

One-stage Fowler–Stephens orchidopexy for impalpable undescended testis

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Abstract

Background The Fowler–Stephens orchidopexy (FSO) is a well-described treatment for high maldescended testes where the limiting factor for successful placement in the scrotum is short testicular vessels. The operation involves division of these vessels. The testicular blood supply is then dependent on collaterals from the vasal artery.

Aims To assess the long-term outcome of patients who underwent this procedure in our institution.

Methods The medical records of 20 patients who underwent 22 FSO from 1978 to 1999 by one urologist (HB) were reviewed. Outcome was assessed in terms of testicular position and size.

Results Age at operation ranged from 2 to 14 years (mean 5.8 years). All patients had a one-stage FSO and in two of them the procedure was bilateral. In five patients, FSO was preceded by a diagnostic laparoscopy. Mean follow up was 22 months (range 0–121 months). Overall, results were considered good in 18 of 22 testes (82%).

Conclusion Our results for the one-stage FSO are comparable with other procedures for the management of high maldescended testis.

Introduction

Cryptorchidism has an incidence of 5.5% of normal birthweight males at birth, which decreases to 1% by one year of age.¹ An impalpable testis occurs in approximately 20% of these latter cases.² Many of these impalpable testes are in fact found hidden in inguinal or pubic fat at exploration and can be placed in the scrotum using standard orchidopexy techniques. Intra-abdominal lie has been reported to occur in 8% of cryptorchidism.²

Various procedures have been used in the management of impalpable intra-abdominal testes. These include one and two-stage FSO and microvascular surgery. We herein report our results with the one-stage FSO.

Patients and methods

Between 1978 to 1999, 20 patients with impalpable testes underwent single-stage FSO. Their ages ranged from 2 to 14 years (mean 5.8 years). The procedures were performed by one urologist (HB), being unilateral in 18 patients and bilateral in two.

Operative procedure

Following general anaesthesia and immediately prior to surgery, the scrotum and inguinal areas were examined to confirm that the testis was impalpable. The usual surgical operative technique performed for intra-abdominal testes was to make an oblique incision over the inguinal canal dividing the external oblique aponeurosis. The medial fibres of the internal oblique musculature were divided and the peritoneum was then opened and the testis was located, most commonly covered by peritoneum in the iliac fossa.

The peritoneum overlying the spermatic cord was opened longitudinally and the spermatic vessels were divided between silk ligatures 3cm above the testis. The vas deferens was mobilised on a strip of peritoneum down into the pelvis. The testis was placed in the scrotum, not in a dartos pouch but held by a silk suture

brought through the scrotal wall and fixed via a rubber band to the ipsilateral thigh. The silk suture and rubber band were released three days postoperatively.

In the latter five patients in our series, FSO was preceded by diagnostic laparoscopy to confirm an intra-abdominal testis.

Follow-up

The patients were usually seen at routine follow-up on several occasions in the outpatient clinic and assessed by the consultant urologist (HB) or a member of his team. In assessing testicular size, comparison was made with the contralateral testis or, in the case of bilateral FSO, with the expected testicular size for a child of similar age.

Results

Twenty-one testes were found in the iliac fossa and one testis was high in the inguinal canal. This latter testis had a short vas deferens and could only be brought to the pubic tubercle despite division of the testicular vessels. Surgical placement of the testis into the scrotum was achieved in all but the one patient whose vas deferens was short.

Follow up ranged from two months to 10 years (mean 22 months) in 20 patients (22 testes). Sixteen testes were of normal size, two were 70% normal size, three were <70% normal size and one had atrophied. Of the palpable testes, 14 were in good position in the scrotum and six were high in the scrotum. One patient's testis was at the pubic tubercle due to a short vas deferens, which precluded placement of the testis in the scrotum. In 18 of the 22 testes (82%), the results were considered good because the palpable testis was either of normal size or at least 70% of normal size.

Laparoscopy was carried out as a preliminary procedure in the last five patients of the series, and is now routinely performed in all impalpable testes. There were no post-operative complications.

Table 1. Comparison of the outcomes of surgical approaches to the impalpable testis

Series	No.	Operation	% success	Follow-up (months)
Ransley et al ⁶	13	Two-stage	92	10.5
Bloom ⁷	7	Two-stage	86	21
Kirsch et al ¹	38	One-stage	74	18
Lindgren et al ⁸	13	One-stage laparoscopic	89	6
Bukowski et al ⁹	24	Autotransplantation	96	2–168
Fowler and Stephens ⁵	12	One-stage	67	12
Present study	22	One-stage	82	22

Discussion

The management of cryptorchidism has presented a challenge to urologists and surgeons for over a century. Bevan first described the basis for successful orchidopexy in 1899.³ This involved making an inguinal incision, freeing the testis and cord from their attachments and repairing any associated hernia. These manoeuvres elongated the cord and allowed placement of the testis in the scrotum. Problems, however, arose with the higher testis, especially when intra-abdominal. In 1903, Bevan suggested division of the spermatic vessels to allow for scrotal placement of the testis in these situations.⁴

Fowler and Stephens expanded on this approach by dividing the spermatic vessels well above the testis and carefully preserving the collateral vasal arteries by leaving a strip of peritoneum attached to the vas when dissecting it into the pelvis.⁵ They reported a successful salvage in eight of 12 testes. In 1984, Ransley et al reported a two-stage FSO. This involved preliminary ligation of the spermatic vessels and after an interval of several months to allow for compensatory dilatation of collateral blood supply, an orchidopexy was performed.⁶ In 1991, Bloom described performing the first stage laparoscopically.⁷ In 1999, Lindgren et al reported on laparoscopic single-stage FSO.⁸

An alternative approach to the intra-abdominal testis is testicular autotransplantation.⁹ In this procedure the testicular artery and vein are divided and anastomosed to the inferior epigastric vessels using microvascular surgical techniques. Table 1 summarises the outcomes of the various surgical approaches to the impalpable testis. Comparison of the different approaches is difficult because of variation in the patient age and duration of follow-up in the different reported series. In a literature review, Docimo¹⁰ compared the results of the various treatment options for the undescended testis, including intra-abdominal testes. He reported 321 one-stage FSO with a 67% success rate and 56 two-stage FSO with a 78% success rate. He demonstrated no statistical difference in the results between the one- and two-stage approaches.

We believe that our success with the one-stage FSO (82%), by one urologist over 21 years, is comparable with most other series (see Table 1). We report some atrophy in four cases, when compared to the normal contralateral testis. Follow-up of 22 months is comparable with some of the larger series.

Our results demonstrate the efficacy of the single-stage Fowler–Stephens approach. Undoubtedly earlier operative intervention and the laparoscopic single-stage orchidopexy warrant further evaluation including longer follow-up and the assessment of testicular growth and fertility after puberty in these patients. In due course, the efficacy of the various surgical approaches may be resolved by performing randomised, controlled, prospective studies.

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