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High prevalence of intratesticular varicocele in a post-orchidopexy cohort

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Abstract *Purpose:* Intratesticular varicocele (ITV) is an uncommon sonographic finding. A prevalence of up to 2% has been reported in men with testicular problems. In a cohort of men who had undergone prepubertal orchidopexy for acquired undescended testis, several cases of ITV were found. The aim of this study was to analyse the prevalence and clinical aspects of ITV in this cohort.
Methods: In a long-term follow-up study of position and growth of undescended testis after prepubertal orchidopexy, ultrasonography was used to identify men with ITV. Data on clinical presentation, testicular volume, and the location, size and Doppler aspects of intratesticular varicocele were collected and analysed.
Results: Of the 105 men, 9 were identified with ITV (8.6%). In all patients, the side of orchidopexy correlated with the side of the ITV, and all were left-sided. The testis with ITV had a smaller volume than the testis without ITV ($p = 0.026$).
Conclusions: A remarkably high prevalence of ITV (8.6%) was found as well as a smaller volume of the testes with ITV in a cohort of men who had undergone prepubertal orchidopexy for acquired undescended testis.

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Introduction

Extratesticular varicocele (ETV) is a common condition, occurring in approximately 10%–15% of males [1–5]. It is an abnormal dilatation of the veins of the spermatic cord, caused mostly by incompetent valves in the internal spermatic veins. Intratesticular varicocele (ITV) was first described in 1992 by Weiss et al. [3], who described two patients with dilated intratesticular veins: straight or serpentine hypoechoic structures within the mediastinum testis and radiating into the testicular parenchyma. Since 1992, more cases of ITV have been reported. The reported prevalence is 0.4%–2.0% in patients referred for scrotal ultrasound due to various testicular problems [6–8] or for routine andrological evaluation [9].

In a long-term follow-up study on the position and growth of acquired undescended testis after prepubertal orchidopexy, several cases of ITV were found. The aim of this study was to analyse the prevalence, clinical aspects and testicular volumes of the patients with ITV in this study cohort.

Methods

From 1986 to 1999, 335 boys underwent prepubertal orchidopexy for acquired undescended testis at our hospital. In 2010, we conducted a follow-up study on testis position and growth [10]. All 335 were requested by post to participate in this long-term evaluation. If no reaction followed, a second letter was sent, and if still no reaction occurred the patient was contacted by telephone. Patients were excluded if one or more of the following criteria were present in their medical history: recurrent epididymitis, chromosomal or hormonal abnormalities, hormonal medication, earlier orchidopexy or other inguinal surgery, congenital undescended testis, presence of a testicular germ cell tumour.

Written informed consent was received from 122 (36.4%) patients, 17 of whom were excluded due to recurrent epididymitis ($n = 1$), pubertas tarda and mental retardation ($n = 1$), previous orchidopexy ($n = 2$), inguinal hernia surgery ($n = 10$), congenital undescended testis ($n = 2$) and an immature teratoma ($n = 1$).

Consequently, 105 (31.3%) patients were included. The age at orchidopexy of the patients was 2.4–13.9 years (mean +/− SD: 9.2 +/− 2.8 years). Of these 105 patients, 73 had undergone unilateral orchidopexy (33 left- and 40 right-sided), whereas 32 had undergone bilateral orchidopexy. As a result, 137 orchidopexied testes were studied. At follow-up, the patients' ages ranged from 14.0 to 31.6 years (mean 25.7 years, SD +/− 3.3). Examination at follow-up included scrotal sonography of both testes. If participants appeared to have findings suspicious for ITV, informed consent to participate in this study was asked. If consent was given, colour Doppler ultrasound was performed to confirm the diagnosis of ITV and to collect additional data.

Definitions

Undescended testis

An undescended testis was defined as a testis which could not be manipulated into a stable scrotal position in its most caudal position, and further traction on cord structures was painful. It included high scrotal, inguinal or impalpable forms.

Acquired undescended testis

An acquired undescended testis is an undescended testis which had been descended earlier in life and for which a previous scrotal position had been documented at least twice.

Orchidopexy

Orchidopexy was started with an inguinal incision. Subsequently, exploration of the groin took place and, if present, the open processus vaginalis was separated from the cord structures and ligated. Retroperitoneal funiculolysis and separation of the cremaster muscle were performed to mobilize the cord. Finally, the testis was fixated scrotally by making a scrotal incision and placing it in a created dartos pouch. All orchidopexies were performed under general anaesthesia as an outpatient procedure.

Intratesticular varicocele (ITV)

An ITV is an anechoic tubular, oval or serpentine intratesticular structure that shows increased flow or reflux during a Valsalva manoeuvre.

Questionnaire

Participants were asked about their medical history. In addition, clinical symptoms such as testicular pain, scrotal swelling, epididymitis or gynaecomastia were scored. Moreover, the questionnaire included questions regarding fatherhood.

Ultrasound

The scrotal ultrasounds in the orchidopexy follow-up study were performed with a 12 MHz linear array transducer and Falco Auto Image (Falco Software Co, Tomsk, Russia). If findings were suspicious for ITV, a second sonographic examination was performed, with the UST-567 linear probe, frequency range 6–13 MHz, 50 mm on the Aloka ProSound ALPHA 10 (Tokyo, Japan). Examinations comprised both B-mode and colour Doppler sonography. Before and during the Valsalva manoeuvre, the ITVs were scored for diameter and location (mediastinum/parenchyma/subcapsular). Furthermore, the presence of ETV was assessed. Testicular volume was calculated by measuring the maximum length, width and height, using the formula for an ellipsoid $= \pi/6 \times$ length $\times$ width $\times$ height.

Data analysis

All data were collected and analysed using SPSS, version 14.0. The independent *t*-test and the Mann–Whitney test were performed to calculate the differences in age and