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Do blind ending vas deferens and testicular vessels on inguinal exploration always indicate a vanishing testis?

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Abstract In nonpalpable testis cases, laparoscopically blind-ending vas deferens and testicular vessels prior to entering the internal ring is sufficient to diagnose a "vanishing" testis, which requires no further exploration. Laparoscopic identification of cord structures entering the internal ring is required the exploration of the inguinal canal to find a testis or to rule out a "vanishing" testis". However, the need for further investigation in cases that identified the blind-ending cord structures on inguinal canal is questioned. Herein, we present a case of the scrotal nubbin along with blind ending cord structures during inguinal exploration.

Key Words Nonpalpable testis; laparoscopy; nubbin; vanishing testis.

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INTRODUCTION

Approximately 1% of boys have an undescended testis, and about 20% of them are nonpalpable [1]. Among the reasons for non-palpable testis (NPT) is agenesis of

testis, intra-abdominal testis, inguinal or intra-abdominal vanishing testis [2].

Diagnostic laparoscopy is widely accepted as useful for the management of patients with a NPT. When testis is observed during endoscopy, and if laparoscopy reveals both the vas deferens and the vessels enter the closed internal ring, inguinal exploration is essential to clarify the exact anatomy; most of these patients have testicular nubbin below the external inguinal ring [3,4]. On the other hand, it is commonly thought that the testis is truly vanished when laparoscopy reveals a blind-ending vas deferens and blind-ending spermatic vessels above a closed internal ring. However, it is not clear, when the blind-ending vas deferens and vessels are found during inguinal exploration, whether subsequent scrotal exploration is needed. We aim to present a case of NPT that is found a scrotal nubbin associated with the inguinal exploration of both blind-ending vas and vessels and to review of the literature.

CASE REPORT

A 14- month old male infant was brought with an empty right scrotum to our outpatient department. In external genital examination, right testis was not palpable in right scrotum and inguinal area but the left testis was normally palpated in the ipsilateral hemiscrotum. Ultrasonography showed no testis on the right inguino-scrotal region and in intra-abdominal location. To investigate the right non-palpable testis, diagnostic laparoscopy was decided according to the findings of physical examination and USG. Under general anesthesia, the patient was reexamined to determine if the testis was indeed nonpalpable. A right testis or remnant could not be palpated on examination, and laparoscopy was started. Pneumoperitoneum was created, with insufflating carbon dioxide to 10 mmHg after a Veress needle was punctured through an infra-umbilical incision. A 5-mm trocar sheath was inserted steadily after withdrawing the needle. A 30^{o} telescope was advanced into the abdomen

through trocar. Firstly, intra-abdominal examination was conducted to rule out any injury; and then specifically focused on both internal inguinal rings. On both sides of the testicular vessels and the vas deferens were entering into closed inguinal ring. The procedure was terminated, right inguinal canal was opened, and the inguinal exploration was performed. During exploration, we detected that both the testicular vessels and the vas deferens were ending blindly on the spermatic cord. A thin fibrous band was also continuing into the scrotum in this situation (Fig. 1).

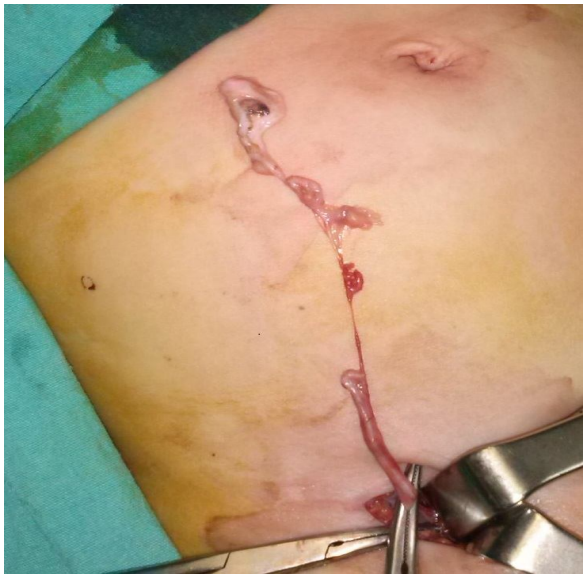

Fig. 1. Intraoperative photograph shows blind-ending the vas deferens and the testicular vessels along with scrotal nubbin on inguinal exploration.

When exploration was continued, a testicular nubbin was found in the scrotum. The testicular remnant was removed, and operation terminated. The postoperative period was uneventful, and the patient was discharged the same day. Histopathology showed presence of atrophic testis without germ cell.

DISCUSSION

Since Cortesi et al. [5] first reported the use of laparoscopy for investigation of NPT in 1976, both diagnostic and therapeutic laparoscopy in patients with NPT has gradually gained a greater acceptance among physicians. Based on the various series, the accuracy of laparoscopy to prove the localization of a testis or its absence has been reported to be between 88-100% [3]. The important feature of laparoscopy for NPT is the demonstration of the testis, the testicular vessels and the vas deferens. Appearance of the internal inguinal canal is another important visual finding in laparoscopy, because absent or vanishing testes are likely associated with a closed

processus vaginalis [4]. The most frequent laparoscopic findings include an intra-abdominal testis in 40% of cases, the blind ending cord structures in the abdomen in 15%, or the cord structures entering the internal inguinal ring in 45% [6].

Laparoscopy allows the surgeon to locate and manipulate of a testis found above the internal ring. It has been suggested that when the testicular vessels and the vas deferens ending blindly before to entering the internal ring is detected laparoscopically, it is sufficient to diagnose a "vanishing" testis [3]. The term of 'vanishing testis' or 'testicular regression syndrome' is a condition which is considered as the subsequent atrophy and disappearance in fetal or perinatal period of an initially normal testis, usually as a consequence of perinatal testicular torsion [7]. Belman and Rushton [7] categorized the vanishing testis into two groups according to the termination location of cord structures. If a testis is not identified in the abdomen and atretic testicular vessels and vas deferens are noted to terminate in the region of the closed internal inguinal ring, it is called as "intra-abdominal vanishing testis". On the other hand, when atretic cord structures are found on inguinal exploration, this has been termed an 'inguinal vanishing testis'.

In our case, the testicular vessels and the vas deferens were entering the inguinal ring during laparoscopy, and inguinal exploration was carried out to find a testis or nubbin. However, there was seen the testicular vessels and the vas deferens terminating blindly on the spermatic cord. According to the literature, this situation indicates an inguinal vanishing testis. Because of a thin fibrous band was also continuing into the scrotum, the procedure was not terminated and the dissection was continued to the scrotum. Finally a scrotal nubbin was found.

If the normal testicular vessels and a vas deferens is entering the internal ring, there has been advised an exploration of the inguinal canal to find a viable or atrophic testis or to verify vanishing testis [4]. It has been proposed that there is no need further

evaluation in the cases with the intra-abdominal blind-ending testicular vessels and vas deferens, whereas there is not clear what should be done when encountered blind-ending cord structures on inguinal region [3,8]. We thought that a dilemma emerges when cord structures terminated blindly in inguinal exploration is seen as in our case. In this situation, it is not clear whether testicular remnants are present below the internal ring. The major limitation of the knowledge on this subject is that inguinal or scrotal exploration was not carried out in almost all patients with cord structures.

Belman and Rushton [7] pointed out that perinatal testicular torsion occurs neither in the abdomen nor inguinal canal and is almost always a scrotal event. Thus they recommended that the diagnosis can be confirmed in almost all cases by simple scrotal exploration. Thus, testicular nubbin in few series of NPT with blind ending cord structures also has been reported. Snodgrass et al. [9] reported six scrotal nubbins associated with the laparoscopic findings of both blind ending cord structures. Ueda et al. [8] had found an extra-abdominal testicular nubbin, regardless of the status of the testicular vessels and the vas deferens at the internal ring, in 77 of 79 patients with a closed internal ring. They have stated that a closed internal ring without an abdominal testis on laparoscopy was always associated with the presence of an extra-abdominal nubbin in unilateral NPT.

Snodgrass et al. [9] reported that they preferred initially scrotal exploration than laparoscopy to detect and facilitate the management of the extra-abdominal testes and testicular remnants found in the majority of patients with unilateral nonpalpable testis. Bae et al. [10] also stated that the benefits of initial inguinal approach for unilateral non-palpable testis should be compared with diagnostic laparoscopy followed by groin dissection to remove a nubbin or performing orchiopexy.

As first step, the benefits of scrotal exploration in these cases could be

questioned. Elder [11] has noted that the potential risk of making a misdiagnosis of a scrotal nubbin is the reason for having a low threshold for performing laparoscopy because the risk of subsequent testicular malignancy in an abdominal testis is significant.

In conclusion, laparoscopy for researching of non-palpable testis is still a valuable method. Blind ending cord structures may not always mark vanishing testis. Scrotal exploration in cases with NPT may be preferred as initial procedure, but the misdiagnosis of a scrotal nubbin should be taken into account a potential risk of malignancy in an intra-abdominal testis.

CONFLICT OF INTEREST

None declared.

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