exists within our health authority), hence the need for follow-up in this patient group.

Conclusions

While there is a paucity of data detailing complication rates in GPS, we believe we have reinforced the Royal College of Surgeons' perception that surgeons who undertake GPS in a DGH can provide a service that is safe and to a high standard. In so doing, we have also provided additional outcome data that can be used as an external comparator for audit and subsequent revalidation.

References

1. Children's Surgical Forum. *Ensuring the Provision of General Paediatric Surgery in the General District Hospital*. London: RCS; 2010.
2. Revalidation. British Medical Association. http://www.bma.org.uk/wa/employmentandcontracts/doctors_performance/professional_regulation/revalidation.jsp (cited June 2011).
3. Wein AJ, Kavoussi LR, Novick AC et al, eds. *Campbell-Walsh Urology*. 9th edn. Philadelphia, PA: Saunders; 2007.
4. Weiss RM, George NJ, O'Reilly PH, eds. *Comprehensive Urology*. Philadelphia, PA: Mosby; 2000.
5. Stringer MD, Oldham KT, Mouriquand PD, eds. *Pediatric Surgery and Urology*. 2nd edn. Cambridge: Cambridge University Press; 2006.
6. Thomas DF, Duffy PG, Rickwood AM, eds. *Essentials of Paediatric Urology*. 2nd edn. London: Informa Healthcare; 2008.
7. British Association of Paediatric Urologists. *Management of Foreskin Conditions*. London: BAPU; 2007.
8. Griffiths DM, Atwell JD, Freeman NV. A prospective survey of the indications and morbidity of circumcision in children. *Eur Urol* 1985; **11**: 184–187.
9. Yeung YP, Cheng MS, Ho KL, Yip AW. Day-case inguinal herniotomy in Chinese children: retrospective study. *Hong Kong Med J* 2002; **8**: 245–248.
10. Wilson-Storey D, McGenity K, Dickson JA. Orchidopexy: the younger then better? *J R Coll Surg Edinb* 1990; **35**: 362–364.
11. Taran I, Elder JS. Results of orchidopexy for the undescended testis. *World J Urol* 2006; **24**: 231–239.
12. Elder JS. Two stage Fowler-Stephens orchidopexy in the management of intra-abdominal testes. *J Urol* 1992; **148**: 1,239–1,241.