



# Çocuklarda Özel Ürodinamik İncelemeler

**Dr. Tarkan Soygür, FEAPU**

Ankara Üniversitesi Tıp Fakültesi

Üroloji AD, Çocuk Ürolojisi BD

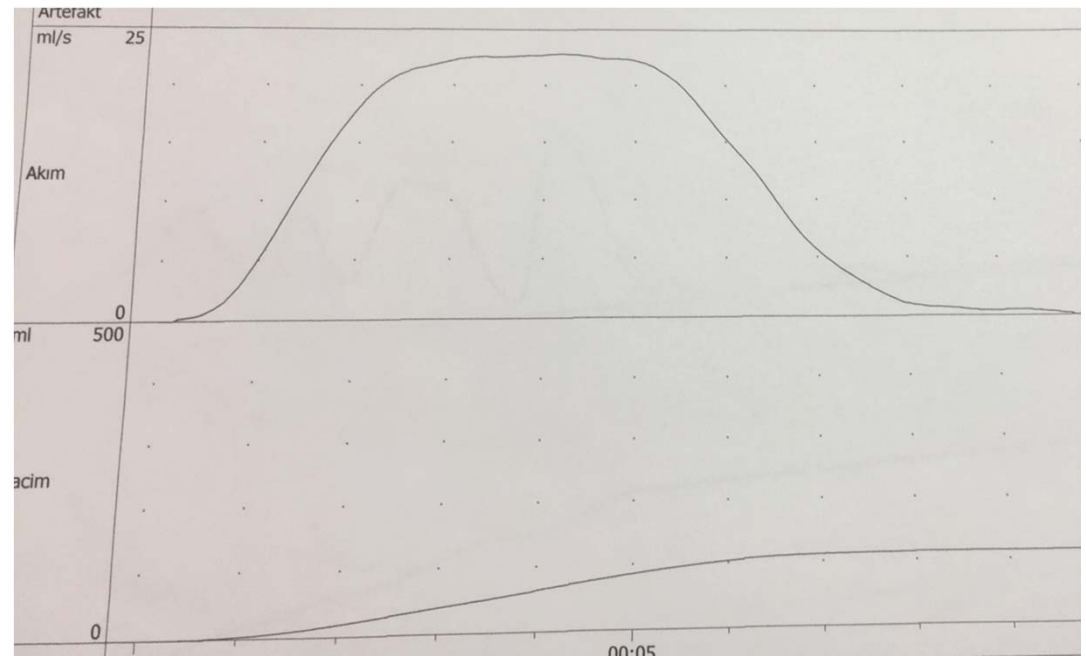
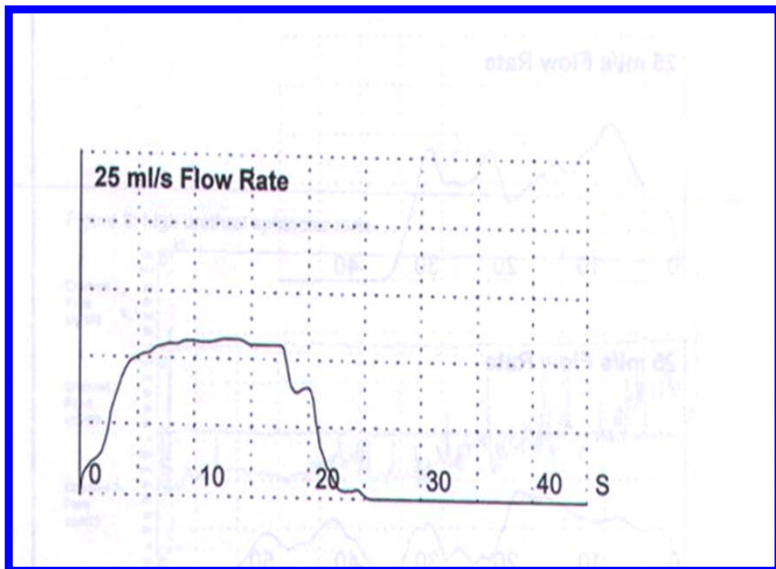
# Çocuklarda Ürodinami

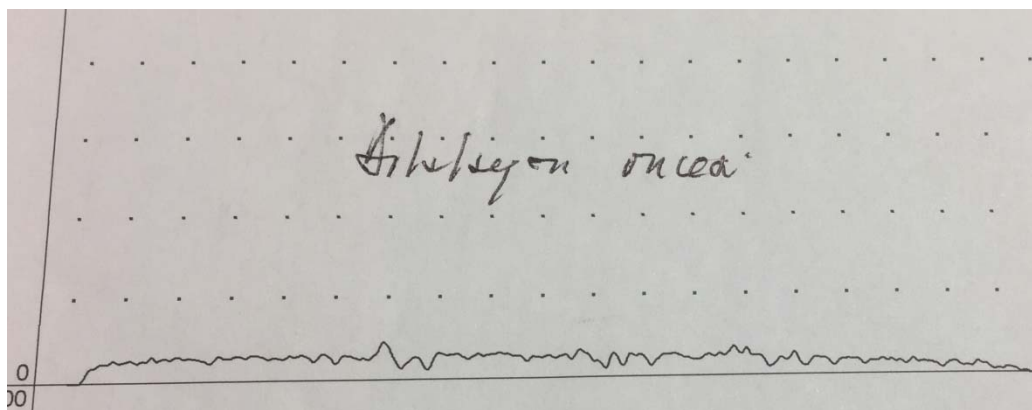
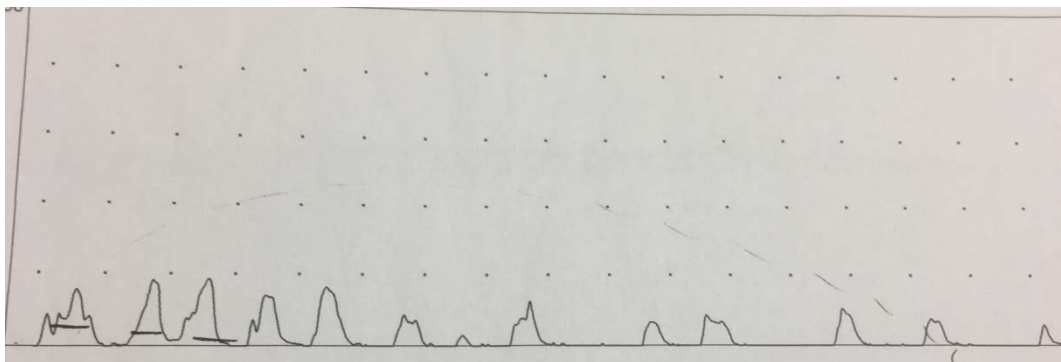
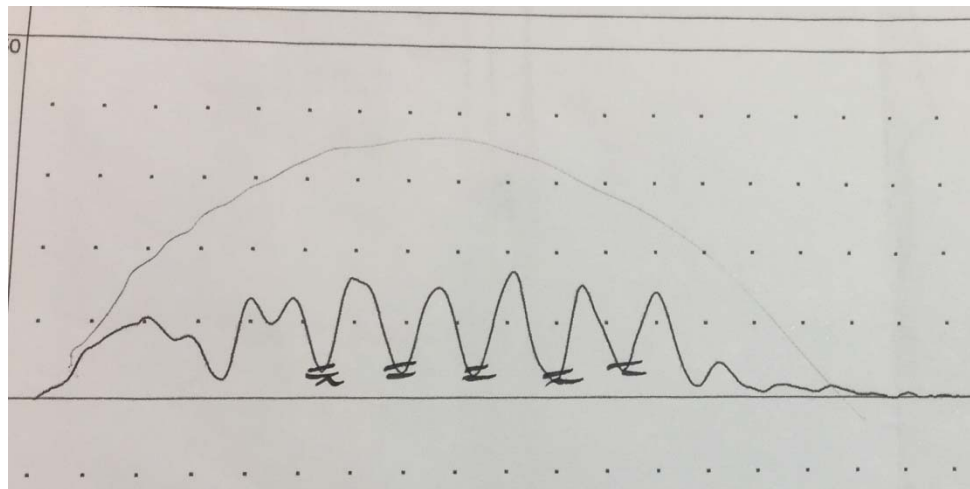
- **Nörojenik Alt Üriner Sistem Disfonksiyonu**
- **Nörojenik olmayan Alt Üriner Sistem Disfonksiyonu**
- **Anatomik Nedenler**
  - **PUV**
  - **Ekstrofi-Epispaidas**

# Ürodinamik Çalışmalar

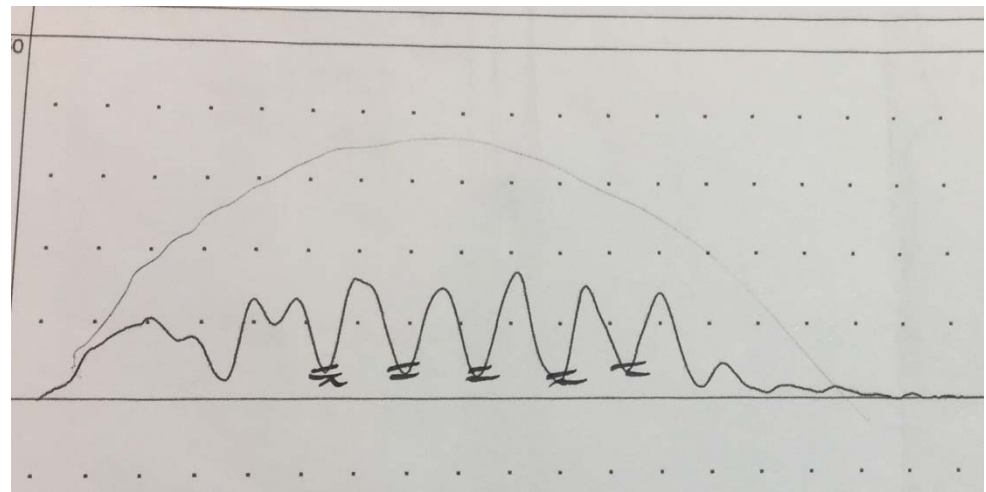
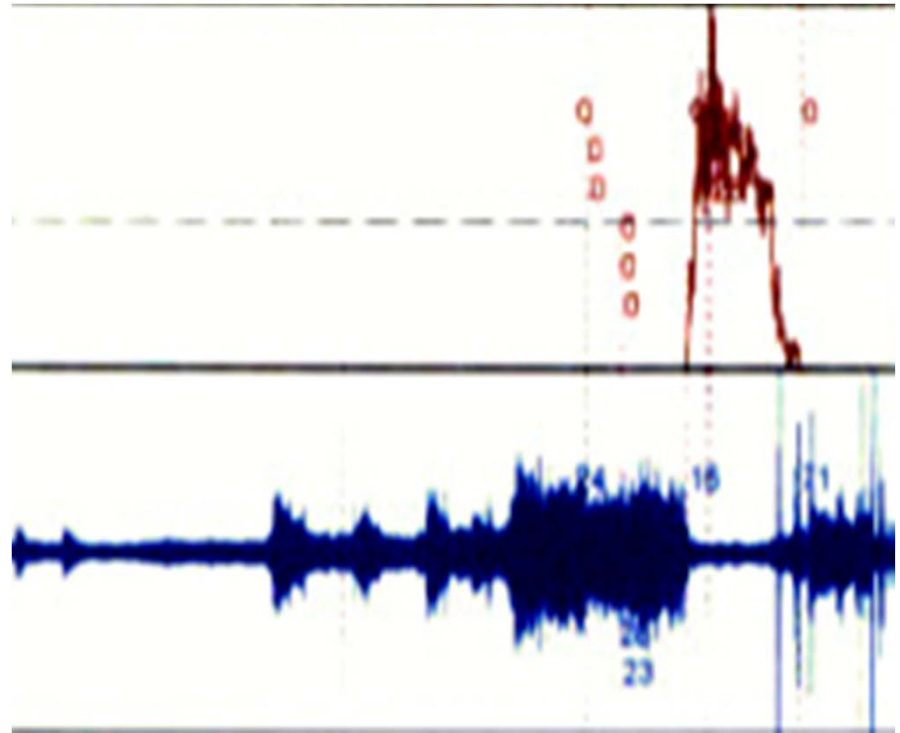
- **Üroflowmetri (+ PVR)**
- **Üroflow-EMG**
- **Sistometri**
- **Videoürodinami**
- Basınç-Akım çalışması
- Üretral basınç profili (UPP)
- Ambulatuvar ürodinami

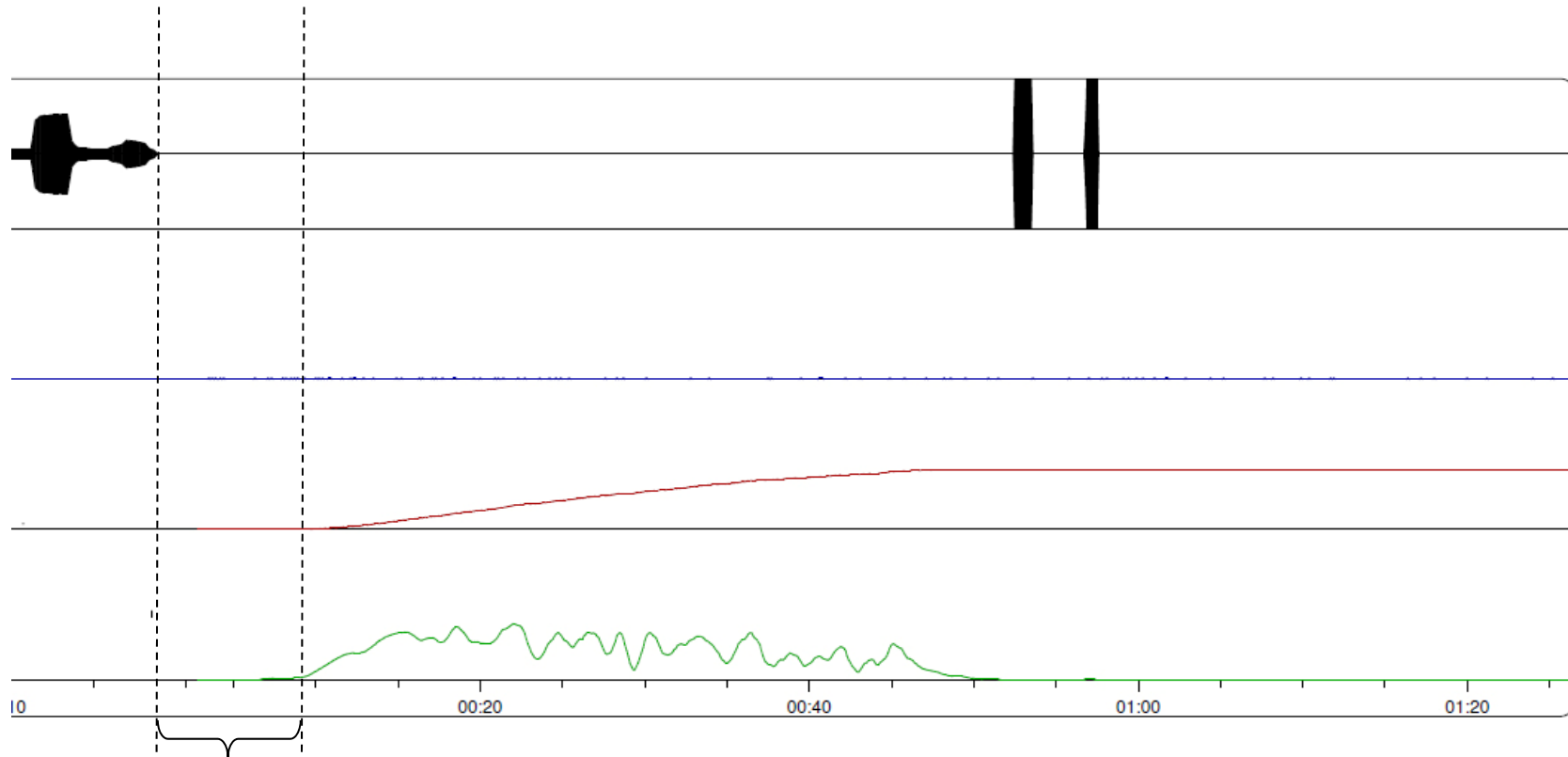
# Normal idrar akım paterni





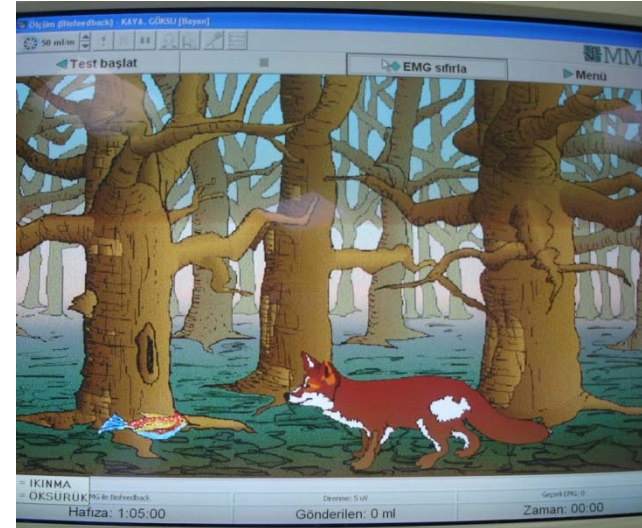
# Üroflow-EMG





EMG gecikme zamanı (lag time)

# UFM-EMG destekli Biofeed-back

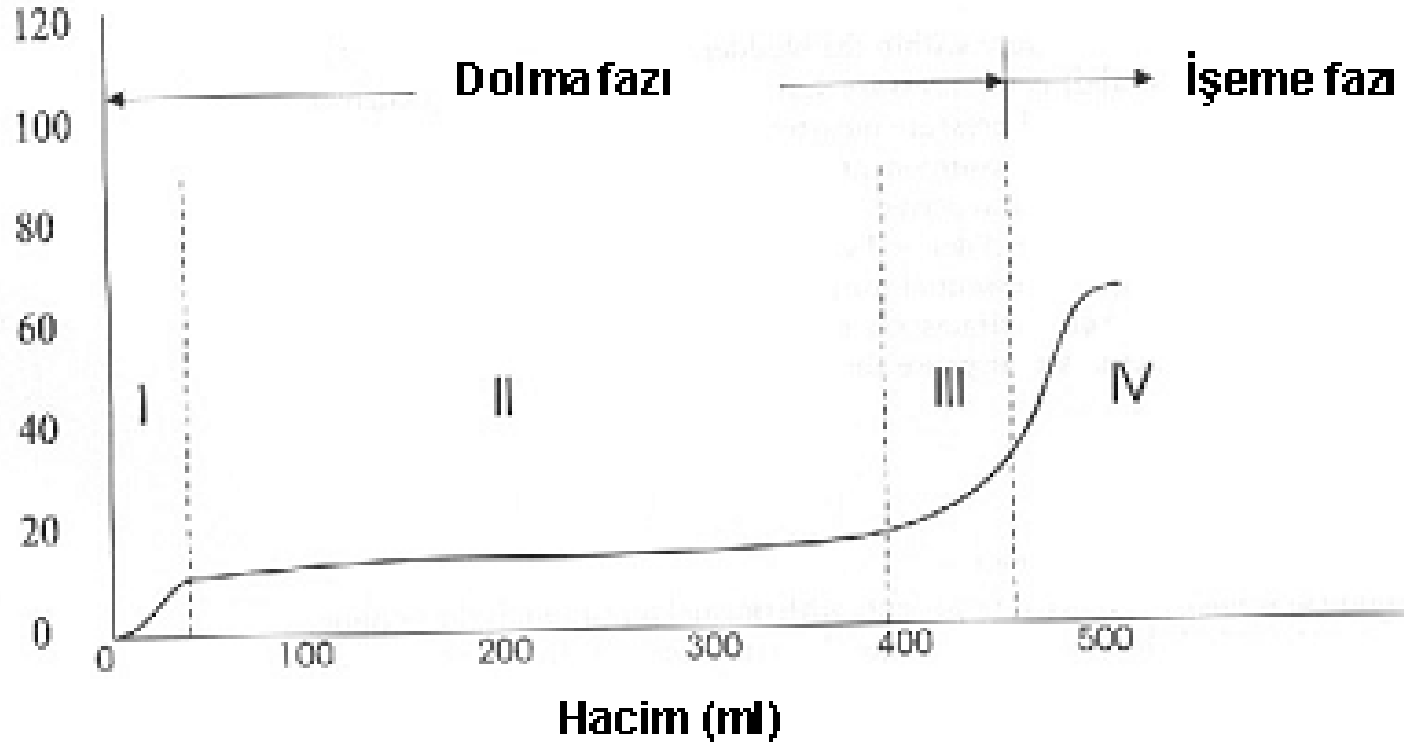




# Sistometri

- Mesanede; belli bir hızda doldurulurken ortaya çıkan basınç değişikliklerinin ölçüldüğü ürodinamik inceleme
- Test basit olarak mesanenin dolma veya depolama fazını değerlendirmek için uygulanır.

# Sistometri



**Sistometri 4 fazdan oluşur:**

**(I) İnisiyal basınç artışı**

**(II) Müsküler dilatasyon**

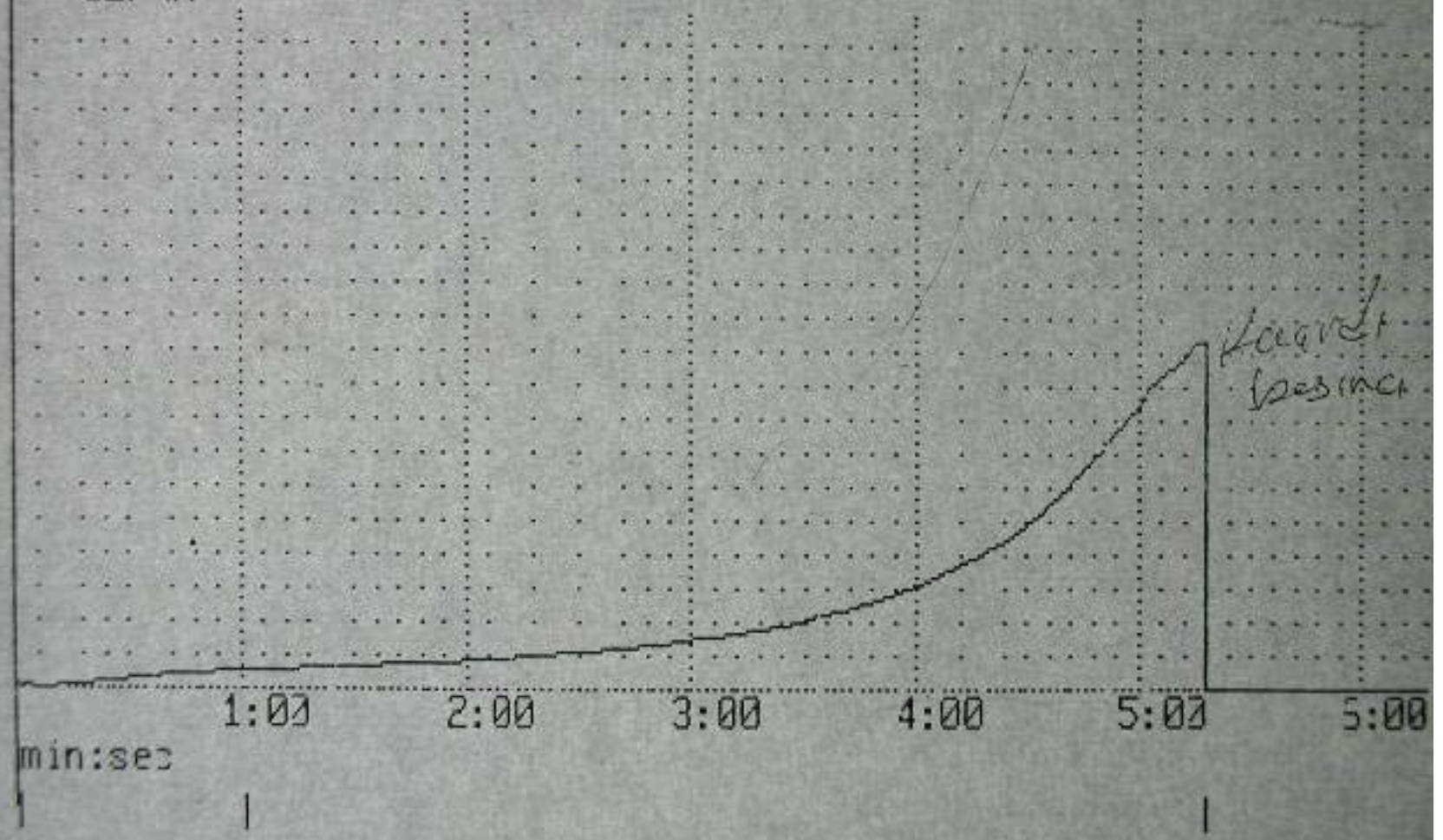
**(III) Gerilme**

**(IV) Müsküler kasılma**

H2O CYSTOMETRY  
POST\_PROCESSIN  
1\_FRM

02.09.13 10:20 ID:

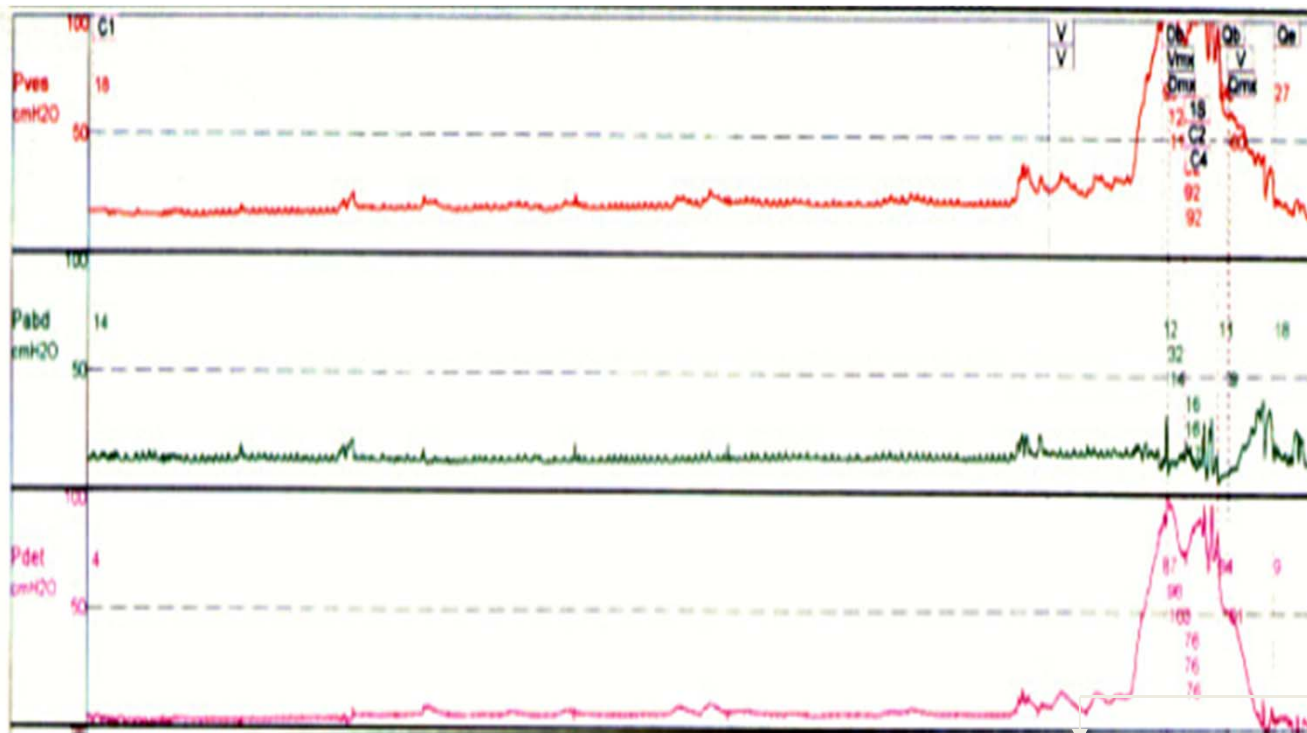
C.



# Çok Kanallı Sistometri

- İntravezikal basınç (Pves)
- İntraabdominal basınç (Pabd)
- **Detrüsör basıncı (Pdet) =**  
Pves - Pabd





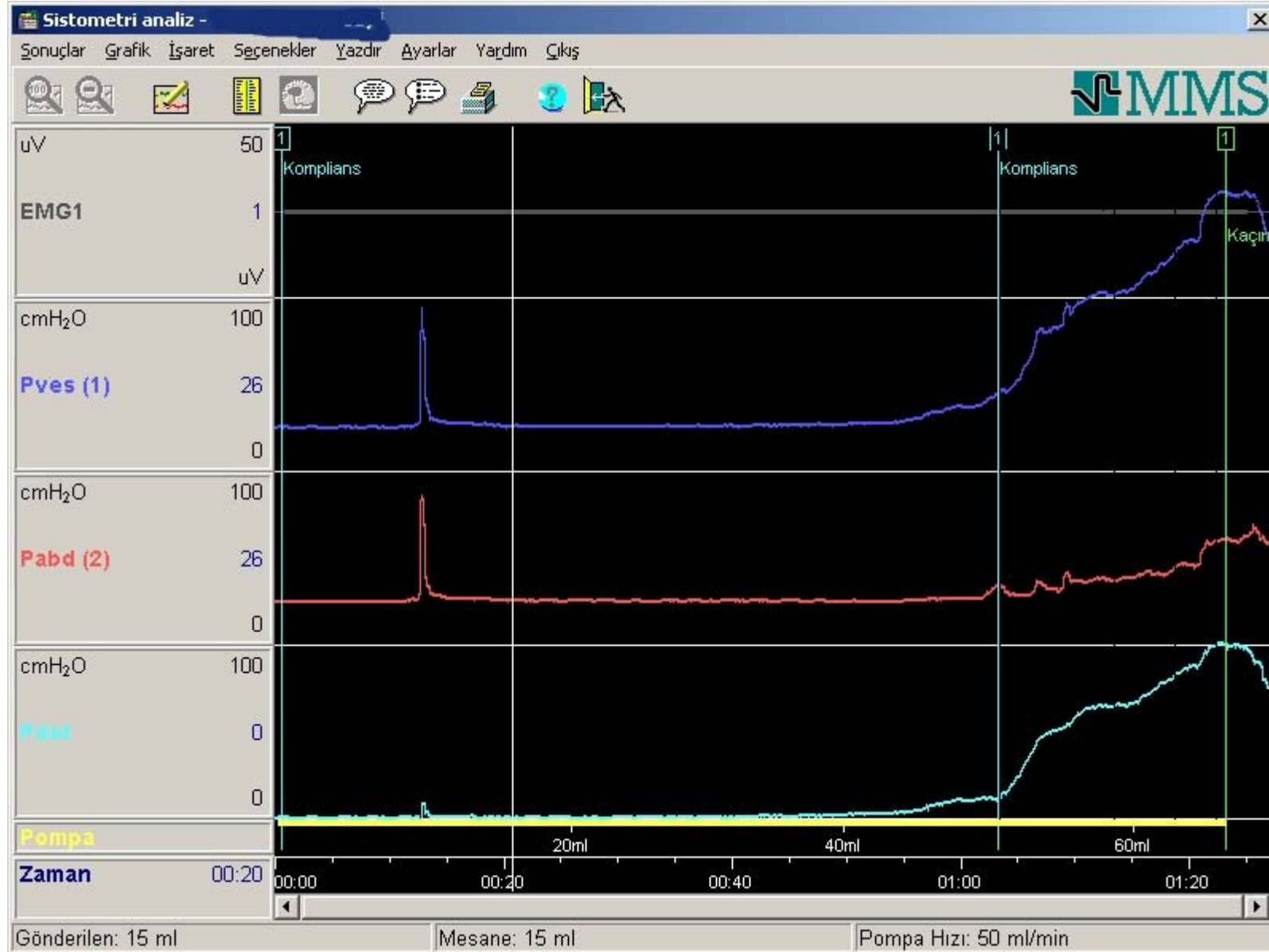
Pves

Pabd

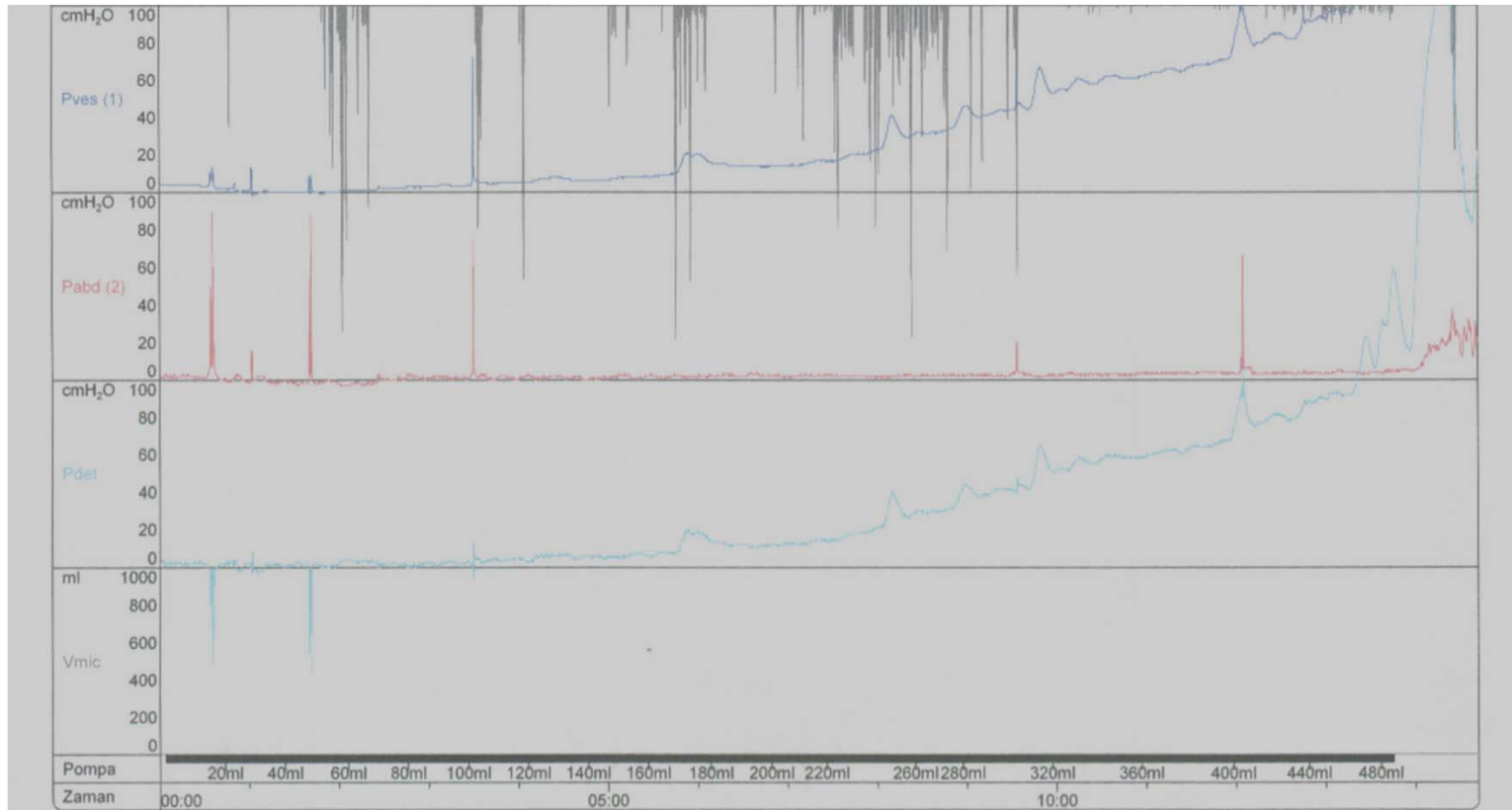
Pdet =

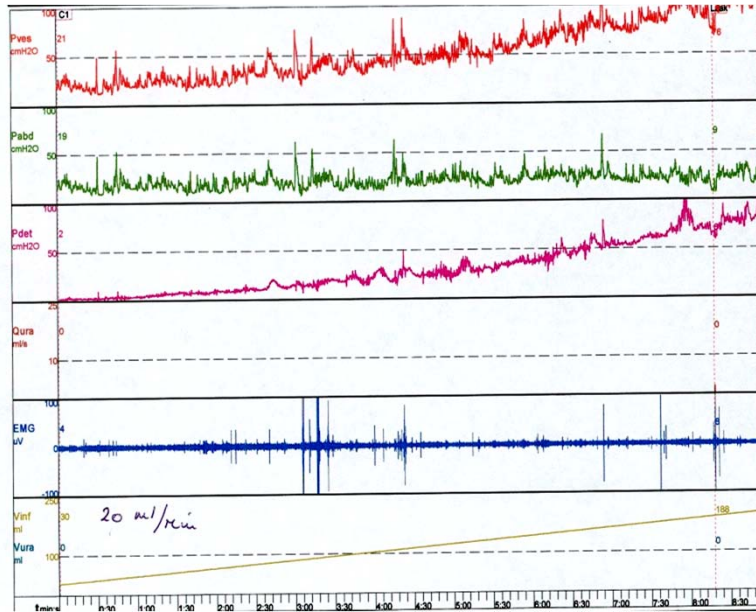
Pves - Pabd

# Hipokomplian Mesane



# Hipokomplian Mesane

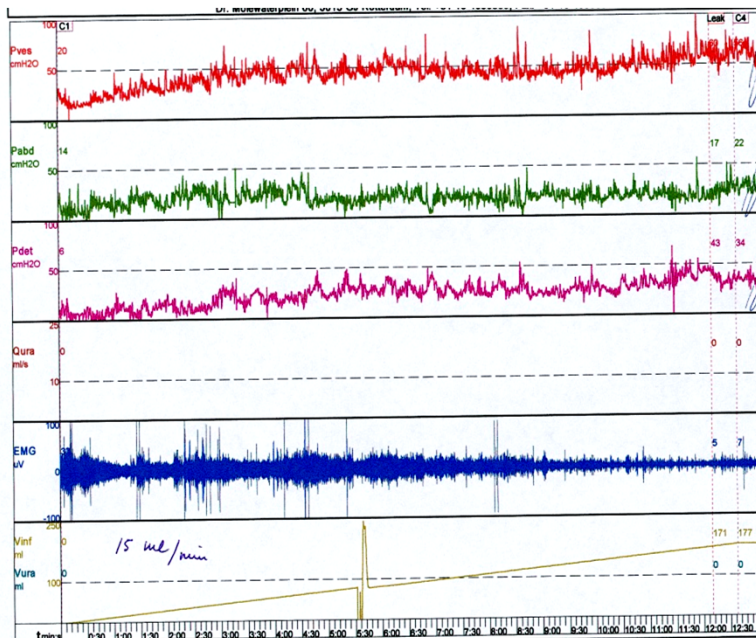




komplians:  $\Delta \text{Vol} / \Delta \text{Pdet}$

$$190 / 94 = 2,02$$

dolum hızı : 20 ml / min

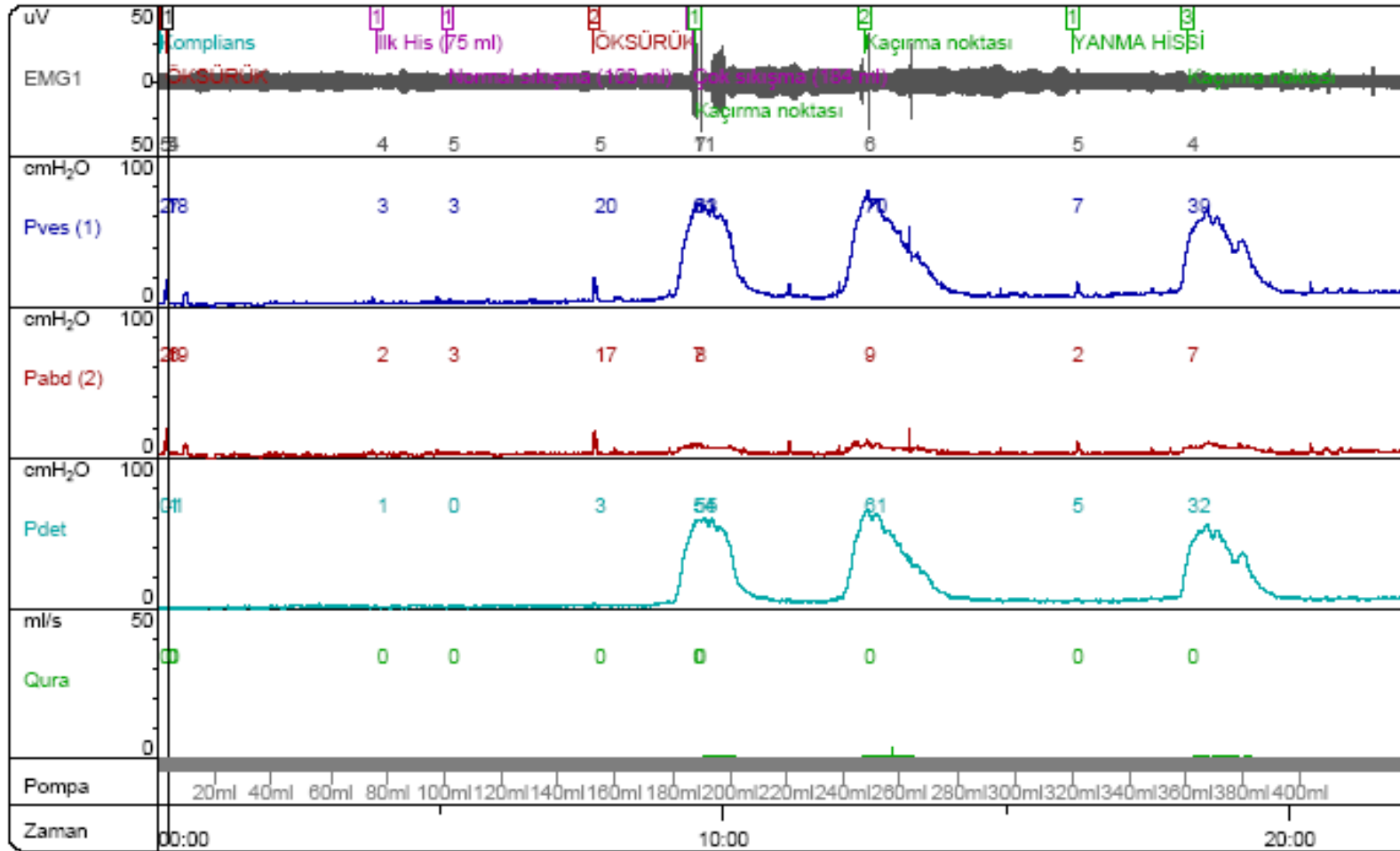


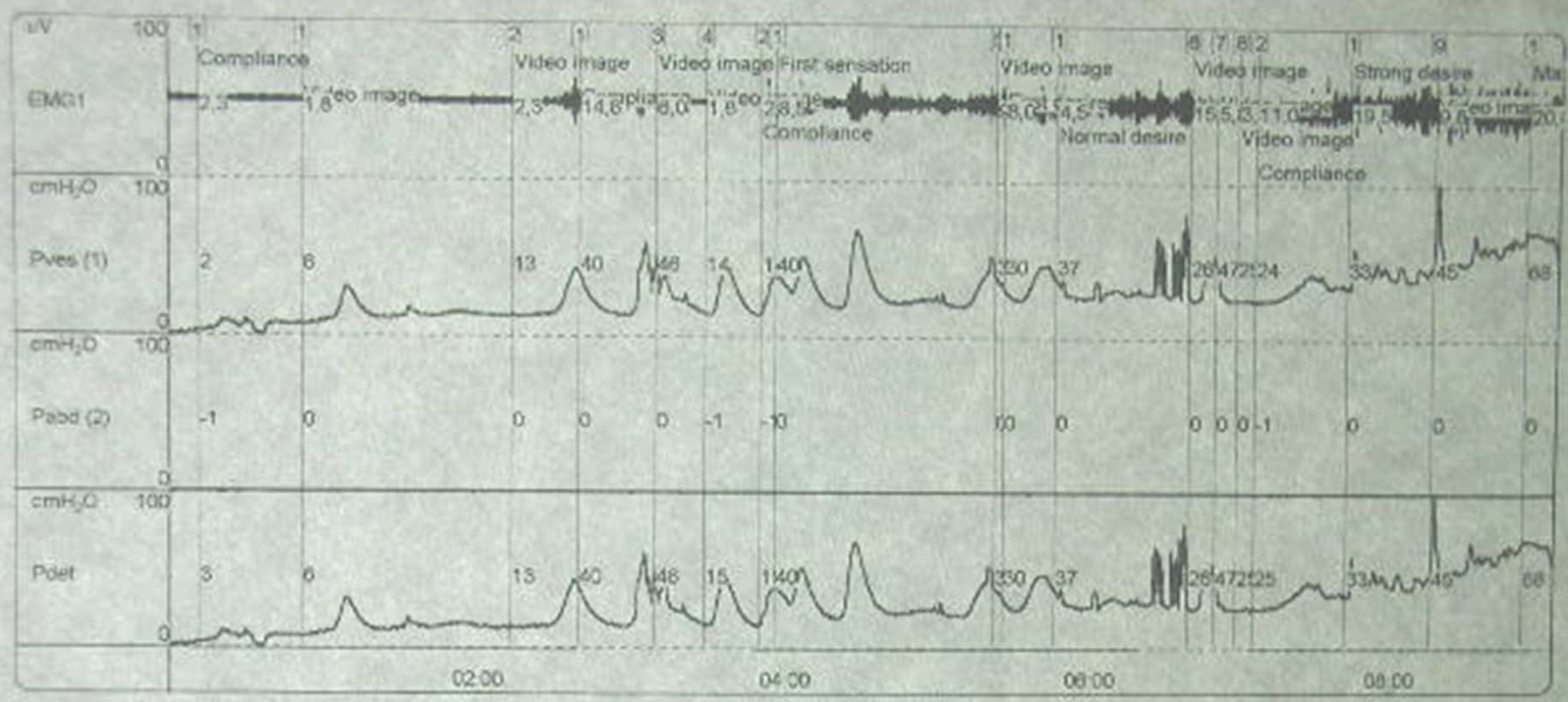
$$k = 171 / 43 = 3.9$$

Dolum hızı: 15 ml / min



# Detrüsör Aşırı Aktivitesi





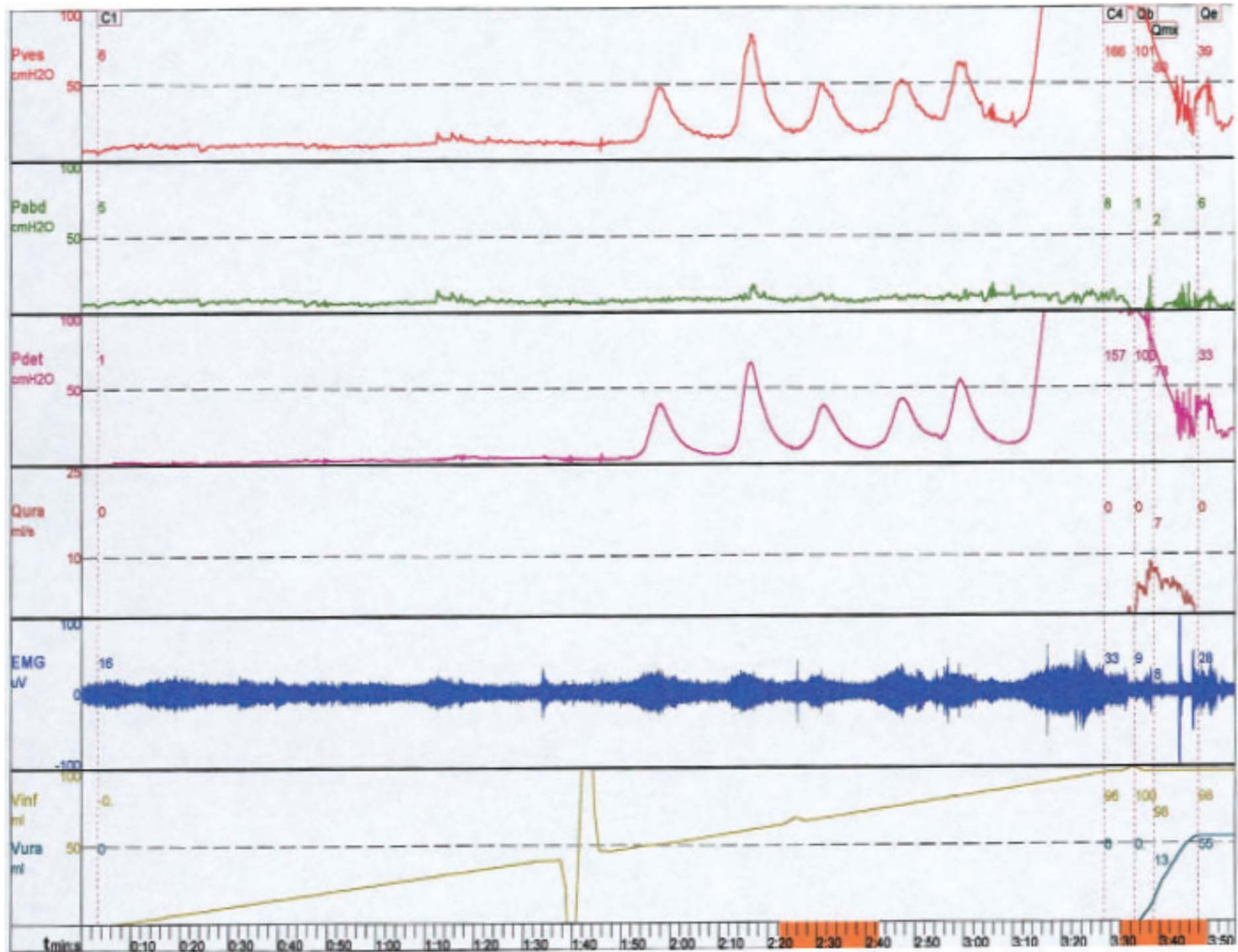
**Cystometry results**

Initial bladder filling	- ml
Infused volume	276 ml
Volume lost through leakage	0 ml
Bladder filling	276 ml
Maximal bladder capacity	276 ml
Efficient bladder capacity	276 ml
Maximal vesical pressure	101 cmH <sub>2</sub> O
Maximal abdominal pressure	- cmH <sub>2</sub> O
Maximal detrusor pressure	101 cmH <sub>2</sub> O
Maximal urethral pressure	1 cmH <sub>2</sub> O
Pump speed	40 ml/min

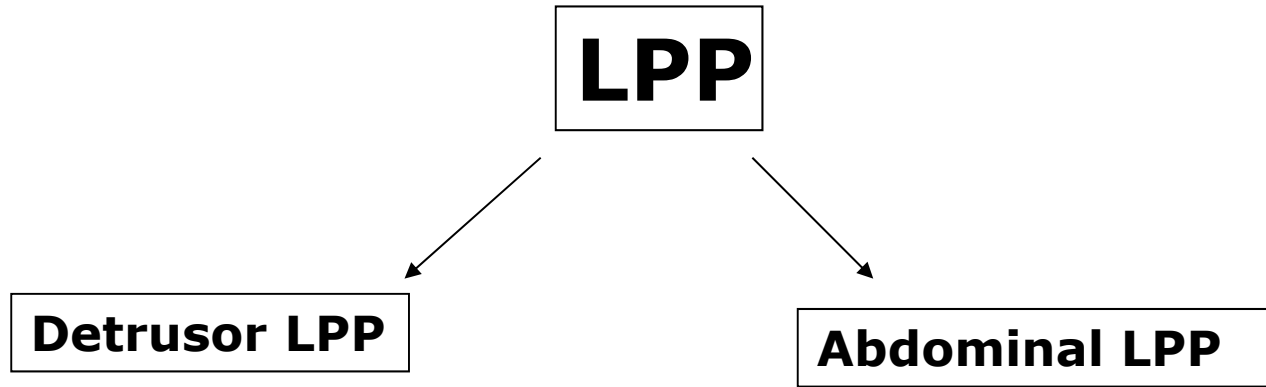
**Sensation results**

Sensation	Bladder filling	Vesical pressure	Detrusor pressure
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# DSD



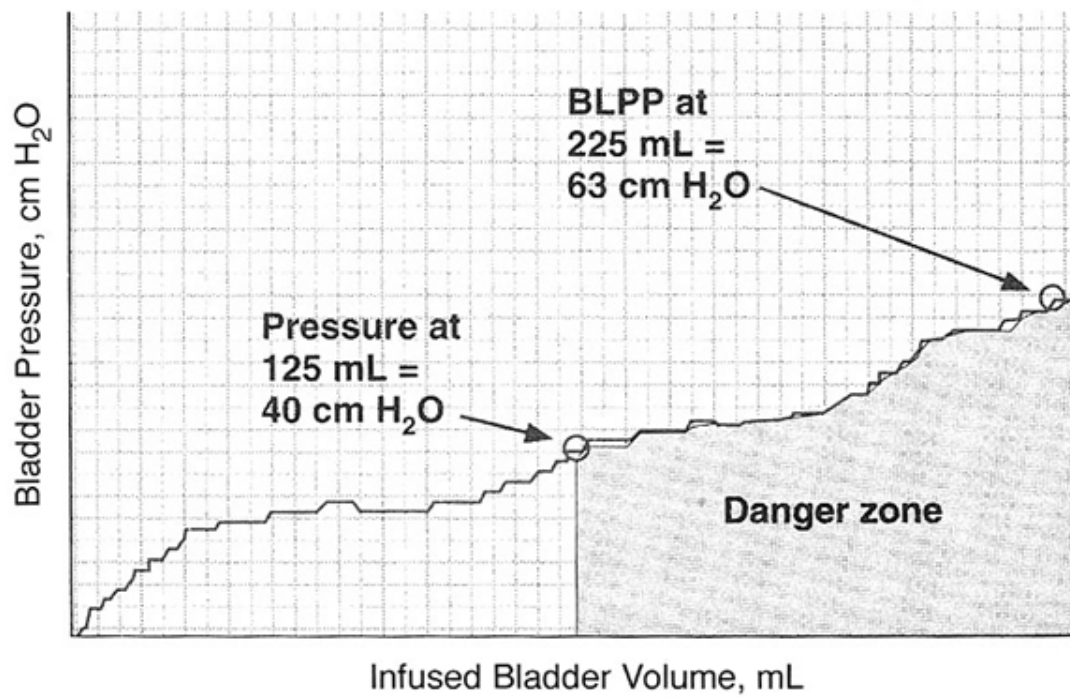
# Abdominal ve detrusor kaçırma basınçları (leak point pressures=LPP)

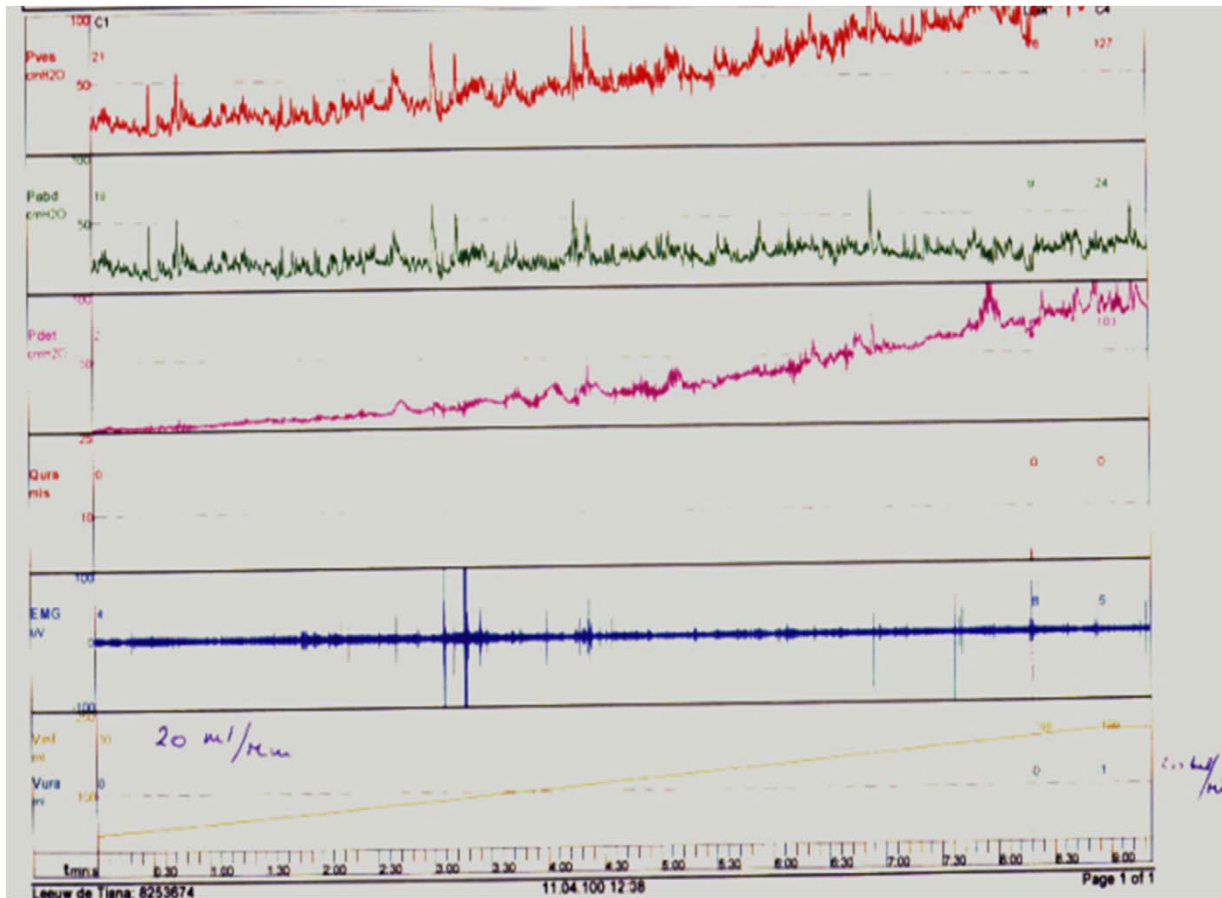


- >40 cmH<sub>2</sub>O  
Üst üriner sistem  
hasarı

- <90-100 cm-su  
Pelvik taban zayıflığı  
Hipermobilite

- <60 cm-su  
İntrensek sfinkter  
yetersizliği





DLPP=65cm-su@215ml  
 Kapasite @ PDet<40cm-su = 125ml

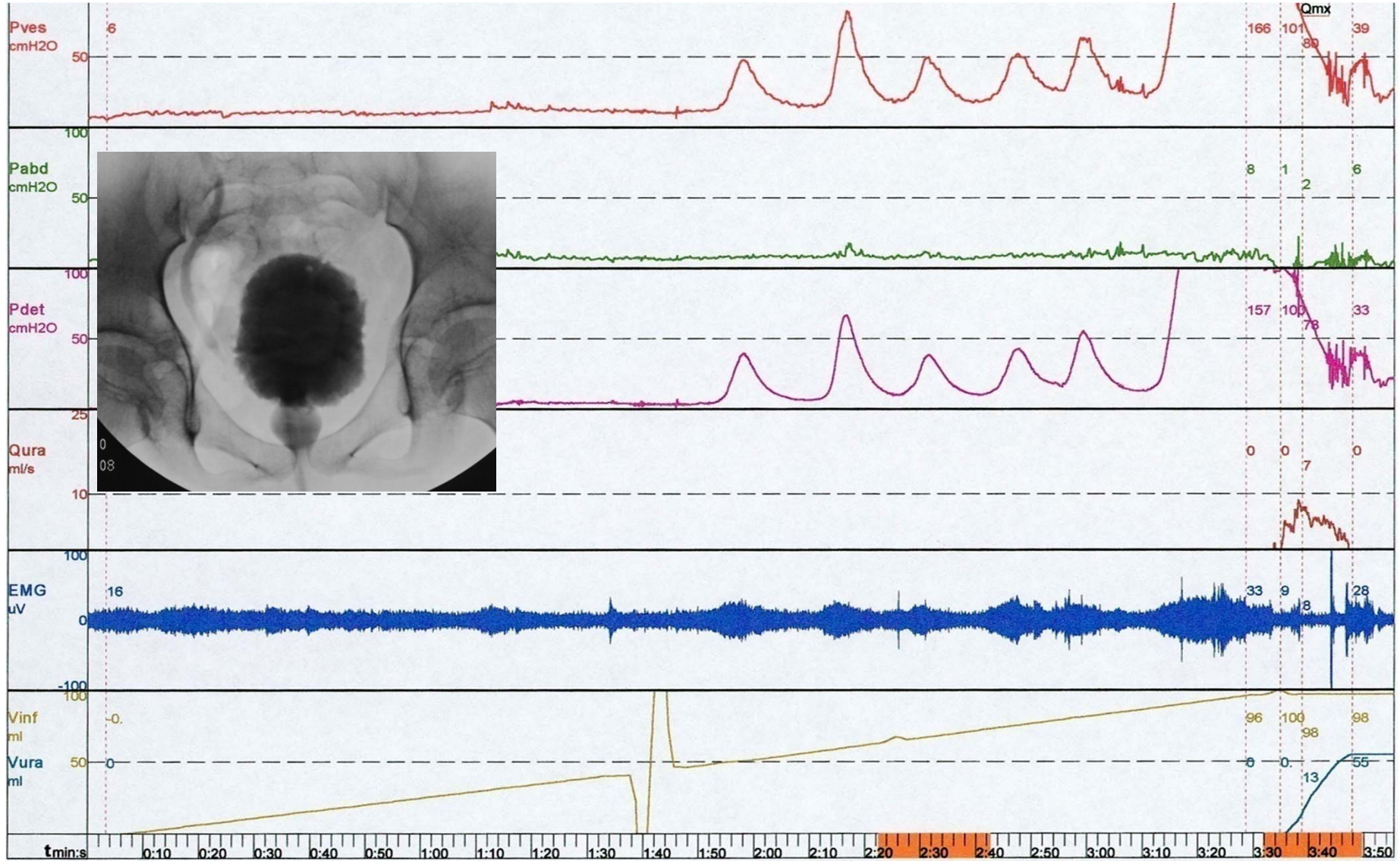
# Videoürodinami

- Rutin ürodinamik çalışma ile skopi altında alt üriner sistemin gözlenmesidir

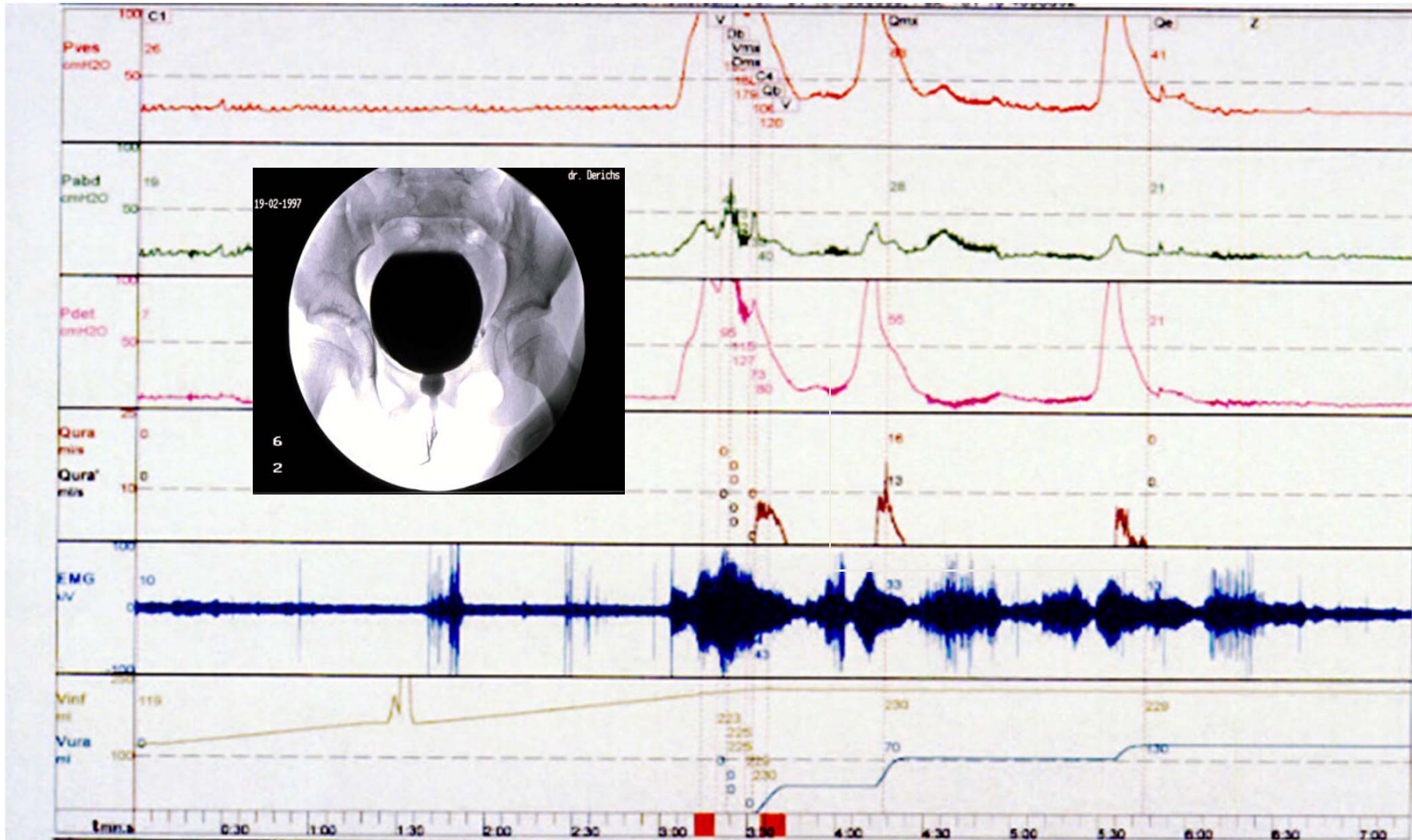




# Aşırı aktif mesane ve Disfonksiyonel İşeme

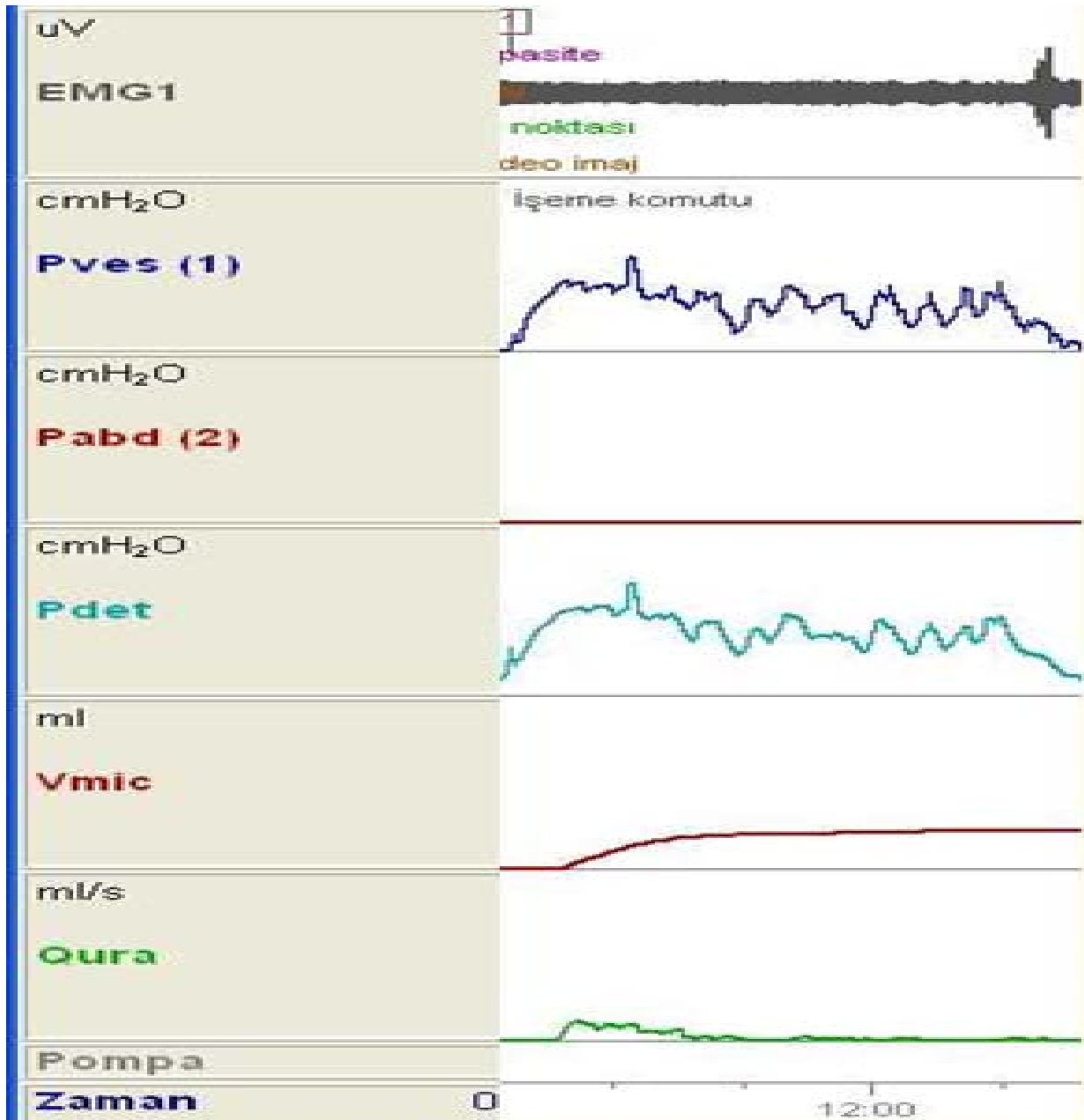


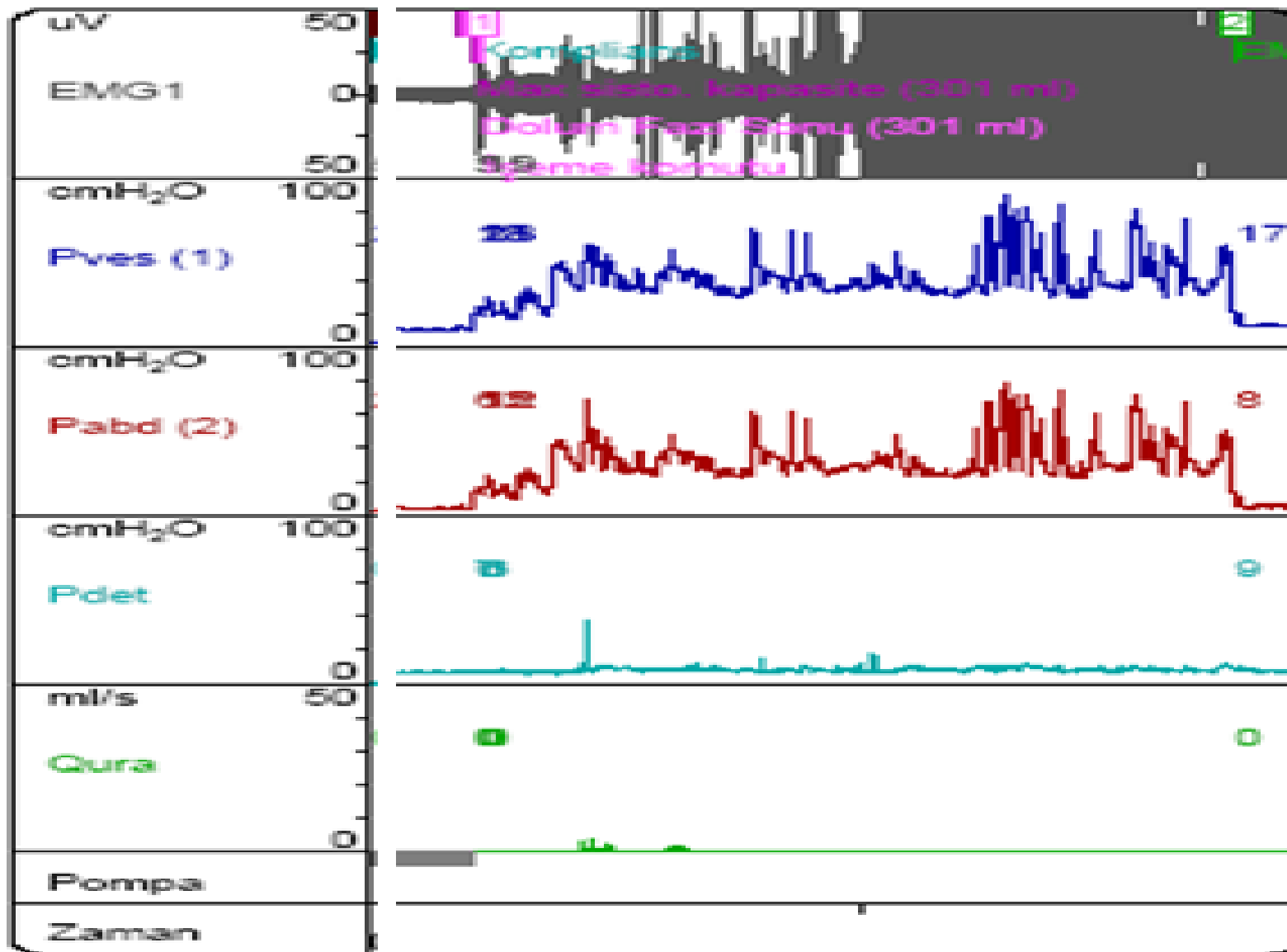
# Nörojenik AAM ve DSD



# Basınç-Akım Çalışması

- Pdet ile idrar akım hızının simültane olarak ölçülmesidir
- İşeme fazını değerlendirmede yalnızca UFM'ye göre daha doğru ve faydalı bilgi verir
- Bu çalışmayı yapmanın ana amacı;
  - Mesane çıkımı obstrüksiyonunu belirleme ve
  - Bozulmuş detrusor kontraktilitesinden obstrüksiyonu ayırt etme
- Normalde yaklaşık 20 ile 35 cmH<sub>2</sub>O 'lik Pdet işeme için yeterli





# Üretral basınç profili

- Üretra boyunca üretral rezistansın (Püret) ölçülmesidir
- Maksimum üretral basınç(MUP); profildeki en yüksek basınç noktası
- Maksimum üretral kapanma basıncı(MUCP); mesane içi basınç ile üretral basınç arasındaki maksimum fark
- Endikasyonu; üretral obstrüktif patolojiler ve stres inkontinans

# Ambulatuvar ürodinami

- Konvansiyonel ürodinami fizyolojik bir ürodinamik deęerlendirme deęildir

# Endikasyonları

- Standart testlerin ortaya koyamadığı inkontinans olguları
- İnvaziv tedavi planlanan ama klasik ürodinaminin yeterli olmadığı olgular
- Tedavi etkisi izlenmesi (ilaç, davranış tedavisi, stimülasyon teknikleri vb.)
- Alt üriner sistemin normal ve anormal faaliyetlerinin daha iyi anlaşılmasına yönelik araştırmalar.
- Spesifik hastalık patofizyoloji araştırmaları



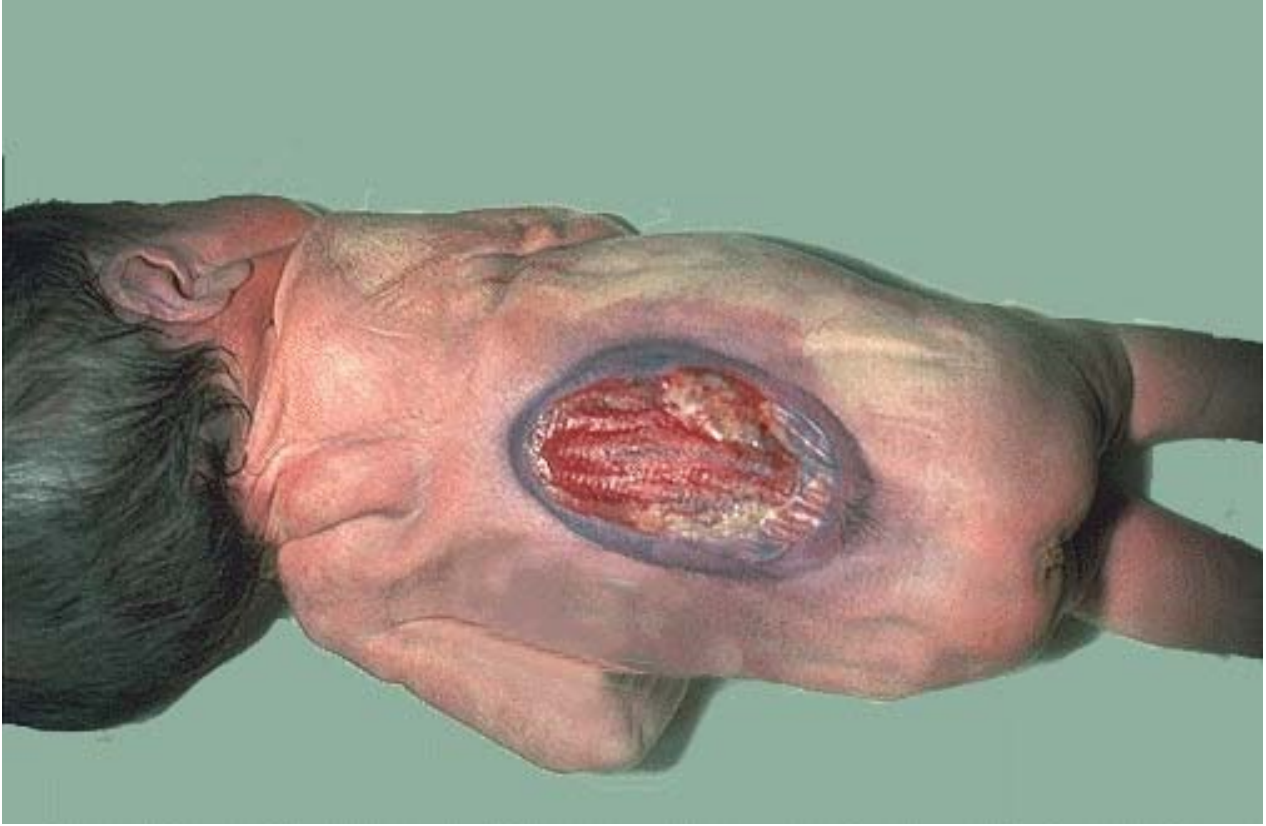


- **Çocuklarda invaziv Ürodinamik İncemeler**

–Kime ?

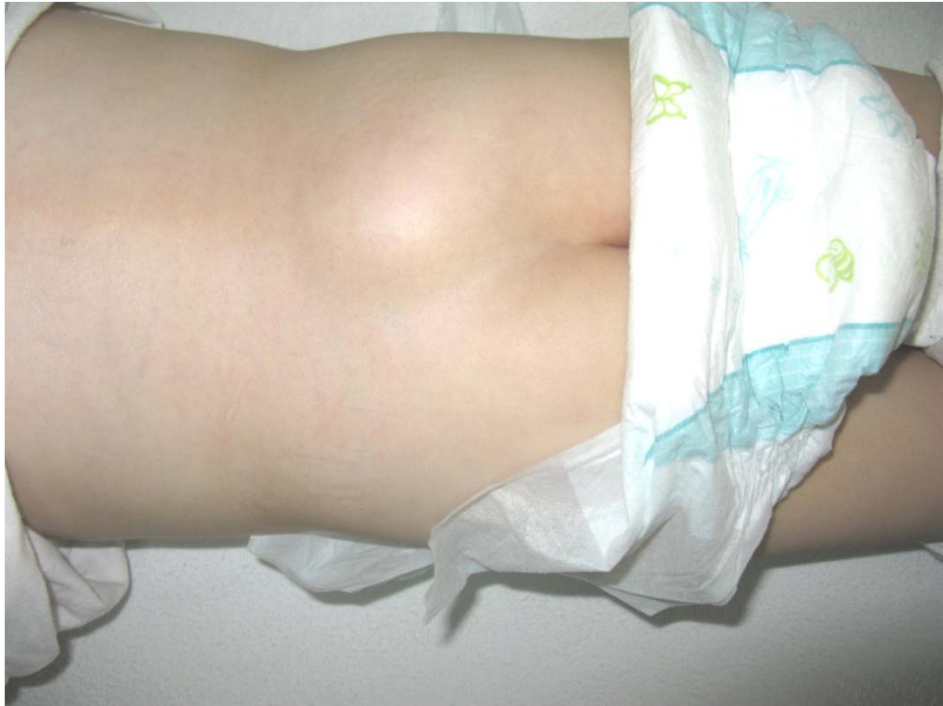
–Ne zaman ?

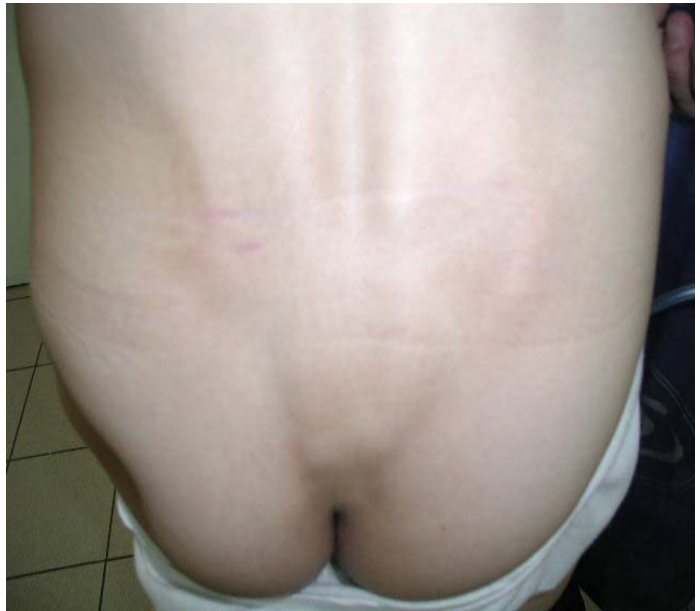
- NÖROJENİK MESANELERDE
- EVET: İLK TANI ve TEDAVİYİ  
TAKİPDE













- İŞEME DİSFONKSİYONU ve ÜSE (ÖZELİKLE

ATEŞLİ) BİRLİKTELİĞİ

- **EVET: VCUĞ YERİNE**

- KONSERVATİF TEDAVİYE DİRENÇLİ İŞEME

DİSFONKSİYONU

- **EVET: NÖROJENİK ya da ANATOMİK**

**PROBLEM ?**

- ALT ÜRİNER SİSTEM REKONSTRÜKSİYONUNDA
- **EVET: PREOP ve POSTOP GEREKLİ SIKLIKDA**



- ÜSE İLE KOMPLİKE OLMAYAN İŞEME  
DİSFONKSİYONU İLE GELEN ÇOCUKLARDA
- **HAYIR**

# The role of video-urodynamic studies in managing non-neurogenic voiding dysfunction in children

T. SOYGÜR, N. ARIKAN, Z. TOKATLI and R. KARABOGA

*Department of Urology, Division of Paediatric Urology, School of Medicine, University of Ankara, Turkey*

Accepted for publication 10 December 2003

## OBJECTIVE

To retrospectively evaluate the role of video-urodynamics (VUD) in the diagnosis and management of voiding dysfunction in children.

## PATIENTS AND METHODS

The records of the 128 children with dysfunctional voiding symptoms were retrospectively evaluated. All patients had a noninvasive screening assessment consisting of a detailed voiding history, ultrasonography and uroflowmetry, and measurement of residual urine. All the patients had also undergone VUD with no selection criteria. The results of VUD were compared retrospectively with the noninvasive screening assessment results.

## RESULTS

In 84 patients with urge syndrome VUD showed detrusor overactivity in 72 (86%); the bladder configuration and voiding-phase results were normal. Three (3.5%) patients had low-grade reflux. In 38 patients with voiding dysfunction VUD showed an intermittent flow pattern and/or increased electromyographic activity with a 'spinning top' deformity of the bladder neck and increased detrusor pressure during voiding. Five (13%) of these children had low-grade reflux. In six infrequent voiders VUD revealed increased bladder capacity with fractionated flow patterns, with concomitantly increased abdominal pressures. There was decreased detrusor pressure during voiding with significant residual urine volume in only two

patients; there was no reflux in any of the patients in this group.

## CONCLUSION

We do not recommend routine VUD in children with non-neurogenic voiding dysfunction, as it does not generally change the management and treatment. A detailed voiding history and physical examination is usually sufficient for a correct diagnosis.

## KEYWORDS

non-neurogenic voiding dysfunction, video-urodynamics, noninvasive assessment, children

# The Management of Dysfunctional Voiding in Children: A Report From the Standardisation Committee of the International Children's Continence Society

Janet Chase, Paul Austin,\* Piet Hoebeke and Patrick McKennat

0022-5347/10/1834-1296/0

THE JOURNAL OF UROLOGY®

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Vol. 183, 1296-1302, April 2010

Printed in U.S.A.

DOI:10.1016/j.juro.2009.12.059

## ASSESSMENT

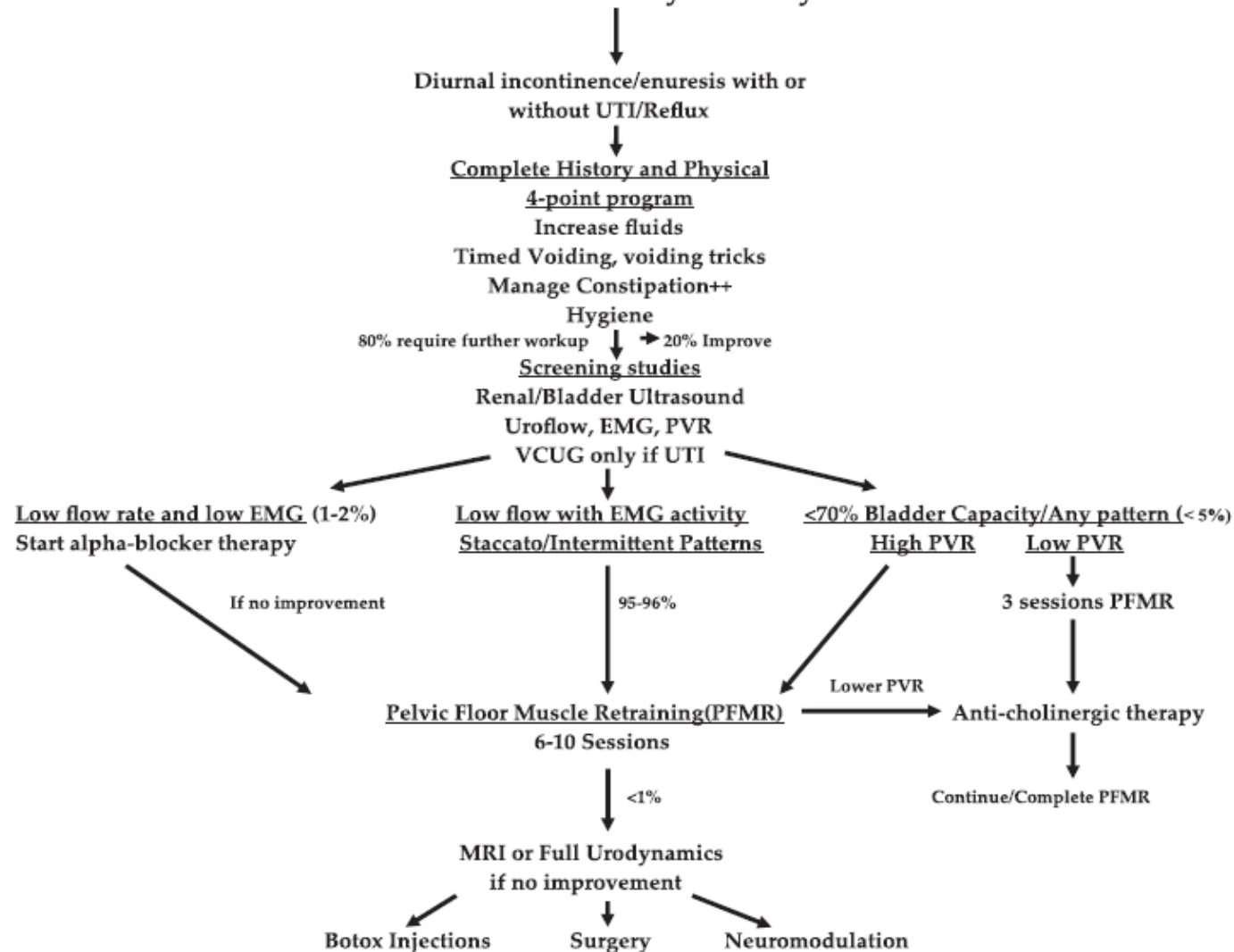
The assessment of dysfunctional voiding requires repeat uroflowmetry with EMG of perineal muscles if available and the measurement of post-void residual volume. The trend is to move away from invasive studies, such as voiding cystourethrography and full urodynamic studies, and rely on the aforementioned less invasive studies.

# Lower Urinary Tract Dysfunction in Childhood

Urol Clin N Am 37 (2010) 215–228  
doi:10.1016/j.ucl.2010.03.001

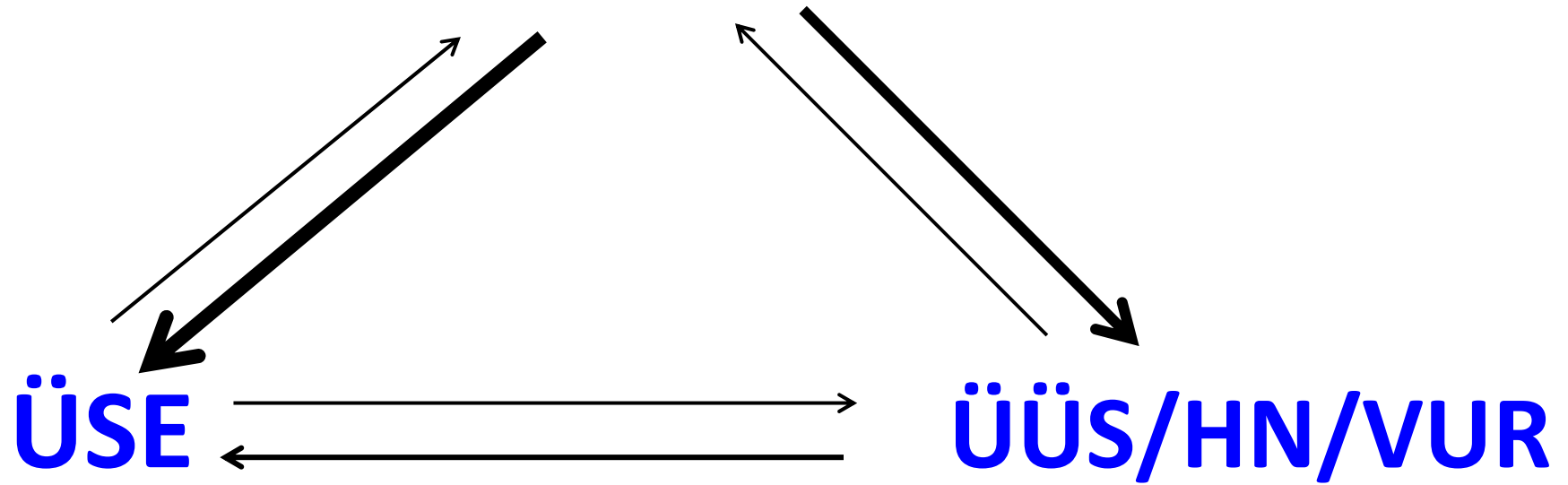
Nathaniel K. Ballek, MD, Patrick H. McKenna, MD\*

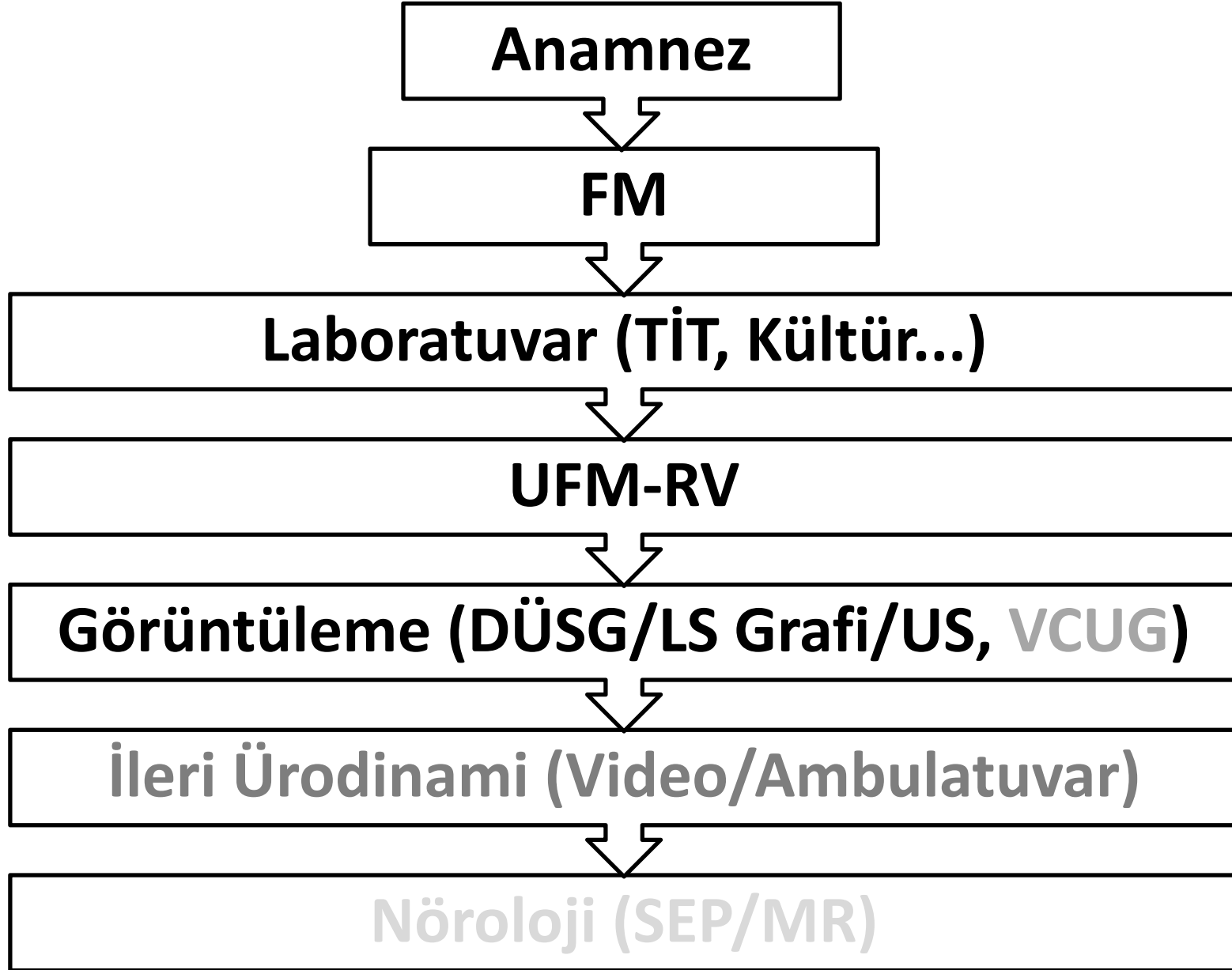
## Treatment of Lower Urinary Tract Dysfunction





# AÜS DİSFONKSİYONU





# Miksiyon Çizelgesi

Tercihan 2-3 günlük olmalı

## GÜNLÜK İDRAR ETME ÇİZELGENİZ

Bu çizelge size ve hekiminiz olarak bana yardımcı olacaktır. Bu tip çizelgeler idrar sorunlarınızın nedenlerinin belirlenmesinde yardımcıdır.

En üst sütündeki ÖRNEK satır çizelgeyi doldurmanızda yardımcı olmak içindir.

İSİM : .....

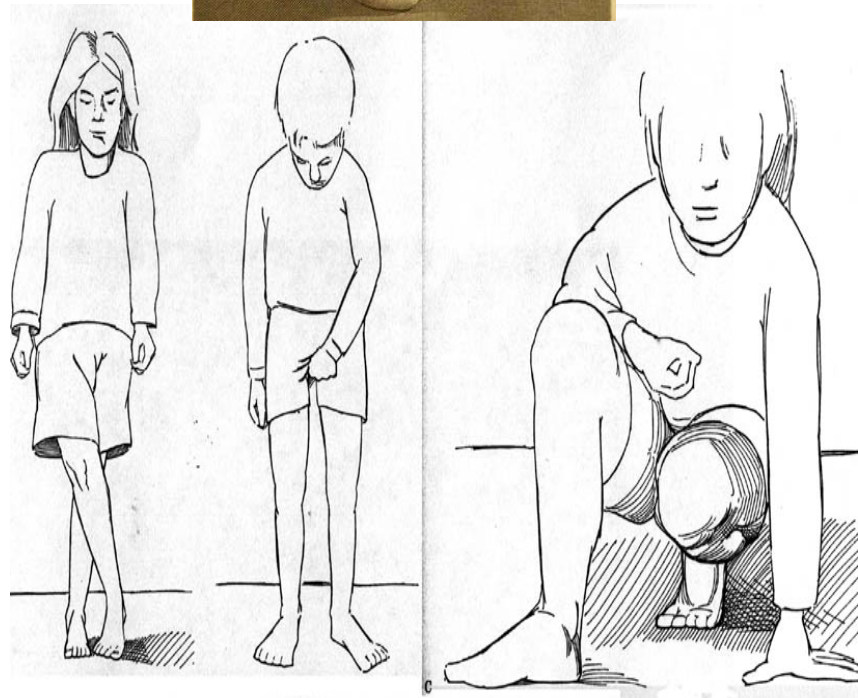
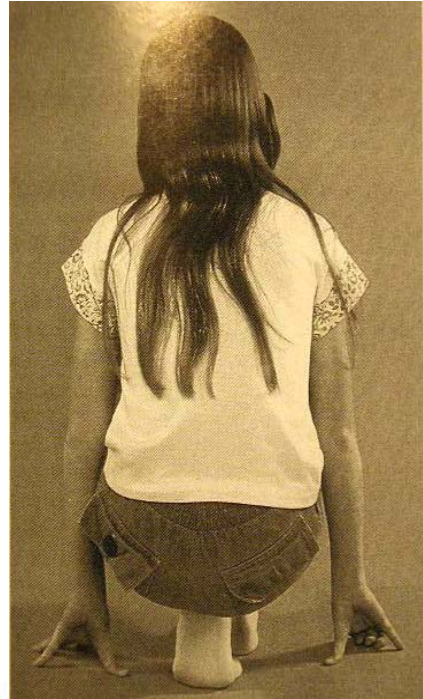
TARİH: ...../...../.....

SAAT	İçtikleriniz Ne içtiniz? Ne kadar?	İdrara Çıkma	İdrar Kaçırma	İdrar Kaçırılmadan Önce Şiddetli Bir İdrar Hissi Düydünüz mü?	İdrar Kaçırduğunuz anda ne yapıyordunuz?(Heşşırma, gülme, egzersiz, ağır kaldırma, vs.)
ÖRNEK	44 / 1 bardak	✓	✗	Evet <input checked="" type="radio"/> Hayır	gülme
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08,00	/			Evet Hayır	
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05,00	/			Evet Hayır	
06,00	/			Evet Hayır	

- Günlük alınan sıvı miktar
- 24 saatlik idrar miktarı
- Gündüz/gece inkontinans  
sayı ve derecesi
- Fonksiyonel kapasite



**Semptom  
Skorları**







THE BRISTOL STOOL FORM SCALE (for children)

## choose your POO!

type <b>1</b>		looks like: <b>rabbit droppings</b> Separate hard lumps, like nuts (hard to pass)
type <b>2</b>		looks like: <b>bunch of grapes</b> Sausage-shaped but lumpy
type <b>3</b>		looks like: <b>corn on cob</b> Like a sausage but with cracks on its surface
type <b>4</b>		looks like: <b>sausage</b> Like a sausage or snake, smooth and soft
type <b>5</b>		looks like: <b>chicken nuggets</b> Soft blobs with clear-cut edges (passed easily)
type <b>6</b>		looks like: <b>porridge</b> Fluffy pieces with ragged edges, a mushy stool
type <b>7</b>		looks like: <b>gravy</b> Watery, no solid pieces ENTIRELY LIQUID



Eur J Pediatr (2010) 169:431–435  
DOI 10.1007/s00431-009-1042-9

ORIGINAL PAPER

## Ochoa syndrome: a spectrum of urofacial syndrome

Ozgu Aydogdu • Berk Burgu • Fuat Demirel •  
Tarkan Soygur • Zeynep Birsin Ozcakar •  
Fatos Yalcinkaya • Serdar Tekgul

Received: 11 June 2009 / Accepted: 30 July 2009 / Published online: 11 August 2009  
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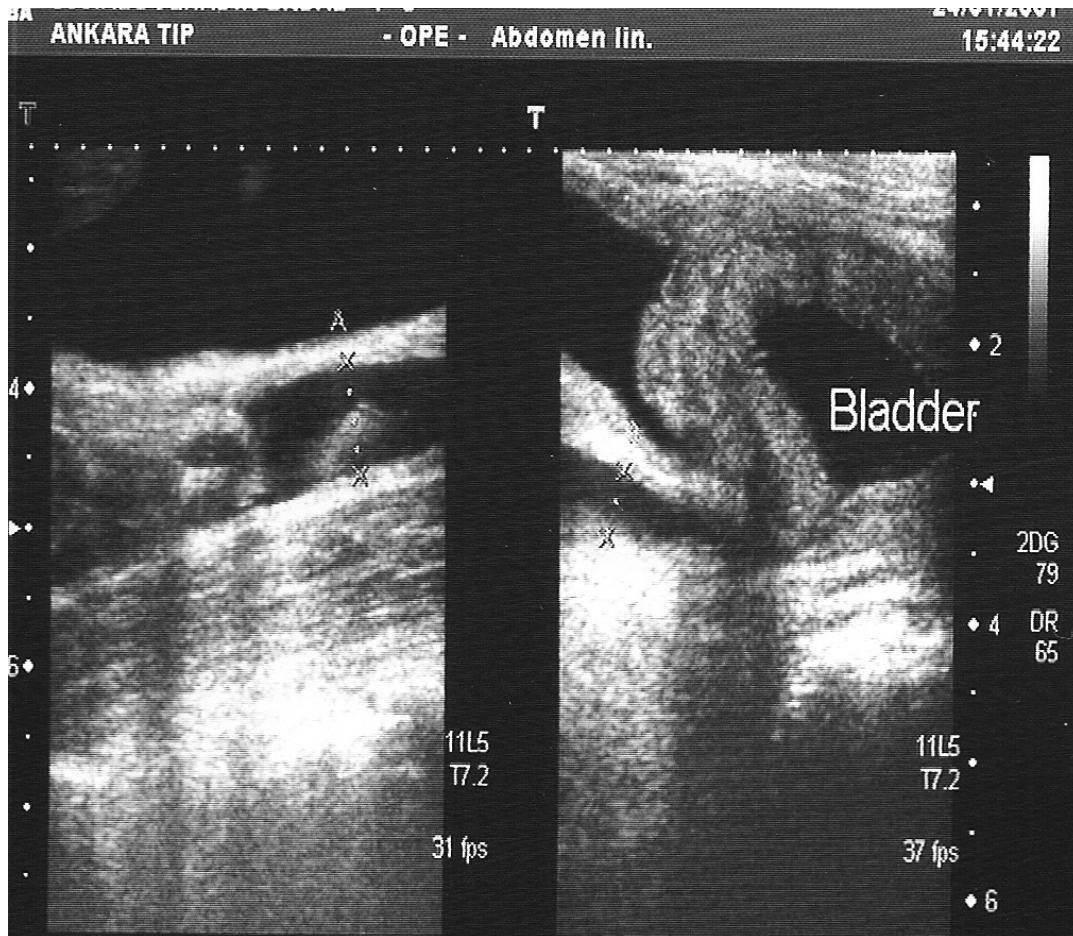
**Abstract** The urofacial syndrome, also known as Ochoa syndrome, is a rare autosomal recessive condition that occurs in both genders and characterized by uropathy and facial abnormalities. Early diagnosis is crucial for the management and prognosis of urinary problems due to a dysfunctional bladder. We report 11 patients with urofacial syndrome in five families from Turkey with a median follow up of 32 months (range, 2–44 months).

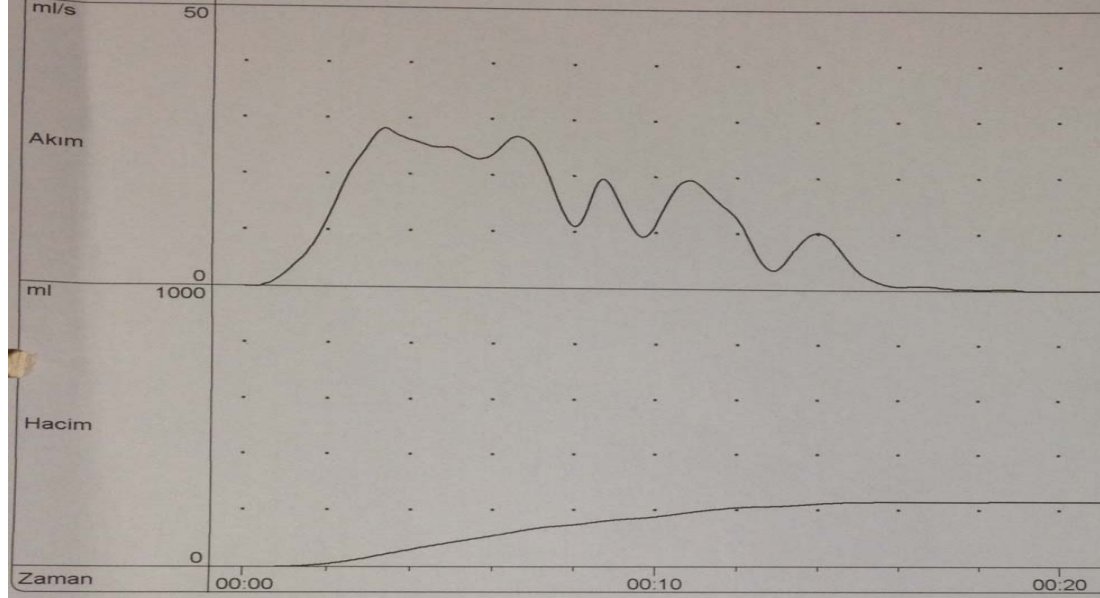
### Introduction

Ochoa described a group of children with the characteristic symptomatology of neurogenic bladder with no apparent neurological or obstructive abnormality [1]. Each patient showed a paradoxical inversion of facial musculature when smiling, giving an appearance of crying [1, 2]. The first genetic evaluation was performed by Elejalde [3] who









### Sonuçlar

Ortalama akım hızı	:	12,1	ml/s
Tepe akım hızı	:	28,3	ml/s
Maks. hıza ulaşma süresi	:	3,0	s
İşenen hacim	:	234,9	ml
Akım süresi	:	18,1	s
İşeme süresi	:	18,5	s
Kesintiler	:	1	

PVR → 130

### Yorum

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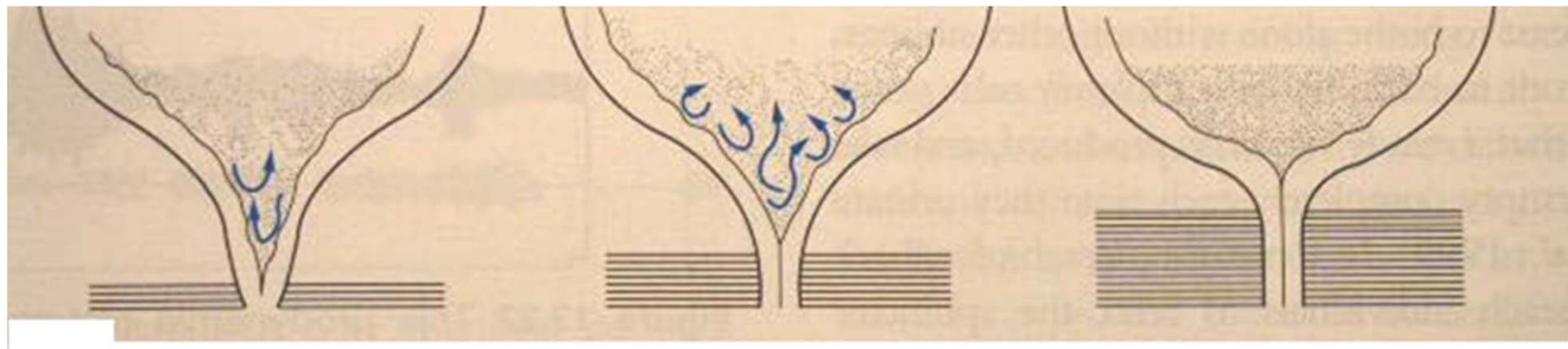
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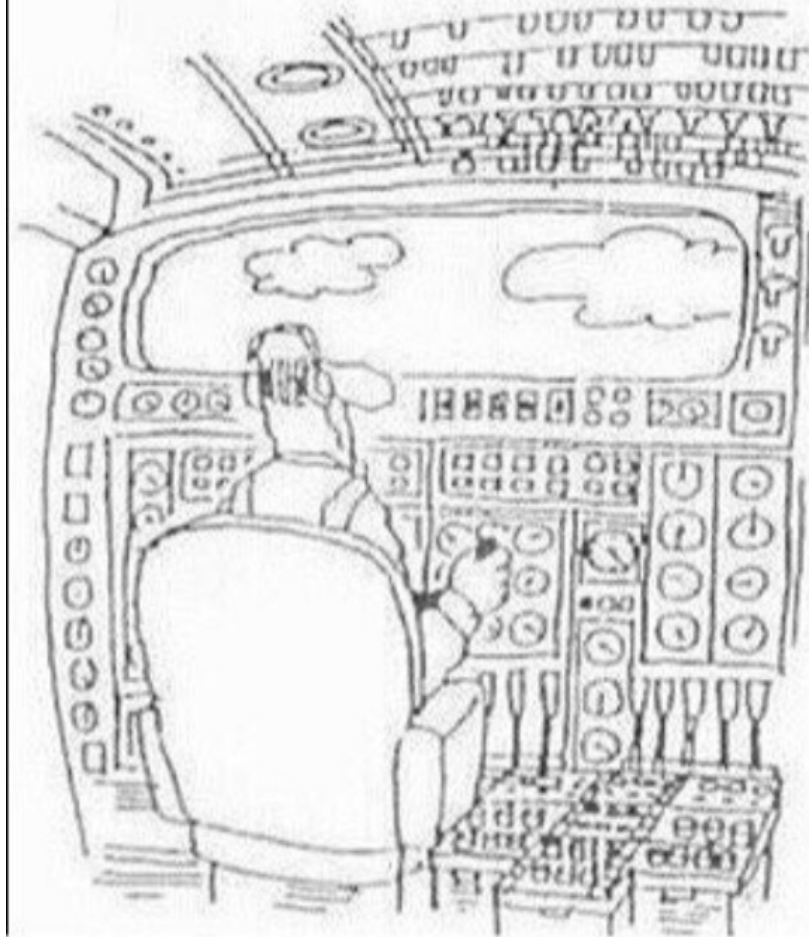




4inchs  
small  
R-155  
A.U.T.F. CEBECI RAD.  
DR-1000 /

50

# MD88



# A320

