Case Report

“Through Thick and Thin:” Morphological Spectrum of Epididymal Tubules in Obstructive Azoospermia

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Morphological appearance of the epididymal tubules encountered at the time of microsurgical vasoepididymal anastomosis (VEA) is quite variable. They are the indicators of underlying etiology as well as guide further course of management. We present three cases of obstructive azoospermia with three different morphologies encountered during the microsurgical VEA. As the etiologies encountered in our setup are different from that of the western world, this report highlights the morphological variation of tubules encountered in our subpopulation. This also helps us in deciding the customization of microsurgical VEA accordingly.

Keywords: Infertility, morphology, obstructive azoospermia, sperm, vasoepididymal anastomosis

INTRODUCTION

Morphological appearance of the epididymal tubules encountered at the time of microsurgical vasoepididymal anastomosis (VEA) is quite variable. On one hand, it is an indicator toward the underlying etiology. On the other hand, it helps in deciding the type of anastomosis as well as in prognosticating about the success of the procedure. We present three cases of obstructive azoospermia (OA) with three different morphologies encountered during microsurgical VEA. These highlight the morphological variation of the tubules encountered during scrotal exploration in patients of OA and customization of the VEA procedure according to these.

CASE REPORTS

Case 1

A 28-year-old male with semen analysis suggestive of azoospermia exhibited unilateral left vasal agenesis, whereas thin cord-like vas was palpable on the right side. Ultrasound abdomen did not suggest kidney anomaly while transrectal ultrasound showed normal seminal vesicles. Serum testosterone was 14.53 nmol/L and follicle-stimulating hormone (FSH) was 3.99 IU/L (within normal limits). CFTR mutation was negative in both partners. Fine-needle aspiration cytology (FNAC) was suggestive of maturation up to spermatozoa. On scrotal exploration, left vas deferens was absent as expected. On the right side, the vas was thin and was also obliterated without any lumen to be seen. The epididymis was seen free and was attached to the testis at the cranial end only. The tubules of the epididymis were dilated and turgid [Figure 1a]. The procedure was abandoned and the patient was planned for percutaneous epididymal sperm aspiration and intracytoplasmic sperm injection (ICSI).

Case 2

A 29-year-old male with normovolemic azoospermia and normal clinical examination had palpable epididymal tail. Serum testosterone was 16.1 nmol/L and FSH was 3.75 IU/L (within normal limits). FNAC was suggestive of few spermatozoa with Sertoli cell predominance. He was planned for unilateral VEA. On scrotal exploration, chalky tubules were seen in the region of head, suggesting possibility of infective etiology, with adjacent normal-appearing nondilated tubules [Figure 1b]. The effluent from the incised tubules did not show...
spermatozoa, but a multitubular VEA was performed. Semen analysis after 3 months showed persistent azoospermia. He was given the option of micro-Testicular Sperm Extraction/ Intracytoplasmic Sperm injection TESE/ICSI versus donor insemination (due to financial constraints).

Case 3

A 32-year-old male presented with normal volume semen and azoospermia. Clinical examination was essentially normal, including bilateral palpable vas deferens and turgid epididymal tail. Serum testosterone was 20.2 nmol/L and FSH was 3.31 IU/L (within normal limits). FNAC revealed maturation up to spermatozoa. On scrotal exploration under microscope (×18), tubules appeared turgid and distinct [Figure 2a]. The effluent from the tubules revealed viable, motile sperms [Figure 3]. Microsurgical VEA was performed according to the steps depicted [Figure 2b-d]. After 3 months of the procedure, following semen analysis signified success of the procedure: Semen volume – 2.5 mL; semen concentration – 2.4 million/mL; motility – 20%.

Discussion

Despite the wide availability of assisted reproduction, microsurgical reconstruction (vasovasostomy and VEA) remains a viable option for a substantial subset of population suffering from male infertility.[1] The cost is prohibitive, and also, the chance of getting spontaneous pregnancy after the procedure remains the prime drivers of these procedures. During microsurgical VEA, the epididymal tubules show variable anatomical features depending on the underlying etiology. The three cases highlight the variations encountered during the scrotal exploration in patients of OA.

Patients with vasal agenesis have most dilated tubules due to distal obstruction. In addition, there may be partial or complete agenesis of the epididymis in such case. Other epididymal abnormalities may also be seen as was seen in our patient.[1] Chalky tubules are characteristic of an inflammatory lesion, and the fluid from such tubules rarely shows motile sperms. Occasional lipofuscin may be providing blue-brown discoloration to the epididymal tubules.[2] Due to higher prevalence of genital infections in developing countries, the epididymis may be swollen and turgid, but the dissection of tubules is difficult in such cases due to inflammation and consequential fibrosis. It is difficult to perform VEA in such cases due to scarred epididymis and/or normal-sized tubules.[3]

Idiopathic or postvasectomy secondary obstruction has dilated tubules, and tubular fluid is usually white/pink and has abundant sperms as in Figures 2 and 3. A number of factors determine the success of VEA. Use of microsurgical technology, performance of bilateral anastomosis, corpus or caudal anastomosis, and motile sperm in the effluent are associated with the improvement in patency rate postoperatively.[1,4,5] The tubule diameter has not been objectively studied as prognostic factor for VEA. However, the fact that the tubule diameter is largest in the body and tail and the consequential higher success rate provides an indirect evidence for the same. Through this case report, we highlight that there is morphological variation in the epididymal tubule depending upon the varying etiologies. Hence, not only the factors studied already but also the morphological appearance and overall findings during scrotal exploration affect the final outcome. The infective and idiopathic etiology is much more frequently encountered in the literature from Asian countries when compared...
from the Western literature where the most common cause of such obstruction is postvasectomy. To the best of our knowledge, it is one of the first pictographic descriptions of the morphological variation of the epididymal tubules during VEA and contributes to the literature of male infertility.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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