



REVISTA BRASILEIRA DE ANESTESIOLOGIA

Publicação Oficial da Sociedade Brasileira de Anestesiologia
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SCIENTIFIC ARTICLE

Anesthesia management by residents does not alter the incidence of recall of tracheal extubation: a teaching hospital-based propensity score analysis

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Received 15 December 2015; accepted 23 February 2016

KEYWORDS

Awareness;
Airway extubation;
Academic Medical
Centers

Abstract

Background and objectives: The memory of emergence from anesthesia is recognized as one of types of anesthesia awareness. Apart from planned awake extubation, unintentional recall of tracheal extubation is thought to be results of inadequate anesthesia management; therefore, the incidence can be related with the experience of anesthetists. To assess whether the incidence of recall of tracheal extubation is related to anesthetists' experience, we compared the incidence of recall of tracheal extubation between patients managed by anesthesia residents or by experienced anesthetists.

Methods: This is a retrospective review of an institutional registry containing 21,606 general anesthesia cases and was conducted with the ethics board approval. All resident tracheal extubations were performed under anesthetists' supervision. To avoid channeling bias, propensity score analysis was used to generate a set of matched cases (resident managements) and controls (anesthetist managements), yielding 3475 matched patient pairs. The incidence of recall of tracheal extubation was compared as primary outcomes.

Results: In the unmatched population, there was no difference in the incidences of recall of tracheal extubation between resident management and anesthetist management (6.5% vs. 7.1%, $p=0.275$). After propensity score matching, there was still no difference in incidences of recall of tracheal extubation (7.1% vs. 7.0%, $p=0.853$).

Conclusion: In conclusion, when supervised by an anesthetist, resident extubations are no more likely to result in recall than anesthetist extubations.

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<http://dx.doi.org/10.1016/j.bjane.2016.02.008>

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Please cite this article in press as: Inoue S, et al. Anesthesia management by residents does not alter the incidence of recall of tracheal extubation: a teaching hospital-based propensity score analysis. Rev Bras Anesthesiol. 2016. <http://dx.doi.org/10.1016/j.bjane.2016.02.008>

PALAVRAS-CHAVE

Consciência;
Extubação;
Centros Médicos
Acadêmicos

O manejo de anestesia por residentes não altera a incidência de recordação da extubação traqueal: uma análise do índice de propensão com base em hospital de ensino

Resumo

Justificativa e objetivos: A recordação da emergência da anestesia é reconhecida como um dos tipos de consciência anestésica. Excluindo a extubação planejada com o paciente acordado, acredita-se que a recordação não intencional da extubação traqueal seja o resultado de manejo inadequado da anestesia; portanto, a incidência pode estar relacionada com a experiência dos anestesistas. Para avaliar se a incidência de recordação da extubação traqueal está relacionada com a experiência dos anestesistas, comparamos a incidência de recordação da extubação traqueal entre pacientes tratados por residentes de anestesia ou por anestesistas experientes.

Métodos: Estudo retrospectivo de revisão de um registo institucional contendo 21.606 casos de anestesia geral, conduzido com a aprovação do Conselho de Ética. Todas as extubações traqueais foram realizadas por residentes sob a supervisão de anestesistas. Para evitar o viés de canalização, a análise do índice de propensão foi usada para gerar um grupo de casos pareados (manejo por residentes) e de controles (manejo por anestesistas), obtendo-se 3.475 pares combinados de pacientes. A incidência de recordação da extubação traqueal foi comparada como desfechos primários.

Resultados: Na população incomparável, não houve diferença na incidência de recall de extubação traqueal entre a gestão residente e gestão anestesista. (6,5% vs. 7,1%, $p = 0,275$). Depois de correspondência score de propensão, ainda não havia diferença na incidência de recall de extubação traqueal (7,1% vs. 7,0%, $p = 0,853$).

Resultados: Na população não pareada, não houve diferença na incidência de recordação da extubação traqueal entre o manejo por residentes e o manejo por anestesistas (6,5% vs. 7,1%, $p = 0,275$). Após parear os índices de propensão, também não houve diferença na incidência de recordação da extubação traqueal (7,1% vs. 7,0%, $p = 0,853$).

Conclusão: Em conclusão, quando supervisionados por um anestesista, as extubações feitas por residentes não são mais propensas a resultar em recordação que as extubações feitas por anestesistas.

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Introduction

The memory of emergence from anesthesia is recognized as one of types of anesthesia awareness.^{1,2} Apart from difficult airway cases, awake tracheal extubation is unnecessary.³ Though, as a result of practical changes in anesthesia including development of short acting drugs and enhanced patient recovery and operating room turnover, it may reasonably be predicted that patients more frequently awake during emergence from general anesthesia. On occasion, unintentionally patients might be fully awakened during emergence. Patients who reported accidental awareness during emergence rarely mentioned feeling the tracheal tube per se, but rather they experienced distressing paralysis.^{1,2} Therefore, the incidence of recall of tracheal extubation can be overlooked and happen more frequently than expected. Takahashi et al.⁴ reported that of 1993 surgical patients, 202 had the memory of tracheal extubation. They found that sex, age, and anesthesia maintained by propofol was related to the memory of tracheal extubation.⁴ In addition, they considered that the memory of tracheal extubation contributes to patient's dissatisfaction with anesthesia.⁴ Therefore, feeling the tracheal tube should be unpleasant at

the moment, therefore, it can be an unpleasant experience during anesthesia if the recall is explicit or conscious memory. It is reasonable to think that accidental full awakesness during emergence is related to lack of education and knowledge about the variability of duration of neuromuscular blockade and the rapidity of offset of newer volatile agents and propofol, which might result in inadvertent mismatch between the time course of return of consciousness, return of motor capacity, and the timing for tracheal extubation.² Therefore, unintentional recall of tracheal extubation is thought to be results of inadequate anesthesia management; therefore, the incidence can be related with the experience of anesthetists. However, it is not clear whether or not anesthetists' experience affects the incidence of recall of tracheal extubation or any investigation about this concern has never been reported.

In our institute, surgical patients managed by the anesthesia department undergo a postoperative structured interview with consultant anesthetists at the postoperative anesthesia consultation clinic, where the occurrence of perioperative adverse events are assessed and the patients can critique perioperative management based on the filled interview form. Using these interview data, we retrospectively

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