
Scrotal Incision Orchiopexy for Undescended Testes With or Without a Patent Processus Vaginalis

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Purpose: Bianchi and Squire first described scrotal incision orchiopexy as an alternative to the traditional inguinal approach in the 1980s. The goal of this study was to review our series of scrotal orchiopexies to evaluate operative times, success rates and complications in patients with and without a patent processus vaginalis.

Materials and Methods: A total of 121 scrotal incision orchiopexies were performed in 103 patients with palpable undescended testes between November 2002 and January 2006. This technique involves manipulation of the testis down to the scrotum so that it is secured between the thumb and index finger as fixation is performed. Charts were retrospectively reviewed to assess operative times as well as position and size of the testes at followup.

Results: Patient age ranged from 6 months to 13 years (mean 4.5 years). The processus vaginalis was patent in 75 testes (62%). A total of 121 testes (100%) were successfully placed within the scrotum using a single incision. Operative times ranged from 7 to 36 minutes (mean 18.9). There were no cases of testicular atrophy or ascent, hernia or hydrocele formation with followup that ranged from 6 months to 1 year. The only complications were 4 wound infections (3.3%), which were successfully treated with antibiotics.

Conclusions: The scrotal incision technique is an underused method of orchiopexy regardless of patency of the processus vaginalis. Shorter operative times, comparable success and complication rates, and a more cosmetically appealing result compared to the traditional inguinal approach make scrotal orchiopexy an attractive alternative.

Key Words: cryptorchidism; urologic surgical procedures, male; testis

The rate of cryptorchidism has historically been reported to be 3% to 5% among full-term neonates,¹ and has remained at this rate according to recent studies.^{2,3} Fortunately, the incidence decreases to approximately 0.8% by age 1 year secondary to spontaneous descent, and remains at that level throughout adulthood⁴⁻⁶ However, surgical intervention is warranted in patients whose testes do not descend to improve fertility, allow surveillance for malignancy and reduce the risk of torsion.

Traditionally, the inguinal approach has been used to perform orchiopexy when the testes are palpable. However, in the 1980s a single incision, transscrotal technique was introduced by Bianchi and Squire.⁷ The benefits of using this method include reduced operative times, less postoperative pain and an esthetically pleasing single scrotal wound. The concern with this approach is that there may be a high incidence of hernias or hydroceles if ligation of the sac is not high enough, or that reascent may occur if the proximal attachments are not divided. Recently, there have been studies showing excellent success rates with minimal complications in a limited number of patients.⁸⁻¹¹ We reviewed a large series of scrotal incision orchiopexies to evaluate operative times, success rates and complications.

MATERIALS AND METHODS

A total of 121 scrotal incision orchiopexies were performed in 103 patients with palpable undescended testes by 1 of 2 surgeons (AK, HS) between November 2002 and January 2006. Charts were retrospectively reviewed to obtain demographic data on the patients, including laterality, preoperative position of the testes and patency of the processus vaginalis. An additional goal was to assess operative times, position and size of the testis at initial followup, and postoperative complications. The vast majority of palpable testes can be approached in this fashion. However, the percentage of total orchiopexies performed in this manner was not addressed in this study.

The scrotal incision orchiopexy technique involves manipulation of the testis down to the scrotum so that it is secured between the thumb and index finger while the initial dissection is performed (fig. 1). The patient is examined under anesthesia before an incision is made to evaluate if the testis can be brought down to or near the scrotum. We opt for a traditional 2-incision approach if the surgeon is unable to perform this maneuver. Retractable testes, which are those that remain within the scrotum after tension is released, were excluded from this study.

With the surgeon maintaining caudal traction on the testis, an incision is created and a dartos pouch is formed. The incision is then carried down to the tunica vaginalis and opened so that the testis can be delivered through the wound. It is not necessary to divide the gubernaculum, since the testis is already in the scrotum. If the processus vaginalis is patent, peritoneal fluid is often apparent. A

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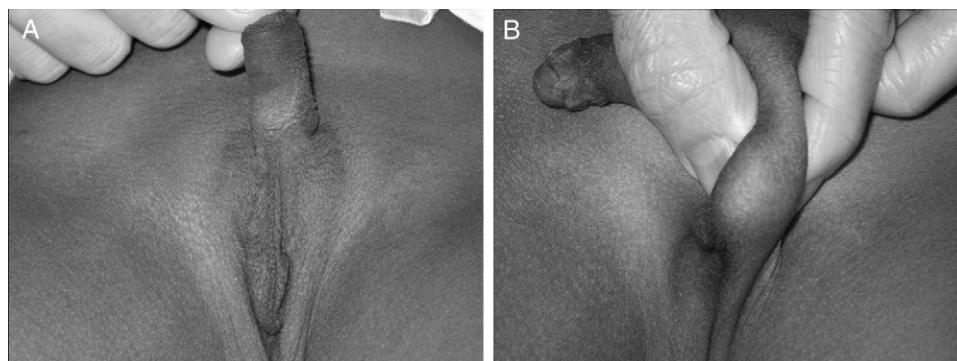


FIG. 1. A, preoperative appearance of bilateral palpable testes and flattened scrotum. B, surgeon maintains traction between thumb and index finger to aid in initial dissection. Marking pen line of incision is helpful, since scrotum is often distorted substantially when traction on testis is maintained.

clamp and/or a small Deaver retractor may be inserted to check patency.

The processus vaginalis is then separated off the cord structures, as is routine for an inguinal approach. A suture ligature is then applied if it is patent (fig. 2). If the processus is closed, simple division of this layer is often all that is needed to release the testis from cephalad retraction. Following this maneuver the testis is released and should remain in a scrotal position under no tension. Finally, the testis is placed within the dartos pouch, and an absorbable stitch into the tunica albuginea is used to fix the testis in the proper orientation (fig. 3).

RESULTS

Patient age ranged from 6 months to 13 years (mean 4.5 years). Of 103 patients 18 (17.5%) had bilateral undescended testes, 33 (32%) had a left undescended testis and 52 (50.5%) had a right undescended testis. Position of the testis preoperatively was considered to be ectopic in 10 patients (8.3%), intracanalicular in 14 (11.6%), at the scrotal neck in 17 (14%) and in the superficial inguinal pouch in 80 (66.1%). The processus vaginalis was patent in 75 testes (62%). True hernia of visceral contents was not seen in any case.

A total of 121 attempted scrotal approaches (100%) were performed successfully without an additional inguinal incision to complete the orchiopexy. Operative times ranged

from 7 to 36 minutes (mean 18.9) but could only be determined for 97 of the 121 cases because concomitant procedures were performed. There were no cases of testicular atrophy or ascent, or hernia or hydrocele formation with followup that ranged from 6 months to 1 year. The only complications were 4 wound infections (3.3%), which were successfully treated with antibiotics.

DISCUSSION

The scrotal approach for performing orchiopexy is an alternative to the traditional inguinal technique, and allows the surgeon to accomplish the same results using only 1 incision. The controversy surrounding this technique is that the dissection cannot be taken high enough to allow for tension-free placement of the testis into the scrotum. There is also concern that a single incision does not allow a patent processus to be adequately ligated so as to avoid hernia or hydrocele formation postoperatively.

Bianchi and Squire, in their original description of the procedure, made a high scrotal incision and ligated the processus proximal to the external ring.⁷ Their success rate was 95.8% for 120 attempted scrotal approaches. Their failures occurred when the testes were in a higher position, such as in the inguinal canal or just at the external ring. Iyer et al reported 367 orchiopexies performed via a high scrotal

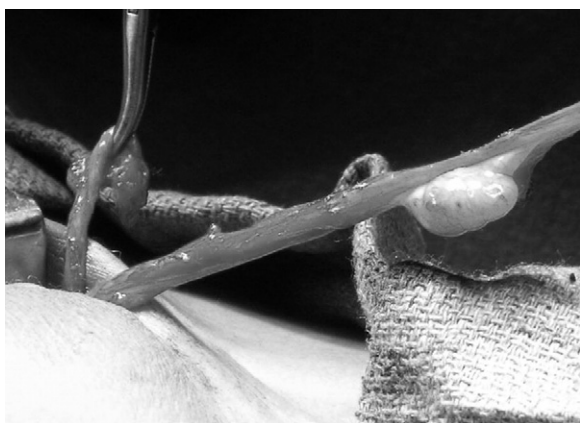


FIG. 2. Processus vaginalis is dissected off cord structures and then assessed for patency. High suture ligation is performed if it is found to be open, and it is then allowed to retract back into internal ring.



FIG. 3. Testes are subsequently placed under no tension within dartos pouches once adequate length of each spermatic cord has been achieved.

approach and had a success rate of 96.2%.⁸ Their complications included 3 patients with atrophy, 4 with hematoma and 2 with wound infections. They did not attempt this approach when the position was considered high in the inguinal canal. More recently, other series have demonstrated similar success and complication rates.^{9,10}

Parsons et al reported using a low scrotal incision initially for 71 palpable testes, and then assessing for patency.¹¹ Of the testes in their series 20% had a patent processus, and in these instances a second inguinal incision was always made. These authors advocate scrotal orchiopexy for patients without a patent processus. However, they believe that a patent sac necessitates a second inguinal incision to avoid the complexity associated with ligation via a scrotal incision. The patency rate of the processus during orchiopexy was slightly higher, as reported by Dayanc et al, at 36.1%.¹² More importantly, they were able to perform this procedure successfully in 94.4% of the cases and noted no hernia or hydrocele formation on followup.

Our experience with a scrotal approach with or without a patent processus vaginalis is among the largest series to date. We were able to perform orchiopexy successfully via a single incision for palpable testes regardless of the preoperative position, including 14 (11.6%) that were considered to be intracanalicular. The learning curve for this technique is approximately 5 to 10 cases, and it can easily be taught to residents and fellows. The only complications in our series were 4 wound infections, and there was no development of hernia or hydrocele on followup. Long-term followup was not available for this patient population, and complications beyond 1 year, while they do exist, were not assessed.

With the majority of these procedures being performed in infants there is little difficulty in obtaining proper retraction to visualize and dissect past the level of the external ring. The external oblique fascia is not incised because a patent hernia sac can be pulled down through the external ring to be ligated and then allowed to retract back through the internal ring. We believe that examination of the patient under anesthesia before making any incision is the most important predictor of success with the single incision, and we do not attempt this approach if we are unable to manipulate the testes down to or near the scrotum. Furthermore, using this technique should be the initial approach because

it in no way precludes one from using a second inguinal incision if adequate tension-free placement of the testis within the scrotum is not achieved.

CONCLUSIONS

The scrotal incision technique is a viable alternative to the traditional 2-incision approach. Position of the palpable testis and patency of the processus vaginalis are not contraindications to performing orchiopexy with this method if the testis can be brought down to the scrotum preoperatively. The procedure results in shorter operative times, similar success and complication rates, and a more cosmetically appealing outcome compared to inguinal orchiopexy.

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