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The management of boys under 3 months of age with an inguinal hernia and ipsilateral palpable undescended testis

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ABSTRACT

Aims: The optimal management for boys under 3 months of age with an indirect inguinal hernia (IIH) and ipsilateral palpable undescended testis (IPUDT) is unknown. We aimed to: 1) determine the current practice for managing these boys across the UK, and 2) compare outcomes of different treatment strategies.
Methodology: We undertook two studies. Firstly, we completed a National Survey of all surgeons on the British Association of Paediatric Surgeons email list in 2014. Subsequently, we undertook a multi-centre, retrospective, 10-year (2005–2015) review across 4 pediatric surgery centers of boys under 3 months of age with concomitant IIH and IPUDT. Primary outcome was testicular atrophy. Secondary outcomes included need for subsequent orchidopexy, testicular ascent and hernia recurrence. Data are presented as median (range). Chi-squared test and multivariate binomial logistic regression analysis were used for analysis; $p < 0.05$ was considered significant.
Results: Survey: Consultant practice varies widely across the UK, with a tendency towards performing concurrent orchidopexy at the time of herniotomy under 3 months of age. Concurrent orchidopexy is favored less in cases where the hernia is symptomatic.
Case Series Review: Forty-one boys with 43 concomitant IIH and IPUDT were identified, and all included. 32 (74%) hernias were reducible, 11 (26%) were symptomatic requiring urgent or emergency repair. Post-conceptual age at surgery was 45 weeks (36–65). Primary operations included: 29 (67%) open hernia repair and standard orchidopexy, 8 (19%) open hernia repair with future orchidopexy if required, 4 (9%) laparoscopic hernia repair with future orchidopexy if required, 2 (5%) open hernia repair and suturing of the testis to the inverted scrotum without scrotal incision. Variation in atrophy rate between different surgical approaches did not reach statistical significance ($p = 0.42$). Overall atrophy rate was 18%. If hernia repair alone was undertaken (8 open and 4 laparoscopic), the testis did not descend in 8 patients, requiring subsequent orchidopexy (67%); if orchidopexy was undertaken at the time of hernia repair, 1 in 29 required a repeat orchidopexy (3%) ($p = 0.0001$). No hernia recurred.
Conclusion: This study suggests that orchidopexy at the time of inguinal herniotomy does not increase the risk of testicular atrophy in boys under 3 months of age.

Large patient population studies in children have demonstrated that indirect inguinal hernias tend to present early in life, particularly in premature infants, who are also at greater risk of having undescended testes [1]. Current literature suggests approximately 1–3% of boys with an inguinal hernia also have a concomitant undescended testis [1,2].

The majority of reducible inguinal hernias in infants under 3 months of age are managed operatively on a semi-urgent basis within 1–2 weeks of diagnosis or before discharge if an inpatient. Some are managed on an emergency basis sooner if complications arise. Infants with a palpable undescended testis are typically offered an orchidopexy between 6 and 12 months of age in keeping with recent commissioning guidelines from the Royal College of Surgeons of England in collaboration with the British Association of Paediatric Surgeons (BAPS) and the British Association of Paediatric Urologists (BAPU) [3]. The most recent BAPU consensus recommends undertaking orchidopexy from 3 months and operating upon all infants with an undescended testis before the age of 12 months [4]. However, orchidopexy is not recommended under 3 months due to presumed increased risks of testicular atrophy in smaller infants and the chance of spontaneous descent [5], which continues after birth but rarely after the age of 6 months [6,7].

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The evidence base for these recommendations is limited and there is no guidance, to our knowledge, regarding the optimum management of boys less than 3 months of age with a concomitant indirect inguinal hernia (IIH) and ipsilateral palpable undescended testis (IPUDT).

We aimed to establish the current practice in the UK by way of a national survey. Following on from this, a multi-centre, retrospective analysis aimed to compare the outcomes of different treatment strategies.

1. Materials and methods

1.1. National survey

We undertook a national online survey of all contactable consultant pediatric surgeons and pediatric urologists on the BAPS email list in 2014 (n = 100) (Appendix 1: Survey Questions). From this we have been able to define the current practices of pediatric surgeons for this patient population in the UK.

1.2. Case series review

A 10-year retrospective review of case notes across 4 centers was performed. Cases were identified through coding and departmental databases. We included all boys with concomitant IIH and IPUDT who were under 52 weeks post conceptual age at the time of diagnosis. This included boys with either bilateral inguinal herniae or bilateral undescended testes. We excluded any patient with an impalpable testis or where the unilateral hernia was contralateral to the UDT.

The primary outcome was testicular atrophy – defined as a documented decrease in the size of the operated testis. If the testicular size was not documented at the time of surgery, but later documented to be smaller than the contralateral side, then it was assumed to have atrophied. If post-operative follow-up information regarding testicular size was unavailable, the case was excluded from the analysis to avoid an underestimation of the atrophy rate, which could happen if included in the whole denominator. Secondary outcomes included need for subsequent orchidopexy, testicular ascent and hernia recurrence. Need for subsequent orchidopexy was determined from the patient's notes, operation waiting lists and theater logbooks; this information was available for all patients. Testicular ascent was defined as a testis that had been in the scrotum at the end of primary surgery and later was outside the scrotum requiring subsequent orchidopexy.

Data was collected on patient demographics, presentation of the hernia (reducible, difficult to reduce and operated urgently within 48-h, or irreducible and operated as an emergency) and operation performed. Primary operation was categorized into: open inguinal herniotomy with standard orchidopexy using a dartos pouch as described by Brown [8], open inguinal herniotomy and modified orchidopexy with a suture to the inverted scrotum and no dartos pouch, open inguinal herniotomy and no orchidopexy, laparoscopic inguinal herniotomy and no orchidopexy. Detail regarding whether dissection was undertaken to lengthen the cord, as described in the survey, was not used in the case series review due to the inherent unreliability of such data retrospectively. Duration of follow-up was defined as time from primary surgery to last clinic appointment in months.

Chi-squared test and multivariate binomial logistic regression analysis were used for statistical analysis; $p < 0.05$ was considered significant.

2. Results

2.1. National survey

Seventy-eight consultants responded (78%): 66 pediatric surgeons, 12 pediatric urologists. In the absence of an UDT, 81% respondents (n = 63) routinely perform open herniotomy in boys <3 months, whereas 19% (n = 15) perform laparoscopic hernia repair. In the absence of clinical evidence of an inguinal hernia, 4% (n = 3) undertake orchidopexy for a palpable UDT at 3-6 months, 64% (n = 50) at 6-12 months and 32% (n = 25) >12 months of age.

In boys <3 months with both reducible IIH and IPUDT, 54% (n = 42) would proceed to herniotomy and orchidopexy at this age, 24% (n = 19) would undertake herniotomy at this age and delay orchidopexy until over 3 months of age if necessary and 8% (n = 6) would delay both until over 3 months (Fig. 1). Fourteen percent (n = 11) would vary management depending on clinical and operative findings. Among those who would proceed with IIH repair under 3 months (n = 71), choice of operative procedure varied widely [Fig. 2]. The most common was open herniotomy and standard orchidopexy using a dartos pouch; favored by almost half of those choosing to operate at this stage (44%, N = 31). A further 14% (N = 10) would undertake a modified orchidopexy with a suture to the inverted scrotum, but no dartos pouch.

If the hernia was difficult to reduce, fewer surgeons would undertake concurrent standard orchidopexy (35%) and fewer still in the

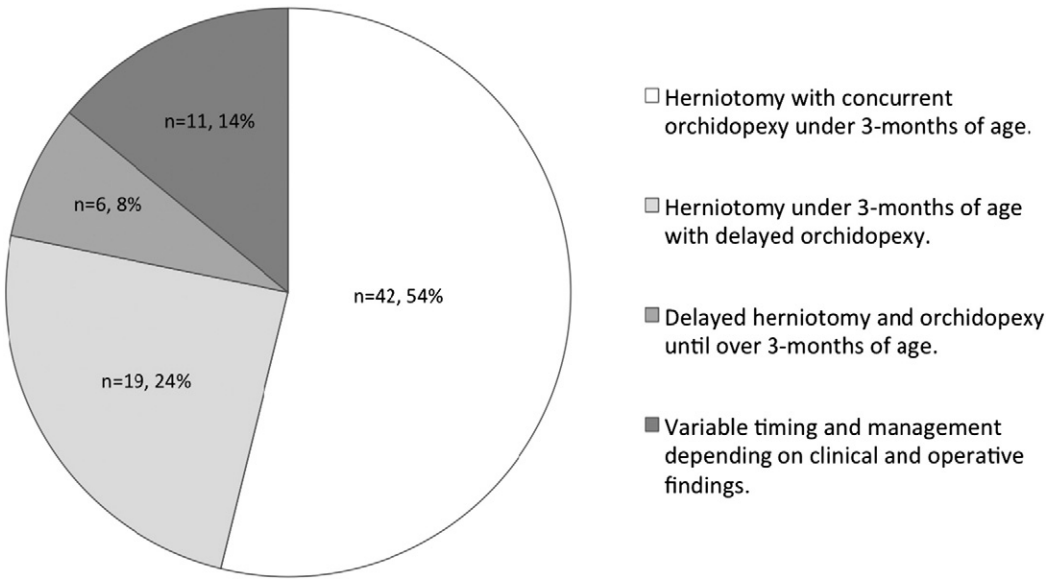

Fig. 1. UK surgeons' preference regarding the timing of surgery in boys presenting with an IIH and IPUDT under 3 months of age (n = 78).