

## The Role of Vasography in Obstructive Azospermia : A Report of 26 Patients

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### Abstract

26 male patients referred with obstructive azospermia were selected for bilateral vasography. The F.S.H. was normal in 84.6 % of patients. testicular biopsy showed normal spermatogenesis in all biopsied normal sized testes. Obstructions were epididymal in 6 patients, vasal in 6 patients and at the level of ejaculatory ducts in 4 patients. Congenital absence of the vas was unilateral in 6 patients and bilateral in 2 patients. Iatrogenic post-operative obstruction was present in 6 patients and post-inflammatory obstruction was found in 8 patients. The seminal vesicles were dilated unilaterally in 4 patients and bilaterally in 2 patients. They were absent in 4 patients on both sides and in 2 patients on one side. They showed atrophy in 2 patients and were normal in the remaining 8 patients. Vasography proved to be an essential and reliable technique in the diagnosis of the level of obstructive azospermia as well as the underlying etiologic cause of obstruction.

### Introduction

**AZOSPERMIA** is of grave prognostic significance with regard to fertility. It is either production type due to testicular failure or transport type due to failure of sperms to be ejaculated from urethra [1].

Obstructive azospermia represents 7 % of the cases of infertility and carries a good hope for successful microsurgical management [2].

In obstructive azospermia, the volume and consistency of the testes are normal.

The plasma F.S.H. level is within normal range [3].

The vas deferens normally originates at the globus minor of the epididymis where it forms an acute angle known as the vasoepididymal kink giving the feathery appearance on the vasoepididymogram. The body of the epididymis is forked. The globus major is not seen because the contrast medium normally stops here. The globus major comprises ductuli efferentes and is continuous with the testis [1]. The ascending portion of the vas begins with numerous convolutions for a distance of 2 to 4 cms after which it straightens out. The vas deferens joins the seminal duct dichotomously at an angle of 30° or greater to form the ejaculatory duct which is in direct line with the vas deferens. The ejaculatory duct and the seminal ducts are straight and well-defined [4,5]. The normal seminal vesicle is oval and pyriform and shows 10 to 12 convolutions of uniform breadth and density on the vesiculogram. The proximal portion appears to be slightly wider than the distal [6]. However, Herbst and Merricks believe that the middle portion is the widest.

Ductal obstruction may be at the level of the vasa efferentia, epididymis, vas deferens or ejaculatory ducts. While the prognosis and management of the first type is difficult, microsurgery carries good results and better prognosis in the last two types [7].

The aim of this study is to diagnose and localize the level of the obstruction and the possible etiologic cause of obstructive azospermia utilizing vasography.

#### Material and Methods

The present work was performed on 26 selected male patients with primary sterility. Their ages ranged between 22 and 36 years. They were diagnosed by their referring clinicians as possible obstructive type of sterility after clinical and laboratory investigations. This work was done in Saudi Arabia.

Each patient was subjected to the following studies:

1. Full clinical history including history of operations or infections as T.B., gonorrhea or Bilharziasis.
2. General and local clinical examination.
3. Semen analysis for volume, pH, number of spermatozoa per ml, immediate and after 1 hour motility.
4. Hormonal level of F.S.H.
5. Testicular biopsy of the normal sized testes.
6. Vasography.

Selection of the patients submitted to this study was based on the criteria of normal hormonal assay level of F.S.H. and normal spermatogenesis as proved by testicular biopsy in azospermic male patients.

Vasography was not performed in patients with congenital absence of the vas deferens.

*Technique :*

The technique is done under local anaesthesia. A 1 cm high vertical scrotal incision is done. The vas deferens is identified. The vasal vessels are carefully preserved. A 22 G angiocath cannula is inserted into the lumen of the vas cephalad. A 2.5 ml of 50% diluted water soluble contrast is injected. Supine and Oblique radiographs of the vas and ejaculatory ducts are obtained. The needle is reinserted at a point caudad and a 0.5 ml of contrast is injected to demonstrate the convoluted vas and epididymis. The scrotal incision is sutured by one stitch of catgut. The procedure is repeated on the other side. Antibiotic therapy is given for 5 days [8].

**Results**

Semen analysis showed azospermia in all the 26 patients (100%). Low semen volume was present in 18 patients (69%).

The F.S.H. level was within normal range in 22 patients (84.6%). It showed mild rise in 4 patients (15.4%) with unilateral testicular fibrosis and atrophy.

Testicular biopsy showed normal spermatogenesis in 16 patients (61.5%) with normal size of their testes. In 4 patients (15.4%) the biopsy demonstrated fibrosis and granulation tissue. 6 patients (23%)



Fig. 1: Post-Herniorrhaphy vasal obstruction



Fig. 2: Post-T. B. Beading and tapered obstruction of the vas.



Fig. 3: Post-T.B. complete abrupt obstruction of the vas deferens.



Fig. 4: Obstruction of the ejaculatory duct



Fig. 5: Bilateral dilatation of the seminal vesicles.



Fig. 6: Dilated left seminal vesicle and normal right side.

refused to do testicular biopsy. The levels of obstruction are shown in table 1.

Table (1): Levels of Obstruction Among Examined Patients.

Level	No. of Patients	%
Epididymal	6	6
Vasal: Scrotal	12	12
Inguinal	4	4
Ejaculatory Ducts	4	4

Epididymal obstruction was diagnosed by exclusion as these patients showed patent vas deferens and ejaculatory ducts with normal spermatogenesis.

The seminal vesicles appeared normal in 8 patients. Unilateral congenital absence was found in 4 patients while bilateral absence was present in 2 patients. Unilateral fibrosis and irregular seminal vesicle was found in 2 patients. Bilateral seminal vesicles dilatation was found in 2 patients while unilateral marked dilatation was found in 4 patients,

The underlying causes of vasal obstruction are shown in table 2. Post-herniorrhaphy obstruction appeared as an abrupt obstruction of the vas at the level of the inguinal canal. The scar of the previous operation was noticed in the inguinal region. Also, patients with post-epididymovasostomy had a history of vasal operations and they showed bilateral obstruction of the terminal convoluted part

Table (2): Etiological Causes Among Examined Patients.

Etiological Causes	No. of Patients	%
<i>Congenital :</i>		
Unilateral Absence of vas	6	23
Bilateral Absence of vas	2	7.6
<i>Traumatic :</i>		
Post-Herniorrhaphy	4	15.4
Post-Epididymovasostomy	2	7.6
<i>Inflammatory :</i>		
Post T.B.	6	23
Post Gonorrhoeal	2	7.6

of the vas deferens with proximal non-uniform dilatation.

In cases of tuberculous infection, beading of the vas is felt clinically, while vasography showed tapering, beading and complete obstruction with proximal dilatation.

In the 4 patients with unilateral post-herniorrhaphy vasal obstruction, 2 of them had atrophy of the testes on the opposite side and the other 2 had unilateral absence of the vas deferens on the opposite side. For the 6 patients with unilateral absence of the vas, the opposite side showed post-herniorrhaphy obstruction in 2 patients, post-inflammatory obstruction in 2 patients and epididymal obstruction in 2 patients.

### *Complications :*

As the follow up of the patients was for short duration (1 month), no major complications were encountered.

Pain was the major complaint in 6 patients during the examination and was relieved by additional injection of 5 cc of local anaesthesia.

No evidence of hydroceles, haematomas or wound infections were encountered.

### **Discussion**

Azospemia in the presence of normal spermatogenesis of the testes is the hallmark of ductal obstruction [7].

Genital duct obstruction is found in 7% of infertile patients [8].

26 male patients with obstructive azospemia were investigated in this study. The F.S.H. was normal in 84.6% of patients but showed mild rise in 15.3% with unilateral testicular fibrosis and atrophy. This confirms with the study of Johnsunbaugh et al [9], who demonstrated that the majority of obstructive azospemic patients have normal gonadotrophin levels.

Analysis of the results of tables 1 and 2 in the present study revealed that the majority of the patients had their obstruction at the level of the vas deferens (62.5%) with 38.4% were post-inflammatory. However, the primary inflammatory lesions were epididymal but as the patients presented late, multiple vasal obstructions

were present. In the study of Pryor et al [10] most of the obstructive lesions were at the level of the epididymis (52.3%).

Congenital absence of the vas is an uncommon cause of male infertility representing 11-50% of cases of congenital duct obstruction [11].

In comparison to the study of Michaelson [12] and Pryor et al [3] who found unilateral absence of the vas in 1% and bilateral absence in 20%, we found in our study that unilateral congenital absence of the vas was present in 6 patients (23%) while bilateral absence was present in 2 patients (7.6%). Also, we found unilateral renal agenesis associated with unilateral absence of the vas in only 2 patients.

Congenital obstruction of the vasa efferentia of the epididymis represents 21% of cases of ductal obstruction [1]. 4 patients (15.2%) in the present study were diagnosed as vasa efferentia obstruction by exclusion, since vasography demonstrated patent vas, epididymis and ejaculatory ducts.

Also, we encountered in this work 4 patients with ejaculatory duct obstruction and were considered of congenital origin due to absence of evident pathology at the ejaculatory ducts or history of infections.

Presently, vasectomy is the leading cause of ductal obstruction [7]. It may be iatrogenic as post-varicolectomy or post-herniorrhaphy or as a birth control method specially in India [1]. In the present

study, 4 patients presented with post-herniorrhaphy vasal obstruction and 2 patients came with recurrent post-epididymovasostomy obstruction (23%).

As accurate localization of the level of obstruction is especially important as long as obstructive azospermia is one of the few treatable causes of infertility, vasography is considered an essential and the only reliable technique in the localization of the level of obstructive azospermia. The etiology of the obstructive azospermia can be suggested from the radiologic appearance of the vasogram. However, it should be limited to the patients with the history, clinical and laboratory findings suggestive of obstruction.

However, vasography is still an invasive technique and has its complication although we reported very minimal incidence of complications, so it should be performed to the indicated patients with the least possible trauma to the vas deferens and with careful preservation of the vasal vessels.

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