Applied Anatomy of Varicocele Treated by Ligation of Spermatic Vein under Microscope

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Abstract: Under microscope, varicocele ligation is a good treatment for the common and frequently occurring diseases of young adults. From the perspective of application, the incidence rate of adult patients is 15%. The incidence of male infertility is 40%, and the incidence rate of pain and discomfort is 20%, which is one of the important factors of male infertility. From the medical point of view, normal fertility of varicocele does not need treatment. Treatment is needed only if it leads to varicocele complications and infertility. This paper discusses the applied anatomy of varicocele ligation under microscope.

1. Introduction

At present, microscopic varicocele ligation in the treatment of infertility caused by varicocele has been better applied in developed countries, and the comprehensive effect is better. Varicocele (VC) is a kind of vascular disease. The root of this disease is the tendril venous plexus in spermatic cord. It is caused by the poor venous blood return, and also partly caused by the damage of venous valve function. It is directly manifested as the slow process of blood return, which leads to the extension, expansion and varicose of local veins. It is a common disease in urology and andrology in clinic [1].

2. Overview of Varicocele Ligation under Microscope

The microscopic varicocele ligation (MV) is mainly operated with the help of the operating microscope. It will also use the magnifying glass, and by protecting the spermatic artery and lymphatic vessels, it can better identify the small veins, and ligate them under microscope. The treatment produces much less complications than traditional surgery. According to the literature review of CNKI, compared with the traditional operation, the overall recurrence rate, testicular hydrocele and spermatic cord are mature after MV operation, which has become an effective method for the treatment of varicocele. From the perspective of varicocele surgery, the current arterial injury and other complications are relatively low. At the same time, it has a positive improvement effect on semen parameters and sperm DNA integrity, and the performance is better [2]. From the clinical practice, there are three main techniques of ligation of varicocele under microscope. The first is open inguinal surgery, which has large wound and many complications. The second is laparoscopic varicocele ligation, which has smaller wound than the first, but requires better skills, and has limited protection for micro vessels and lymphatic vessels. The third is microscopic varicocele ligation more in line with the concept of minimally invasive modern medicine, and it has fewer complications, faster recovery. From the perspective of the development of modern medical diagnosis and treatment technology, any technological development is inseparable from the change of traditional technology. Similarly, the improvement of ligation of varicocele under microscope also depends on the experience of traditional technology. From the perspective of the development trend of surgery, the current operation for human body begins to turn to minimally invasive and refined. With the development of science and technology, the change

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of medical science and technology are conducive to high-tech means to ensure the safety of surgery. The local vein ligation under microscope can be more comprehensive and thorough, and can better retain the micro ecology of arteries and lymphatic vessels, improve the postoperative semen quality significantly. And it has faster recovery, fewer complications and lower recurrence rate than traditional operation. The clinical practice has further proved that the ligation of varicocele under microscope has little trauma and very low surgical risk [3].

3. Advances and Characteristics of Spermatic Vein Ligation under Microscope

3.1 Advances of Varicocele Ligation under Microscope

From the clinical practice, varicocele ligation under microscope can significantly improve the sperm motility and pregnancy rate, mainly reflected in the fact that it can better ligate the spermatic vein completeness, and improve the environment of spermatozoa, improve sperm quality, so as to improve sperm motility and reflect its advanced nature.

From the clinical practice, ligation of varicocele under microscope can significantly reduce the postoperative complications. Because the incision under the outer ring is lower, which can be better observed with the help of high-power microscope, and the degree of refinement will be higher, so it will effectively protect the testicular artery and lymphatic vessel, and reduce the incidence of complications, such as the occurrence of testicular hydrocele, testicular atrophy.

From the clinical practice, in varicocele ligation under microscope, the position of the spermatic cord under the outer ring is superficial, and it is not difficult in operation skills, reflected in the fact that the surgical suture anatomical levels are relatively fewer, and the postoperative infection rate is relatively low.

3.2 Characteristics of Varicocele Ligation under Microscope

Varicocele ligation under microscope is characterized by small incision, which not only has low position, but also can meet the characteristics of strong concealment. Patients' incision can be fully covered by pubic hair after operation, which has less impact on psychology and does not affect appearance.

Varicocele ligation under microscope can significantly reduce the recurrence rate, because compared with traditional surgery, it can identify small veins and ligate them in the operation process, unlike traditional surgery, which is easy to miss ligation. According to the existing literature, the recurrence rate of microsurgical varicocele ligation is only 0-2%, while that of non-microsurgical varicocele ligation is as high as 10% - 18%. The gap is very obvious.

The anesthesia of varicocele ligation under microscope is simple, which can also be afforded by patients with financial difficulties, and the recovery period is short. The intraspinal anesthesia is enough and there is no need of dropper anesthesia. The intraspinal anesthesia has less nerve damage, less adverse reactions, and can ensure fast postoperative recovery and shorter hospitalization period.

Varicocele ligation under microscope can be selected as reoperation after recurrence, that is, compared with traditional operation, it is repeatable. Patients with recurrence after microsurgical ligation of varicocele can have the chance of reoperation.

4. Anatomic Analysis on Varicocele Ligation under Microscope

From the clinical practice of the treatment of varicocele, whether the way can reflect the advantages and disadvantages of the operation is very important. It should have lower recurrence rate, incidence of complications and operation cost, and varicocele ligation under microscope can meet these requirements. We need to further consider the role of improving the quality of semen and pregnancy rate. According to the literature of CNKI and the clinical research results of our hospital, varicocele ligation under microscope is the best. Generally, the semen improvement rate after varicocele ligation is less than 75%, and the pregnancy rate is less than 45%. After ligation of varicocele under microscope, most patients need more time to improve the quality of semen, and the time span is different from people to person. Some people need half a year, but others need 1-2

years to recover. In the recovery period, patients must carry out regular review and self-observation, and timely tell the doctor about the postoperative recovery. The doctor can timely adjust the treatment plan according to the patients' feedback, so as to obtain the best curative effect.

The inguinal approach and the inferior outer ring approach can be observed under microscope. Compared with the inguinal approach, the incision 1 cm below the inguinal outer ring is selected. Because the sheath of the external oblique muscle is not opened during the operation, compared with the traditional operation, the incidence of pain after microscopic varicocele ligation is significantly reduced, band the postoperative recovery is fast, and the hospitalization period is short. Although the inferior inguinal approach has more venous branches than the inguinal approach, smaller diameter of the veins, more abundant anastomotic branches, and more difficult ligation of the veins, it is easy to identify under microscope, so that all the spermatic veins can be completely ligated and blocked, and the levator vein and vas deferens vein can be treated at the same time.

The main reason for the recurrence of varicocele after operation is that the clinicians are not skilled and the anatomical level is unclear, which leads to the ligation of internal spermatic vein or the inability to deal with levator vein and vas deferens vein at the same time. Therefore, how to avoid ligation of internal spermatic vein and deal with levator vein and vas deferens vein at the same time is the key to avoid recurrence. According to the "three-layer method", the principle of layered opening and treatment, the veins of levator palpebrae superioris muscle layer are fully ligated. If there are more than two vas deferens, only one vas deferens should be reserved. The doctor can ligate the internal spermatic vein, cut off the silk thread, and perform bipolar electrocoagulation on the small vein less than 1 mm.

The complications of varicocele are mainly related to the ligation of testicular artery and lymphatic vessel. Testicular atrophy and scrotal edema after varicocele ligation are observed under microscope. Therefore, according to the "three-layer" anatomical principle, we can use microscope to assist amplification. By injecting papaverine, increasing blood pressure and compressing scrotum, the arteries, veins and lymphatic vessels of each layer can be clearly identified, which is helpful for the effective identification and preservation of testicular arteries and lymphatic vessels. Ligation of the affected testicular artery during operation can aggravate the atrophy of the affected testis, affect the spermatogenesis of testis and reduce the fertility of patients. Therefore, it is very important to preserve the testicular artery during the operation. However, for male infertility patients caused by VC, the testicular artery should be retained as much as possible during microsurgical varicocele ligation, so as to protect testicular function to the greatest extent, restore testicular spermatogenic function as soon as possible, improve semen quality and fertility.

5. Conclusion

Varicocele is a kind of vascular disease, which mostly occurs in adult men. It is a common disease in urology andrology. At present, microscopic varicocele ligation is the first choice of surgical treatment. From the clinical practice, microscopic varicocele ligation can fully retain the testicular artery and lymphatic vessel, and in the process of operation, the varicocele ligation is more complete. And there are fewer postoperative complications. So, it is worthy of clinical application and promotion.

Acknowledgments

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