# Transrectal ultrasound guided seminal vesiculography in the evaluation of distal seminal tract obstruction

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# Transrectal ultrasound guided seminal vesiculography in the evaluation of distal seminal tract obstruction

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## Abstract

**Background:** Azoospermia is either obstructive or non obstructive .Non obstructive Azoospermia is caused by severely reduced sperm production .obstructive Azoospermia is either due to proximal or distal seminal tract obstruction .Vasography was used to image the seminal tracts but it carries the risks of General aneathesia and vasal damage .Trials has been done to replace vasography with less invasive techniques.

**Aim of study** :To assess the benefits of TRUS guided seminal vesiculography in evaluating the distal seminal tract obstruction.

**Materials and Methods:** 13 patients with laboratory results of obstructive Azoospermia were examined with TRUS guided seminal vesiculography and if recommended TRUS guided aspiration of seminal vesicles.

**Results:** the diagnoses based on the examination findings . 4 cases showed normal findings with suspected proximal seminal tract obstruction.3 cases showed mid line prostatic cysts.2 cases showed unilateral ejaculatory ducts obstruction with suspected contralateral strictures.2cases showed bilateral ejaculatory ducts obstruction. 2 cases showed bilateral agenesis of seminal vesicles.

**Conclusion**: TRUS guided seminal vesiculography is valuable and usefull technique in the diagnosis and decision for managements of infertile men with obstructed seminal tracts.

## introduction :-

- Infertility is defined as failure to conceive after 1 year of unprotected intercourse , the male factor is the primary cause in 40 to 60 % of cases . incidence of azoospermia in infertile men is between 5 % and 20 % . the main purpose of the evaluation of azoospermic patients is to differentiate between seminal tract obstruction and testicular failure .(1,2)
- Azoospermia is defined as the absence of sperm in the centrifuged semen sample, while aspermia refers to an absent ejaculate ( 3)
- A Zoospermia is either obstructive or non obstructive .Non obstructive azoospermia is caused by severely reduced sperm

production resulting in the absence of sperms in the semen (1) Obstructive azoospermia is either due to proximal seminal tract obstruction which involves the epididymal tubules or the scrotal portion of vas deferens which is well recognized and readily treated cause of infertility or due to distal seminal tract obstruction which may involves the distal course of vas deferens ( Ampula of vas , pelvic and inguinal portions of vas ) or the ejaculatory ducts . the distal course of vas is Strictured by usually previous pelvic or inguinal surgery .(1, 4)

- The etiologies of ejaculatory duct obstruction include either congenital or acquired causes , congenital causes are stenosis , Atresia and mid line prostatic cysts . these cysts are either containing sperms or sperms free (2,5,6,7,8,9)
- The sperms free cysts are the utericulus and mullerian duct cysts , the uterculus cysts are situated near the verumontanum , while the mullerian duct cysts are situated close to the prostatic base .(9,10,11)
- Transurethral resection of mullerian duct cysts is more difficicult than the utericulus cysts (11)
- The sperm containing cysts are the distal ejaculatory duct cysts , these can be treated easily by transurethral resection of ejaculatory ducts ( TURED) .(7,9,12,13)
- The importance of midline prostatic cysts that it can exert compression or deviation to the course of distal ejaculatory ducts with subsequent obstructive azoospermia .(10)
- Acquired causes of ejaculatory duct obstruction are either inflammatory , infectious, post traumatic or ejaculatory ducts calculi .(3,4,10)
- The role of Chronic prostatitis in causing obstruction to the ejaculatory ducts by either extension of inflammation to the walls of ducts or by changes in the compliance of duct walls or adjacent prostatic tissue is still unclear .(2,5,10)
- Vasography was used to evaluate the distal seminal tract (6,9,15 , 16 , 17) but it carries the potential risks of general aneasthesia and the risk of vasal damage or stricture .(2,6,9,14)
- Trials has been done to replace the vasography with less invasive imaging techniques to assess the patency of distal seminal tract .Katz et al (18 )has reported the use of Transrectal ultrasound ( TRUS ) guided seminal vesiculography to assess ejaculatory duct obstruction , as the technique provide excellent visualization and imging of the ejaculatory ducts .
- TRUS guided aspiration of seminal vesicles also used to assess ejaculatroty duct obstruction and to obtain sperms for assisted reproduction techniques ( 19 ) .

## Objective :-

- To assess the benefits of TRUS guided seminal vesiculography in evaluating the distal seminal tract obstruction

## Materials and Methods:-

- 13 Patients attended to Doki Radiology centre with laboratory results of obstructive azoospermia or severe oligoathenospermia between march 2005 and March 2007.
- All showed normal scrotal ultrasound with normal size testes, normal serum level of follicle stimulating Hormone ( FSH) and palpable scrotal vas suggesting seminal tracts obstruction.
- They were prepared by taking Broad spectrum Antibiotic 2 days perior to the exam and cleaning enema at day of exam.
- All subjected to Transrectal ultrasound using 5-7.5 MHZ endo rectal ultrasonic transducer (Voluson 530 D , GE logic 7 machines) in the fluoroscopic X ray room with the patient examined in left lateral decubitus position, Hip and Knee joints were flexed .
- The results of TRUS exam were recorded as regard to presence or absence of seminal vesicles, seminal vesicles width and length, caliber of ejaculatory ducts, and if there were mid line prostatic cysts.
- Under ultrasonic guidance 30 to 35 cm long 20 Gouge needle was introduced to puncture the Rt. or left seminal vesicle and if recommended aspiration was done (If aspiration of seminal vesicles is recommended the patient should be ejaculated within 24 hrs perior to the time of exam) and the aspirate is preserved to be sent to the laboratory clinic to assess the presence or absence of motile sperms.
- 5 to 20 ml of non ionic contrast medium was injected into the seminal vesicle under fluoroscopic x ray monitoring and radiographic images were taken .
- The dye should not be allowed to reach the epididymal tubules otherwise chemical Epididymitis may occur .
- The patient there after is asked to micturate and after 10 minutes (allowing wash out of contract medium ), the contralateral seminal vesicle is examined .
- OPacification of ejaculatory ducts . posterior urethra and filling of urinary bladder with contract media denote patent ejaculatory duct .
- The course and caliber of inguinal and pelvic portions of vas deferens can also be evaluated to exclude stricture or occlusion .

## Results :-

- 4 cases from 13 cases attended the examination showed normal patency of distal seminal tract with normal filling of ejaculatory ducts ,

posterior urethra and urinary bladder denoting normal patency of ejaculatory ducts . normal caliber and course of inguinal and pelvic vas deferens , guided aspiration of seminal vesicles revealed the absence of motile sperms in seminal vesicles suggesting proximal vaso epididymal obstruction.

- 3 cases showed mid line prostatic cysts by TRUS with no filling of ejaculatory ducts , posterior urethra and urinary bladder denoting bilateral ejaculatory ducts obstruction likely due to mechanical compression exerted by the cysts on the distal course of ejaculatory ducts .
- 2 cases of unilateral ejaculatory duct obstruction associated with contralateral opacified ejaculatory ducts , posterior urethra and filling of urinary bladder with contrast however the possibility of ejaculatory ducts stricture was considered due to mildly distended seminal vesicles observed by TRUS and the presence of motile sperms in the seminal vesicles ( > 3 motile sperms per high power field ) .
- 2 cases of bilateral ejaculatory ducts obstruction .
- 2 cases showed agenesis of both seminal vesicles on TRUS , so we didn't proceed to further contrast injection
- No cases of inguinal or pelvic vas deferens obstruction observed which can be suggested from the increased vasal caliber and stagnation of contrast media with the delay in the contrast wash out .

**Table :- Show Results of TRUS guided seminal vesiculography and seminal vesicles aspiration among our patients**

| Number of cases | % | Diagnosis |
|---|---|---|
| 4 | 30.8% | Normal findings with suspected proximal seminal tract obstruction |
| 3 | 23% | Mid line prostatic cysts |
| 2 | 15.4% | Unilateral ejaculatory ducts obstruction with contralateral stricture |
| 2 | 15.4% | Bilateral ejaculatory ducts obstruction |
| 2 | 15.4% | Bilateral agenesis of seminal vesicles |
| TOTAL : 13 | 100% | Obstructive azoospermia |

Images: TRUS guided seminal vesiculography showed :



**Image I** : unilateral ejaculatory duct obstruction **Image II**: bilateral patent ejaculatory ducts


Image **III** unilateral patent ejaculatory duct with normal contrast filling of posterior urethra and urinary bladder

## Discussion :-

- The success in the managements of infertile men with azoospermia or severe oligoathenospermia depends on the accurate diagnosis for the etiology of azoospermia .Non obstructive azoospermia due to severely impaired spermatogenesis can be expected when scrotal ultrasound reveals small size testes , testicular neoplasm or varicoceles associated with low serum follicle stimulating hormon (FSH ) level and the management will depends on the assisted reproduction techniques and intra cytoplasmic sperm injection .(1)
- If non obstructive etiology is excluded by normal scrotal ultrasound with normal level of serum FSH level and obstructive etiology is expected , we can either proceed to vasography with

the risks of general anaesthesia and vasal damage(6,9, 12,15,16) or to assess the patency of distal seminal tract by TRUS guided seminal vesiculography. Which is much less invasive technique do not require aneasthesia and can be done as outpatient procedure (18) that carry the benefits of Transrectal ultrasound exam which gives valuable informations as regard to the seminal vesicles agenesis , mid line prostatic cysts , estimate the width of seminal vesicles which increase with ejaculatory duct obstruction and can visualize ejaculatory ducts calculi. (20,14,6,9,21)together with the benefits of contrast opacification of ejaculatory ducts and posterior urethra to confirm the ductal patency . Also Opacification of pelvic and inguinal portion of vas can be achieved to exclude or confirm vasal obstruction or stricture by previous pelvic or inguinal surgery.(18)

- Increasing the benefits of TRUS guided seminal vesiculography it allows aspiration of seminal vesicles for presence of motile sperms in the seminal vesicles aspirate which confirm ejaculatory duct obstruction and obtain motile sperms for the assisted reproduction techniques .(19)
- Patients with ejaculatory ducts obstruction can be managed effectively with trans urethral resection of ejaculatory ducts (10,15,23,24,25)
- If distal seminal tract obstruction is excluded by normal results of TRUS guided seminal vesiculography and proximal seminal tract obstruction is expected, the patients can be managed with vaso – epididymostomy .(26)
- In cases of mid line prostatic cysts , injection of contrast media to the cysts can be performed and if the cysts were communicating with the seminal tracts ,they can be managed with TURED and if not communicating ,they can be managed with TRUS guided aspiration .(11,22)

## In conclusion :-

- TRUS guided seminal vesiculography is valuable and usefull technique in the diagnosis and the decision for management of infertile men with obstructed seminal tracts

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