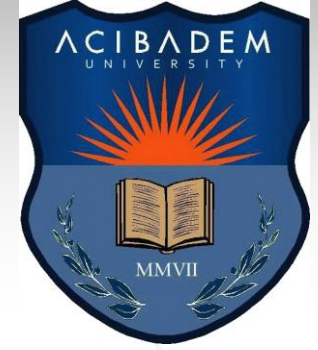


Amniyotik Sıvı Dinamiği Fetal Monitorizasyondaki Önemi



Doç. Dr. Derya EROĞLU
Acibadem Üniversitesi Tıp Fakültesi
Kadın Hastalıkları ve Doğum AD



TMFTP X. Ulusal Kongresi, 27-30 Ekim 2016, İstanbul

○ **Amniyonik Sıvıda Mekonyum**

○ **Amnioinfüzyon**

- **Variable Deselerasyonlar için Profilaktik Amnioinfüzyon**
- **Oligohidramniosisda Amnioinfüzyon**
- **Mekonyumlu Amniotik Sıvı için Amnioinfüzyon**

Amniyotik Sıvıda Mekonyum

1903, J Whitridge Williams

**fetal kanın kötü oksijenasyonuna
bağlı sfinkter ani kasında
gevşeme**

Katz ve Bowes 1992

'Murky subject'

**Mekonyumlu amniyotik sıvı
doğum eylemlerinin %12-22**

**Bu yenidoğanların 1/3'ünde
mekonyum vokal kordların
altındadır**

**Mekonyuma atfedilen perinatal
mortalite 1/1000 canlı doğum**

**Mekonyum inhale eden infantların
%95'i mekonyumu spontan olarak
temizler**



Teoriler??

Fetuslar hipoksiye cevap olarak mekonyum yaparlar mekonyum fetal sıkıntı sinyali olabilir

İntrauterin mekonyum geçişi nöral kontrollü normal gastrointestinal traktüs maturasyonunu gösterir

Geçici umbilikal kord basısı vagal stimulasyon ve barsak peristaltizminde artış

Meconium aspiration syndrome: Reflections on a murky subject

Vern L. Katz, MD, and Watson A. Bowes, Jr., MD
Chapel Hill, North Carolina

Mekonyum aspirasyon sendromunda primer patolojik kondisyonu oluşturan inhale edilen mekonyum değil, etiyolojik ajan fetal hipoksi

İntrauterin asfiksi pulmoner spazm ve pulmoner hiperaktiviteye neden olur

Ciddi asfiksi varlığında fetal AC lerde pulmoner vasküler hasar ve pulmoner HT olur

Meconium aspiration syndrome: Reflections on a murky subject

Vern L. Katz, MD, and Watson A. Bowes, Jr., MD

Chapel Hill, North Carolina

Hasarlı AC ler mekonyumu temizleyemezler

Ciddi vakalarda sağdan sola şant ve persistan fetal sirkulasyon ve fetal ölüm ile sonuçlanır

MAS insidansı güncel obstetrik ve pediatrik girişimlerden etkilenmeyebilir

Table II. Meconium passage as function of gestational age

<i>Series</i>	<i>Infants with meconium passage (%)</i>
Usher et al. ⁷	
39-40 wk	15.3
41 wk	27.0
≥42 wk	31.5
Ostrea and Naqvi ⁹	
<38 wk	4.3
39-42 wk	6.0
≥42 wk	52.0
Eden et al. ²⁰	
39 wk	13.5
40 wk	19.4
42 wk	25.5
>42 wk	28.9
Steer et al. ²⁴	
<36 wk	3.0
36-39 wk	13.0
40-41 wk	19.0
≥42 wk	23.0

Gestasyonel yaşa göre mekonyum pasajı

Amniotic Fluid Meconium: A Fetal Environmental Hazard

KIRK D. RAMIN, MD, KENNETH J. LEVENO, MD, MARY ANN KELLY, RN, AND
THOMAS J. CARMODY, PhD

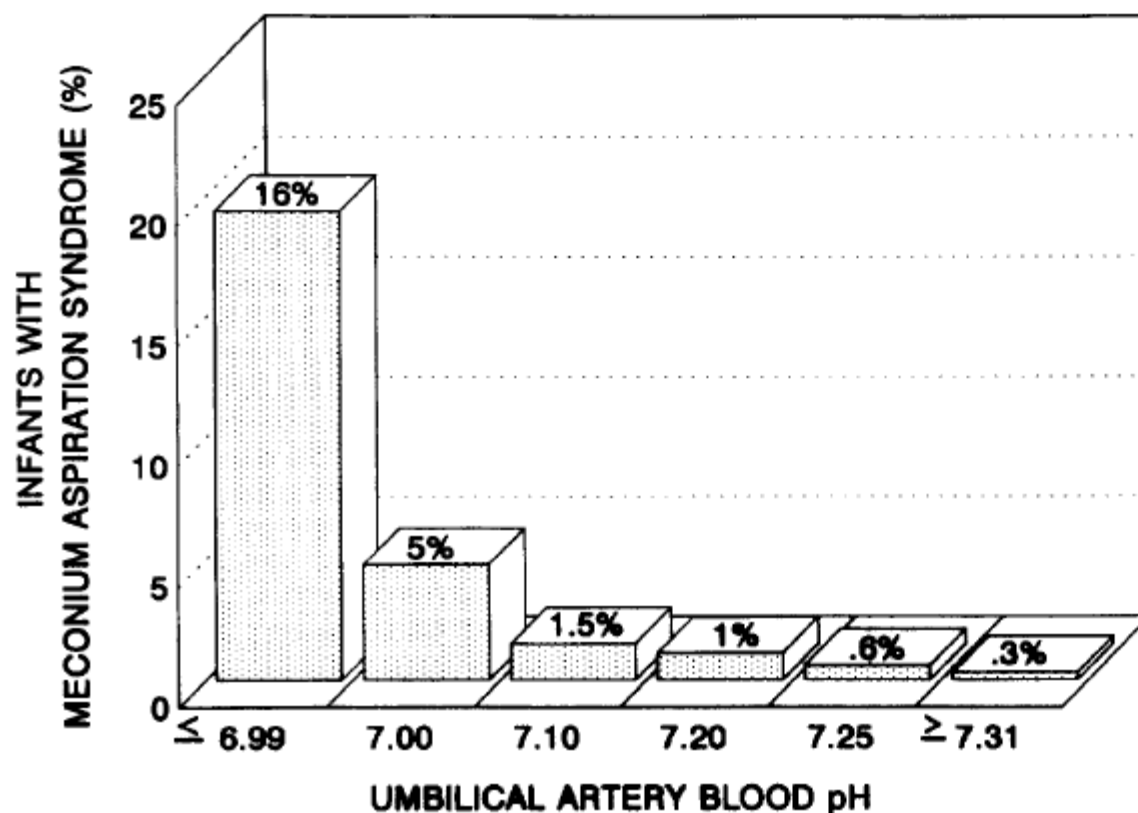


Figure 1. Percentage of infants who aspirated meconium from their amniotic fluid in relation to their umbilical blood pH at birth. (Mantel-Haenszel χ^2 analysis, $P < .001$).

Table 1. Labor and Delivery Complications in Relation to the Development of Neonatal Meconium Aspiration Syndrome

Labor and delivery outcome(s)	Infants with meconium in the AF and no MAS (N = 7747)	Infants with meconium in the AF and MAS (N = 69)	<i>p</i> *
Fetal heart rate abnormality	2501 (32%)	47 (68%)	<.001
Oxytocin stimulation	1739 (23%)	14 (20%)	NS
Length of labor			
2-h second stage	132 (2%)	2 (3%)	NS
12 h or longer	1237 (16%)	8 (12%)	NS
Cesarean delivery			
All	1101 (14%)	36 (52%)	.001
Fetal distress	435 (6%)	23 (33%)	.001
Dystocia	586 (8%)	8 (12%)	NS
Hypertension in labor	787 (10%)	12 (17%)	NS
Forceps delivery	711 (9%)	12 (17%)	.03
Shoulder dystocia	84 (1%)	1 (1%)	NS

AF = amniotic fluid; MAS = meconium aspiration syndrome.

* χ^2 and Fisher exact test (two-tailed), as indicated.

MAS doğum eylemi ve doğumda fetal sıkıntı ile ilintili durumlarla birliktelik göstermekte

Amniotic Fluid Meconium: A Fetal Environmental Hazard

KIRK D. RAMIN, MD, KENNETH J. LEVENO, MD, MARY ANN KELLY, RN, AND
THOMAS J. CARMODY, PhD

Table 2. Condition of Newborns at Delivery and Subsequent Neonatal Morbidity

Outcome	Infants with meconium in the AF and no MAS (N = 7747)	Infants with meconium in the AF and MAS (N = 69)	P*
Apgar scores			
≤3 at 1 min	97 (1.3%)	12 (17%)	<.001
<u>≤3 at 5 min</u>	10 (0.1%)	3 (4%)	<.002
Ventilation at <u>birth[†]</u>	715 (9%)	29 (42%)	<.001
<u>Seizure(s) first 24 h</u>	11 (0.1%)	5 (7%)	<.001
<u>Deaths</u>	4 (0.05%)	4 (6%)	<.001

AF = amniotic fluid; MAS = meconium aspiration syndrome.

* χ^2 analysis and Fisher exact test (two-tailed), as indicated.

[†] Assisted with ambu bag.

Amniotic Fluid Meconium: A Fetal Environmental Hazard

*KIRK D. RAMIN, MD, KENNETH J. LEVENO, MD, MARY ANN KELLY, RN, AND
THOMAS J. CARMODY, PhD*

MAS PATOFİZYOLOJİSİ İÇİN HİPOTEZ;

- Fetal hiperkarbi fetal respirasyonu stimule eder, mekonyum alveollere aspire edilir**
- AC parankimal hasarı asideminin indüklediği alveolar hücre hasarına sekonderdir**

Obstet Gynecol 1996;87:181-4

Amniotic Fluid Meconium: A Fetal Environmental Hazard

*KIRK D. RAMIN, MD, KENNETH J. LEVENO, MD, MARY ANN KELLY, RN, AND
THOMAS J. CARMODY, PhD*

MAS PATOFİZYOLOJİSİ İÇİN HİPOTEZ;

**Ancak bu patofizyolojik sekans
genis kapsamlı değil MAS'u olup
doğumda fetal asidemisi olmayan
vakalarda nedeni açıklayamamakta**

Obstet Gynecol 1996;87:181-4

Doğum eyleminde amniyotik sıvıda mekonyumun yüksek insidansı sıklıkla normal fizyolojik prosesler ile birlikte fetal gastrointestinal içeriklerin geçişini gösterir

Ancak fetal asidemi eklenirse bu mekonyum fetus için bir tehlike olabilir

Fetal asidemiyi engellemek obstetrik gol olmalı??

Fetal asidemi akut olmakta, mekonum aspirasyonu öngörülememekte ve büyük ihtimalle de önlenememekte

Berrak amniyon sıvısı ne kadar güven verici??

Kötü akibeti olan infantların çoğunluğunda doğum eyleminde mekonyum geçişi yoktur

İntrapartum mekonyum geçişinin kötü akıbet için sensitivitesi oldukça düşüktür (orta-ciddi asidoz, 5. dk düşük Apgar skoru ve neonatal nöbet)

Mekonyum pasajı direk hipoksiye cevaben olmayabilir

Berrak amniyonik sıvı 'nonreassuring kardiyotogogram varlığında yönetimi etkilememeli

Obstet Gynecol 2003; 102:89 -93
BJOG 2002;109:1171-4

Severe meconium aspiration syndrome is not caused by aspiration of meconium

Alessandro Ghidini, MD, and Catherine Y. Spong, MD

Washington, DC, and Bethesda, Md

- MAS'lu infantların çoğunluğunun doğumdan önce kronik hipoksiye maruz kaldığını göstermekte**
- Kronik intrauterin asfiksi, FGR veya intrauterin enfeksiyon gibi patolojik prosesler**

Severe meconium aspiration syndrome is not caused by
aspiration of meconium

Alessandro Ghidini, MD, and Catherine Y. Spong, MD

Washington, DC, and Bethesda, Md

Doğumdan önce uzamış fetal sıkıntı ya da intrauterin enfeksiyon varlığında MAS mekanik ventilasyon veya ECMO ya rağmen yenidoğanda ciddi AC hasarı veya perinatal ölümle birliktelik göstermekte

Am J Obstet Gynecol 2001;185:931-8

Severe meconium aspiration syndrome is not caused by
aspiration of meconium

Alessandro Ghidini, MD, and Catherine Y. Spong, MD

Washington, DC, and Bethesda, Md

Doğum eyleminde, daha önceden var olan AC hasarını komplike eden akut hipoksi varlığını anlamak için umbilikal arter kan gazları ve baz defisiti değerlendirilmeli

Meconium aspiration syndrome in term neonates with normal acid-base status at delivery: Is it different?

Sean C. Blackwell, MD, Julie Moldenhauer, MD, Sonia S. Hassan, MD, Mark E. Redman, MD, Jerrie S. Refuerzo, MD, Stanley M. Berry, MD, and Yoram Sorokin, MD

Detroit, Michigan

**-Mekonyum aspirasyon sendromu ve
UA pH ≥ 7.20 (>%60)**

**-Mekonyum aspirasyon sendromu ve
UA pH < 7.20**

Neonatal sonuçlar karşılaştırılmakta

Table I. Demographic and antenatal characteristics of neonates with meconium aspiration syndrome and pH ≥ 7.2 versus pH < 7.2

Variable	pH ≥ 7.2 (n = 29)	pH < 7.2 (n = 19)	Statistical significance
Maternal age (y, mean $\pm$ SD)	25.1 $\pm$ 5.8	25.0 $\pm$ 7.8	NS
African American ethnicity (No., %)	26 (90%)	19 (100%)	NS
Parity (median and range)	1 (0-5)	0 (0-3)	NS
Gestational age (wk, median and range)	40 (37-44)	40 (37-42)	NS
Clinical chorioamnionitis (No., %)	3 (10.3%)	2 (10.5%)	NS
Cesarean delivery (No., %)	12 (41.4%)	16 (84.2%)	P = .006
Fetal indications (No.)*	5 (41.3%)	13 (81%)	P = .001
Labor arrest (No.)*	3 (25%)	2 (12.5%)	NS
Other (No.)*	4 (33.3%)	1 (6.5%)	NS

NS, Not significant.

*Expressed as percentage of cesarean deliveries.

Table II. Delivery characteristics between meconium aspiration syndrome in neonates with pH ≥ 7.2 versus pH < 7.2

Variable	pH ≥ 7.2 (n = 29)	pH < 7.2 (n = 19)	Statistical significance
Birth weight (g, mean $\pm$ SD)	3264.7 $\pm$ 452.8	3388.8 $\pm$ 511.9	NS
Meconium below cord (No., %)	20 (71%)	10 (56%)	NS
Apgar score (median and range)			
At 1 min	7 (1-9)	4 (1-8)	P = .008
At 5 min	8 (6-9)	7 (5-9)	P = .005
Umbilical artery pH (mean $\pm$ SD)	7.28 $\pm$ 0.05	7.09 $\pm$ 0.07	P < .001
Umbilical artery carbon dioxide tension (mean $\pm$ SD)	46.3 $\pm$ 8.2	70.4 $\pm$ 13.9	P < .001
Umbilical artery base excess (mean $\pm$ SD)	-6.1 $\pm$ 3.4	-10.7 $\pm$ 3.2	P < .001

NS, Not significant.

Klinik koryoamniyonit insidansı
Doğum kilosuz
Vokal kord altındaki mekonyum varlığı

Table III. Neonatal outcomes of meconium aspiration syndrome in neonates with pH ≥ 7.2 versus pH < 7.2

<i>Variable</i>	<i>pH ≥ 7.2 (n = 29)</i>	<i>pH < 7.2 (n = 19)</i>	<i>Statistical significance</i>
Neonatal intensive care (d, median and range)	5 (2-17)	5 (2-14)	NS
Ventilator use (d, median and range)	3 (2-12)	3 (2-11)	NS
Seizures (No., %)	6 (20.7%)	4 (21.1%)	NS

NS, Not significant.

İki grupta da nöbet geçirme sıklığı benzer

Çok sayıda ciddi mekonyum aspirasyon sendromu olan vakada doğumda normal asit-baz durumu mevcut

Daha önceden var olan hasar ya da nonhipoksik mekanizma sıklıkla ilişkilidir

MAS doğumda neonatal kondisyonla ilgili değil

Number 379 • September 2007

Management of Delivery of a Newborn With Meconium-Stained Amniotic Fluid

Committee on Obstetric Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

ABSTRACT: In accordance with the new guidelines from the American Academy of Pediatrics and the American Heart Association, all infants with meconium-stained amniotic fluid should no longer routinely receive intrapartum suctioning. If meconium is present and the newborn is depressed, the clinician should intubate the trachea and suction meconium and other aspirated material from beneath the glottis.

Rutin intrapartum orofarinks ve nazofarinks aspirasyonu gereksiz

İnfant deprese ise trakea entübe edilmeli mekonyum glottis altından aspire edilmeli

İnfant deprese değil aktifse trakeal aspirasyon gereksiz

Amnioinfüzyon

**Variabl veya uzamış
deselerasyonların tedavisinde**

Oligohidramniyosta profilaktik

**Kalın mekonyum dilusyonu veya
yıkınması**

Saline amnioinfusion for relief of variable or prolonged decelerations

A preliminary report

Fred S. Miyazaki and Nancy A. Taylor

Los Angeles, California

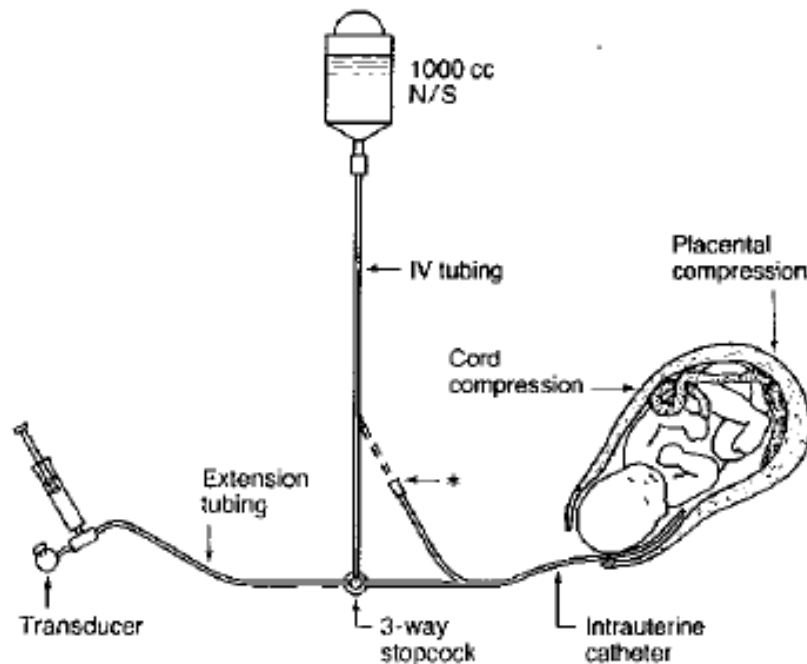


Fig. 1. Diagram shows amnioinfusion equipment.

Isıtılmış izotonik 500-800 ml Bolus
3ml/dk devamlı infüzyon

Am J obstet Gynecol 1983;146:670

Amnioinfusion Survey: Prevalence, Protocols, and Complications

KATHARINE WENSTROM, MD, WILLIAM W. ANDREWS, PhD, MD, AND
JAMES E. MAHER, MD

Table 1. Percentage of Respondents Who Use Various Aspects of an Amnioinfusion Protocol (*n* = 186)

Fluid*	
Normal saline	84%
Lactated Ringer's solution	20%
Other	2%
Warmed?	
Yes	78%
No	22%
Rate*	
Bolus followed by constant infusion	64%
Mean bolus volume (mL)	500 (50–1000)
Serial boluses	26%
Intrabolus time (min)	20–240
Constant infusion	15%
Mean infusion rate (mL/h)	1500 (15–2250)
Other	3%
Infusion method*	
Infusion pump	75%
Gravity drainage	25%
Catheter type*	
Single IUPC	40%
Double-lumen catheter	40%
Two IUPCs	30%
Other	2%

IUPC = intrauterine pressure catheter

Obstet Gynecol 1995;86:572-6

Amnioinfusion Survey: Prevalence, Protocols, and Complications

KATHARINE WENSTROM, MD, WILLIAM W. ANDREWS, PhD, MD, AND
JAMES E. MAHER, MD

Table 2. Number of Centers Reporting Complications
Associated With Amnioinfusion

	N
Amnionitis	7 (4%)
Uterine hypertonus	27 (14%)
Uterine rupture	4 (2%)
Associated with previous cesarean delivery	1
Abnormal FHR	17 (9%)
Bradycardia	3
Acute fetal distress	1
Maternal cardiac or respiratory compromise	3 (2%)
Maternal death	2 (1%)
Other	10 (5%)
Umbilical cord prolapse	5
Abruptio	2
"Over-inflated uterus"*	1
"Steamy baby"*	1
Change from vertex to breech in preterm infant	1

FHR = fetal heart rate.

* Direct quotes from surveys, with no further explanation provided by the respondents.



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Amnioinfusion for potential or suspected umbilical cord compression in labour (Review)

Hofmeyr GJ, Lawrie TA

Olası ya da şüphelenilen umbilikal kord kompresyonu

- variabl FHR deselerasyonların azalması
- kısa dönem neonatal kondisyonu iyileştirme



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Amnioinfusion for potential or suspected umbilical cord compression in labour (Review)

Hofmeyr GJ, Lawrie TA

Olası ya da şüphelenilen umbilikal kord kompresyonu

- maternal postpartum endometriti azaltmak
- sezaryen sekiyoyu azaltmak



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Amnioinfusion for potential or suspected umbilical cord compression in labour (Review)

Hofmeyr GJ, Lawrie TA

Persistan variabl deselerasyonlar varlığında amniyoinfüzyonun düşünülmesi önerilmekte

Prophylactic Amnioinfusion in Pregnancies Complicated by Oligohydramnios: A Prospective Study

MICHAEL P. NAGEOTTE, MD, LINDA BERTUCCI, RN, CRAIG V. TOWERS, MD, DAVID L. LAGREW, MD, AND HOUCANG MODANLOU, MD

- Term ve postterm gebelikler**
- PROM veya FGR ilişkili oligohidramniosis**
- Isıtılmış izotonik ile amnioinfüzyon, oda sıcaklığında salin ile amniyoinfüzyon ve kontrol grubu**

Table 5. Frequency (Per Hour) and Severity of Variable Decelerations

	Control (N = 26)	Treatment (N = 50)	P
First stage labor			
Mild	2.2 ± 4.0	1.0 ± 1.7	.03
Moderate	1.7 ± 3.3	0.4 ± 0.8	.01
Severe	0.4 ± 0.6	0.1 ± 0.2	.006
Total	3.7 ± 7.5	1.5 ± 2.1	.006
Second stage labor			
Mild	5.1 ± 10.1	3.0 ± 3.4	NS
Moderate	4.7 ± 4.8	3.8 ± 4.7	NS
Severe	2.4 ± 4.6	2.2 ± 4.1	NS
Total	12.2 ± 11.5	9.0 ± 2.1	NS
Average total number	4.6 ± 5.5	2.2 ± 2.3	.01
Average total number (no nuchal cord)	4.7 ± 5.9	2.2 ± 2.4	.02

NS = not significant.

Data are presented as mean ± SD.

Variabl deselerasyon sıklığı ve ciddiyeti

Table 2. Neonatal Characteristics

	Control (N = 26)	Treatment (N = 50)	P
Birth weight (g)	3376 $\pm$ 606	3289 $\pm$ 738	NS
1-min Apgar score <4	11.5%	8.0%	NS
5-min Apgar score <7	7.7%	4.0%	NS
Umbilical venous pH	7.36 $\pm$ 0.08	7.34 $\pm$ 0.05	NS
Umbilical arterial pH	7.28 $\pm$ 0.10	7.28 $\pm$ 0.07	NS
Nuchal cord	15.4%	26.0%	NS

NS = not significant.

Data are presented as mean $\pm$ SD or %.

Table 3. Labor Characteristics

	Control (<i>N</i> = 26)	Treatment (<i>N</i> = 50)	<i>P</i>
First stage labor (h)	6.5 ± 6.9	6.9 ± 4.2	NS
Second stage labor (h)	0.9 ± 0.6	1.4 ± 1.0	.04
Time from ROM to delivery (h)	7.0 ± 3.6	8.6 ± 4.5	NS
Hours of intrauterine pressure catheter	4.5 ± 4.0	7.0 ± 4.5	.02
Amount of infusion (mL)		1059 ± 740	
Cesarean	7 (26.9%)	7 (14.0%)	.14
For failure to progress	3	5	NS
For fetal distress	4	2	.09

NS = not significant; ROM = rupture of membranes.
Data are presented as mean ± SD or *N* (%).

**Term fetus rekürren kalp hızı
deselerasyon epizotlarını
prematür fetusta olduğu gibi
hızlı metabolik değişiklikler
göstermeksizin tolere etme
kabiliyetine sahip**

Prophylactic Amnioinfusion for Oligohydramnios: A Reevaluation

O. ANTHONY OGUNDIPE, MD, CATHY Y. SPONG, MD, AND MICHAEL G. ROSS, MD

Oligohidramniyos varlığında gebelerin %20'sinde doğum eyleminde variabl deselerasyon ve terapotik amniyoinfüzyon gerekir

Oligohidramniyosu olan 5 gebenin 4'ünde profilaktik ya da terapotik amniyoinfüzyon gerekmemekte

Prophylactic Amnioinfusion for Oligohydramnios: A Reevaluation

O. ANTHONY OGUNDIPE, MD, CATHY Y. SPONG, MD, AND MICHAEL G. ROSS, MD

Profilaktik amniyoinfüzyon sezaryen seksiyο hızı %20

Terapotik amniyoinfüzyon sezaryen seksiyο hızı %15

Oligohidramniyosu olan eylemdeki gebelerde variabl deselerasyonları gelişen vakalarda yapmak daha uygun

İntrapartum ateş riski düşebilir ve maliyet minimize edilebilir

INTRAPARTUM AMNIOINFUSION FOR MECONIUM-STAINED FLUID: META-ANALYSIS OF PROSPECTIVE CLINICAL TRIALS

*John Pierce, MD, Francisco L. Gaudier, MD, and
Luis Sanchez-Ramos, MD*

Mekonyumlu amniyon sıvısı için amnioinfüzyon yapılan prospektif çalışmaların analizi

**Obstet Gynecol 2000;95:1051– 6. © 2000
by The American College of Obstetricians
and Gynecologists**

Table 2. Intrapartum Amnioinfusion and Meconium Aspiration Syndrome

Study	Amnioinfusion group n (%)	Control group n (%)	Odds ratio (95% CI)
Wenstrom and Parsons ¹⁶	0/36 (0.0)	3/44 (6.8)	0.16 (0.01, 3.25)
Sadovsky et al ¹⁹	0/19 (0.0)	0/21 (0.0)	0.00 (0.00, 0.00)
Macri et al ¹⁷	0/85 (0.0)	5/85 (5.9)	0.09 (0.00, 1.57)
Lo and Rogers ¹⁸	1/60 (1.7)	3/52 (5.8)	0.28 (0.03, 2.75)
Spong et al ²⁰	3/43 (7.0)	1/50 (2.0)	3.67 (0.37, 36.1)
Cialone et al ¹⁵	1/47 (2.1)	6/58 (13.6)	0.14 (0.02, 1.13)
Eriksen et al ²¹	0/65 (0.0)	2/59 (3.4)	0.18 (0.01, 3.73)
Hofmeyr et al ²²	4/162 (2.5)	6/163 (3.8)	0.66 (0.18, 2.39)
Mahomed et al ²³	10/323 (3.1)	42/329 (12.8)	0.22 (0.11, 0.44)
Adam et al [*]	1/17 (5.9)	4/18 (22.2)	0.22 (0.02, 2.19)
Ilagan et al [†]	3/38 (7.9)	4/40 (10.0)	0.77 (0.16, 3.70)
Moodley et al ²⁵	1/30 (3.3)	4/30 (13.3)	0.22 (0.02, 2.14)
Khosla et al ²⁴	0/25 (0.0)	1/25 (4.0)	0.31 (0.01, 7.92)
Total	24/950 (2.5)	83/974 (8.5)	0.30 (0.19, 0.46)

CI = confidence interval.

* Adam K, Cano L, Moise K Jr. The effect of intrapartum amnioinfusion on the outcome of the fetus with heavy meconium stained amniotic fluid. Proceedings of 9th Annual Meeting of the Society of Perinatal Obstetricians, February 1-4, 1989, New Orleans, LA; 1989; 438.

† Ilagan N, Kazzi G, Shankeuan S, Liangk, Womack S, Bronsteen R, et al. Transcervical amnioinfusion for the prevention of meconium aspiration. *Pediatr Res* 1992;31:205.

[‡] Pooled odds ratio and 95% CI. Heterogeneity $\chi^2_{11} 9.87$, $P = .54$.

İntrapartum amniyoinfüzyon MAS sıklığını belirgin düşürmekte

Table 3. Intrapartum Amnioinfusion and Acidemia at Birth

Study	Amnioinfusion group n (%)	Control group n (%)	Odds ratio (95% CI)
Sadovsky et al ¹⁹	3/19 (15.8)	8/21 (38.1)	0.30 (0.07, 1.39)
Macri et al ¹⁷	7/85 (8.2)	31/85 (36.5)	0.16 (0.06, 0.38)
Lo and Rogers ¹⁸	1/60 (1.7)	8/52 (15.4)	0.09 (0.01, 0.77)
Spong et al ²⁰	8/43 (18.6)	11/50 (22.0)	0.81 (0.29, 2.24)
Cialone et al ¹⁵	4/45 (8.9)	12/50 (24.0)	0.31 (0.09, 1.04)
Hofmeyr et al ²²	18/96 (18.8)	20/105 (19.0)	0.98 (0.48, 1.99)
Total	41/348 (11.8)	90/363 (24.8)	0.42 (0.28, 0.62)*

CI = confidence interval.

Acidemia is defined as an umbilical artery pH less than 7.20.

* Pooled odds ratio and 95% CI. Heterogeneity χ^2 :14.24, $P = .01$.

İntrapartum amniyoinfüzyon neonatal asidemi sıklığını düşürmekte

The Impact of a Policy of Amnioinfusion for Meconium-Stained Amniotic Fluid

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**Prospektif randomize çalışma
Orta derecede ya da kalın mekonyumu olan gebeler
Amniyoinfüzyon yapılan grup
Kontrol grubu**

Obstet Gynecol 1995; 85:237-41

Table 1. Neonatal Outcome

	No amnioinfusion (n = 497)	Amnioinfusion (n = 440)
Small for gestational age	62 (12%)	58 (13%)
Large for gestational age	15 (3%)	15 (3%)
Apgar score ≤ 4 at 1 min	68 (14%)	71 (16%)
Apgar score ≤ 7 at 5 min	35 (7%)	36 (8%)
Cord pH ≤ 7.20	41/126 (33%)	44/133 (33%)
Suctioned below vocal cords*	97 (20%)	112 (25%)
Meconium below vocal cords	28/97 (29%)	31/112 (28%)
Admitted to intermediate care nursery	52 (10%)	51 (12%)
Admitted to intensive care nursery	16 (3%)	18 (4%)

Data are presented as n (%).

* $P < .05$.

Neonatal akıbette iyileşme yok

Table 2. Neonatal Complications

	No amnioinfusion (n = 497)	Amnioinfusion (n = 440)
<u>Meconium aspiration syndrome</u>	19 (3.8%)	20 (4.5%)
Nulliparous	4 (0.8%)	10 (2.3%)
Multiparous	15 (3.0%)	10 (2.3%)
Cervix <5 cm at detection of meconium	9 (1.8%)	14 (3.2%)
Cervix ≥5 cm at detection of meconium	10 (2.0%)	6 (1.4%)
Neonatal seizures	7 (1.4%)	5 (1.1%)
Persistent fetal circulation	4 (0.8%)	6 (1.4%)
Sepsis	5 (1.0%)	11 (2.5%)
Pneumothorax	4 (0.8%)	6 (1.4%)
Oxygen therapy	40 (8.0%)	52 (11.8%)
Required ventilator	12 (2.4%)	19 (4.3%)
<u>Required ECMO</u>	1 (0.2%)	3 (0.7%)
<u>Perinatal death</u>	1 (0.2%)	3 (0.7%)

ECMO = extracorporeal membrane oxygenation.

İki grup arasında fark yok

Amniyoinfüzyon grubunda

- Doğum eyleminde yüksek fetal kalp hızı anormallikleri insidansı yüksek
- Operatif vajinal doğum sıklığı yüksek
- Sezaryen doğum hızı yüksek

Orta ya da kalın mekonyum için amniyoinfüzyon yapılan vakalarda neonatal akıbette iyileşme gösterilememekte

Obstet Gynecol 1995; 85:237-41

ACOG

Committee on
Obstetric Practice

Reaffirmed 2016

Committee Opinion



Number 346, October 2006

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an

Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

Amniyoinfüzyon mekonyum aspirasyon insidansını azaltmak ve neonatal akıbeti iyileştirmek için önerilen bir teknik

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Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

Ancak, mekonyumlu amniyon sıvısı olan kadınların çoğunluğunda infantlar mekonyumu trakea ve bronşiolere mekonyum geçişi farkedildikten önce, amnioinfüzyon yapılmadan önce almakta

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Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

**Mekonyum geiři doęum eyleminden
nce olabilir**

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Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

Güncel literatüre göre mekonyumla boyanmış amniyotik sıvının dilusyonu için profilaktik amniyoinfüzyon önerilmemekte

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Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

Ancak, tekrarlayan variabl deselerasyonların tedavisinde amniyotik sıvı mekonyum durumuna bakmaksızın uygun bir yaklaşım olarak kalmakta