Microscopic assisted spermatocelectomy – a fertility preserving procedure

C. Gagiu, S. Voinea, I. Manea, A. Preda, C. Baston,
A. Ţurcanu, R. Duşcă, A. Ion, I. Sinescu
Center of Uronephrology and Renal Transpantation, Fundeni Clinical Institute

Abstract

Introduction and objective. The word spermatocele is derived from the greek words spermatos – sperm and kele – cyst. The spermatocele is an extratesticular cystic mass frequently localized at the head of the epididymis and it is produced by the obstruction of a rete testis efferent duct. It is frequently idiopathic and rarely is secondary to infection, inflammation or trauma. The size of spermatocele range from millimeters to centimeters and the maximum incidence is between 4th and 5th decade. The majority of small, asymptomatic spermatocele needs surveillance and no treatment. The most common indications for surgery is large spermatocele (> 1 cm) associated with pain. Far less frequent the procedure is performed when malignancy could not be excluded by noninvasive data. Recently was considered that large spermatocele could cause infertility and spermatocelectomy can be indicated in a patient with no other proven cause of infertility. It can be traditionally treated by minimal invasive techniques like aspiration and scletotherapy or by open macroscopic surgery. These procedures are associated by the majority of authors with high rate of complications like recurrence and decreasing the fertility potential. Recent papers report a better outcome and low rate of complications after microscopic assisted spermatocelectomy. Using an operative microscope during procedure could ensure a complete excision of the cyst with a minimum risk of injury to the epididymis and testicular blood supply. The goal of this paper is to present our technique of microscopic assisted spermatocelectomy and the outcome of the procedure in a case of a man who wishes to preserve the fertility potential.
Materials and method. 46 years old male was admitted for chronic left testicular pain and was diagnosed clinically and by ultrasound with a 4/5 cm cystic lesion localized at the left epididymal head. The patient's sperm analysis was normal and he was interested in preserving his reproductive function. A 3 cm scrotal raphe incision was performed. After performing a large opening in tunica vaginalis the testis was delivered and the operative microscope was brought in the surgical field. The vaginalis was incised at junction between spermatocele and epididymis and the dissection was performed carefully in order to avoid opening either the spermatocele or the rete testis. The excision of the cyst was complete and supplying efferent duct was legated. The epididymis was inspected under highest magnification for bleeding or iatrogenic opening of the tubules.
Results. The microscopic analysis confirmed the presence of sperm in the cystic liquid. The post–operatory course was uneventful and the patient was discharged 24 hours after surgery. At 3 months post-operatory check-up the patient was asymptomatic and the sperm analysis and ultrasound were normal.
Conclusions. Traditional treatments for spermatocele are associated with high rate of complications. Using the magnification during spermatocelectomy could decrease the risk of epididymal injury and subsequent blockage, recurrence of spermatocele and testicular atrophy. The microscopic assisted spermatocelectomy could become the gold standard of treatment in patients with symptomatic and large spermatocele who wish to preserve the fertility potential.

Keywords: spermatocele, infertility, microsurgery

Correspondence to: Voinea Sebastian, M.D., PhD.
Center of Uronephrology and Renal Transplantation, Fundeni Clinical Institute
258, Fundeni Street, Bucharest, Romania, 022328
Phone: +40723381071
Email: voiniseb@yahoo.com

Introduction and objective

The word spermatocele is derived from the greek words spermatos – sperm and kele – cyst. The spermatocele is an extratesticular cystic mass frequently arised from the head of the epididymis and it is produced by the obstruction of a rete testis efferent duct. Most frequently the spermatocele is idiopathic, rarely it is secondary to infection, inflammation or trauma. The size of spermatocele range from millimeters to centimeters and the maximum incidence is between 4th and 5th decade. In 30% of cases the spermatocele is asymptomatic and it is diagnosed during examination of the scrotum. Patients with large spermatocele could complain of local discomfort, pain or scrotal swelling. Local examination reveals a cystic mass, transiluminant, smooth, mobile, painless, located at the upper pole of the epididymis[3,4,7,8]. The clinical differential diagnosis should be done with hydrocele, epididymal cyst, varicocele, scrotal infection or tumors. Scrotal ultrasound examination identifies hypoechoic mass, most commonly of 1-2 cm, with posterior enhancement, located at the head of the epididymis[1-4,7-9]. Diagnosis is obtained by identifying intracystic spermatozoa[10].

Small spermatocele, asymptomatic, should be treated conservatively. Symptomatic treatment consist in NSAIDs, analgesics and, less frequently, antibiotics when there are signs of epididymitis.

The most common indications for surgery are large spermatocele (> 1 cm) associated with pain or discomfort or for spermatocele to whom malignancy could not be excluded by noninvasive data[1,3-5,9]. It can be traditionally treated by minimal invasive techniques like aspiration and scletotherapy or by open macroscopic surgery.

Due to the increased complications potential, ideal surgical technique choice to cure the spermatocele still remains a controversial topic. Although minimally invasive, percutaneous fluid aspiration from the spermatocele can cause irreversible damage to the epididymis and testis. Other potential complications reported in various studies are: increased serum sperm antibodies, local infections and reccurence of the collection.

Sclerotherapy, another minimally invasive therapeutic alternative is cheap and fast. The disadvantages of this technique consist of low success rate (up to 80% reccurence rate) and impaired semen quality due to the occurrence of chemical epididymitis (local toxic effect of sclerosing agent)[2].

The macroscopic spermatocele excision is the standard procedure and has a major disadvantage: it is highly inaccurate. The spermatocele is located in the immediate vicinity of the efferent tubules of the rete testis. The tubule of the epididymis is a structure with a size of 0.1-0.2 mm. These anatomical particularities explains the high rate of epididymal injury (from 17% to 50%) during the macroscopic spermatocelectomy which may lead to partial or complete obstruction of the epididymo-testicular junction. This can lead to infertility/subfertility, especially in the associated scrotal pathology (single testis, controlateral varicocele, etc.). The incidence of injury the epididymis appears to be higher when the monopolar electrocautery is used. Other reported complications are: scrotal hematoma, important scrotal edema, infection, recurrent spermatocele and testicular atrophy.

Recent papers reported a better outcome and low rate of complications after microscopic assisted spermatocelectomy. However, there are no comparative studies between classical and microscopic assisted approach1. Using an operative microscope during the procedure, could ensure a complete excision of the cyst with a minimum risk of injury to the epididymis and testicular blood supply.

Materials and method

46 years old male with scrotal trauma in adolescence, was admitted for continuous chronic left testicular pain (VAS - 5), left scrotal swelling, symptoms which were gradually higher in the last year. Clinical examination reveals local ovoid tumor mass, soft, smooth and mobile. Scrotal ultrasound reveals a 34/30 mm hypoechoic fine walled mass, with posterior enhancement, arising from the right epididymal head (Fig. 1 and 2). The patient's sperm analysis was normal and he was interested in preserving his reproductive function.

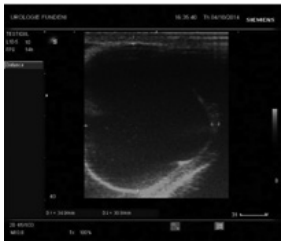


Fig. 1 Ultrasonography – spermatocele

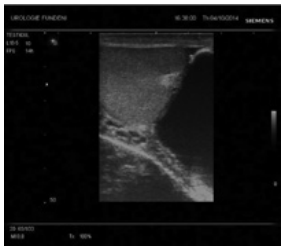


Fig. 2 Ultrasonography – testis and spermatocele

Surgical technique

To perform the surgery, in addition to minor surgery instruments set, the microsurgery instruments set with microsurgery bipolar coagulation forceps was needed. With the patient seated in the supine position and spinal anesthesia, we performed a 3 cm longitudinal scrotal raphe incision. After performing a large opening in tunica vaginalis, the testis, epididymis and the spermatocele were delivered and the operative microscope was brought in the surgical field (Fig. 3).

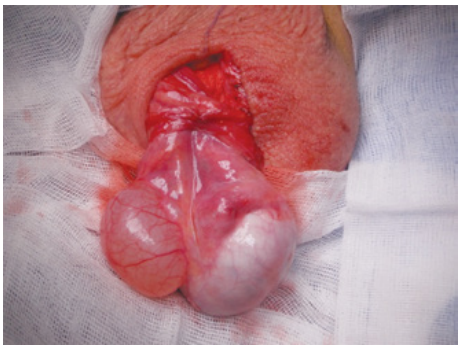


Fig. 3 Spermatocele – intraoperatory aspect

The epididymal albuginea was incised at junction between spermatocele and epididymis and the dissection was performed carefully in order to avoid opening either the spermatocele or the rete testis, using microsurgical instruments. The complete excision was performed away from the epididymis and spermatocele wall, up to the efferent obstructive tube, on a good cleavage plane (Fig. 4). The supplying efferent duct was ligated with 5-0 vicryl.



Fig. 4 – microscopic assisted spermatocelectomy (intraoperatory aspect)

Results

The microscopic analysis confirmed the presence of sperm in the cystic liquid. The epididymis was inspected under highest magnification for bleeding or iatrogenic opening of the tubule. To close the resection bed, the epididymal albuginea was reapproximated using a with 5-0 PDS running suture. The tunica vaginalis is closed, and the dartos fascia and scrotal skin are closed in anatomical layers with absorbable suture.

Local treatment consisted in ice paks and scrotal support for 48 hours postoperatively. The post–operatory course was uneventful and the patient was discharged 24 hours after surgery. At 3 months post-operatory check-up the patient was asymptomatic (VAS - 1) and the sperm analysis and ultrasound were normal.

Conclusions

Traditional treatments for spermatocele are associated with high rate of complications. Using the magnification during spermatocelectomy could decrease the risk of epididymal injury and subsequent blockage, recurrence of spermatocele and testicular atrophy. The microscopic assisted spermatocelectomy could become the gold standard treatment in patients with symptomatic and large spermatocele who wish to preserve the fertility potential.

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