



Testicular atrophy after attempted pediatric orchidopexy for true undescended testis

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ABSTRACT

Background/Purpose: A normal testis in the scrotum is the most important outcome of the attempted pediatric orchidopexy for a true undescended testis. The reports of post-orchidopexy testicular atrophy in the literature have ranged from non-existent to unclear. Our purpose in this study was to estimate the incidence of and associated risk factors for post-orchidopexy testicular atrophy.

Methods: We performed a retrospective review of data from children who had an attempted orchidopexy for a true undescended testis from 1969 to 2003 inclusive. REB approval 1000011987.

Results: There were 1400 attempted orchidopexies involving common (low) type ($n = 1135$), ectopic type ($n = 174$), and high type testes ($n = 91$). There were a total of 111/1400 (8%) atrophic testes, mostly right-sided. 66/111 (59%) were MADE atrophic, and 45 (41%) were FOUND atrophic. Of the 1135 common type, 56 (5%) were MADE atrophic. In the ectopic and high types, the incidence of post-operative testicular atrophy was 1% and 9%, respectively.

The most significant risk factors associated with testes MADE atrophic were high testicle, vas problems, and pre-operative torsion.

Conclusions: In this series, the incidence of post-operative testicular atrophy that was MADE was 5% in the common (low) type and 9% in the high type. These numbers and the above risk factors should be quoted to the caregiver during pre-operative informed consent.

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Today, orchidopexy is the fourth most common pediatric general surgical operation after appendectomy, circumcision and hernia repair [1]. The incidence of undescended testicle (UDT) is said to be between three and five percent at birth, but by one year of age 0.8% to 1.6% [2]. The most important aspect of the attempted pediatric orchidopexy for a true undescended testis is the end result of a normal testis in the scrotum [2]. However, reports of post-orchidopexy testicular atrophy in the literature have ranged from non-existent [1–12] to unclear [13–23].

Our objectives in this study were to assess the risk factors associated with testicular atrophy after attempted orchidopexy.

1. Methods

This was a retrospective cohort study from July 1969 to December 2003 inclusive of children treated at The Hospital for Sick Children (HSC), Toronto. The following variables were collected: age, weight, side or bilateral, hormone treatment, other medical problems, type of true undescended testis, pre-orchidopexy complications and problems, type of orchidopexy repair, intra-operative and post-operative complications, results (focusing on risk factors for atrophic testes). Follow-up of all the patients until their testicular problem was solved

was carried out by the senior author with his surgical residents. This review received HSC Research Ethics Board approval (1000011987).

We used the following definitions: *testicular atrophy* – decrease in size of the testicle by one-third or more compared to the contralateral testicle; *low (common) UDT* – testis found at the mid/lower inguinal canal (intra-canalicular) + complete indirect inguinal hernia; *ectopic UDT* – testis found at/outside external ring ± small indirect inguinal hernia; *high undescended testis* – testis found at high inguinal canal, at internal ring (peeping testis) or intra-abdominal + complete indirect inguinal hernia. All operations were done under general anesthesia along with either caudal analgesia or local nerve block. Unless there were other medical problems and/or emergencies, the majority of these procedures were done as elective outpatient operations.

Data were compared using Chi square for categorical variables and student's T test for continuous ones. A logistic regression model was made with an aim to predict variables associated with post-operative testicular atrophy. A P-value < 0.05 was considered significant.

2. Results

There were 1400 [1368 (97.8%) unilateral and 32 (2.2%) bilateral] true UDTs who had an attempted orchidopexy; the 32 bilateral ones in 16 children were operated on at separate operations (Fig. 1). The mean age at operation was 5.4 years (range: 1 month to 18 years); the weight ranged between 1.9 and 113 kg. There were 55% right-sided, 44.5% left-sided and 0.5% bilateral.

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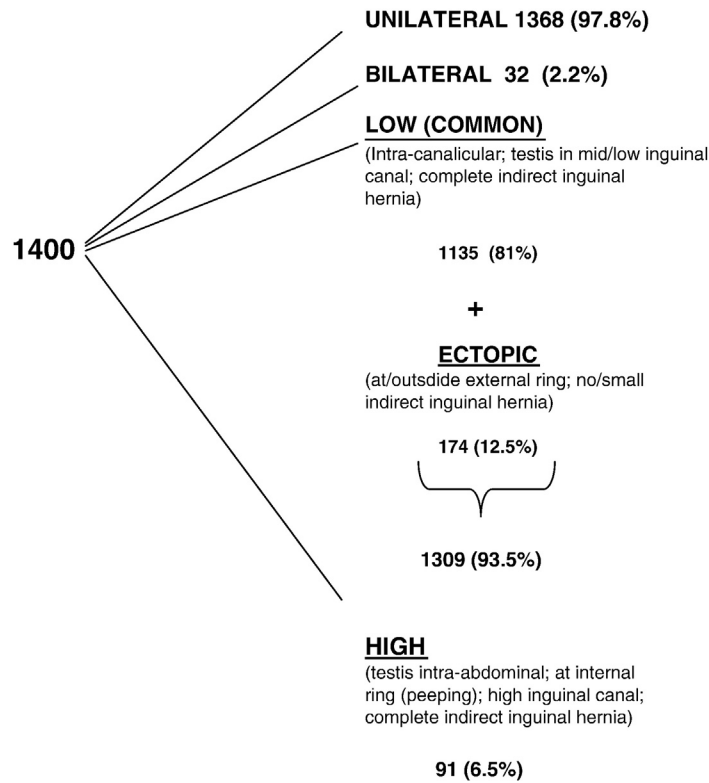


Fig. 1. Types of true undescended testes that underwent attempted orchidopexy.

From this group of 1400, there were 182 (13%) boys who had pre-orchidopexy complications and problems (excluding atrophic testes); the most common category was 64 (4.5% of 1400) secondary orchidopexies (recurrent or redo orchidopexy; [24–28] post-operative inguinal hernia repair) (Table 1).

2.1. Operative details

There were 1400 attempted orchidopexies involving common (low) UDT ($n = 1135$, 81%), ectopic UDT ($n = 174$, 12.5%), and high UDT (91, 6.5%) (Fig. 1). There were 1348 standard (regular) repairs, for the three types of UDT ($n = 1135$ common (low), $n = 174$ ectopic and $n = 39$ high) (Table 2). Within the ectopic group were five with their testes located in the perineum ($n = 2$), groin ($n = 2$), and thigh ($n = 1$).

The remaining 52 high undescended testes, felt to be too high to have a standard (regular) repair, received one of three different repairs: one-stage open Fowler–Stephens [29] ($n = 34$), two-stage open Corkery [30] (Silon sheath) ($n = 10$) and Jones [31] (one-stage open retroperitoneal) ($n = 8$). Each testis was placed in a dartos (Koop, subcutaneous) scrotal pouch, with the entrance of the pouch narrowed by 1 or 2

sutures. No suture was placed through the testis to fix it in position within the pouch or scrotum [7,32].

Seventy-one (5%) had concomitant procedures (the commonest was circumcision 45%).

Of the 43 (3.1%) boys in this series who had other medical problems and were operated on, 15 (33% of 43) were of the developmental delay variety, with almost all of the others having some kind of congenital anomaly. Six (0.4%) were abdominal wall and/or diaphragmatic defects (omphalocele $n = 3$, diaphragmatic hernia $n = 2$, gastroschisis $n = 1$), and all had delayed attempted orchidopexy with 50% success.

There were 21 (1.5%) intra-operative orchidopexy complications and problems (including orchidectomy and considered an atrophic testis). The commonest was related to the vas. There were five orchidectomies (Table 3a).

2.2. Outcomes

There were 36 (2.5%) post-operative orchidopexy complications, (excluding atrophic testis) the most common of which was wound infection (Table 3b).

Table 1
Pre-orchidopexy complications and problems (excluding atrophic testes).

COMPLICATION OR PROBLEM	NUMBER (% of 1400)	MEAN AGE (yr)	MAJORITY SIDE
SECONDARY (recurrent/redo orchidopexy; post-operative inguinal hernia repair)	64 (4.5%)	6.5	R
INCARCERATION (Inguinal hernia with undescended testis)	61 (4.3%)	1.1	R
RETRACTILE (late ascent; small testis)	46 (3.2%)	5.4	R
TORSION (of true undescended testis)	11 (0.7%)	3.6	L
TOTAL	182 (13%)	4.1	R

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