

EJAKÜLATÖR KANALLARIN RADYOLOJİK OLARAK DEĞERLENDİRLİMESİ

Prof. Dr. İrfan Orhan

Fırat Üniversitesi, Tıp Fakültesi, Üroloji AD,
Androloji BD, Elazığ.

Ejakülatör Kanal Patolojileri

- 1942 R. Gutierrez
- 1973 S. Farley, R. Barnes

- İnfertilitedeki önemi

Azoospermi (Obstrüktif)

İdiopatik infertilite

Etiology of Azoospermia in a Military Population

Suzanne R. Gudeman, Blair Townsend, Kimberly Fischer,
Rustin C. Walters and Donald Crain*

From the Departments of Urology, Naval Medical Center San Diego, San Diego, California, and Naval Medical Center

Results: We reviewed 139 outpatient records. Nonobstructive azoospermia was diagnosed in 99 men (71%), including 33 (34%) identified with Sertoli-cell only syndrome. Other etiologies included an idiopathic cause in 25 cases (26%), Klinefelter syndrome in 9 (9%), maturation arrest in 9 (9%), Y chromosome microdeletion in 5 (5%), cryptorchidism in 4 (4%), trauma in 4 (4%), exogenous testosterone supplementation in 4 (4%) and other genetic disorders in 6 (6%). Obstructive azoospermia was identified in 40 men (29%), of whom 16 (40%) had congenital bilateral absence of the vas deferens. Other etiologies included an idiopathic cause in 11 cases (28%), an iatrogenic condition due to a surgical cause in 5 (13%), ejaculatory duct obstruction in 3 (8%), trauma in 1 (3%), retrograde ejaculation in 1 (3%), vas deferens occlusion in 2 (5%) and unilateral absence of the vas deferens in 1 (3%).

Etiology of Azoospermia in a Military Population

Suzanne R. Gudeman, Blair Townsend, Kimberly Fischer,
Rustin C. Walters and Donald Crain*

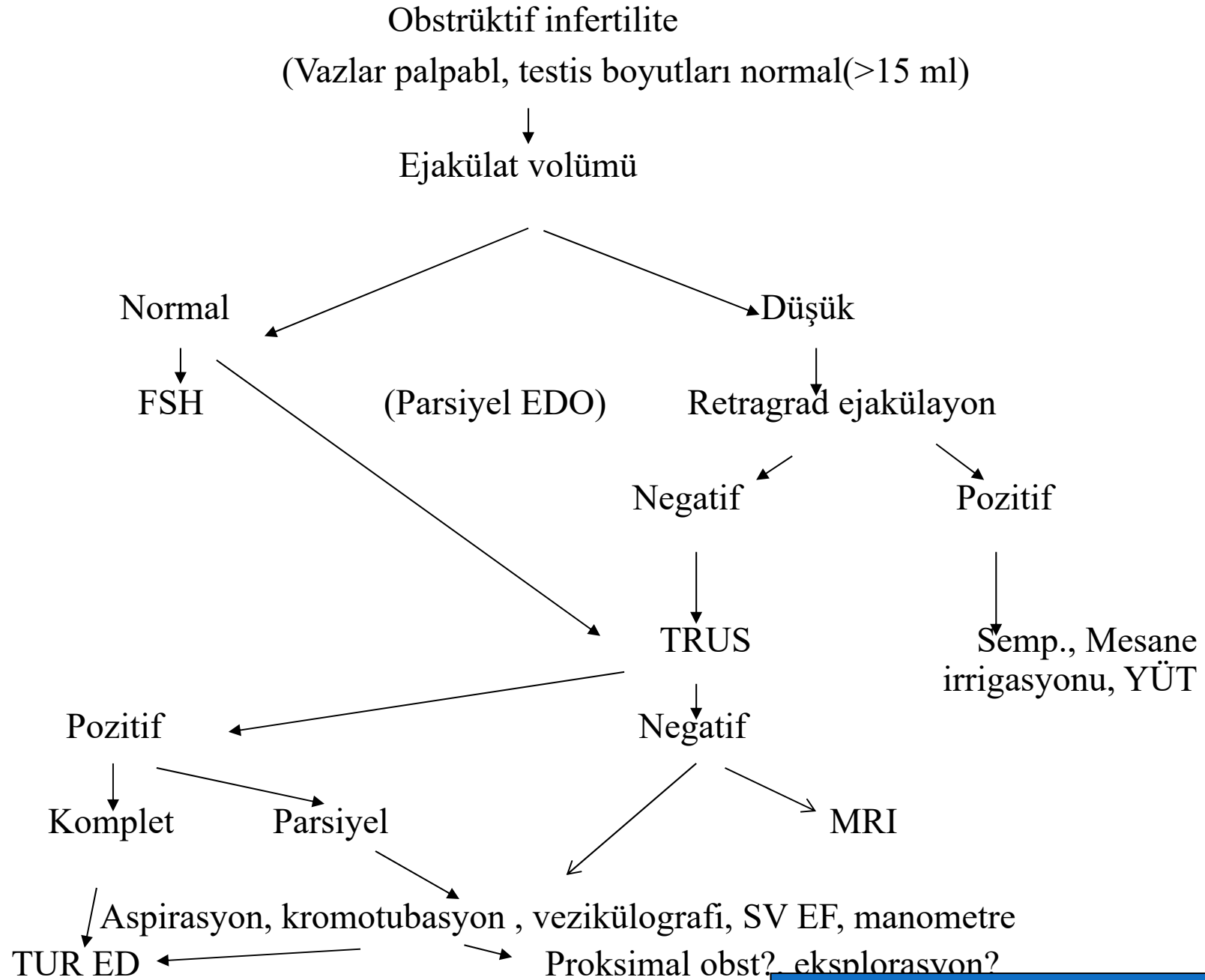
From the Departments of Urology, Naval Medical Center San Diego, San Diego, California, and Naval Medical Center

Etiology of NOA and OA in patients in current and previous studies

Etiology	No. Fedder et al (%) ⁵	No. Jarow et al (%) ⁴	No. Present Series (%)
NOA:	72	85	99
SCOS	—	37 (44)	33 (34)
Idiopathic	45 (63)	—	25 (26)
KS	6 (8)	3 (3)	9 (9)
Maturation arrest	—	20 (23)	9 (9)
Y microdeletion	9 (13)	—	5 (5)
Other genetic disorder	2 (3)	2 (2)	6 (6)
Undescended testis	—	—	4 (4)
Exogenous T	5 (7)	—	4 (4)
Trauma	—	—	4 (4)
Gonadotoxins	5 (7)	19 (22)	—
Mumps orchitis	—	4 (5)	—
OA:	28	49	40
CBAVD	12 (43)	16 (33)	16 (40)
Idiopathic	4 (14)	—	11 (28)
Iatrogenic (surgery)	2 (7)	1 (2)	5 (13)
EDO	—	3 (6)	3 (8)
Trauma	3 (11)	—	1 (3)
Retrograde ejaculation	—	—	1 (3)
Vas deferens occlusion	—	—	2 (5)
Unilat vas absence	—	—	1 (3)
Epididymitis	5 (17)	16 (33)	—
Young syndrome	—	1 (2)	—
Epididymal atresia	—	12 (24)	—
Epididymal	2 (7)	—	—

Table 1: Male infertility causes and associated factors and percentage of distribution in 10,469 patients [6]

Diagnosis	Unselected patients (n = 12,945)	Azoospermic patients (n = 1,446)
<i>All</i>	100%	11.2%
<i>Infertility of known (possible) cause</i>	42.6%	42.6%
Maldescended testes	8.4	17.2
Varicocele	14.8	10.9
Sperm autoantibodies	3.9	-
Testicular tumour	1.2	2.8
Others	5.0	1.2
Idiopathic infertility	30.0	13.3
<i>Hypogonadism</i>	10.1	16.4
Klinefelter's syndrome (47, XXY)	2.6	13.7
XX male	0.1	0.6
Primary hypogonadism of unknown cause	2.3	0.8
Secondary (hypogonadotropic) hypogonadism	1.6	1.9
Kallmann syndrome	0.3	0.5
Idiopathic hypogonadotrophic hypogonadism	0.4	0.4
Residual after pituitary surgery	<0.1	0.3
Others	0.8	0.8
Late-onset hypogonadism	2.2	-
Constitutional delay of puberty	1.4	-
<i>General/systemic disease</i>	2.2	0.5
<i>Cryopreservation due to malignant disease</i>	7.8	12.5
Testicular tumour	5.0	4.3
Lymphoma	1.5	4.6



AMAÇ

- Sperm parametrelerinde düzelme
- Spontan gebelik
- Komplikasyon(?) (Hematospermi, ağrılı ejakülasyon vb.)
- % 50- 70 sperm parametrelerinde düzelme,
- % 20- 40 gebelik
- %30- 50 hastada yetersiz
- %20 komplikasyon (Hematüri, orşiepididimit, reflü vb.)

Ejakülatör Kanal Obstrüksiyonu (EDO)

- Etyoloji

Embriyolojik & Anatomik tanımlamalar & Obstrüktif patolojilerde yeni sınıflamalar (Kistler)

- Tanı

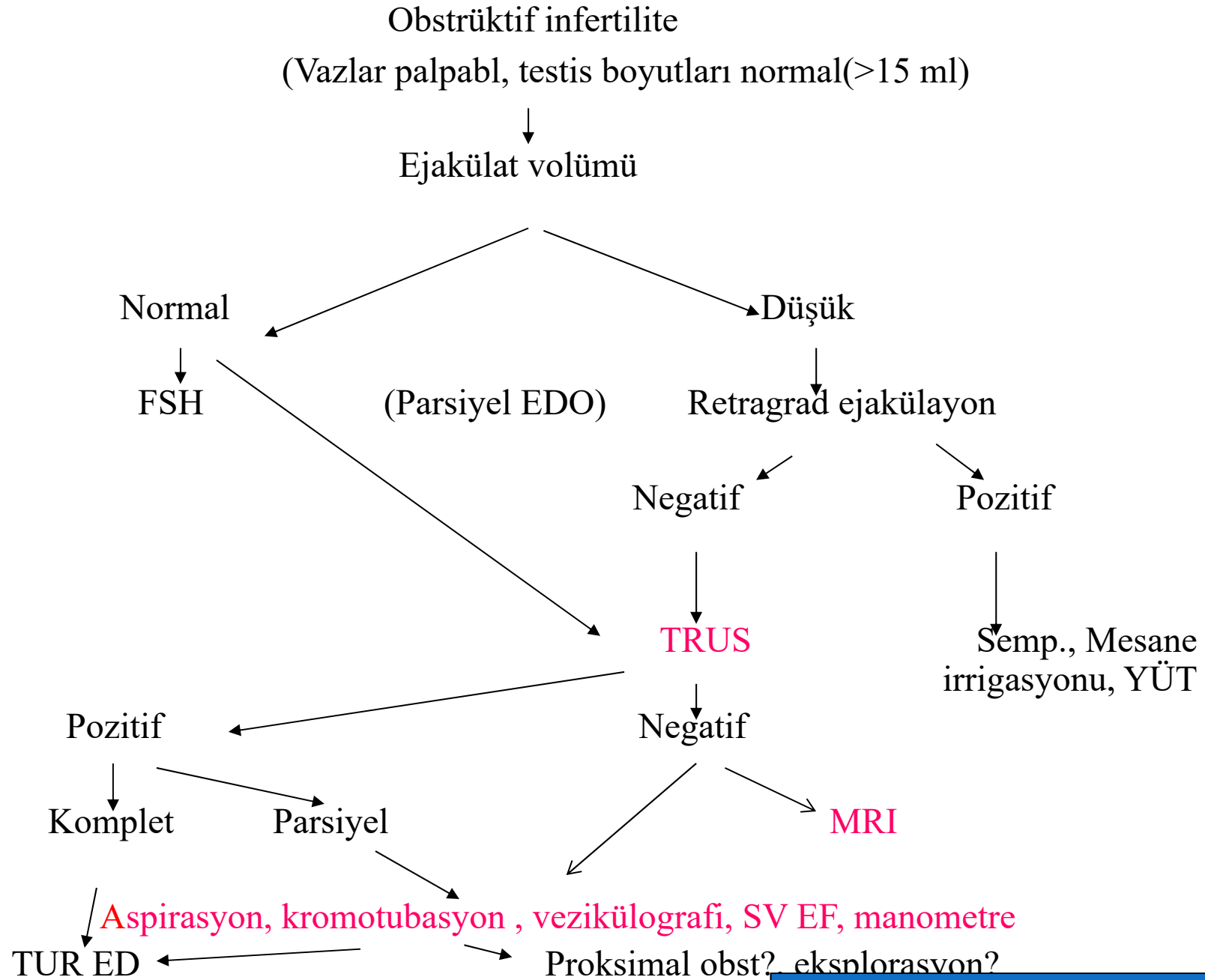
TRUS& Ek uygulamalar

- Tedavi

Tedavide daha az invaziv yaklaşımlar

Ejakülatör Kanal Obstrüksiyonları TANI

- Vazografi
- TRUS
- MRI
- Veziküloskopi



TRUS

TRUS

Non-invaziv, kolay uygulanım, ucuz

Obstrüksiyon bulguları

Dilate v. seminalis (A-P > 1,5 cm)

Dilate vazal ampulla (> 6mm)

Dilate ejakülatör kanallar (Transvers çap >1,2 -2mm)

Kalkül ve kalsifikasyonlar

EDO için altın standart tanı yöntemi değil

Ejakülatör Kanal Obstrüksiyonları

TANI

TRUS

%32- 50 yanlış pozitiflik*

%48 prognostik değil*

Ejakülasyon miksiyon benzeri mekanik ve fonksiyonel bütünlük gerektirmektedir.

**Turek PJ, J Urol, 2004.*

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis sintigrafisi

Veziküla seminalis manometresi

- MRI

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

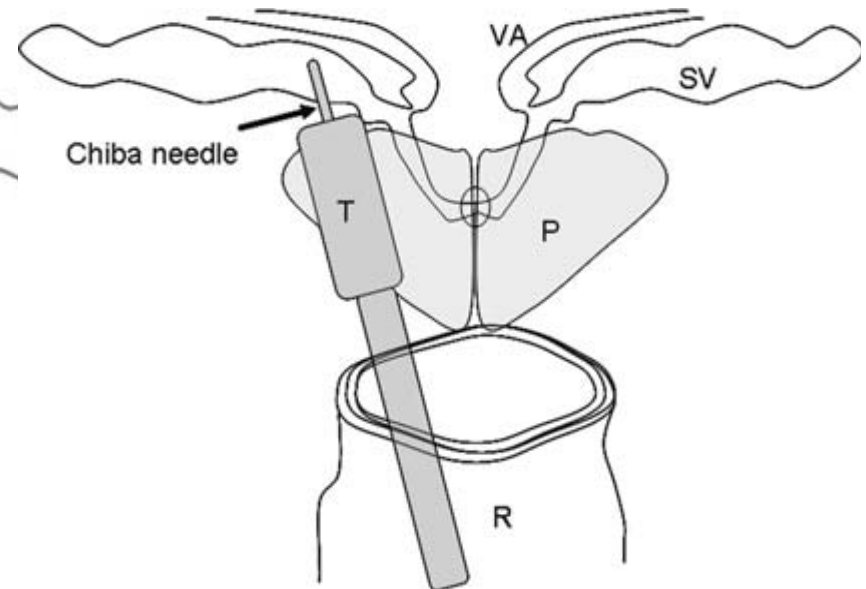
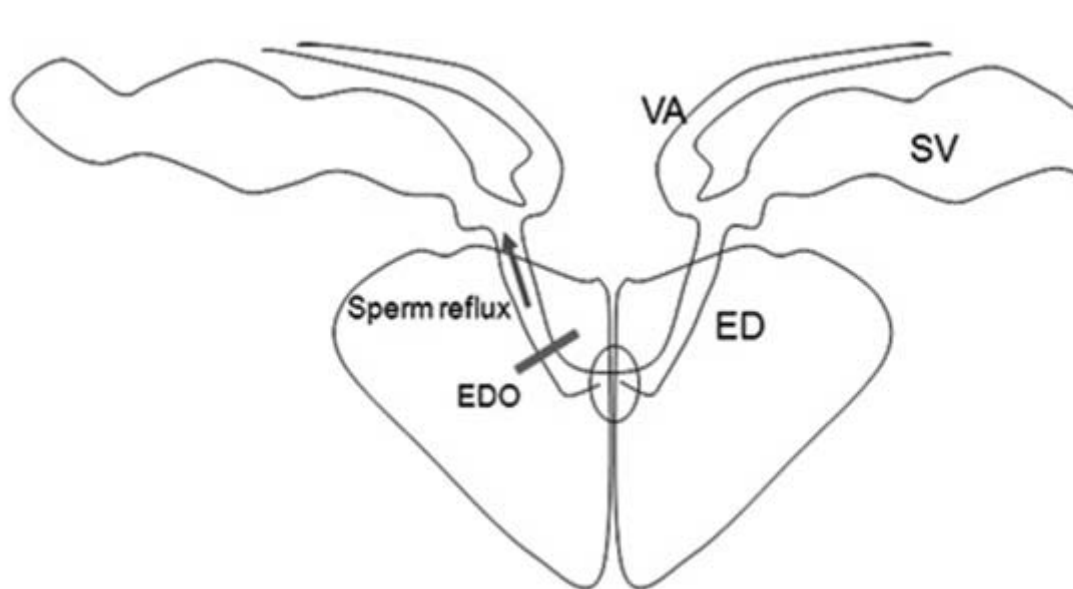
Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI



- TRUS & aspirasyon
- Ejakülasyondan 2 saat sonra
- 20G/25 cm
- 2 ml
- x400



Engin G, Diagn Interv Radiol 2012; 18:488–495
Engin G, et al 2009;92:964- 970

Comparison of transrectal ultrasonography and transrectal ultrasonography-guided seminal vesicle aspiration in the diagnosis of the ejaculatory duct obstruction

Gulgun Engin, M.D.,^a Murat Celtik, M.D.,^b Oner Sanli, M.D.,^b Omer Aytac, M.D.,^b Zarifcan Muradov, M.D.,^b and Ates Kadioglu, M.D.^b

^a Department of Radiology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey ^b Department of Urology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey

Diagn Interv Radiol 2012; 18:488–495

© Turkish Society of Radiology 2012

GENITOURINARY IMAGING

REVIEW

Transrectal US-guided seminal vesicle aspiration in the diagnosis of partial ejaculatory duct obstruction

Gülgün Engin

Comparison of transrectal ultrasonography and transrectal ultrasonography-guided seminal vesicle aspiration in the diagnosis of the ejaculatory duct obstruction

Gulgun Engin, M.D.,^a Murat Celtik, M.D.,^b Oner Sanli, M.D.,^b Omer Aytac, M.D.,^b Zarifcan Muradov, M.D.,^b and Ates Kadioglu, M.D.^b

TABLE 1							
Frequency of TRUS findings in 70 patients with suspected complete and partial ejaculatory duct obstruction.							
TRUS findings	Complete EDO (n = 10)			Partial EDO (n = 60)			P ^a
	No. single finding	No. multiple findings	Total	No. single finding	No. multiple findings	Total	
Significant findings for EDO							
Prostatic midline/ED cysts	0	0	0	11	5	16	.10
Dilatation of							
Seminal vesicle/sec	0	0	0	3	10	13	.19
Vasal ampulla/sec	0	2	2	1	1	2	.10
Ejaculatory duct/sec	0	1	1	1	1	2	.38
Chronic inflammatory changes in prostate	1	4	5	0	16	16	.16
ED/sec calcification	0	0	0	0	2	2	1.00
Stasis in the seminal vesicle/sec	1	1	2	2	1	3	.15
Other findings							
Chronic inflammatory changes in							
Seminal vesicle/sec	0	5	5	1	14	15	.14
Vasal ampulla/sec	0	1	1	0	7	7	1.00
Hypogenesis or atrophy of seminal vesicle/sec	0	1	1	1	7	8	1.00
Normal	2	0	2	11	—	11	1.00

Comparison of transrectal ultrasonography and transrectal ultrasonography-guided seminal vesicle aspiration in the diagnosis of the ejaculatory duct obstruction

Gulgun Engin, M.D.,^a Murat Celtik, M.D.,^b Oner Sanli, M.D.,^b Omer Aytac, M.D.,^b Zarifcan Muradov, M.D.,^b and Ates Kadioglu, M.D.^b

TABLE 2

TRUS findings frequencies according to the seminal vesicle aspirate results.

TRUS findings	Negative aspirate (≤ 3 sperm) (n = 43)	Positive aspirate (> 3 sperm) (n = 27)	Total	P ^a
Prostatic midline/ED cysts	4	12	16	.001
Dilatation of				
Seminal vesicle/sec	2	11	13	.0003
Vasal ampulla/sec	3	1	4	1.00
Ejaculatory duct/sec	2	1	3	1.00
Chronic inflammatory changes in				
Prostate	17	4	21	.034
Seminal vesicle/sec	15	5	20	.179
Vasal ampulla/sec	4	4	8	.48
Ejaculatory duct/sec	2	0	2	.256
Hypogenesis or atrophy of seminal vesicle/sec	9	0	9	.01
Stasis in the seminal vesicle/sec	2	3	5	.307
Normal	11	2	13	.067

Comparison of transrectal ultrasonography and transrectal ultrasonography-guided seminal vesicle aspiration in the diagnosis of the ejaculatory duct obstruction

Gulgun Engin, M.D.,^a Murat Celtik, M.D.,^b Oner Sanli, M.D.,^b Omer Aytac, M.D.,^b Zarifcan Muradov, M.D.,^b and Ates Kadioglu, M.D.^b

TABLE 2

TRUS findings frequencies according to the seminal vesicle aspirate results.

TRUS findings	Negative aspirate (≤ 3 sperm) (n = 43)	Positive aspirate (> 3 sperm) (n = 27)	Total	P ^a
Prostatic midline/ED cysts	4	12	16	.001
Dilatation of				
Seminal vesicle/sec	2	11	13	.0003
Vasal ampulla/sec	3	1	4	1.00
Ejaculatory duct/sec	2	1	3	1.00
Chronic inflammatory changes in				
Prostate	17	4	21	.034
Seminal vesicle/sec	15	5	20	.179
Vasal ampulla/sec	4	4	8	.48
Ejaculatory duct/sec	2	0	2	.256
Hypogenesis or atrophy of seminal vesicle/sec	9	0	9	.01
Stasis in the seminal vesicle/sec	2	3	5	.307
Normal	11	2	13	.067

TRUS = transrectal ultrasonography; ED = ejaculatory duct.

^a P value obtained from the comparison of total values of both groups (Pearson chi-squared test or Fisher's exact test).

Engin. TRUS-guided seminal vesicle aspiration. Fertil Steril 2009.

Comparison of transrectal ultrasonography and transrectal ultrasonography-guided seminal vesicle aspiration in the diagnosis of the ejaculatory duct obstruction

Gulgun Engin, M.D.,^a Murat Celtik, M.D.,^b Oner Sanli, M.D.,^b Omer Aytac, M.D.,^b Zarifcan Muradov, M.D.,^b and Ates Kadioglu, M.D.^b

Result(s): Fifty-five (78.6%) patients had evidence of EDO on diagnostic TRUS. However, obstruction on TRUS was confirmed in 49.1% (27 of 55) of the patients with SV aspiration. Higher sperm positivity rates were achieved in patients with SV dilation (11 of 13, 84.6%) and prostatic midline/ED cyst (12 of 16, 75.0%). Stepwise logistic regression analysis revealed that the incidence of SV dilation was significantly higher, whereas that of chronic inflammatory findings in the prostate was significantly lower in the positive SV aspirate group.

- TRUS'un belirleyici olmadığı & Aspirasyon belirleyici2/13(%15,4)

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI

Ejakülatör Kanal Obstrüksiyonları TANI



Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI

Ejakülatör Kanal Obstrüksiyonları TANI



TABLE 2. *TRUS and other techniques for EDO*

	No. TRUS (%)	No. SV Aspiration (%)	Chromotubation (%)	No. Vesiculography (%)
No. obstructed pts	25	12	9	13
SV aspiration:				
Obstruction	12 (48)		6 (67)	8 (62)
No obstruction	13 (52)		3 (33)	5 (38)
Chromotubation:				
Obstruction	9 (36)	6 (50)		9 (69)
No obstruction	16 (64)	6 (50)		4 (31)
Vesiculography:				
Obstruction	13 (52)	8 (67)	9 (100)	
No obstruction	12 (48)	4 (33)	0	

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI

Technetium Tc 99m Sulphur Colloid Seminal Vesicle Scintigraphy: A Novel Approach for the Diagnosis of the Ejaculatory Duct Obstruction

Irfan Orhan, İmed Duksal, Rahmi Onur, Tansel Ansal Balci, Kürşad Poyraz, Fatih Firdolas, and Ates Kadıoğlu

OBJECTIVES	To define a novel technique in the diagnosis of partial and complete ejaculatory duct obstruction (EDO).
METHODS	Twenty men with suspected EDO were initially evaluated by transrectal ultrasound (TRUS). Subsequently, all patients underwent TRUS-guided seminal vesicle (SV) scintigraphy. Technetium Tc 99m sulphur colloid solution was injected into each SV under TRUS guidance and patients were immediately evaluated by scintigraphy. After patients ejaculated scintigraphy was repeated. The difference between 2 measurements in respect to technetium Tc 99m count was used to measure the percentage of emptying.
RESULTS	In the first group, TRUS revealed 11 patients with findings suggestive of EDO, whereas no abnormality was found in 9. Scintigraphic measurement in first group of patients showed a mean emptying ratio for the right and left SVs of $16.6\% \pm 2.22$ (2.2 to 30.6) and $17.1\% \pm 2.34$ (1.4 to 32.5), respectively. The mean percent of emptied technetium Tc 99m from right and left SVs in patients with no pathologic findings on TRUS was $30.9\% \pm 4.3$ (10.1 to 44.2) and $33.9\% \pm 5.81$ (13.6 to 68.1), respectively. Statistically significant difference was determined between 2 groups ($P = 0.037$). Initially, TRUS examination revealed no pathologic findings in 3 patients; however, SV scintigraphy showed less than 30% emptying and revealed an additional 33% of patients to be obstructed in our series.
CONCLUSIONS	TRUS, the static anatomic imaging modality, may not be sufficient to distinguish functional from complete obstruction. Seminal vesicle scintigraphy is unique that incorporates physiologic aspect of ejaculation into a diagnostic intervention, of which we believe that is especially important in diagnosis of functional EDO. UROLOGY 71: 672–676, 2008. © 2008 Elsevier Inc.

Technetium Tc 99m Sulphur Colloid Seminal Vesicle Scintigraphy: A Novel Approach for the Diagnosis of the Ejaculatory Duct Obstruction

Irfan Orhan, Imed Duksal, Rahmi Onur, Tansel Ansal Balci, Kürşad Poyraz, Fatih Firdolas, and Ates Kadioğlu

OBJECTIVES	To define a novel technique in the diagnosis of partial and complete ejaculatory duct obstruction (EDO).
METHODS	Twenty men with suspected EDO were initially evaluated by transrectal ultrasound (TRUS). Subsequently, all patients underwent TRUS-guided seminal vesicle (SV) scintigraphy. Technetium Tc 99m sulphur colloid solution was injected into each SV under TRUS guidance and patients were immediately evaluated by scintigraphy. After patients ejaculated scintigraphy was repeated. The difference between 2 measurements in respect to technetium Tc 99m count was used to measure the percentage of emptying.
RESULTS	In the first group, TRUS revealed 11 patients with findings suggestive of EDO, whereas no abnormality was found in 9. Scintigraphic measurement in first group of patients showed a mean emptying ratio for the right and left SVs of $16.6\% \pm 2.22$ (2.2 to 30.6) and $17.1\% \pm 2.34$ (1.4 to 32.5), respectively. The mean percent of emptied technetium Tc 99m from right and left SVs in patients with no pathologic findings on TRUS was $30.9\% \pm 4.3$ (10.1 to 44.2) and $33.9\% \pm 5.81$ (13.6 to 68.1), respectively. Statistically significant difference was determined between 2 groups ($P = 0.037$). Initially, TRUS examination revealed no pathologic findings in 3 patients; however, SV scintigraphy showed less than 30% emptying and revealed an additional 33% of patients to be obstructed in our series.
CONCLUSIONS	TRUS, the static anatomic imaging modality, may not be sufficient to distinguish functional from complete obstruction. Seminal vesicle scintigraphy is unique that incorporates physiologic aspect of ejaculation into a diagnostic intervention, of which we believe that is especially important in diagnosis of functional EDO. UROLOGY 71: 672–676, 2008. © 2008 Elsevier Inc.

Table 2. Patient characteristics, infertility periods, and scintigraphic measurements in patients with no pathologic findings on TRUS

Patient	Age	IP (yr)	SV	PE (%)	Semen Volume
1	31	4	Right	10.1	1st: 0.2 mL
			Left	13.6	2nd: 0.1 mL
2	30	2.5	Right	16.4	1st: 1.6 mL
			Left	14.2	2nd: 0.8 mL
3	27	1.5	Right	41.8	1st: 1.0 mL
			Left	34.4	2nd: 1.0 mL
4	26	1.6	Right	35.4	1st: 1.6 mL
			Left	42.1	2nd: 1.5 mL
5	24	3.2	Right	36.6	1st: 3.6 mL
			Left	43.6	2nd: 4.0 mL
6	33	4.1	Right	44.2	1st: 5.2 mL
			Left	68.1	2nd: 3.6 mL
7	35	3.6	Right	42.9	1st: 4.0 mL
			Left	40.7	2nd: 4.0 mL
8	31	2.6	Right	34.8	1st: 2.5 mL
			Left	30.7	2nd: 2.0 mL
9	26	1.2	Right	16.1	1st: 0.6 mL
			Left	18.3	2nd: 0.8 mL

Seminal Vesicle Scintigraphy: A Novel Approach for the Diagnosis of the Ejaculatory Duct Obstruction

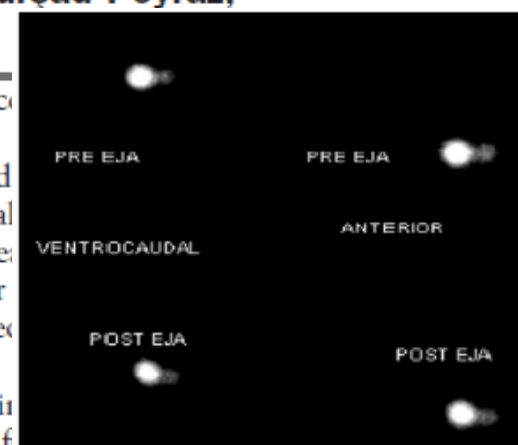
Irfan Orhan, İmed Duksal, Rahmi Onur, Tansel Ansal Balci, Kürşad Poyraz, Fatih Firdolas, and Ates Kadioğlu

OBJECTIVES To define a novel technique in the diagnosis of partial and complete ejaculatory duct obstruction (EDO).

METHODS Twenty men with suspected EDO were initially evaluated by TRUS. Subsequently, all patients underwent TRUS-guided seminal vesicle (SV) puncture. A technetium Tc 99m sulphur colloid solution was injected into the SV. All patients were immediately evaluated by scintigraphy. After 20 minutes, the study was repeated. The difference between 2 measurements in respect of emptying was used to measure the percentage of emptying.

RESULTS In the first group, TRUS revealed 11 patients with findings suggestive of EDO. In 9 of these patients, an abnormality was found in 9. Scintigraphic measurement in 9 patients revealed an emptying ratio for the right and left SVs of $16.6\% \pm 2.22$ (2.2 to 30.6) and $17.1\% \pm 2.34$ (1.4 to 32.5), respectively. The mean percent of emptied technetium Tc 99m from right and left SVs in patients with no pathologic findings on TRUS was $30.9\% \pm 4.3$ (10.1 to 44.2) and $33.9\% \pm 5.81$ (13.6 to 68.1), respectively. Statistically significant difference was determined between 2 groups ($P = 0.037$). Initially, TRUS examination revealed no pathologic findings in 3 patients; however, SV scintigraphy showed less than 30% emptying and revealed an additional 33% of patients to be obstructed in our series.

CONCLUSIONS TRUS, the static anatomic imaging modality, may not be sufficient to distinguish functional from complete obstruction. Seminal vesicle scintigraphy is unique that incorporates physiologic aspect of ejaculation into a diagnostic intervention, of which we believe that is especially important in diagnosis of functional EDO. UROLOGY 71: 672–676, 2008. © 2008 Elsevier Inc.



Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI

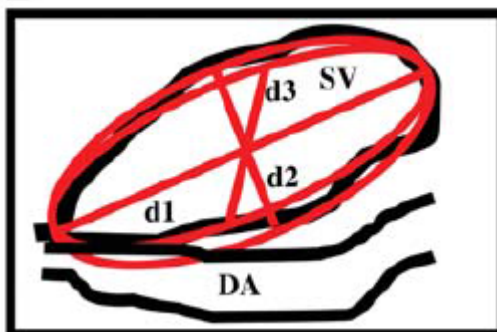
Seminal vesicles ultrasound features in a cohort of infertility patients

OBJECTIVES: Previous studies concerning ultrasound evaluation of the seminal vesicles (SV) were performed on a limited series of subjects, and considered few parameters, often only before ejaculation and without assessing the patients' sexual abstinence. The aim of this study was to evaluate the volume and the emptying characteristics of the SV and their possible correlations with scrotal and transrectal ultrasound features.

METHODS: The SV of 368 men seeking medical care for couple infertility were evaluated by ultrasound. All patients underwent, during the same ultrasound session, scrotal and transrectal evaluation, before and after ejaculation, and the ejaculate was subjected to semen analysis. A new parameter, SV ejection fraction, calculated as: $[(\text{SV volume before ejaculation} - \text{SV volume after ejaculation}) / \text{SV volume before ejaculation}] \times 100$, was evaluated.

RESULTS: After adjusting for sexual abstinence and age, both pre-ejaculatory SV volume and SV ejection fraction were positively associated with ejaculate volume. As assessed by receiver operating characteristic curve, a cut-off for SV ejection fraction of 21.6% discriminates subjects with normal ejaculate volume (≥ 1.5 ml) and pH (≥ 7.2 ml) with both sensitivity and specificity equal to 75%. Subjects with SV ejection fraction of $<21.6\%$ more often had a higher post-ejaculatory SV volume and ejaculatory duct abnormalities. Furthermore, a higher post-ejaculatory SV volume and SV abnormalities. Higher epididymal and deferential diameters were also her post-ejaculatory SV volume or reduced SV ejection fraction. No association between SV and testis parameters was observed. Associations with SV ejection fraction were confirmed in nested 1:1 case-

tribute significantly to the ejaculate volume. A new parameter, SV ejection fraction, could be useful in assessment of $<21.6\%$ was associated with prostate-vesicular and epididymal ultrasound abnormalities.



Seminal vesicles ultrasound features in a cohort of infertility patients

F. Lotti¹, G. Corona^{1,2}, G.M. Colpi³, E. Filimberti¹, S. Degli Innocenti¹, M. Mancini³, E. Baldi¹, I. Noci⁴, G. Forti¹, and M. Maggi^{1,*}

	All patients (n = 368)	SVEF $\geq 21.6\%$ (n = 266)	SVEF $< 21.6\%$ (n = 102)
Dilated ejaculatory duct	13.9	9.7	25.3***
Unilateral	6.3	4.1	12.1**
Bilateral	7.6	5.6	13.2
Ejaculatory duct calcifications	8.2	5.6	14.1*
Unilateral	4.3	3.0	8.0
Bilateral	3.8	2.6	6.1
Ejaculatory duct cysts	1.4	0.0	5.1***
Unilateral	1.1	0.0	4.0**
Bilateral	0.3	0.0	1.0

estis

Seminal vesicles ultrasound features in a cohort of infertility patients

F. Lotti¹, G. Corona^{1,2}, G.M. Colpi³, E. Filimberti¹, S. Degli Innocenti¹, M. Mancini³, E. Baldi¹, I. Noci⁴, G. Forti¹, and M. Maggi^{1,*}

	Case patients (n = 102)	Controls (n = 102)
SV giant cyst (%)	7.1***	0.0
Dilated ejaculatory duct (%)	25.3*	14.7
Ejaculatory duct calcifications (%)	14.1	6.9
Ejaculatory duct cyst (%)	5.1**	0.0
Epididymal mean size of the head (mm)	9.6 ± 2.4***	8.8 ± 1.6
Epididymal mean size of the tail (mm)	4.5 ± 1.5	4.2 ± 1.3
Epididymal hypo-echoic tail (%)	29.6***	11.0
Epididymal hyper-echoic tail (%)	28.4**	12.0

Seminal vesicles ultrasound features in a cohort of infertility patients

OBJECTIVES: Previous studies concerning ultrasound evaluation of the seminal vesicles (SV) were performed on a limited series of subjects, and considered few parameters, often only before ejaculation and without assessing the patients' sexual abstinence. The aim of this study was to evaluate the volume and the emptying characteristics of the SV and their possible correlations with scrotal and transrectal ultrasound features.

METHODS: The SV of 368 men seeking medical care for couple infertility were evaluated by ultrasound. All patients underwent, during the same ultrasound session, scrotal and transrectal evaluation, before and after ejaculation, and the ejaculate was subjected to semen analysis. A new parameter, SV ejection fraction, calculated as: $[(\text{SV volume before ejaculation} - \text{SV volume after ejaculation}) / \text{SV volume before ejaculation}] \times 100$, was evaluated.

RESULTS: After adjusting for sexual abstinence and age, both pre-ejaculatory SV volume and SV ejection fraction were positively associated with ejaculate volume. As assessed by receiver operating characteristic curve, a cut-off for SV ejection fraction of 21.6% discriminates subjects with normal ejaculate volume (≥ 1.5 ml) and pH (≥ 7.2 ml) with both sensitivity and specificity equal to 75%. Subjects with SV ejection fraction of $<21.6\%$ more often had a higher post-ejaculatory SV volume and ejaculatory duct abnormalities. Furthermore, a higher post-ejaculatory SV volume was associated with a higher prostate volume and SV abnormalities. Higher epididymal and deferential diameters were also detected in subjects with a higher post-ejaculatory SV volume or reduced SV ejection fraction. No association between SV and testis ultrasound features or sperm parameters was observed. Associations with SV ejection fraction were confirmed in nested 1:1 case-control analysis.

CONCLUSIONS: The SV contribute significantly to the ejaculate volume. A new parameter, SV ejection fraction, could be useful in assessing SV emptying. **A SV ejection fraction of $<21.6\%$ was associated with prostate-vesicular and epididymal ultrasound abnormalities.**

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

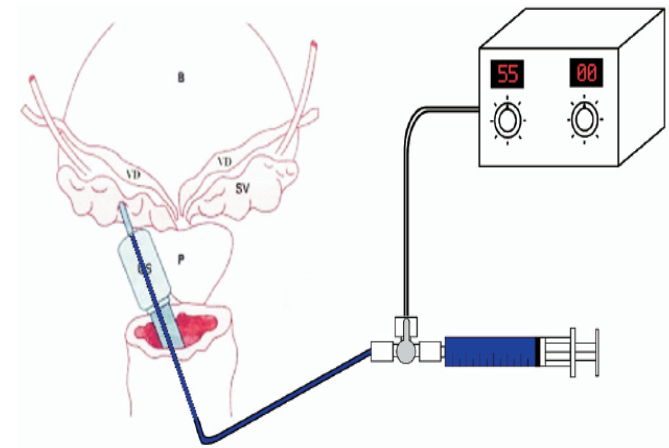
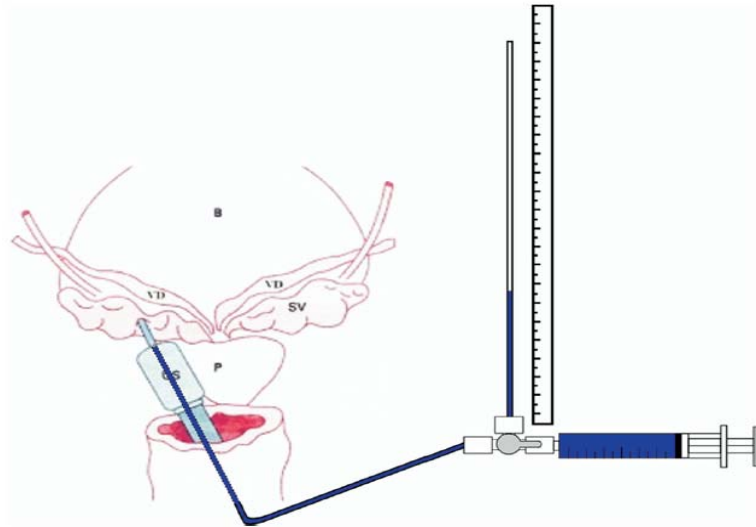
- MRI

Sexual Function/Infertility

Ejaculatory Duct Manometry in Normal Men and in Patients With Ejaculatory Duct Obstruction

Michael L. Eisenberg, Thomas J. Walsh, Maurice M. Garcia,* Katsuto Shinohara† and Paul J. Turek†

From the Department of Urology, University of California-San Francisco, San Francisco, California

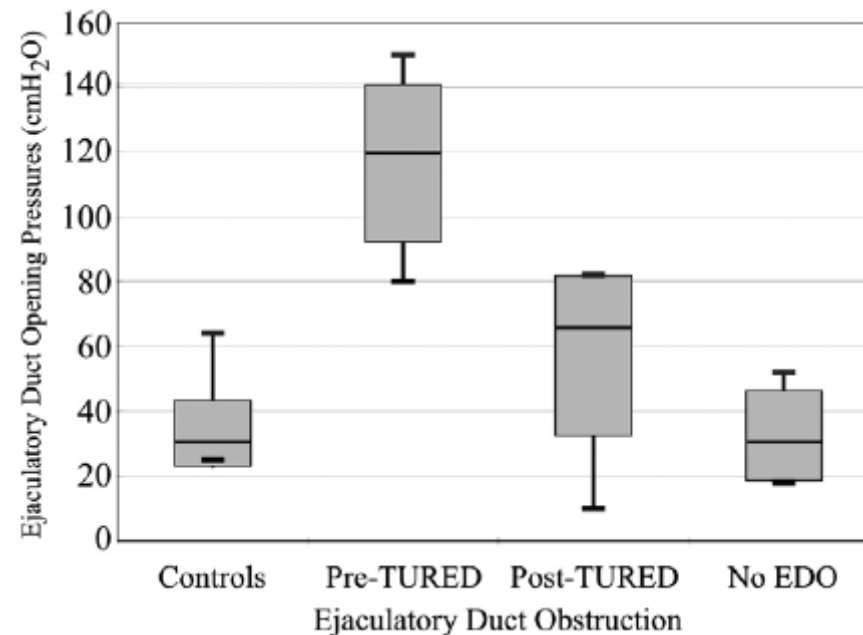


Sexual Function/Infertility

Ejaculatory Duct Manometry in Normal Men and in Patients With Ejaculatory Duct Obstruction

Michael L. Eisenberg, Thomas J. Walsh, Maurice M. Garcia,* Katsuto Shinohara† and Paul J. Turek†

From the Department of Urology, University of California-San Francisco, San Francisco, California



Results: In the 7 controls (14 sides) mean ejaculatory duct opening pressure was 33.2 cm H₂O. In the 9 patients (17 sides) with suspected ejaculatory duct obstruction mean ejaculatory duct opening pressure before transurethral ejaculatory duct resection was 116 cm H₂O. In the 6 patients who underwent resection, which was unilateral and bilateral in 3 each, mean ejaculatory duct opening pressure decreased from 118 to 53 cm H₂O. Of the 5 patients who underwent semen analyses before and after resection 80% showed an increase in ejaculate volume and/or at least 100% improvement in TMC (volume × concentration × motile fraction).

Ejakülatör Kanal Obstrüksiyonları

TANI

- TRUS

Veziküla seminalis aspirasyonu,

Vezikülografi

Kromotubasyon

Veziküla seminalis sintigrafisi

Veziküla seminalis ejaksiyon fraksiyonu

Veziküla seminalis manometresi

- MRI

MR GÖRÜNTÜLEME

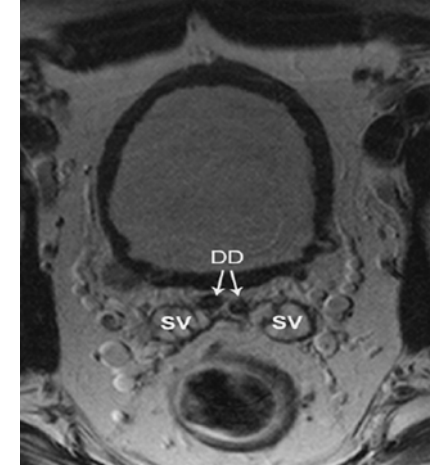
- **Avantajlar**

- Multiplan görüntüleme
- Derin pelvik glandüler organların görüntülenmesi
- Non- invaziv

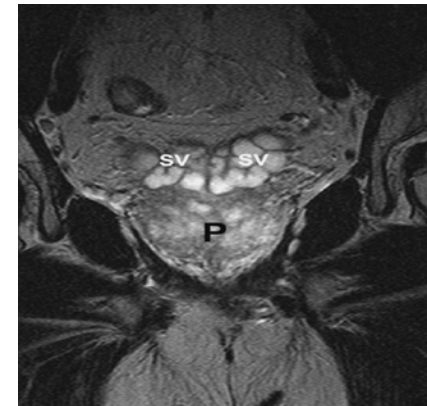
- **Dezavantajları**

- Pahalı olması
- Kolay uygulanamaması

Komplike vakalar ?



yüksek rezolüsyon



TRANSRECTAL US AND ENDORECTAL MR IMAGING IN PARTIAL AND COMPLETE OBSTRUCTION OF THE SEMINAL DUCT SYSTEM

A comparative study

G. ENGİN¹, A. KADIOĞLU², İ. ORHAN³, S. AKDÖL¹ and İ. ROZANES¹

Departments of ¹Radiology and ²Urology, Istanbul Faculty of Medicine, Istanbul and ³Department of Urology, Firat Faculty of Medicine, Elazığ, Turkey.

- TRUS..... : 218

Komplet: 48

Parsiyel: 170

- MRI.....: 62/218

Komplet:13/48

Parsiyel:49/170

TRANSRECTAL US AND ENDORECTAL MR IMAGING IN PARTIAL AND COMPLETE OBSTRUCTION OF THE SEMINAL DUCT SYSTEM

A comparative study

G. ENGIN¹, A. KADIOĞLU², I. ORHAN³, S. AKDÖL¹ and I. ROZANES¹

Departments of ¹Radiology and ²Urology, Istanbul Faculty of Medicine, Istanbul and ³Department of Urology, Firat Faculty of Medicine, Elazığ, Turkey.

- TRUS& MRI (62)

14/62 (%22,5)Ek patoloji

Orta hat kisti.....5

ED kisti& kalsi..... 10

K. Prostatit.....2

V. Seminalis kisti.....2

9/62 (%14,6) Normal

TRANSRECTAL US AND ENDORECTAL MR IMAGING IN PARTIAL AND COMPLETE OBSTRUCTION OF THE SEMINAL DUCT SYSTEM

A comparative study

G. ENGİN¹, A. KADIOĞLU², İ. ORHAN³, S. AKDÖL¹ and İ. ROZANES¹

Departments of ¹Radiology and ²Urology, Istanbul Faculty of Medicine, Istanbul and ³Department of Urology, Firat Faculty of Medicine, Elazığ, Turkey.

- TRUS

Komplet: 36/48 (%75)

Parsiyel: 60/170(%35,2)

- MRI.....: 62/218

Komplet: 8/13(%61,5)

Parsiyel: 20/49 (%40,9)

- *Komplet obstrüksiyonlarda TRUS'un yanlış pozitifliğinde etkin*

- *Parsiyel obstrüksiyonlarda daha belirleyici*

The performance of transrectal ultrasound in the diagnosis of seminal vesicle defects: a comparison with magnetic resonance imaging

Xu Chen¹, Hua Wang¹, Rong-Pei Wu¹, Hui Liang², Xiao-Peng Mao¹, Cheng-Qiang Mao¹, Hong-Zhang Zhu³, Shao-Peng Qiu¹, Dao-Hu Wang¹

Obstructive azoospermia (OA) is one of the most common causes of male infertility. Transrectal ultrasound (TRUS) has been used to diagnose OA for many years. From 2009 to 2013, we evaluated a prospective cohort of 1249 patients with suspected OA using TRUS. It was found that dilation of the ejaculatory duct (ED) (29.9%, 374/1249) was the most common cause of OA, followed by seminal vesicle (SV) abnormalities (28.5%, 356/1249). A total of 237 patients were diagnosed with congenital defects (agenesis and/or hypoplasia) of the SV, constituting more than half of the cases of SV disease in OA (19.0%, 237/1249). In contrast to ED, congenital defects of the SV could not be corrected with surgical treatment. Therefore, it is meaningful to compare TRUS and magnetic resonance imaging (MRI) for accurate diagnosis of SV defects. Among our patients, 30 with agenesis or/and hypoplasia of the SV on TRUS were further evaluated using pelvic MRI within 2 years, with the objective of verifying the TRUS results. The concordance rate for diagnosing congenital defects of the SV was 73.3% (22/30). We concluded that TRUS is a reliable and convenient method for diagnosing agenesis or hypoplasia of the SV in OA patients with a high concordance with MRI while MRI is useful in patients with inconclusive TRUS findings.

Asian Journal of Andrology (2014) **16**, 907–911; doi: 10.4103/1008-682X.142768; published online: 03 October 2014

The performance of transrectal ultrasound in the diagnosis of seminal vesicle defects: a comparison with magnetic resonance imaging

Xu Chen¹, Hua Wang¹, Rong-Pei Wu¹, Hui Liang², Xiao-Peng Mao¹, Cheng-Qiang Mao¹, Hong-Zhang Zhu³, Shao-Peng Qiu¹, Dao-Hu Wang¹

Obstructive azoospermia (OA) is one of the most common causes of male infertility. Transrectal ultrasound (TRUS) has been used to diagnose OA for many years. From 2009 to 2013, we evaluated a prospective cohort of 1249 patients with suspected OA using TRUS. It was found that dilation of the ejaculatory duct (ED) (29.9%, 374/1249) was the most common cause of OA, followed by seminal vesicle (SV) abnormalities (28.5%, 356/1249). A total of 237 patients were diagnosed with congenital defects (agenesis and/or hypoplasia) of the SV, constituting more than half of the cases of SV disease in OA (19.0%, 237/1249). In contrast to ED, congenital defects of the SV could not be corrected with surgical treatment. Therefore, it is meaningful to compare TRUS and magnetic resonance imaging (MRI) for accurate diagnosis of SV defects. Among our patients, 30 with agenesis or/and hypoplasia of the SV on TRUS were further evaluated using pelvic MRI within 2 years, with the objective of verifying the TRUS results. **The concordance rate for diagnosing congenital defects of the SV was 73.3% (22/30).** We concluded that TRUS is a reliable and convenient method for diagnosing agenesis or hypoplasia of the SV in OA patients with a high concordance with MRI while MRI is useful in patients with inconclusive TRUS findings.

Asian Journal of Andrology (2014) **16**, 907–911; doi: 10.4103/1008-682X.142768; published online: 03 October 2014

Keywords: defects; magnetic resonance imaging; obstructive azoospermia; seminal vesicle; transrectal ultrasound

- 5 hasta

TRUS(Unilateral) → MRI(Bilateral)

Table 3: Comparison of TRUS and MRI

ID	Age	TRUS		MRI	
		Right	Left	Right	Left
1	26	Hypoplasia	Hypoplasia	Agensis or hypoplasia	Agensis or hypoplasia
2	22	Hypoplasia	Normal	Agensis	Normal
3	27	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
4	32	Agensis	Hypoplasia	Agensis	Agensis
5	33	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
6	28	Hypoplasia	Agensis	Agensis	Agensis
7	23	Hypoplasia	Normal	Hypoplasia	Hypoplasia
8	24	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
9	36	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
10	27	Agensis	Hypoplasia	Hypoplasia	Hypoplasia
11	27	Hypoplasia	Agensis	Hypoplasia	Hypoplasia
12	27	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
13	26	Agensis	Agensis	Agensis or hypoplasia	Seminal vesiculitis
14	21	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
15	24	Hypoplasia	Agensis or hypoplasia	Hypoplasia	Seminal vesiculitis
16	30	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
17	33	Agensis	Agensis	Hypoplasia	Hypoplasia
18	40	Hypoplasia	Agensis	Hypoplasia	Hypoplasia
19	26	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
20	22	Hypoplasia	Normal	Hypoplasia	Hypoplasia
21	26	Agensis	Normal	Hypoplasia	Hypoplasia and seminal vesiculitis
22	28	Hypoplasia	Agensis	Agensis	Hypoplasia and seminal vesiculitis
23	27	Agensis	Hypoplasia	Agensis	Seminal vesiculitis
24	29	Hypoplasia	Hypoplasia or agensis	Hypoplasia	Hypoplasia
25	32	Normal	Hypoplasia	Agensis	Agensis
26	26	Hypoplasia	Hypoplasia or agensis	Hypoplasia	Hypoplasia
27	34	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
28	28	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
29	31	Agensis	Hypoplasia	Agensis	Agensis
30	21	Normal	Agensis	Agensis	Agensis

- 3 hasta

TRUS

(Agenezi/hipoplazi)



MRI

(Vezikülit)

Table 3: Comparison of TRUS and MRI

ID	Age	TRUS		MRI	
		Right	Left	Right	Left
1	26	Hypoplasia	Hypoplasia	Agenesis or hypoplasia	Agenesis or hypoplasia
2	22	Hypoplasia	Normal	Agenesis	Normal
3	27	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
4	32	Agenesis	Hypoplasia	Agenesis	Agenesis
5	33	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
6	28	Hypoplasia	Agenesis	Agenesis	Agenesis
7	23	Hypoplasia	Normal	Hypoplasia	Hypoplasia
8	24	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
9	36	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
10	27	Agenesis	Hypoplasia	Hypoplasia	Hypoplasia
11	27	Hypoplasia	Agenesis	Hypoplasia	Hypoplasia
12	27	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
13	26	Agenesis	Agenesis	Agenesis or hypoplasia	Seminal vesiculitis
14	21	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
15	24	Hypoplasia	Agenesis or hypoplasia	Hypoplasia	Seminal vesiculitis
16	30	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
17	33	Agenesis	Agenesis	Hypoplasia	Hypoplasia
18	40	Hypoplasia	Agenesis	Hypoplasia	Hypoplasia
19	26	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
20	22	Hypoplasia	Normal	Hypoplasia	Hypoplasia
21	26	Agenesis	Normal	Hypoplasia	Hypoplasia and seminal vesiculitis
22	28	Hypoplasia	Agenesis	Agenesis	Hypoplasia and seminal vesiculitis
23	27	Agenesis	Hypoplasia	Agenesis	Seminal vesiculitis
24	29	Hypoplasia	Hypoplasia or agenesis	Hypoplasia	Hypoplasia
25	32	Normal	Hypoplasia	Agenesis	Agenesis
26	26	Hypoplasia	Hypoplasia or agenesis	Hypoplasia	Hypoplasia
27	34	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
28	28	Hypoplasia	Hypoplasia	Hypoplasia	Hypoplasia
29	31	Agenesis	Hypoplasia	Agenesis	Agenesis
30	21	Normal	Agenesis	Agenesis	Agenesis

SONUÇ

- Erkek reproduktif traktın distal kısmının görüntülenmesinde ilk tanı yöntemi TRUS
- TRUS altın standart değil
- Yanlış pozitiflik oranı yüksek (%35- 50)
- Tedavi prognozunu belirlemede yetersiz(%35-45)
- Ek yöntemler etkin(?)
- Komplike vakalarda MRI

Ejakülatör Kanal Obstrüksiyonları TANI

- %30-35 tanı yetersiz

Derin pelvik glandüler organ görüntülenmesi

Fonksiyonel obstrüksiyon

Partikül çapı/ sperm boyutu**

Yeni dinamik testler.

**Turek PJ, J Urol, 2004. **Jarow JP, J Urol 2004.*

Distal Ejakülatör Kanal Obstrüksiyonları

TANI

- Tanı

TRUS

Statik

*Aspirasyon**

Dinamik

Vezikülografi & Kist görüntülemesi

*Kromotubasyon***

**Orhan İ& Kadioğlu A, BJU 1999, **Turek PJ, J Urol, 2002*