



Noninvazif Mekanik Ventilasyon

Dr ÖZGE KÖNER
YEDİTEPE ÜNİVERSİTESİ TIP FAKÜLTESİ
ANESTEZİYOLOJİ AD.

Kalp Cerrahisi Sonrası Pulmoner Komplikasyon oranı %8.1

Postoperatif dönemde tek başına solunum yetersizliği olan hasta mortalitesi %11.4.

- Pnömoni
- Plevral efüzyon
- Diafram disfonksiyonu
- KPB'a bağlı akciğer kollapsı
- Operasyon sırasında AC doku travması

Kalp Cerrahisi Sonrasında Respiratuvar Komplikasyonlar

**HAFİF
HİPOKSEMİ**

**AKUT SOLUNUM
YETERSİZLİĞİ**

NG CS. Chest 2002

Wynne R. Am J Crit Care 2004

Taggart DP. Ann Thorac Surg 1993

Christenson JT. Cardiovasc Surg 1996

Kavanagh BP. Minerva Anesthesiol 2008

Kalp Cerrahisi Sonrası Uzamış Mekanik Ventilasyon / Re-entübasyon

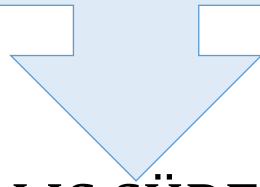
PRİMER neden

Kardiyak mı?

Pulmoner mi?

Kalp cerrahisi sonrasında

- UZAMIŞ MEKANİK VENTİLASYON
- RE-ENTÜBASYON (mortaliteyi %40 arttırır)

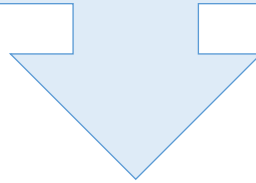


HASTANE/YBÜ KALIŞ SÜRESİ UZAR
MORTALİTE /MORBİDİTE ARTAR

Pulmoner komplikasyonların önlenmesi ve etkin tedavisi
prognoz açısından önem taşır.

Kalp cerrahisi sonrasında

- HİPOKSİK
- HİPERKARBİK SOLUNUM YETERSİZLİĞİ

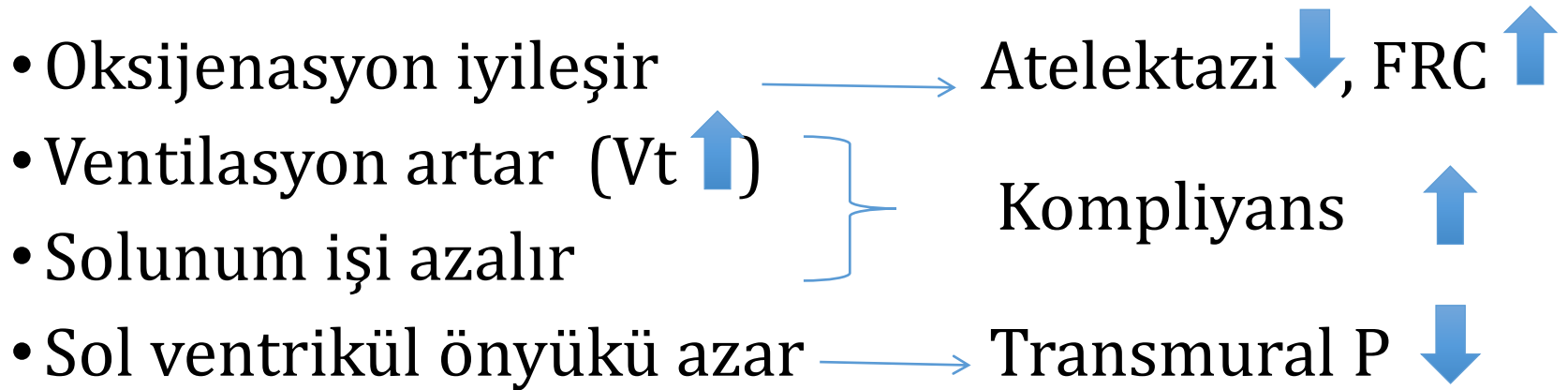


- KOAH
- OBEZİTE



- ATELEKTAZİ
- AC SIVISI
- AĞRI
- AC ÖDEMİ

NONİNVAZİF MEKANİK VENTİLYASYON FİZYOLOJİSİ



Santral kateter YOK

Sedasyon YOK



ETT YOK

Üriner kateter YOK

NIMV ENDİKASYONLARI:

- KOAH alevlenmeleri
- Kardiyojenik AC ödemi
- İmmüsupresyonda akut solunum yetersizliği
- KOAH'da “weaning”



- Postop akut solunum yetersizliği **korunma/önleme**
- KOAH'da pnömoni, Astım
- Nöromuskuler hastalıklar
- Toraks travması
- Pulmoner Hipertansiyon
- “Entübe edilmeyecek” hastanın palyasyonu



NIMV KONTRENDİKASYONLARI:

- Kardiyak/respiratuar arest
- Hemodinamik instabilite/Majör aritmiler
- Üst havayolu obstrüksiyonu, sekresyon atamama
- Nöbet
- Yüz travma/deformitesi
- GİS kanama, Ösofagus lezyonları

MUTLAK

- Koma
- Akut ciddi solunum yetersizliği
- Ajitasyon, yetersiz kooperasyon

RÖLATİF

Ekstübasyon Sonrası Solunum Yetersizliği **Tedavisinde** NIV:

The efficacy of noninvasive ventilation in managing postextubation respiratory failure: A meta-analysis

2014
Heart & Lung

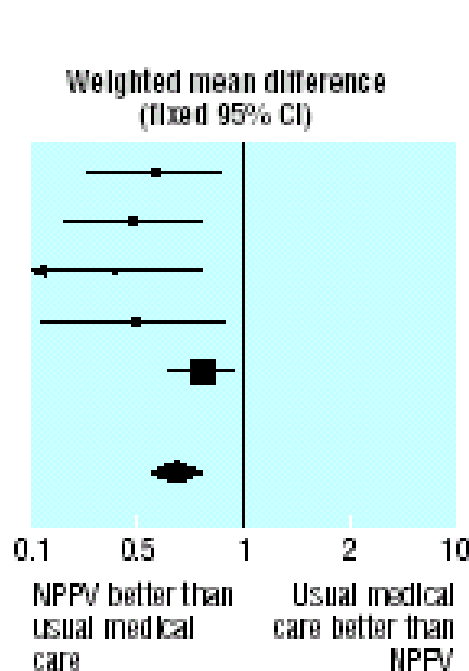
Changyang Lin, Dr, Huapeng Yu, MD *, Huizhen Fan, Dr, Zhongli Li, Dr

- Ekstübasyon sonrası **solunum yetersizliği** gelişen hastalarda **mortalite ve re-entübasyonu değiştirmez.**
(Standart medikal tedaviye göre)
- Ekstübasyon sonrası **KORUYUCU** amaçlı uygulandığında da re-entübasyon ve Mortaliteyi **değişmez.**
 - Planlı ekstübasyon (SBT başarılı) alt grubunda, **re-entübasyon, mortaliteyi** azaltır.

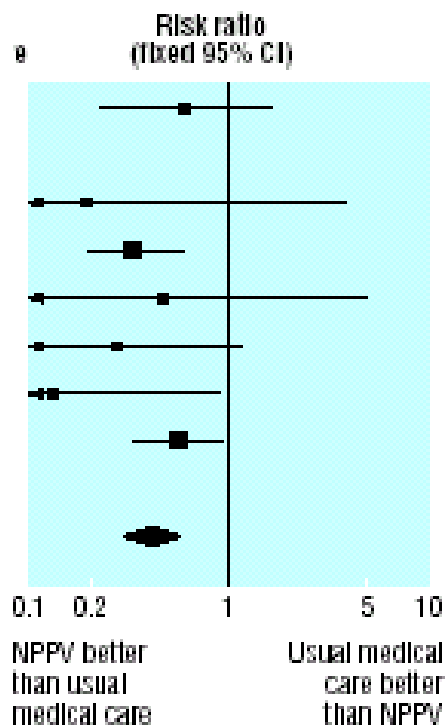
Non-invasive positive pressure ventilation to treat respiratory failure resulting from exacerbations of chronic obstructive pulmonary disease: Cochrane systematic review and meta-analysis

Josephine V Lightowler, Jadwiga A Wedzicha, Mark W Elliott, Felix S F Ram

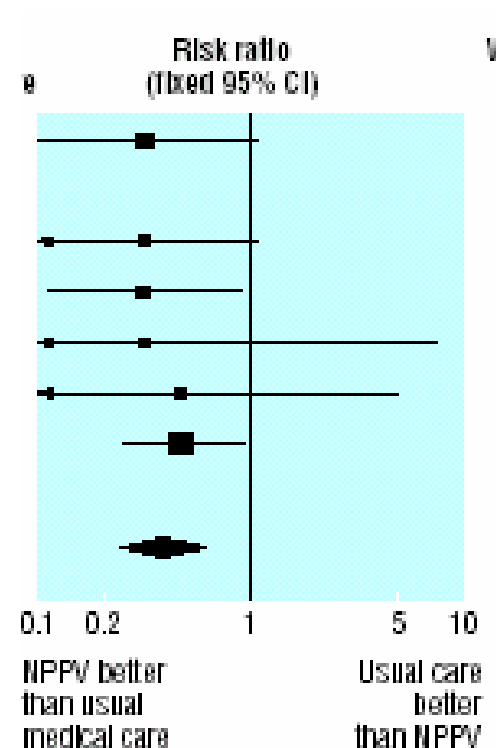
BMJ VOLUME 326 25 JANUARY 2003



Solunum frekansı



Endotrakeal Entübasyon

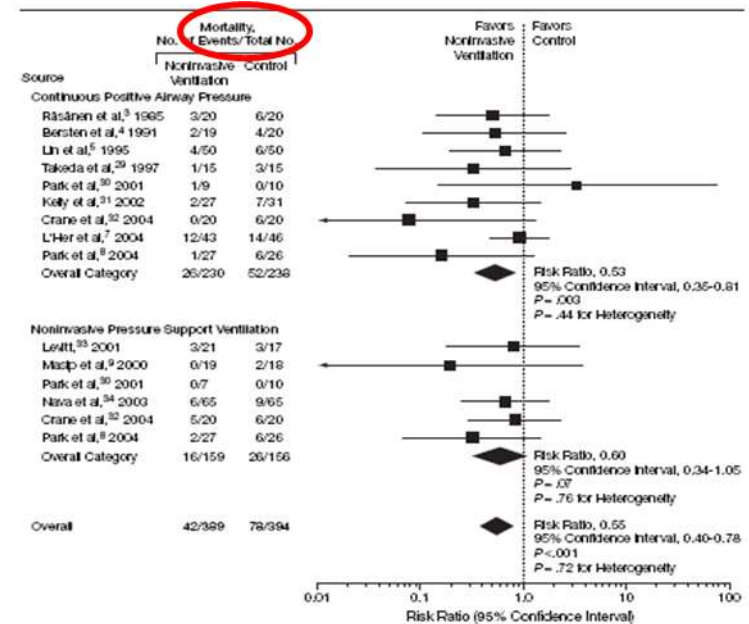


Mortalite Oranı

Non-invasive positive pressure ventilation (CPAP or bilevel NPPV) for cardiogenic pulmonary oedema (Review)

Vital FMR, Ladeira MT, Atallah ÁN 2013

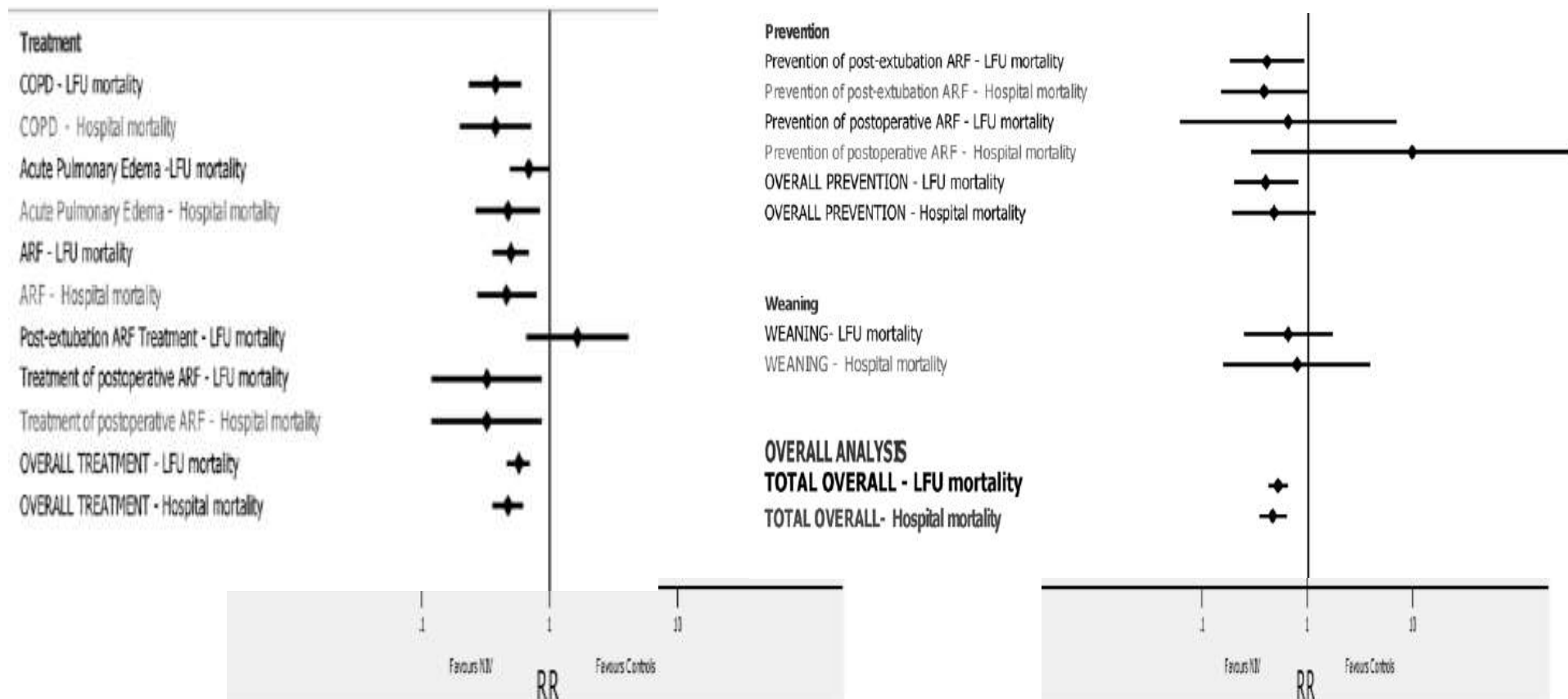
- Std medikal tedavi + **NPPV**, adult “Akut Kardiyojenik Pulmoner Ödem” tedavisinde etkili ve güvenlidir.
- MORTALİTE üzerindeki olumlu etkileri az denek sayılı çalışmalardan elde edilmiştir.



Noninvasive Ventilation and Survival in Acute Care Settings: A Comprehensive Systematic Review and Metaanalysis of Randomized Controlled Trials*

Luca Cabrini, MD; Giovanni Landoni, MD; Alessandro Oriani, MD; Valentina P. Plumari, MD;
Leda Nobile, MD; Massimiliano Greco, MD; Laura Pasin, MD; Luigi Beretta, MD; Alberto Zangrillo, MD

(*Crit Care Med* 2015; 43:880–888)



KALP CERRAHİSİ SONRASINDA NIMV' DAN NE BEKLİYORUZ?

TEDAVİ

PROFİLAKSİ

- Atelektazik alanların açılması
- Ventilasyon ve gaz alış-verişinin iyileşmesi
- Pnömoni riskinin azalması
- Re-entübasyonun önlenmesi
- Mortalitenin azalması

1. Walsh M. Anesthesiology 2013; 119:507–515.
2. Bijker JB. Anesthesiology 2012; 116:658–664.
3. Sessler DI. Anesthesiology 2012; 116:1195–1203.

Noninvasive Ventilation After Cardiac and Thoracic Surgery in Adult Patients: A Review

Giovanni Landoni, MD, Alberto Zangrillo, MD, and Luca Cabrini, MD

Journal of Cardiothoracic and Vascular Anesthesia, Vol 26, No 5 (October), 2012: pp 917-922

PROFİLAKSİ

Table 1. NIV in Cardiac Surgery

	Design of the Study	Population	N	Main Results
NIV as a preventive tool				
Lopes ⁷	Randomized (30 minutes of nasal NPPV after extubation v no NPPV)	CABG or valve surgery	100	NPPV improved arterial oxygenation
Matte ⁸	Randomized (intermittent CPAP + physiotherapy v intermittent NPPV + physiotherapy v only physiotherapy after extubation)	CABG with mammary arteries	96	Both CPAP and NPPV improved the postoperative restrictive syndrome and halved the incidence of atelectasis. Cardiac output was lower with NPPV (-11%) and CPAP (-4%)
Pasquina ⁹	Randomized (intermittent CPAP v intermittent NPPV after extubation)	Cardiac surgery	150	NPPV improved atelectasis, but not oxygenation, length of ICU stay, or pulmonary function tests
Celebi ¹⁰	Randomized (intermittent NPPV after extubation by facemask alone v NPPV + intraoperative RM v RM alone v control group)	CABG	100	NIV improved oxygenation and early postoperative lung function tests, whereas the RM added little benefit. No difference in length of hospitalization and in ICU stay
Zarbock ¹¹	Randomized (intermittent nasal CPAP after extubation for at least 6 h v very brief nasal CPAP, 10 min every 4 h)	CABG or valve surgery	500	ICU readmission and pulmonary complications were lower in the study group, without differences in cardiac complications, length of ICU stay, and hospitalization

CPAP & NPPV: Akciğer fonksiyon testleri, P/F oranı iyileşir
Pulmoner komplikasyon sıklığı azalır (1 çalışmada)

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First Author	Design of the Study	Population	N	Main Results
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PROFİLAKSİ

Uzun süre nazal CPAP 6 st vs kısa nazal CPAP 6 X 10 dak:

- YBÜ yeniden yatma, Pulmoner komplikasyon daha az
- Kardiyak komplikasyon, YBÜ – hastane kalışı değişmiyor.

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PROFİLAKSİ

Aralıklı CPAP + fzy vs aralıklı NPPV + fzy vs sadece Fizyoterapi:

- Hem CPAP, hem NPPV ile atelektazi insidansı %50 azalıyor,
- Kalp debisi azalıyor (CPAP %4, NPPV %11)

differences in cardiac complications, length of ICU stay, and hospitalization

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30 dakika nazal NPPV vs Kontrol:				
<ul style="list-style-type: none"> • NPPV arteriyel oksijenasyonu artırır 				
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Aralıklı NPPV vs Aralıklı CPAP:

- NPPV atelektaziyi azaltıyor
- Arteriyel oksijenasyon, YBÜ kalışı, AC FT değişmiyor

CPAP, 10 min every 4 h)

differences in cardiac complications, length of ICU stay, and hospitalization

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Aralıklı NPPV vs NPPV+RM vs Kontrol:

- NIV: P/F artar, AC FT iyileşir, atelektazi azalır
- YBÜ-Hastanede kalış değişmiyor.
- İntraop. RM ek fayda sağlamıyor.

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POSTOPERATİF AKUT SOLUNUM YETERSİZLİĞİ TEDAVİSİ

Coimbra ¹⁷	Randomized (CPAP v NPPV)	ARF after cardiac surgery	57	NIV success rate was 54%; NIV failure was predicted by age, tachycardia, and tachypnea
Chen ¹⁸ Ç	Randomized (intermittent NPPV v no NPPV)	ARF after CABG	58	NPPV lowered reintubation rate, ICU length of stay, and incidence of arrhythmia and improved the survival rate
Eremenko ¹⁶ R	Prospective (intermittent NPPV by face mask)	ARF after cardiac surgery	20	NIV avoided 90% of reintubations
Boeken ¹⁹	Prospective (CPAP and NPPV)	severe ARF (meeting predefined intubation criteria) after cardiac surgery	300	CPAP and NPPV had a 75% success rate, were associated with an improved survival rate, reduced ICU and hospital stay, and lower incidence of pulmonary infections. CPAP was associated with a higher incidence of impaired sternal wound healing



NIV başarı şansı %75. SAĞ KALIM ARTIYOR.
YBÜ - hastanede kalış kısa. AC enfeksiyonu AZ.
Sternum enfeksiyonu fazla.

treated in the main ward after ICU discharge)

patients were discharged home. Two patients interrupted NIV (1 pneumothorax, 1 hypotension) without further consequences

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De Santo ²⁰	Prospective (intermittent CPAP)	ARF after cardiac surgery	43	CPAP was successful in 75% of the cases (but only in 45% when the cause of ARF was pneumonia)
Kilger ²¹	Prospective (intermittent CPAP)	ARF after cardiac surgery	799	ARF patients treated with NIV had the same mortality than patients who did not develop ARF
Olper ²²	Prospective (intermittent CPAP or NPPV)	Late ARF after cardiac surgery (patients were treated in the main	85	Only 2 patient required ICU readmission; 98% of the patients were discharged home. Two patients interrupted NIV (1 pneumothorax, 1 hypotension) without further consequences



NIV uygulanan ASY hasta MORTALİTESİ = ASY gelişmeyen hasta mortalitesi.

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Cerrahi serviste NIV uygulaması güvenlidir.

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ASY nedeni pnömoni ise NIV başarısı düşük (%45)

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interrupted

t further

NIV başarısı %54.

Başarısızlık nedenleri: İleri yaş, taşikardi, takipne.

POSTOPERATİF AKUT SOLUNUM YETERSİZLİĞİ TEDAVİSİ

Postoperative Respiratory Failure After Cardiac Surgery: Use of Noninvasive Ventilation

Manuel García-Delgado, MD, Inés Navarrete, MD, Maria José García-Palma, MD, and Manuel Colmenero, MD

Journal of Cardiothoracic and Vascular Anesthesia, Vol 26, No 3 (June), 2012: pp 443-447

- Retrospektif, n=63,
- OBEZ hastalarda NIV etkili,
- Ekstübasyon sonrası ilk 24 saatte gelişen **AKUT SOLUNUM YETERSİZLİĞİ'** nde başarısızlık artıyor. Re-entübasyon insidansı %50.

Original article

Efficacy and safety of noninvasive positive pressure ventilation in the treatment of acute respiratory failure after cardiac surgery

ZHU Guang-fa, WANG Di-jia, LIU Shuang, JIA Ming and JIA Shi-jie

POSTOPERATİF AKUT SOLUNUM YETERSİZLİĞİ TEDAVİSİ

- RCT, n=95
- Kalp cerrahisi sonrasında **AKUT SOLUNUM YETERSİZLİĞİ** gelişen seçilmiş hasta grubunda re-entübasyon, VİP insidansı ve MORTALİTEYİ azaltır, YBÜ-hastanede kalış süresi kısalır.
- Pnömoni ve APACHE II >20, NIV başarısızlığı için bağımsız risk faktörleridir.

Effects of non-invasive ventilation on reintubation rate: a systematic review and meta-analysis of randomised studies of patients undergoing cardiothoracic surgery

Crit Care Resusc 2013; 15: 220–227

Luigi Olper, Davide Corbetta, Luca Cabrini,
Giovanni Landoni and Alberto Zangrillo

Study (first author, year)	Type of surgery	Sample size		Type of Intervention	Characteristics of treatment					
		NIV patients	Control		Type of NIV, pressure (cmH ₂ O)		Mean hours per day	Cycles	No. of days	Characteristics of CRC
					CPAP	PS (PEEP+PS)				
Stock 1984 ²⁷	Cardiac	13	25	CPAP v CRC	7, 5		3	1 h cycles	3	Cough, DB, IS
Pirilla 1990 ²⁸	Cardiac	32	26	CPAP v CRC	5–7, 5		12	1 cycle	1	nr
Jousela 1994 ²⁹	Cardiac	15	15	CPAP v CRC	10		8	1 cycle	1	nr
Aguiló 1997 ³⁰	Pulmonary	10	9	PS v CRC		5 + 10	1	1 cycle	1	None
Matte 2000 ³¹	Cardiac	62	28	CPAP + CRC v PS + CRC v CRC	5	5 + 7	6	1 h cycles	1	Cough, mobilisation, IS, aerosol therapy
Auriant 2001 ³²	Pulmonary	24	24	PS v CRC		4 + 12	14	2 h cycles	2	Oxygen, aerosol therapy
Fagevick Olsen 2002 ³³	Thoraco- abdominal	34	36	CPAP v CRC	5–10		4, 5	30 min cycles	3	Cough, IR-PEP
Kindgen- Milles 2005 ³⁴	Thoraco- abdominal	25	25	CPAP v CRC	10		12–24	1 cycle	1	Manual vibration, mobilisation, oxygen, aerosol therapy
Chen 2007 ³⁵	Cardiac	30	28	PS v CRC		3–8 + NR	8	8 on Day 1	unclear	Oxygen
Perrin 2007 ³⁶	Pulmonary	14	18	PS v CRC		5 + 10	5	1 h cycles	10*	Cough, DB, IS, aerosol therapy
Celebi 2008a ^{37†}	Cardiac	25	25	PS + CRC v CRC		5 + 10	4	1 h cycles	1	Cough, mobilisation, IS
Celebi 2008b ^{37†}	Cardiac	25	25	PS + RM + CRC v CRC + RM		5 + 10	4	1 h cycles	1	Cough, mobilisation, IS
Lopes 2008 ³⁸	Cardiac	50	50	PS v oxygen		5 + 8–12	0, 5	1 cycle	1	Oxygen
Zarbock 2009 ³⁹	Cardiac	232	236	CPAP v CRC + intermittent CPAP	10		9	1 cycle	1	Manual vibration, mobilisation, oxygen, intermittent nasal CPAP
Liao 2010 ⁴⁰	Pulmonary	23	27	PS v CRC		4 + 13	4	nr	3	nr

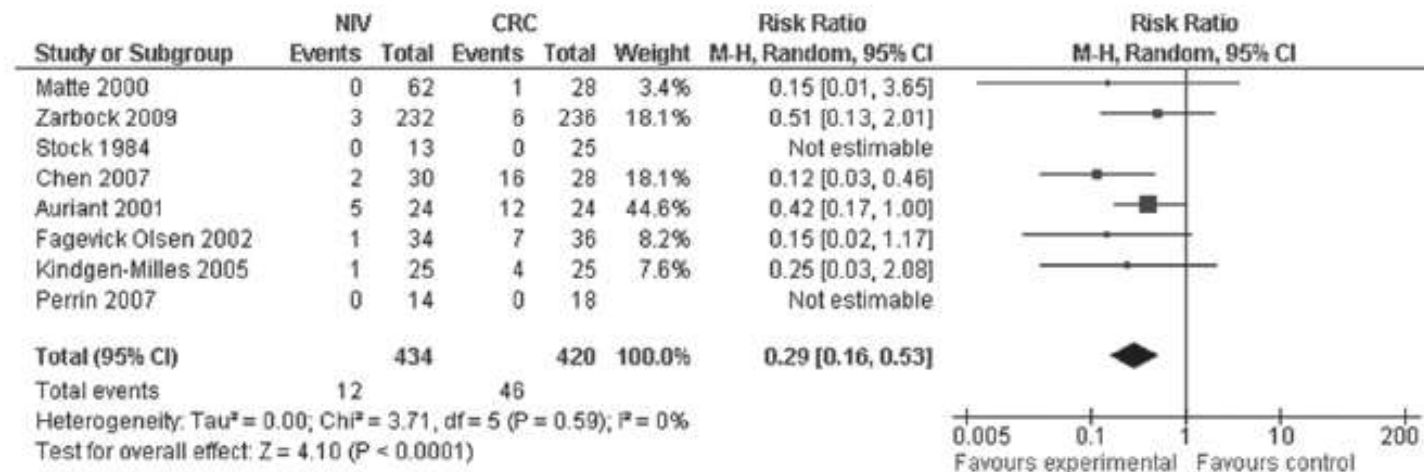
CPAP = continuous positive airway pressure. CRC = conventional respiratory care (oxygen therapy, medications, chest physiotherapy, early mobilisation). DB = deep breathing. IR PEP = inspiratory resistance positive expiratory pressure. IS = incentive spirometer. NIV = non-invasive mechanical ventilation. nr = not reported. PEEP = positive end-expiratory pressure. PS = pressure support. RM = recruitment manoeuvre. * 7 days before and 3 days after surgery. † a and b are different arms of the same trial.

Effects of non-invasive ventilation on reintubation rate: a systematic review and meta-analysis of randomised studies of patients undergoing cardiothoracic surgery

Crit Care Resusc 2013; 15: 220–227

Luigi Olper, Davide Corbetta, Luca Cabrini, Giovanni Landoni and Alberto Zangrillo

Figure 3. Forest plot for reintubation rate



CRC = conventional respiratory care (oxygen therapy, medications, chest physiotherapy, early mobilisation). M-H = Mantel-Haenszel. NIV = non-invasive mechanical ventilation.

NIV, Akut Solunum Yetersizliği gelişen ve Pulmoner Komplikasyon gelişme riski yüksek hastalarda **re-entübasyon, hastanede kalış süresi ve mortalite AZALIYOR.**

High-Flow Nasal Oxygen vs Noninvasive Positive Airway Pressure in Hypoxemic Patients After Cardiothoracic Surgery - BiPOP Study group.

Stéphan F, et al. JAMA 2015, 313 (23): 2331-9.

PROFİLAKSİ / TEDAVİ

- ÇOK MERKEZLİ, Randomize Klinik Çalışma, n=830.
- Kalp cerrahisi sonrasında **AKUT SOLUNUM YETERSİZLİĞİ** gelişen ya da **RİSK ALTINDA** olan hasta grubunda BİPAP (4/8 cmH₂O) -4 saat/gün- vs nazal kanülle sürekli 50 L/dak akım (FiO₂ 0.5 oksijen).
- BİPAP ve Yüksek Akımlı O₂ uygulamalarında;
 - Re-entübasyon (%13,7 vs %14),
 - Tedavi başarısızlığı (%21,9 vs %21)
 - Dispne - konfor skorları ve MORTALİTE (%5,5 vs %6,8) benzer.

ORIGINAL ARTICLE

Noninvasive Positive Pressure Ventilation in Critically Ill Children With Cardiac Disease

Lubica Kovacicova · Peter Skrak · Dusan Dobos ·
Martin Zahorec

n=107, prospektif, gözlemsel, 1 gün-18 yaş.

- NIV oksijenasyonu iyileştirip, solunum eforunu azaltıyor.
- Başarısız ekstübasyon ve infantlarda etkili ve güvenli.

ORIGINAL ARTICLE

Efficacy and Predictors of Success of Noninvasive Ventilation for Prevention of Extubation Failure in Critically Ill Children With Heart Disease

Punkaj Gupta · Jacob E. Kuperstock · Sana Hashmi ·
Vickie Arnold · Jeffrey M. Gossett · Parthak Prodhon ·
Shekhar Venkataraman · Stephen J. Roth

n=221, tek merkez, retrospektif, 1 gün-18 yaş.

- NIV, ekstübasyon başarısızlığını önlemede güvenli ve başarılı
- Uzun entübasyon-mekanik ventilasyon = başarısız NIV
- Mortalite değişmiyor.

Table 4 Multivariate model for NPPV failure

Factor	Odds ratio (95 % CI)	p
ABC score	41.8 (3.8–608)	0.0034
Residual cardiac defect	8.8 (2.6–34)	0.0008
Infection	8.2 (2.2–36)	0.0030
pH <7.36 at h 1	8.4 (2.6–32)	0.0008

Solunum yetersizliği nedenleri:

Kalp yet, enfeksiyon, kronik AC hast, kas güçsüzlüğü, diyafram paralizisi, uzamış mekanik ventilasyon..

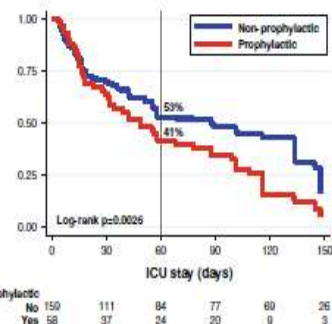


Fig. 2 Comparison of intensive care unit (ICU) lengths of stay between prophylactic events and nonprophylactic events

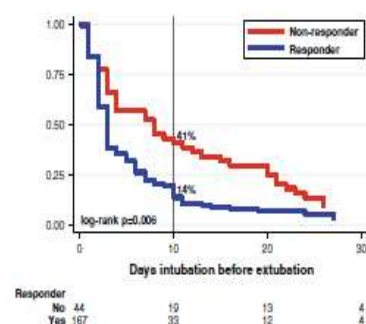


Fig. 3 Days of intubation before extubation compared between responders and nonresponders

Continuous Positive Airway Pressure during Fiberoptic Bronchoscopy in Hypoxemic Patients

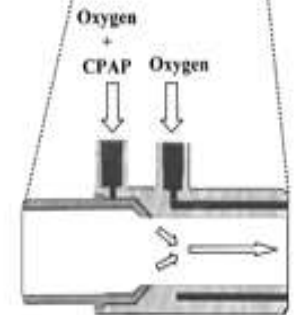
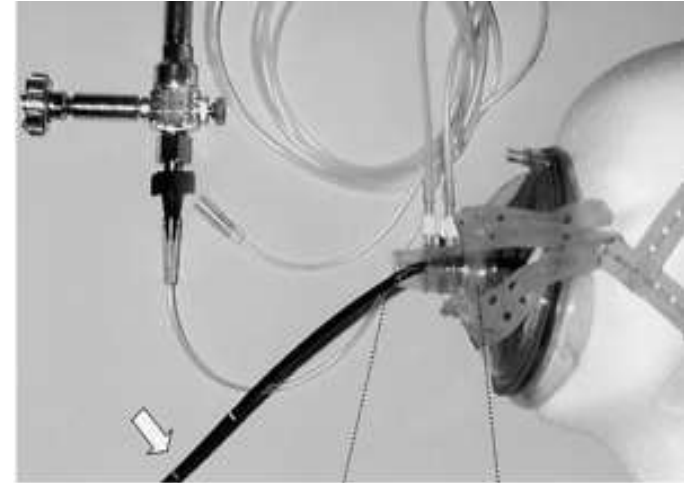
A Randomized Double-Blind Study Using A New Device

AJRCCM, 2000

BERNARD MAITRE, SAMIR JABER, SALVATORE M. MAGGIORE, EMMANUEL BERGOT, JEAN CHRISTOPHE RICHARD, HAMID BAKTHIARI, BRUNO HOUSSET, GEORGES BOUSSIGNAC, and LAURENT BROCHARD

O₂ vs CPAP

Hipoksemik hastalarda FOB sırasında uygulanan CPAP, gaz alışverişinde minimal değişime neden olarak, işlem sonrasında solunum yetersizliği gelişmesini önler.

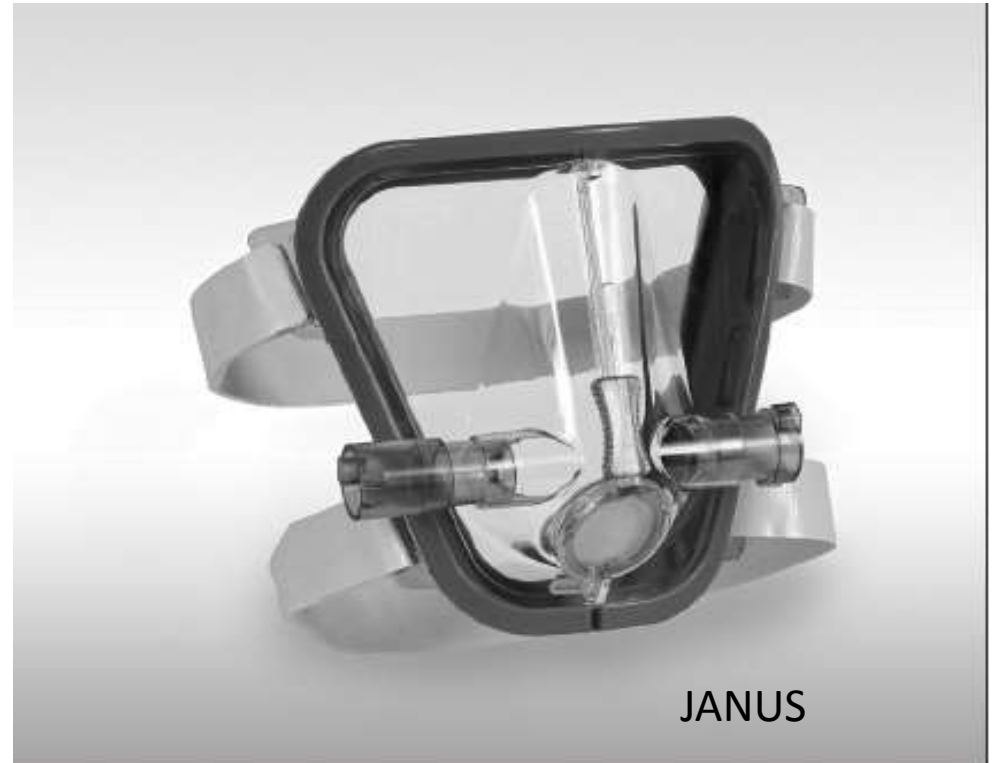


A novel non-invasive ventilation mask to prevent and manage respiratory failure during fiberoptic bronchoscopy, gastroscopy and transesophageal echocardiography

Luca Cabrini^{1,2}, Giovanni Landoni^{1,2}

Curr Opin Anesthesiol 2015, 28:67–72

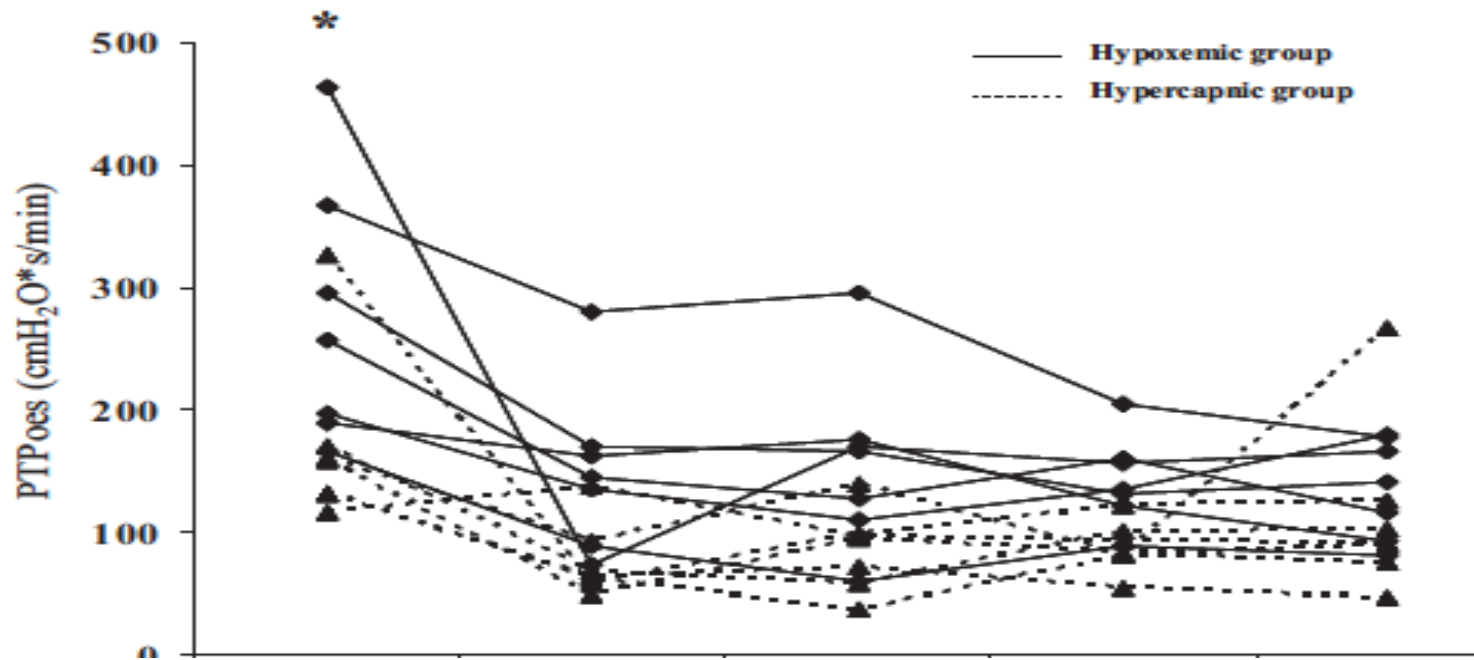
Heart, Lung and Vessels. 2015; 7(4): 297-303



Physiological effects of different interfaces during noninvasive ventilation for acute respiratory failure*

CCM 2009

Amanda Tarabini Fraticelli, MD; François Lellouche, MD; Erwan L'Her, MD; Solenne Taillé, BioMedEng; Jordi Mancebo, MD; Laurent Brochard, MD



Baseline

977mL

163 mL

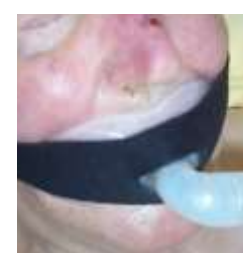
84 mL

Oracle

Inspira'aid

Full-face

Airvie

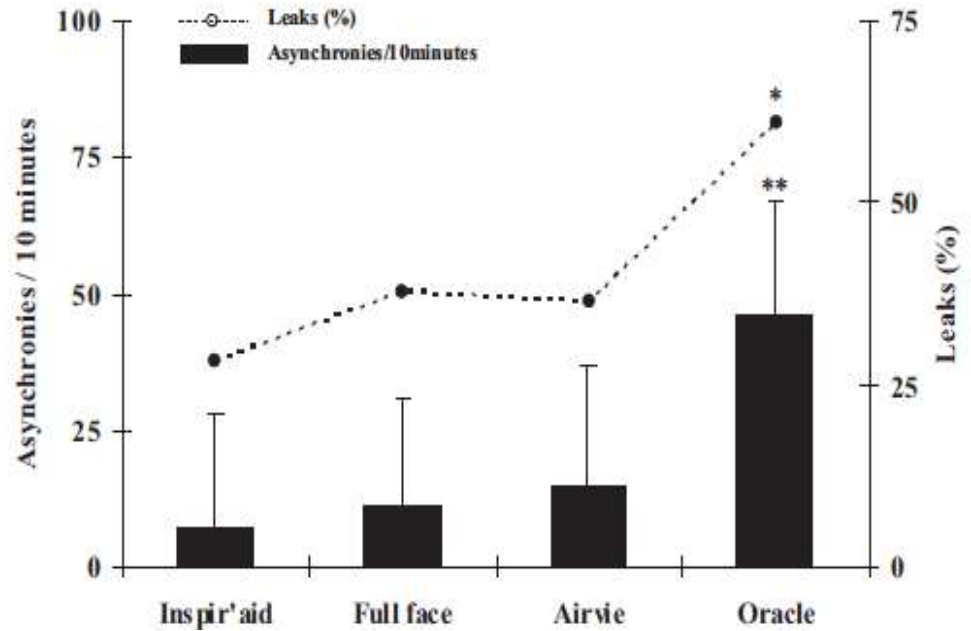


Physiological effects of different interfaces during noninvasive ventilation for acute respiratory failure*

Amanda Tarabini Fraticelli, MD; François Lellouche, MD; Erwan L'Her, MD; Solenne Taillé, BioMedEng; Jordi Mancebo, MD; Laurent Brochard, MD

CCM 2009

- Farklı şekil ve iç hacimdeki maskeler gaz alışverişi ve solunum eforunu azaltmada benzer etkiye sahiptir.
- Kaçak, hasta-ventilatör uyumsuzluğu ve hasta intoleransı en fazla “oral parçayla” görülmüştür.



Interface strategy during noninvasive positive pressure ventilation for hypercapnic acute respiratory failure*

(Crit Care Med 2009; 37:124-131)

Christophe Girault, MD; Anca Briel, MD; Jacques Benichou, MD, PhD; Marie-France Hellot, ScD; Fahmi Dachraoui, MD; Fabienne Tamion, MD, PhD; Guy Bonmarchand, MD, PhD

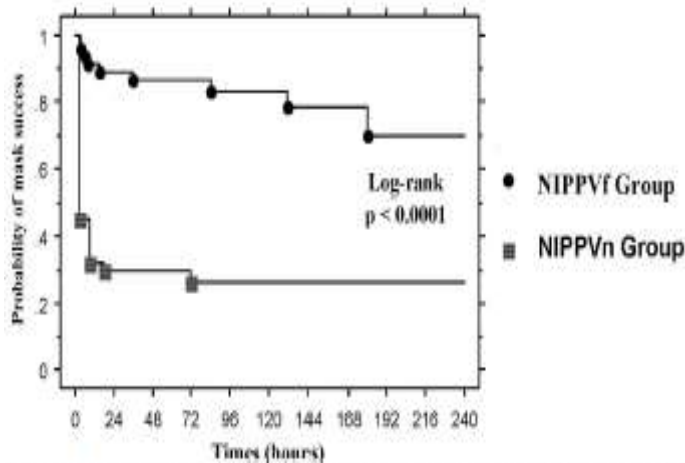


Figure 2. Probability of mask success during NIPPV (intent to treat analysis). NIPPV, noninvasive positive pressure ventilation; NIPPVf, NIPPV face mask group; NIPPVn, NIPPV nasal mask group; Kaplan-Meier curve.

Parameters	Overall Population (n = 90)	NIPPVf Group (n = 46)	NIPPVn Group (n = 44)	p
Mask failure, n (%)	41 (45.5%)	9 (19.5%)	32 (73%)	<0.0001
Mask change, n (%)	32 (35.5%)	0 (0%)	32 (73%)	<0.0001
Causes of mask change, n (%)				
Major air-leaks	30 (33%)	—	30 (94%)	—
Agitation/no cooperation	1 (1%)	—	1 (3%)	—
Consciousness impairment	1 (1%)	—	1 (3%)	—
Severe skin lesions	0	—	0	—
Intubation, n (%)	15 (16.7%)	9 (19.5%)	6 (13.6%)	0.4506
Causes of intubation, n (%)				0.5556
Consciousness impairment	6 (40%)	4 (44.4%)	2 (33.3%)	—
Other organ failures	4 (26.6%)	3 (33.3%)	1 (16.7%)	—
Major air-leaks	2 (13.3%)	0 (0%)	2 (33.3%)	—
Arterial blood gases impairment	2 (13.3%)	1 (11.1%)	1 (16.7%)	—
Agitation/no cooperation	1 (6.6%)	1 (11.1%)	0 (0%)	—

NIPPV, noninvasive positive pressure ventilation; NIPPVf, face mask group; NIPPVn, nasal mask group.

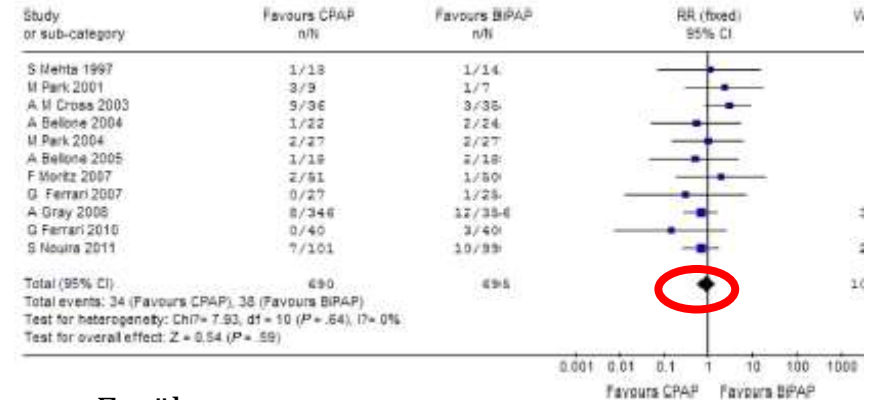
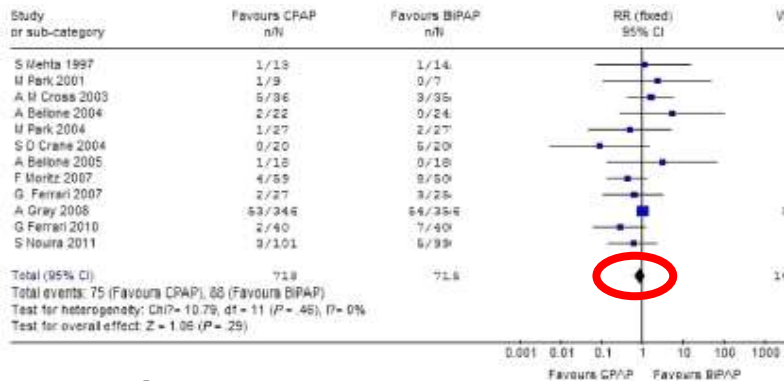
- İlk tercih «Tüm Yüz Maskesi» olmalıdır,
- Eğer uygulama >24-48 saat olacaksa, hasta konforu için nazal maskeye geçilebilir,
- Nazal maske: yanaklar, ağızdan kaçak !?

Hangi Ventilasyon Modu?

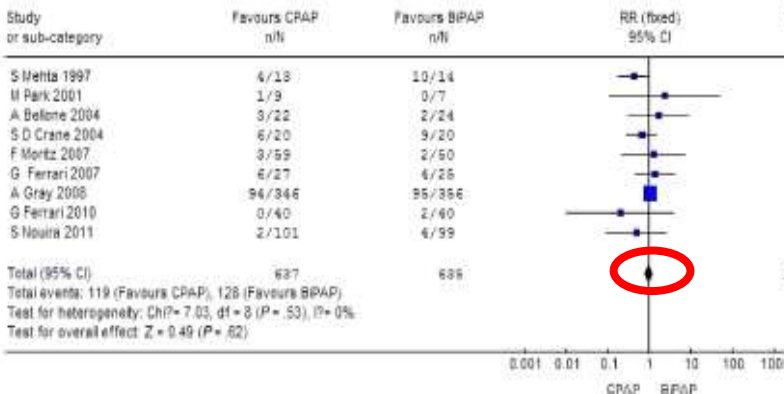
Original Contribution

A comparison of bilevel and continuous positive airway pressure noninvasive ventilation in acute cardiogenic pulmonary edema ☆

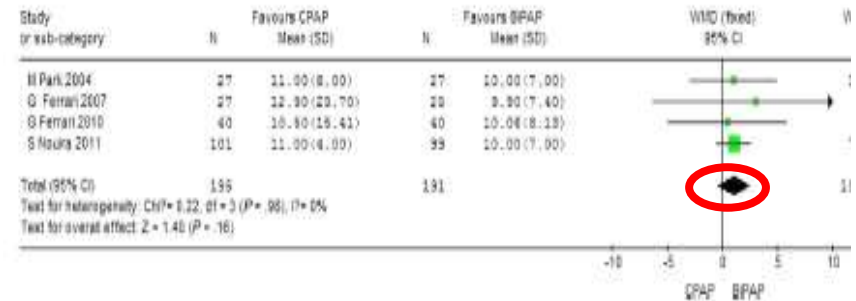
Hui Li MM, Chunlin Hu MD, Jinming Xia MM, Xin Li MD, Hongyan Wei MM,



Mortalite



Entübasyon



M.infarktüsü

Hastanede kalış

Application of Noninvasive Ventilation in Acute Respiratory Failure after Cardiovascular Surgery

Arq Bras Cardiol 2007;88(5):270-

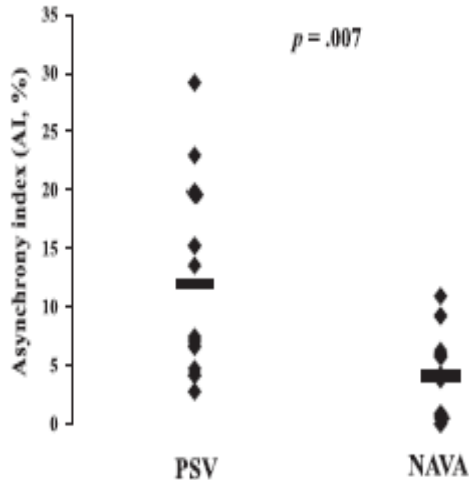
Vera Regina de Moraes Coimbra, Rodrigo de Almeida Lara, Ériko Gonçalves Flores, Emilia Nozawa, José Octávio Costa Auler Júnior, Maria Ignez Zanetti Feltrim

- NIV, kalp cerrahisi sonrasında gelişen “Hipoksemik Akut Solunum Yetersizliğinde” oksijenasyon, solunum ve kalp hızını iyileştirir,
- **Yaşlı ve bazal solunum - kalp hızı yüksek** hastalarda «Hipoksemik Akut Solunum Yetersizliği» nde etkili olmayabilir,
- İnspirasyon - ekspirasyon sonu basınç uygulamalı (bi-level) metodun CPAP’ tan daha üstün olduğu gösterilmiştir.

Neurally Adjusted Ventilatory Assist vs Pressure Support Ventilation for Noninvasive Ventilation During Acute Respiratory Failure

A Crossover Physiologic Study CHEST 2013; 143(1): 30-36

*Pierre-Marie Bertrand, MD; Emmanuel Futier, MD; Yannael Coisel, MD;
Stefan Matecki, MD, PhD; Samir Jaber, MD, PhD; and Jean-Michel Constantin, MD, PhD*



- NAVA, PSV' ye göre, daha iyi hasta-ventilatör uyumu sağlamakla birlikte, her iki yöntemin gaz alışverişinde sağladığı iyileşme benzerdir.

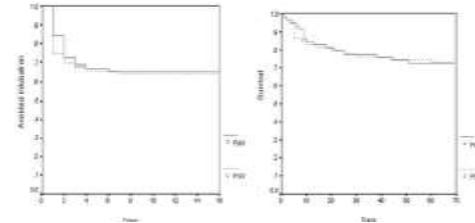
Thierry Rusterholtz
Pierre-Edouard Bollaert
Marc Feissel
Florence Romano-Girard
Marie-Line Harlay
Michel Zaehringier
Benjamin Dusing
Philippe Sauder

Continuous positive airway pressure vs. proportional assist ventilation for noninvasive ventilation in acute cardiogenic pulmonary edema

- Kardiyojenik AC Ödemine bağlı Akut Solunum Yetersizliğinde, CPAP ve PAV benzer sonuçlar veriyor.
- CPAP ucuz, kullanımını kolay. Altın standart.

Miguel Fernández-Vivas
Juan Caturia-Such
Javier González de la Rosa
José Acosta-Escribano
Bernabé Álvarez-Sánchez
José Cánovas-Robles

Noninvasive pressure support versus proportional assist ventilation in acute respiratory failure



- Akut Solunum Yetersizliğinde, PAV-NIV daha konforlu ve intolerans daha nadirse de, fizyolojik parametreler ve prognoz PSV-NIV ile benzerdir.

AARC Clinical Practice Guideline

RESPIRATORY CARE • MAY 2012 VOL. 57 NO 5

Humidification During Invasive and Noninvasive Mechanical Ventilation: 2012

Ruben D Restrepo MD RRT FAARC and Brian K Walsh RRT-NPS FAARC

- Hasta konfor ve uyumunu arttırabileceğinden non-invazif ventilasyonda AKTİF nemlendirme önerilir. (2B)
- Noninvazif ventilasyonda PASİF nemlendirme önerilmez. (2C)

Arařtırma Konuları

- Konunun “**Ekonomik Boyutu**”?
- Güvenli ve etkin uygulama için **Eđitim**?
- NIV komplikasyonları daha **ayrıntılı** incelenmeli
- **Hangi hasta, Ne zaman, Nasıl** tedavi edilmeli?
- PEDİYATRİK KALP CERRAHİSİNDEKİ YERİ

SONUÇ-I

- NIV, kalp cerrahisi sonrasında Akut Solunum Yetersizliđi gelişen ya da gelişme riski olan seçilmiş hastalarda “re-entübasyon” insidansı ve “Mortaliteyi” azaltmaktadır,
- Başarıyı arttıran faktörler: Uygulayıcının tecrübesi, doğru hasta- ventilasyon modu ve maske seçimi, yakın monitorizasyon ve hasta motivasyonudur.

SONUÇ-II

- Pediyatrik hastalarda sonuçlar ümit vericidir, ancak yeterli veri bulunmamaktadır.
- Hem pediyatrik-hem de erişkin hastalarda çok sayıda olguyla yapılacak çalışmalara ihtiyaç vardır,



TEŞEKKÜR
EDERİM