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XXIX CONGRESSO NAZIONALE

ESRA Italian Chapter

CESENA, Cesena Fiera

7-9 Novembre 2024

Presidente del congresso
Vanni Agnoletti
Domenico Pietro Santonastaso
Andrea Tognù

MZ EVENTS

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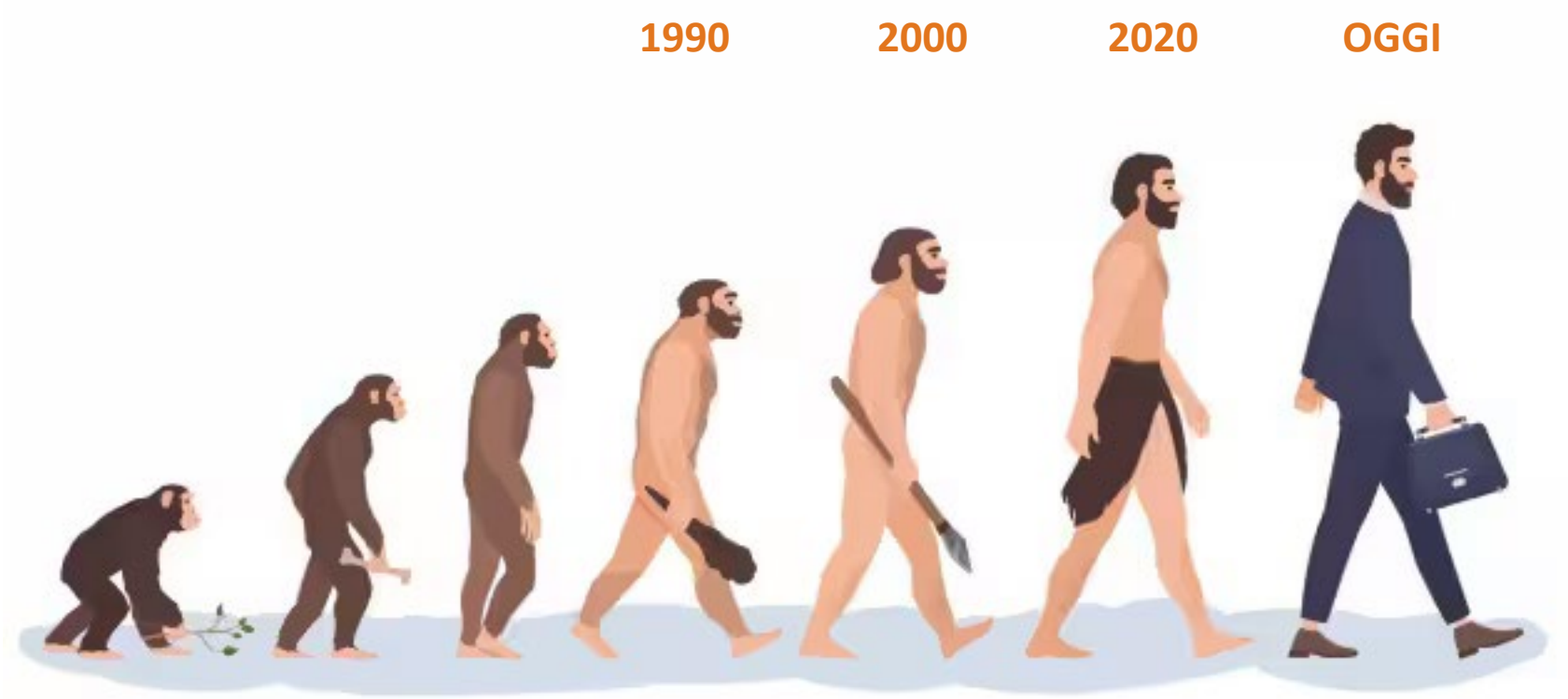
CESENA, Cesena Fiera

Raccomandazioni pratiche per l'estubazione rapida nei pazienti adulti sottoposti a cardiochirurgia

Dott.ssa Simona Silvetti

IRCCS San Martino Genova

No Disclosure


1990
2000
2020
OGGI

REFRESHER COURSE OUTLINE R91

Is there a role for high-dose opioid anaesthesia in the 1990's?

Carl C. Hug Jr MD PhD

1990

Opioids in Cardiovascular Anesthesia

Jeffrey D. Swenson, MD, and Peter L. Bailey, MD

Intrathecal and Epidural Anesthesia and Analgesia for Cardiac Surgery

Mark A. Chaney, MD

Department of Anesthesiology, Loyola University Medical Center, Maywood, Illinois

Anesth Analg 1997;84:1211–21

2000

Fast-Track Cardiac Anesthesia: Use Of Remifentanil Combined with Intrathecal Morphine as an Alternative to Sufentanil During Desflurane Anesthesia

EDUARDO ZARATE, PAIGE LATHAM, PAUL F. WHITE, ROBERT BOSSARD, LISA MORSE, LINDA K. DOUNING, CHEN SHI AND LEI CHI

Department of Anesthesiology and Pain Management, University of Texas Southwestern Medical Center at Dallas, Dallas, Texas

Anesth. Analg., *91:* 283–287, 2000

Journal of
Cardiothoracic and Vascular Anesthesia

VOL 15, NO 3 JUNE 2001

EDITORIAL

Regional Anesthesia for Major Cardiac and Noncardiac Surgery: More Than Just a Strategy for Effective Analgesia?

JAMA Surgery | Special Communication

Guidelines for Perioperative Care in Cardiac Surgery
Enhanced Recovery After Surgery Society Recommendations

Daniel T. Engelman, MD; Walid Ben Ali, MD; Judson B. Williams, MD, MHS; Louis P. Perrault, MD, PhD; V. Seenu Reddy, MD; Rakesh C. Arora, MD, PhD; Eric E. Roselli, MD; Ali Khoynezhad, MD, PhD; Marc Gerdisch, MD; Jerrold H. Levy, MD; Kevin Lobdell, MD; Nick Fletcher, MD, MBBS; Matthias Kirsch, MD; Gregg Nelson, MD; Richard M. Engelman, MD; Alexander J. Gregory, MD; Edward M. Boyle, MD

Enhanced Recovery After Surgery (ERAS) evidence-based protocols for perioperative care can lead to improvements in clinical outcomes and cost savings. This article aims to present consensus recommendations for the optimal perioperative management of patients undergoing cardiac surgery. A review of meta-analyses, randomized clinical trials, large nonrandomized studies, and reviews was conducted for each protocol element. The quality of the evidence was graded and used to form consensus recommendations for each topic. Development of these recommendations was endorsed by the Enhanced Recovery After Surgery Society.

JAMA Surg. doi:10.1001/jamasurg.2019.1153
Published online May 4, 2019.

Invited Commentary

Supplemental content

2019

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ERAS® CARDIAC

SUMMARY: ERAS Expert Recommendations for Cardiac Surgery

Includes Class of Recommendation (COR) and Level of Evidence (LOE)

COR	LOE	Recommendations
I	A	Tranexamic acid or epsilon aminocaproic acid is recommended during on-pump cardiac surgical procedures.
I	B-R	Perioperative glycemic control is recommended.
I	B-R	A care bundle of evidenced based best practices is recommended to reduce surgical site infections.
I	B-R	Goal directed fluid therapy is recommended to reduce postoperative complications.
I	B-NR	A multimodal, opioid-sparing, pain management plan is recommended postoperatively.
I	B-NR	Persistent hypothermia after CPB should be avoided in the early postoperative period.
I	B-NR	Maintenance of chest tube patency is recommended to prevent retained blood.
I	B-NR	Postoperative systematic delirium screening is recommended at least once per nursing shift.
I	C-LD	Smoking and hazardous alcohol consumption should be stopped 4 weeks before elective surgery.
IIa	B-R	Early detection of kidney stress and interventions to avoid acute kidney injury are recommended following surgery.
IIa	B-R	Rigid sternal fixation can be useful to improve/accelerate sternal healing and reduce mediastinal wound complications.
IIa	B-NR	Prehabilitation is recommended for patients undergoing elective surgery with multiple comorbidities or significant deconditioning.
IIa	B-NR	An insulin infusion is recommended to treat hyperglycemia in all patients postoperatively.
IIa	B-NR	Strategies to ensure extubation within 6 hours of surgery are recommended.
IIa	C-LD	Patient engagement tools, including online/application-based systems to promote education, compliance, and patient-reported outcomes are recommended.
IIa	C-LD	Chemical thromboprophylaxis is recommended following surgery.
IIa	C-LD	Preoperative measurement of hemoglobin A1c is recommended to assist with risk stratification.
IIa	C-LD	Preoperative correction of nutritional deficiency is recommended when feasible.
IIb	C-LD	Clear liquids may be continued up until 2-4 hours before general anesthesia.
IIb	C-LD	Preoperative carbohydrate loading may be considered before surgery.
III (No Benefit)	A	Stripping or breaking the sterile field of chest tubes to remove clot is not recommended.
III (Harm)	B-R	Hyperthermia (>37.9 C) while rewarming on cardiopulmonary bypass is potentially harmful and should be avoided.

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EXPERT CONSENSUS STATEMENT

Perioperative Care in Cardiac Surgery: A Joint Consensus Statement by the Enhanced Recovery After Surgery (ERAS) Cardiac Society, ERAS International Society, and The Society of Thoracic Surgeons (STS)

2024

Michael C. Grant, MD, MSE,[1] Cheryl Crisafi, MS, RN,[2] Adrian Alvarez, MD,[3] Rakesh C. Arora, MD, PhD,[4] Mary E. Brindle, MD, MPH,[5] Subhasis Chatterjee, MD,[6] Joerg Ender, MD,[7] Nick Fletcher, MBBS,[8,9] Alexander J. Gregory, MD,[10] Serdar Gunaydin, MD, PhD,[11] Marjan Jahangiri, MBBS, MS,[12] Olle Ljungqvist, MD, PhD,[13] Kevin W. Lobdell, MD,[14] Vicki Morton, DNP,[15] V. Seenu Reddy, MD, MBA,[16] Rawn Salenger, MD,[17] Michael Sander, MD,[18] Alexander Zarbock, MD,[19] and Daniel T. Engelman, MD[2]

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TABLE 1 Summary of Statements and Level of Evidence

Statement	Level of Evidence
Patient engagement is improved through the incorporation of shared decision-making principles.	Low
Program implementation and sustainment is facilitated through the establishment of a multidisciplinary team, including a dedicated coordinator, as an extension of the Heart Team.	Moderate
Routine auditing and evaluation of perioperative process measure adherence and clinical outcomes is a necessary component of high-quality perioperative care.	Moderate
Multifaceted patient screening and risk assessment improves the informed consent process and allows for advanced perioperative planning.	Moderate
Multicomponent prehabilitation may be considered to optimize patients prior to nonurgent cardiac surgery.	Low
Limiting nil per oz status for clear liquids (>2 hours before surgery) is reasonable after assessment of potential risk factors for aspiration.	Low
Transesophageal echocardiography is encouraged in patients with moderate or high risk of perioperative morbidity or mortality.	Moderate
Mechanical ventilation with lung-protective strategies is associated with improved mechanics and fewer pulmonary complications.	High
The role of mechanical ventilation during cardiopulmonary bypass is uncertain.	Moderate
Pulmonary artery catheters use in low-risk patients or procedures incurs greater health care resource utilization without improving morbidity or mortality.	Moderate
Central nervous system monitoring may provide an early indication of neurologic risk, but additional study is necessary to identify strategies to prevent and mitigate injury.	Moderate
Standardized risk factor assessment and prophylaxis has been shown to prevent postoperative nausea and vomiting.	Moderate
Goal-directed perfusion may play a role in preventing organ injury associated with cardiopulmonary bypass.	Low
Structured strategies to facilitate extubation within 6 hours of surgery have been shown to be safe and potentially hasten recovery after elective procedures.	Moderate
Highly selective intraoperative or immediate postoperative extubation may be appropriate for patients undergoing low-risk cardiac surgery.	Low
Routine screening for and, where appropriate, the use of a comprehensive treatment care bundle can reduce the incidence and severity of postoperative acute kidney injury.	Moderate
Early postoperative ambulation and upper extremity exercise is well tolerated and associated with hastened recovery.	Moderate
Goal-directed fluid and hemodynamic therapy can guide perioperative resuscitation and prevent postoperative organ injury.	Moderate
A multimodal approach reduces reliance on opioid-based analgesia and optimizes perioperative pain management.	Moderate
Chest wall regional analgesia can be an effective component of a multimodal approach to perioperative pain management.	Moderate
Blood product utilization and associated outcomes are optimized through the implementation of a comprehensive patient blood management program.	Moderate
Postoperative atrial fibrillation is optimally addressed through the use of a multifaceted prevention strategy.	Moderate
Routine use of a systematic delirium screening tool and nonpharmacologic strategies aid the identification and prevention of postoperative delirium.	High
The bundled application of evidence-based best practices has been shown to prevent surgical site infection.	High

INTRAOPERATIVE EXTUBATION. Intraoperative and immediate postoperative extubation (<1 hour) have been investigated, with published literature suggesting the practice to be both feasible and safe, because studies have reported similar reintubation and overall complication rates compared with standard extubation protocols.[167-171] One propensity-matched analysis of intraoperative extubation compared with early extubation among nonemergent cardiac surgical patients found the practice was associated with a significant reduction in ICU and hospital lengths of stay as well as a 20% reduction in the cost of care.[172]

Given certain characteristics unique to cardiac surgery, including the potential for early postoperative bleeding, acidosis, and delayed awakening, it may be appropriate to use predictive scoring rubrics[173] or establish a consensus intraoperative anesthetic,[166] particularly among centers with limited experience in intraoperative extubation. The limited availability of

REGIONAL ANALGESIA. A greater foundation of literature exists evaluating the effectiveness of thoracic epidural, intrathecal, and regional analgesia in cardiac surgery. A meta-analysis of 69 trials and 4860 patients showed reduced pain, intubation time, respiratory depression, and arrhythmias with the use of thoracic epidural analgesia.[236] These benefits must be balanced with the risk of epidural hematoma, a potentially catastrophic complication with an estimated incidence between 1:1000 and 1:30,000.[237,238] A 2009 systematic review showed intrathecal morphine reduced pain and opioid requirements, but there were inconsistent findings related to reduced adverse effects or other outcome benefits.[239]

Recently, there has been rapid growth in the classification and application of a variety of paraspinal and chest-wall regional anesthesia techniques.[240-242] Four recent systematic reviews have shown that these blocks may help reduce pain and opioid use compared with systemic analgesics alone. However, small sample sizes, poor methodologic quality, and high heterogeneity prevent comparing the relative efficacy of the various techniques, limit quantification of the additive benefit within a pharmacologic multimodal bundle, and indicate that further research is required.[243-246]

Summary Statement: Chest wall regional analgesia is an effective component of a multimodal approach to perioperative pain management.

Quality of Evidence: Moderate

MODERATE

FAST TRACK

- HOW?
- WHO?
- WHY?






Practical Recommendations For Fast Track Extubation In Adult Cardiac Surgery Patients.

An ITACTAIC Consensus Statement

ITACTAIC
Italian Association of Cardiothoracic Anaesthesiology and Intensive Care

European Society of
Regional Anaesthesia
& Pain Therapy
ESRA ITALIA

ESRA Italian Chapter
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Minerva Anestesiologica
EDIZIONI MINERVA MEDICA

Recommendations for Fast-Track Extubation in Adult Cardiac Surgery Patients. A Consensus Statement.

SEARCH
- Rct
- Adult cch
- 2013-2023
- Outcomes = Extubation

Consensus Meeting discussed 60 studies categorised into 6 groups

17 statements

1 excluded after 2° vote

16 statements

8 associated

8 not associated with early extubation

Table I. Drugs, techniques, and strategies that might be associated with fast-track extubation after cardiac surgery. Final statements.

Topic	Statement	N of RCTs in support
Loco-regional anesthesia	In patients scheduled for elective cardiac surgery with sternotomy, **postoperative parasternal block** is associated with fast-track extubation.	6
Loco-regional anesthesia	In patients scheduled for elective cardiac surgery (sternotomy or minimally invasive approach), an **Erector Spinae Plane Block** is associated with fast track extubation.	5
General anesthesia	In elective cardiac anesthesia the use of **alpha-agonists** in theatre is associated with fast-track extubation.	3
General anesthesia	In patients undergoing elective cardiac surgery, the use of **low-dose or short-acting opioids** in theatre is associated with fast-track extubation.	3
General anesthesia	In low-risk cardiac surgery patients undergoing CABG surgery, ICU sedation with **dexmedetomidine** is associated with fast-track extubation.	3
Surgical technique	**Minimally invasive surgical access** is associated with fast-track extubation.	2
Ventilation	In patients undergoing elective cardiac surgery, postoperative **adaptative support ventilation** is associated with fast-track extubation.	3
Anesthesia depth monitoring	In patients undergoing general anesthesia with volatile agents, **anesthesia depth monitoring** with either processed EEG or halogenated end tidal concentration is associated with fast-track extubation.	2

- Postoperative Parasternal block
- ESP
- Alpha agonist in theater
- Low dose or short actinh opioids in theater
- Dexmedetomidine in ICU
- Minimally invasive access
- ASV
- Anesthesia depth monitoring

ULTRA FAST TRACK?

«societal guidelines and consensus statement should be created»

WORK IN PROGRESS……..

Jamel P. Ortoleva et al Operating Room Extubation after Cardiac Surgery: Routine for Some or Routine for None? https://doi.org/10.1053/j.jvca.2024.10.035

FAST TRACK

- HOW?
- WHO?
- WHY?

PATIENTS SELECTION

Preoperative

- Age
- Sex
- BMI
- Comorbidity
- Reoperation
- Elective or not

Intraoperative

- Surgery
- CBP time
- Surgery Complications
- Anesthesiological complications

Postoperative

- Hemodynamic support
- Metabolic conditions
- Bleeding
- Arrival time in ICU

STEP 1: selection

STEP 2: confirmation

FAST TRACK EXTUBATION

«Fast track extubation is now a well-accepted and widely utilized approach to post-operative cardiac surgical care»

Jamel P. Ortoleva et al Operating Room Extubation after Cardiac Surgery: Routine for Some or Routine for None? https://doi.org/10.1053/j.jvca.2024.10.035

ULTRA FAST TRACK?

Predictors of operating room extubation in adult cardiac surgery

Kathirvel Subramaniam, MD, MPH,[a] Diana S. DeAndrade, MD,[a] Daniel R. Mandell, MD,[a] Andrew D. Althouse, PhD,[b] Rajan Manmohan, BS,[c] Stephen A. Esper, MD, MBA,[a] Jeffrey M. Varga, MD,[a] and Vinay Badhwar, MD[d]

Results: Younger age, lower body mass index, higher preoperative serum albumin, absence of chronic lung disease and diabetes, less-invasive surgical approach, isolated coronary bypass surgery, elective surgery, and lower doses of intraoperative intravenous fentanyl were independently associated with higher probability of operating room extubation. The extubation prediction score created in a derivation set of patients performed well in the validation set. Patient scores less than 0 had a minimal probability of successful operating room extubation. Operating room extubation was highly predicted with scores of 5 or greater.

TABLE 3. Multivariate logistic regression model predicting successful operating room extubation (preoperative characteristics only)

Preoperative patient characteristics	Beta	95% CI	OR	95% CI	*P* value	Score points
Age, y						
40-49	1.49	(0.86-2.12)	4.45	(2.38-8.31)	<.001	+3
50-59	1.02	(0.48-1.56)	2.78	(1.63-4.74)	<.001	+2
60-69	0.82	(0.32-1.31)	2.27	(1.38-3.70)	.001	+1
>70 (reference)	NA	(ref)	NA	(ref)	(ref)	
BMI (kg/m^2)						
<25	1.48	(0.79-2.16)	4.39	(2.22-8.66)	<.001	+3
25-30	1.10	(0.45-1.75)	3.01	(1.57-5.77)	.001	+2
30-35	0.72	(0.04-1.39)	2.05	(1.04-4.00)	.036	+1
>35 (reference)	NA	(ref)	NA	(ref)	(ref)	
CLD	−0.79	(−1.53 to −0.03)	0.46	(0.21-0.97)	.041	−2
Diabetes	−0.39	(−0.81 to 0.03)	0.67	(0.44-1.03)	.067	−1
Non–full sternotomy (vs full sternotomy)*	1.59	(1.11-2.06)	4.89	(3.06-7.82)	<.001	+3
Hypoalbuminemia (preoperative total albumin <4 g/dL)	−0.96	(−1.62 to −0.30)	0.38	(0.19-0.74)	.005	−2
Peripheral vascular disease	−0.46	(−0.98 to 0.07)	0.63	(0.37-1.07)	.089	−1
Preoperative mediastinal radiation	−0.98	(−2.03 to 0.08)	0.38	(0.13-1.08)	.069	−2
Procedure						
Isolated CABG (reference)	NA	(ref)	NA	(ref)	(ref)	
Isolated AVR	−1.02	(−1.60 to −0.34)	0.36	(0.18-0.71)	.003	−2
Isolated MVR	−0.44	(−1.72 to 0.84)	0.64	(0.17-2.33)	.501	−1
Multiple operations	−1.29	(−2.10 to −0.39)	0.27	(0.11-0.67)	.005	−3
Other	−0.63	(−1.16 to −0.09)	0.53	(0.31-0.92)	.023	−1
Elective status (vs urgent)	0.60	(0.15-1.04)	1.82	(1.17-2.83)	.008	+1

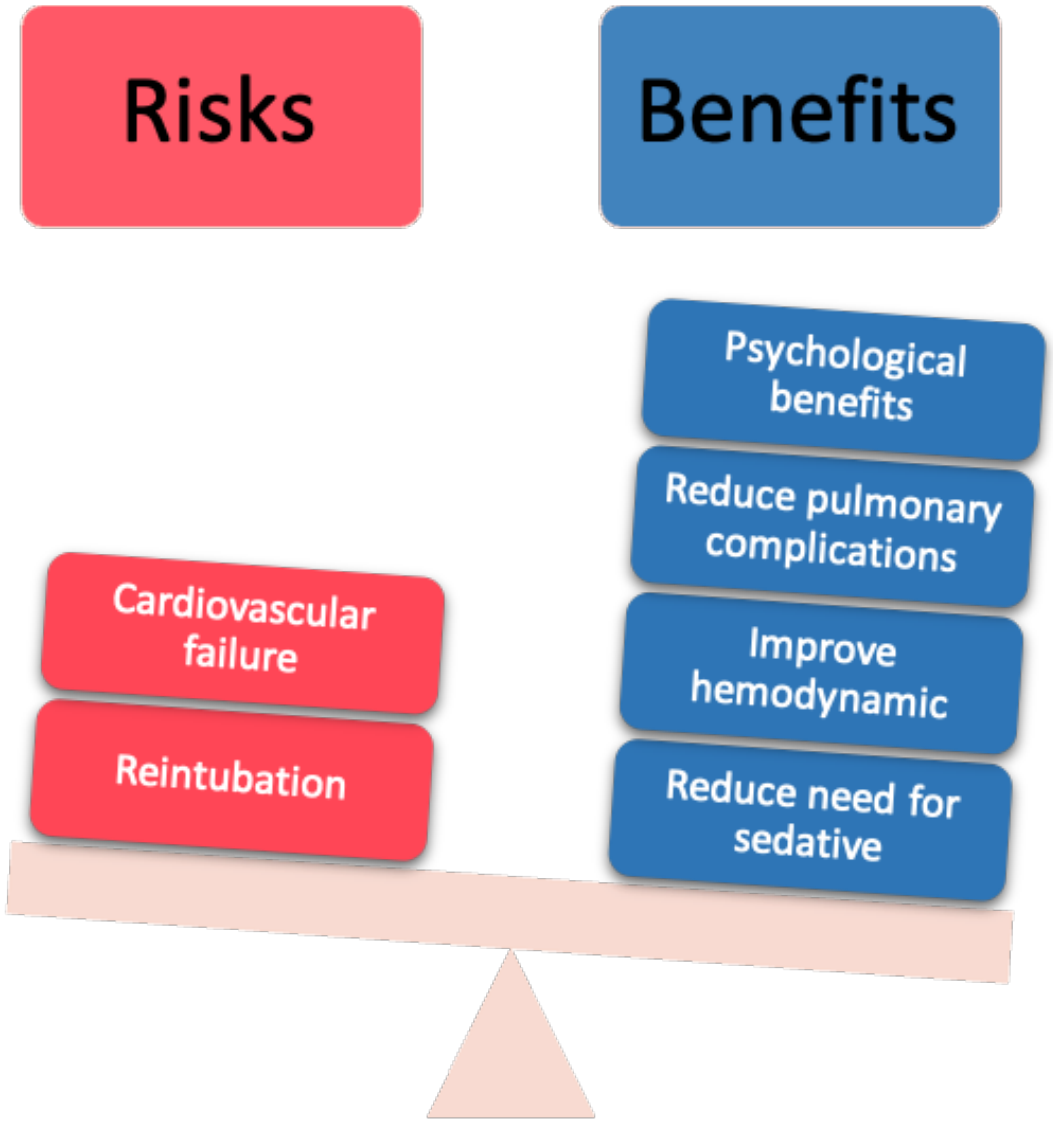
TABLE 4. Multivariate logistic regression model predicting successful operating room extubation (including operative characteristics)

Extubation predictors	Beta	95% CI	OR	95% CI	*P* value	Score points
Preoperative characteristics						
Age, y						
40-49	1.22	(0.41-2.02)	3.39	(1.51-7.56)	.003	+3
50-59	0.97	(0.26-1.67)	2.63	(1.30-5.30)	.007	+2
60-69	0.58	(−0.01 to 1.23)	1.79	(0.93-3.42)	.080	+1
>70 (reference)	NA	(ref)	NA	(ref)	(ref)	
BMI (kg/m^2)						
<25	1.22	(0.35-2.08)	3.37	(1.42-7.99)	.006	+3
25-30	0.81	(0.01-1.62)	2.26	(1.01-5.04)	.047	+2
30-35	0.68	(−0.17 to 1.53)	1.97	(0.84-4.60)	.119	+1
>35 (reference)	NA	(ref)	NA	(ref)	(ref)	
Diabetes	−1.18	(−1.79 to −0.57)	0.31	(0.16-0.57)	<.001	−2
Non–full sternotomy (vs full sternotomy)*	1.84	(1.13-2.55)	6.31	(3.12-12.77)	<.001	+4
Procedure						
Isolated CABG (reference)	NA	(ref)	NA	(ref)	(ref)	
Isolated AVR	−1.96	(−2.91 to −1.00)	0.14	(0.05-0.37)	<.001	−4
Isolated MVR	−0.73	(−2.70 to 1.25)	0.48	(0.06-3.48)	.471	−1
Multiple operations	−1.57	(−2.62 to −0.52)	0.21	(0.07-0.60)	.004	−3
Other	−1.25	(−1.94 to −0.56)	0.29	(0.14-0.57)	<.001	−3
Elective status (vs urgent)	0.56	(−0.07 to 1.19)	1.75	(0.93-3.28)	.082	+2
Intraoperative characteristics						
Fentanyl dose (per 500 μg)	−1.20	(−1.61 to −0.78)	0.30	(0.19-0.46)	<.001	−2
Multiple inhalational agents	1.33	(0.64-2.02)	3.79	(1.91-7.51)	<.001	+2

FAST TRACK

- HOW?
- WHO?
- WHY?


ERAS
PROTOCOL
Reduce
complications
Reduce ICU and
spital stay
Reduce hospital
cost and Improve
patients outcome



INTERVENTIONS

PATIENTS SELECTION

FAST TRACK OR ORE?

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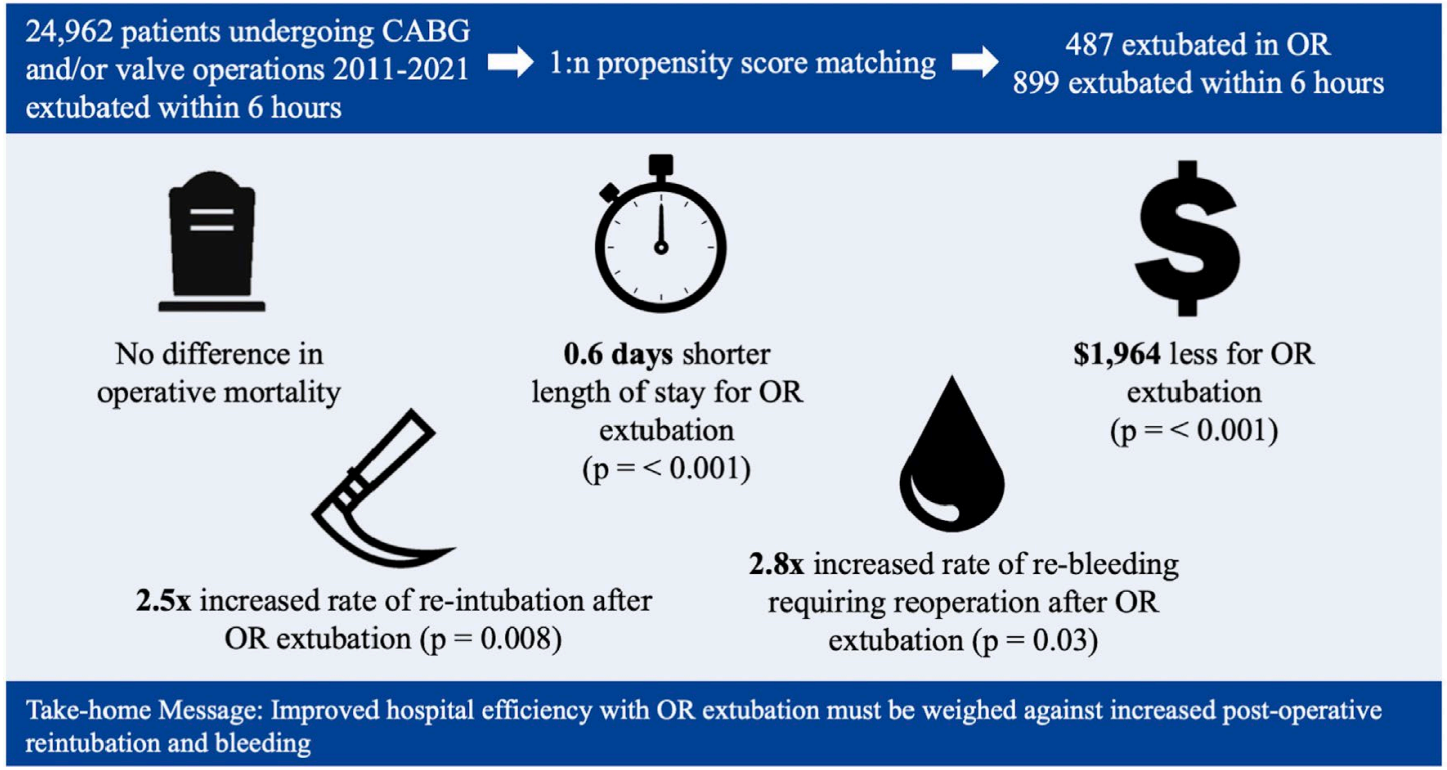
Operating Room Versus Intensive Care Unit Extubation Within 6 Hours After On-Pump Cardiac Surgery: Early Results and Hospital Costs

Andrew D. Hawkins, MD,[*] Raymond J. Strobel, MD, MSc,[*] J. Hunter Mehaffey, MD, MSc,[*] Robert B. Hawkins, MD, MSc,[†] Evan P. Rotar, MD, MS,[*] Andrew M. Young, MD,[*] Leora T. Yarboro, MD,[*] Kenan Yount, MD, MBA,[*] Gorav Ailawadi, MD, MBA,[†] Mark Joseph, MD,[‡] Mohammed Quader, MD,[§] and Nicholas R. Teman, MD[*]



Operating Room Extubation for Patients Undergoing Cardiac Surgery: A National Society of Thoracic Surgeons Database Analysis

Nicholas R. Teman, MD,[1] Raymond J. Strobel, MD, MSc,[1] Levi N. Bonnell, PhD, MPH,[2] Ourania Preventza, MD, MBA,[1] Leora T. Yarboro, MD,[1] Vinay Badhwar, MD,[3] Tsuyoshi Kaneko, MD,[4] Robert H. Habib, PhD,[2] J. Hunter Mehaffey, MD, MSc,[3] and Jared P. Beller, MD[1]

CONCLUSIONS Extubation in the OR was safe and effective in a selected patient population and may be associated with superior outcomes in coronary artery bypass, aortic valve replacement, and mitral valve replacement. These national data appear to confirm institutional experiences regarding the potential benefit of OR extubation. Further refinement of optimal populations may justify randomized investigation.

(Ann Thorac Surg 2024;118:692-700)

Extubation After Cardiac Surgery: It's Better Early, If Often

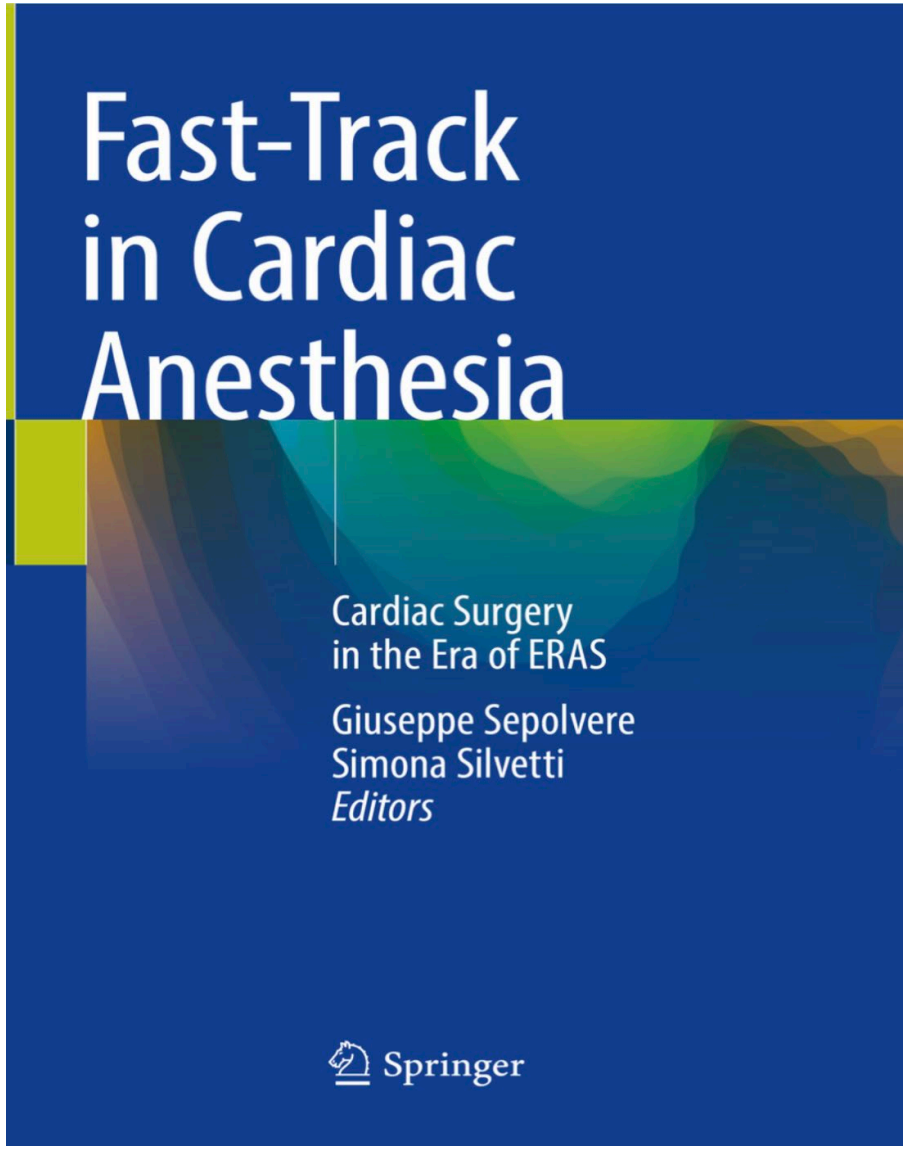
INVITED COMMENTARY:

Multimodal analgesia

Early extubation

CONCLUSIONI

- Chest wall Block
- Early extubation
- Reduce ICU stay and LOS
- Reduce hospital cost and improve patients outcome



https://link.springer.com/book/9783031708985

Overview

Editors: Giuseppe Sepolvere, Simona Silvetti

- Fast-track in cardiac surgery is a new trend borne in 2020 with ERAS CARDIAC society
- Focused on loco regional anesthesia in cardiac surgery
- Analyses all analgesic/anesthetic techniques to optimize hemodynamic condition and pain management after cardiac surgery