Immediate Extubation after Cardiac Surgery Should be Part of Routine Anesthesia Practice for Selected Patients

Cardiac surgery is the only type of elective surgery where routine immediate extubation is not considered a routine procedure.

We routinely extubate after thoracic surgery, neurosurgery, major abdominal surgery, or all sorts of transplantations, other than cardiac. There is a stigma of unorthodox anesthesia technique still hovering around anesthesiologists or anesthesiology groups who routinely extubate patients after extubation. This author strongly believes that routine extubation can be achieved for the majority of patients undergoing elective surgery. What are the prerequisites for establishing a successful immediate extubation program after cardiac surgery?

Competent and Fast Surgeons

This should not come as a surprise. As clinicians, we all know that the best anesthesia cannot compensate for poor or slow surgeons. Any immediate extubation after prolonged surgery is more difficult than immediate extubation after fast surgery with little risk of complications. If you work with surgeons where the outcome is usually sub-standard, surgery takes a very long time, and postoperative complications are frequent, installation of an immediate extubation program after cardiac surgery is fruitless and inherent to dangers to morbidity and mortality of patients. This obviously also applies to other types of surgery, for example, thoracic surgery, and is not reserved for cardiac surgery only. If complications such as postoperative myocardial infarction and bleeding occur frequently, the rate of “taking patients back to the OR” is high, immediate extubation puts unnecessary stress both on patients and on the perioperative care team. Surgical performance can be defined by the quality and quantity of work per unit of time: fast, slick surgeons with good outcomes and low rates of complications provide the best environment for an immediate extubation program after cardiac surgery as for any other type of major surgery.

Competent and Fast Anesthesiologists

What applies to surgeons, also applies to anesthesiologists. Starting or maintaining an immediate extubation program is not for novices or for occasional cardiac anesthesiologists. Basic gestures necessary for this type of surgery should be executed with competence and speed, as not to waste time and delay the beginning of surgery unnecessarily. For most surgeries, insertion of a Swan Ganz catheter is no longer necessary if the anesthesiologist is a master of intraoperative TEE. Since the anesthesia team will have to direct their patient care not only toward hemodynamic stabilization but also to the goal of immediate extubation, special care needs to be taken to use anesthetic techniques which allow immediate extubation: using lower dose opioid strategies and combination with regional techniques can be an excellent option, monitoring of anesthetic depth is also a useful tool to allow immediate extubation. Most importantly, maintenance of body temperature is a key factor of immediate extubation strategies. Close collaboration with the surgeons during off-pump cardiac surgery or with the perfusionists during on-pump cardiac surgery is necessary to avoid big spikes of temperature shifts and maintenance of normothermia.

Inclusion of Local and Regional Techniques

It is still somewhat irrational that thoracic epidural analgesia (TEA) is not more often used or routinely used for cardiac surgery despite positive risk analysis[1] and despite its beneficial effect on the outcome.[2] Unfortunately, recent changes in regional guidelines and above all the introduction of ever more anti-aggregation drugs have impaired the more widespread use of TEA. If TEA is used, close teamwork between the different health-care provides, especially the nurses, is necessary. However, other techniques are available and can be used, such as paravertebral blocks, local infiltration, and a sufficient intraoperative opioid management.

Immediate Extubation as Part of a Program

Immediate extubation still challenges conventional practice; therefore, it should be performed in an environment where surgeons, perfusionists, nurses, and respiratory technician are all involved in this endeavor. There is no doubt that immediate extubation increases the workload in the OR and might be linked to a slightly longer time in the OR. However, it is in my opinion not more challenging than immediate extubation after thoracic surgery using lung separation. Extubation criteria are the same as for any other type of surgery, normothermia, hemodynamic stability, and cognitive state being the key factors.

Why Do It?

On one hand, this seems like a more philosophical question. When George Mallory was asked why climb Mount Everest, he famously answered: “because it’s there.” In our case, the answer would be similar: because it’s possible. The real question would be, where is the advantage of keeping patients intubated? Most will argue that positive pressure ventilation is not beneficial for recovery after cardiac surgery since it reduces the venous...
backflow, can make certain pulmonary complications such as pneumothorax or hemothorax worse. Postoperative ventilation necessitates sedation, which can decrease hemodynamic stability. At the end of the day, most advocates for postoperative ventilation will argue that it “gives the nurses in the Intensive Care Unit (ICU) time to install the patient, monitor etc.” Moreover if in fact, this is necessary, and immediate extubation is not implemented in an environment where everyone is ready to embark, then, in fact, immediate extubation can increase postoperative morbidity. It is no secret that immediate extubation is far easier to implement in ICU units run by anesthesiologists. This is a psychological as much as a skill-set related issue: anesthesiologists are less afraid of re-intubation since they master intubation on a daily basis. Advocates of early rather than immediate extubation argue that there is no difference in the outcome. However, in my experience, maintenance of early extubation programs (within 4 h after surgery) is far more difficult to establish and maintain than immediate extubation programs. There is an inherent reluctance to extubate patients quickly in the ICU, ventilation might actually contribute to hypothermia, and nursing staff is usually reluctant to embark on these early extubation programs.

**Patient Selection**

Critics of immediate extubation after cardiac surgery argue that most studies focus on selected patients. This is true, but it is also true that any immediate extubation after more complex surgeries not only depend on the surgery and surgeon (see point 1) but also on the patients’ status. Immediate extubation after high-risk surgery in a high-risk patient makes no sense since it adds another factor to focus on. The limits to the possibility of immediate extubation are given by the predictive incidence of postoperative or intraoperative complications. If for example after major abdominal surgery, postoperative bleeding is a possibility, immediate extubation might not be attempted. This is not only reserved for cardiac surgery. If the cardiac parameters of a given patient are poor, the chances of hemodynamic instability after surgery are high, and hence, the extubation criteria mentioned above cannot be met. Each team needs to define its patient criteria for immediate extubation. Such criteria can be: ejection fraction above 30%, “simple” cardiac surgery (par ex: on- or off-pump CABG, single valve repair or replacement), the absence of severe pulmonary disease, and absence of previous myocardial infarction within the past 3 months.

In this issue, another fine study on immediate extubation is presented.[3] Immediate extubation is a team effort and is feasible suing a variety of anesthetic techniques. As the authors state, it is “feasible with an awake, warm, pain-free, and hemodynamically stable patient.” I might add, competent and fast cardiac surgeons and anesthesiologists are also needed.

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