Andrology and fertility

Laparoscopic assisted treatment of obstructive azoospermia after hernia repair: A case report

Longyuhe Yang, MD, Xuede Qiu, Phd, MD *

Department of Urology, The Second Affiliated Hospital of Kunming Medical University, Ma Yuan 1, Xishan District, Kunming, Yunnan Province, 650032, China

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A B S T R A C T

The iatrogenic injury of the vas deferens after bilateral hernia repair is rarely found in childhood, and can only diagnose when the patient is infertile after marriage. Azoospermia caused by iatrogenic bilateral vas deferens injury is common in clinic. In the past, patients who had varicocele ligation, pelvic surgery, kidney transplantation and testicular descent fixation may have iatrogenic vas deferens injury. Hernia repair is the most common cause of vas deferens injury, most of which is vas deferens cut and ligated. In this report, we describe a case of obstructive azoospermia after bilateral hernia repair, which was naturally pregnant after laparoscopic assisted microsurgery.

Introduction

With the popularization and application of microsurgery, the treatment of male infertility by vasectomy under microscope has stepped to a new stage, facilitating the postoperative recanalization rate and natural pregnancy rate, which makes it gradually the substitute for the traditional operational system and become the first choice for the treatment of obstructive azoospermia. For some patients with specific location of vas deferens obstruction, other methods are needed to assist the operation.

Case presentation

The 35-year-old male patient did not take contraceptive measures for 2 years after marriage, which was a history of bilateral inguinal hernia repair. No sperm detected more than twice in semen routine examina-
tion, the total testosterone (T) and follicle stimulating hormone (FSH) in sex hormone serum were in normal range; the semen volume was normal ≥ 1.5mL, pH value ≥ 7.2, and the level of neutral alpha glucosidase in seminal plasma decreased (normal reference value ≥ 20mU/ ejaculation); few obvious abnormality was found in prostate and seminval vesicle by transrectal ultrasound, and the size and texture of bilateral testicles were normal by physical examination, both of which were normal. The lateral epididymis was enlarged, the vas deferens of scrotum was dilated by color Doppler ultrasonography, and there was no factor related to infertility in the gynecology examination of spouse. The primary diagnosis was obstructive azoospermia.

The patient underwent general anesthesis, and he took a supine position after took effect. Routine disinfection of the lower abdomen and perineum was laid in the sterile sheet. The catheter was placed during the operation. Take the middle incision of scrotum, explore the bilateral testicles, and find that the resistance of injecting water into the distal end of vas deferens by children’s trocar is large no blue dye in urine is found after injecting diluted methylene blue solution; take the vas deferens smear find the sperm under microscope, consider the obstruction of the distal end of vas deferens; take the original incision of inguinal hernia repair and cut the subcutaneous one by one. The vas deferens were separated from each layer of tissues and explored up and down along the vas deferens. During the operation, the broken end of vas deferens was found, but the distal vas deferens was not found to the inner ring mouth. Laparoscopy was used to explore the abdominal cavity to find them. The vas deferens were found in the peritoneum (Fig. 1). The vas deferens were found located under laparoscope. The tissues were carefully dissociated along the vas deferens to the seminal vesicles to endow the vas deferens with adequate length. The vas deferens were pulled to the groin area by forceps (Fig. 2). The vas deferens were fixed properly to prevent them from retraction. The abdominal cavity and abdominal wall were checked to ensure there was no bleeding. The instruments were checked to be correct. The abdominal wall incision was closed. The distal vas deferens were punctured with children’s trocar needle. The resistance of the distal end of the water injection was small. A 1ml syringe was used to inject diluted methylene blue solution. Blue

* Corresponding author.
E-mail addresses: 394774084@qq.com (L. Yang), scottqiucom@126.com (X. Qiu).

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staining of urine was seen. It was confirmed that the distal vas deferens were connected and aligned in the groin area without tension. The mucosal layer was first sutured by 9-0 Prolene single needle suture in the position of 2, 4, 6, 8, 10 and 12 o’clock of vas deferens, while the muscular layer was sutured by 9-0 Prolene single needle suture in 6 stitches. When inserting the needle, it should be avoided to penetrate the mucosal layer too deep. Then 8-0 Prolene single needle suture was used to intermittently suture the outer membrane layer, and 6 needles were used to close the outer membrane layer. Operate the opposite side as well.

After the operation, the patients were pressed and bandaged, rested in bed for 2–3 days, under antibiotics for 1–3 days, and forbidden to have sex for at least 6 weeks, and should avoid intense exercise for half a year. The recovery of the operation would be observed in 7–15 days after the operation. The semen routine was rechecked every 3 months after the operation. The quality of sperm and semen were observed. The pregnancy of the spouse was followed up by telephone. The sperm concentration was $25.6 \times 10^6$ /mL, and the total sperm activity was 36.3% respectively.

**Discussion/conclusion**

Indirect inguinal hernia is a common clinical disease,\(^1\) the operation in children is the most common cause of iatrogenic vas deferens injury. If not handled properly, various complications may occur. If the operation of indirect inguinal hernia affects the blood supply of testis, iatrogenic testicular atrophy may also occur.\(^2\) If bilateral vas deferens damage occurs, when the child grow up to the reproductive stage, which will lead to male infertility from obstructive azoospermia. Because of the unpredictable length of vas deferens occlusion and the location of the injury, it is difficult to explore the distal end of vas deferens. If open exploration is used, it is difficult to find the distal end of vas deferens, and patients will encounter more serious challenges despite the great anastomotic tension and difficulty. Generally, it is recommended that patients seek the assistance of assisted reproduction.

Laparoscopic assisted microsurgical vasectomy, a combination of technical experience and innovation, provides a better method to choose and technical guarantee for vasectomy.\(^3\) The obstructive azoospermia caused by bilateral inguinal hernia repair is relatively rare in clinical practice. Laparoscopic technique makes it very easy to find the distal vas deferens and avoids greater surgical trauma. The vas deferens anastomosis of microsurgical technique greatly improves the valid rate of the operation.\(^4\) Besides, it can make the patients get the chance of seminal recanalization and natural reproduction, which is a very valuable treatment method.

**Authors’ contributions**

All authors have made substantial contributions to all of the following, the conception and design of the study: Longyuhe Yang; acquisition of data: Xuede Qiu; analysis and interpretation of data: Longyuhe Yang; drafting the article: Longyuhe Yang; All authors read and approved the final manuscript.

**Declaration of competing interest**

There was no conflict of interest in this article.

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