

Research Report

Educational potential of reflection conferences in anesthesia training

Juntaro Shiba¹, Masaaki Satoh¹, Tetsuhito Hara¹, Nozomu Hiraoka¹, Mamoru Takeuchi¹

Department of Anesthesiology and Critical Care Medicine, Jichi Medical University¹, 3311-1 Yakushiji Shimotsuke, Tochigi 329-0498, Japan

Abstract

Formative assessment is a procedure to evaluate the levels of achievement and provide feedback for trainees during an educational process. Self-reflection by trainees has been reported to be an effective means for formative assessment. However, the effects of the reflection in anesthesiology training are unknown. We analyzed anesthesia events in resident reflection conferences, and investigated an educational potential of the reflection conferences. The study subjects were junior residents during their anesthesia rotation. Cases for the reflection were chosen by the residents themselves. In the reflection conferences, events during anesthesia cases were identified and discussed. For individual events, core management problems and essential skills for future improvement were determined. Thirty-two events in fifty-one cases were presented by the residents. Sixty-five percent of the core management problems were circulatory and airway problems, while 70% of essential skills for future improvement were anesthesia planning. Reflection conferences may identify common problems for residents in anesthesia training. Anesthesia planning may be a potential target for education with formative assessment.

(Key words : junior residents, reflection, mentor system, medical education, resident education)

Introduction

Formative assessment is a procedure to evaluate the levels of achievement, provide feedback, and support the learning process of trainees. Self-reflection is one of the methods used for a formative assessment¹⁾, and may be essential for improving residents' clinical capabilities. While debriefing after simulation-based skill training has been shown to be effective²⁾, few studies have been performed on formative assessment with reflection in anesthesiology training³⁾. Therefore, we implemented reflection conferences for junior residents to discuss anesthesia-related events during their rotations, identified problems associated with the events, and investigated an educational potential of the conferences.

Methods

The Institutional Review Board of Jichi Medical University approved the study. The subjects were fiscal 2015 and 2016 junior residents. On the first day of the training, an anesthesiologist in

charge of resident education notified the junior residents that a resident reflection conference would be held in the 2nd month of the training. The residents themselves selected cases for the reflection. Events during individual cases were presented and discussed in the conferences. A core management problem, defined as an underlying management problem associated with each event, was determined. Also, an essential skill for future improvement, defined as a required skill to prevent or improve the management of a similar future event, was then determined.

Results

Fifty-one cases were presented by the junior residents, and 32 events were identified (Table 1). Through the conferences, nine core management problems and three essential skills for future improvement were determined. Two major problems were ones with circulation (26 cases, 51%), and airway (7 cases, 14%). The other problems were associated with healthcare associated complications (4

cases, 7%), medical safety (3 cases, 6%), body temperature management (3 cases, 6%), drug metabolism (3 cases, 6%), and pain management (3 cases, 6%), patient evaluation (1 case, 2%), and management of central nervous system

function (1 case, 2%) (Figure 1). The three essential skills for future improvement were anesthesia planning (36 cases, 70%), emergency management (10 cases, 20%) and communication skills (5 cases, 10%) (Figure 2).

Table 1 Presented cases, core management problems and essential skills for future improvement.

Events during anesthesia cases	Number of cases	Core management problem	Essential skills for future improvement
Anaphylactic shock	1	Circulation	Emergency management
Prolonged hypertension	3	Circulation	Anesthesia planning
Prolonged hypotension	5	Circulation	Anesthesia planning
Erroneous measurements of blood pressure	1	Circulation	Anesthesia planning
Airway troubles in children	1	Airway	Anesthesia planning
Shivering	2	Body temperature	Anesthesia planning
Massive hemorrhage	3	Circulation	Emergency management
Delay in neurological monitoring	1	Central nervous system function	Anesthesia planning
Nasal hemorrhage due to nasogastric tube	1	Complications	Anesthesia planning
Air embolisms	1	Complications	Emergency management
Tourniquet pain	3	Circulation	Anesthesia planning
Delayed awakening	2	Metabolism	Anesthesia planning
Sepsis	4	Circulation	Anesthesia planning
Tracheal tube cuff failure	1	Airway	Emergency management
Tooth injuries	1	Complications	Communication skills
Upper airway obstruction	1	Airway	Emergency management
Postoperative analgesia	2	Pain	Communication skills
Chest pain on anesthesia emergence	1	Systemic assessment	Emergency management
Incidental removal of a venous route	1	Safety	Communication skills
Dyspnea after spinal anesthesia	1	Complications	Anesthesia planning
Prolonged muscular relaxation	1	Metabolism	Anesthesia planning
Surgery by several specialties	1	Airway	Communication skills
Hyperthermia	1	Body temperature	Anesthesia planning
da Vinci surgery	2	Safety	Anesthesia planning
Bradycardia	1	Circulation	Anesthesia planning
Preoperative hypertension	3	Circulation	Anesthesia planning
Postoperative opioid-related events	1	Pain	Anesthesia planning
Atrial fibrillation	1	Circulation	Anesthesia planning
Inappropriate ventilation	1	Airway	Emergency management
Severe psychosomatic disorder	1	Airway	Anesthesia planning
Elevated blood pressure after local anesthesia	1	Circulation	Emergency management
Trismus on intubation	1	Airway	Anesthesia planning

Abbreviations : Safety, medical safety : Complications, healthcare associated complications : Body temperature, body temperature management : Metabolism, drug metabolism : Pain, pain management : Systemic evaluation, patient evaluation : and Central nervous system function, management of central nervous system.

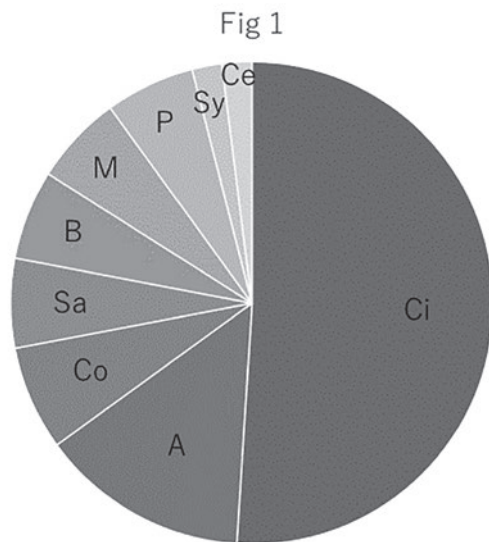


Figure 1

Core management problems. The proportions of the core management problems were 51%, 14%, 7%, 6%, 6%, 6%, 6%, 2% and 2% in Circulation (Ci), Airway (A), Complications (Co), Safety (Sa), Body temperature (B), Metabolism (M), Pain (P), Systemic evaluation (Sy), and Central nervous system function (Ce), respectively (full descriptions of the problems are shown in the footnote of Table1). The two most common problems are the ones in circulatory and airway management.

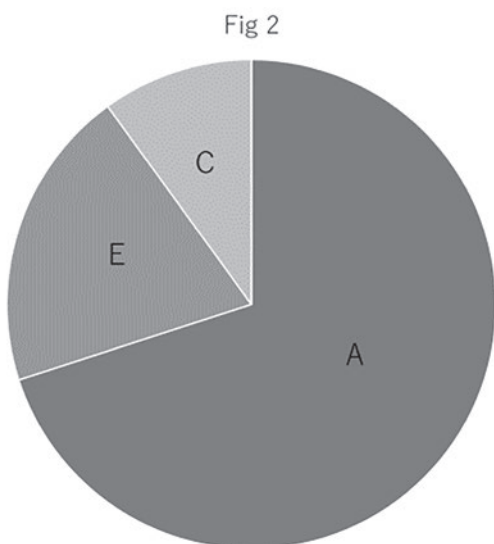


Figure 2

Essential skills for future improvement. The proportions of the skills were 70%, 20%, and 10% in Anesthesia planning (A), Emergency management (E), and Communication skills (C), respectively. Anesthesia planning is the most important skills for future improvement

Discussion

By implementing the reflection conferences, we found that 1) the main problems encountered by junior residents in anesthesia rotations were those related to circulatory and airway management, 2) anesthesia planning was the most common essential skills for future improvement, which suggest that providing feedback with anesthesia planning may be the most efficient means of formative assessment of the residents.

Although residents may experience various problems in anesthesia cases, the most common problems may be the ones associated with circulatory and respiratory (including airway) management as in the current study. The optimal management of these two vital organ systems is an essential part of performing safe and efficient anesthesia, which may be improved by better anesthesia planning. Therefore, the formative assessment with reflection on circulatory and respiratory management in anesthesia planning may be an integral part of anesthesia education.

Learning how to reduce future problems through the reflection after practice is a common tool used in various medical specialties²⁾, but formative assessment with reflection may not be included in the standard anesthesia training. Approximately 30% of residents had no experience with reflection according to responses to a questionnaire for anesthesiology residents in Australia³⁾. According to our literature search, no studies have been performed to investigate an educational potential of reflection conferences in Japan.

Not until we implemented the reflection conferences did we realize an educational potential of these conferences. In fact, the reflection is a simple education tool⁴⁾ that may form an important part of lifelong learning among medical staff⁵⁾. The current study suggests that anesthesia planning may be a critical practice to improve clinical capabilities in anesthesia residents. Thereafter, we launched a mentee-mentor system to encourage reflection and facilitate anesthesia planning by the residents.

The present study suggests that providing feedback for anesthesia planning may be a potential tool for formative assessment in anesthesia education. In fact, formative assessment is described in the requirements for the training programs approved by the Japanese Society of Anesthesiologists. In the current study, however, the optimal timing, frequency and topics of formative assessment for anesthesia planning were still unclear. Providing feedback for circulatory and respiratory management with anesthesia planning in regular basis may be our next goal to maximize an educational potential of formative assessment in anesthesiology training.

Conclusion

We identified common anesthesia problems for junior residents, and identified essential skills to prevent or improve the management of these problems through reflection conferences. Formative assessment in reflection conferences may have an educational potential to identify problems in anesthesia management and improve clinical capability for future anesthesia-related events.

There is no conflict of interest.

References

- 1) Jenny W. Rudolph, Robert Simon, Daniel B. Raemer et al. : Debriefing as formative assessment : Closing performance gaps in medical education. *Academic emergency medicine* 15 : 1010-1016, 2008.
- 2) A.L. Garden, D.M. Le Fevre, H.L. Waddington et al. Debriefing after simulation-based non-technical skill training in healthcare : a systematic review of effective practice. *Anaesth Intensive Care* 43 : 300-308, 2015.
- 3) H Tan. Debriefing After Critical Incidents for Anaesthetic Trainees. *Anaesthesia and Intensive care* 33 : 768-72, 2005.
- 4) Paul CM, David OK, Adam C. Educational Opportunities with Postevent Debriefing. *JAMA* 312 : 2333-2334, 2014.
- 5) Donald A. Schön. *The Reflective Practitioner : How Professionals Think in Action*. London : Temple Smith, 1983.

麻酔科初期研修医教育における振り返りカンファレンスの可能性

芝 順太郎, 佐藤 正章, 原 鉄人, 平岡 希生, 竹内 護

自治医科大学 麻酔科学・集中治療医学講座 〒329-0498 栃木県下野市薬師寺3311-1

邦文要約

形成的評価とは、学修者の到達度確認として途中段階で評価を行い学習支援に用いることである。学修者主体の振り返りは、形成的評価の有効な一法と言われている。しかし、麻酔科研修において振り返りがどのような意義があるのかは分かっていない。そこで我々は振り返りカンファレンスの対象となった麻酔関連事象を分析し、麻酔教育においてどのような可能性があるか検討した。対象は初期研修医とした。振り返り症例は研修医自身が決定した。各症例から麻酔関連事象を同定し、その事象に関連した“管理上の核心的問題”を挙げた。さらに、挙げられた問題を予防あるいは管理するためにどのようなスキルの改善が必要か、すなわち“改善のために必要なスキル”を検討した。提示症例は51例であった。循環管理と気道管理上の問題が主要な管理上の核心的問題で（65%）、改善のために必要と考えられるスキルは麻酔計画が最多であった（70%）。振り返りカンファレンスを行うことで、研修医が頻回に遭遇する麻酔管理上の問題が明らかになった。また、麻酔計画が形成的評価を用いた研修医教育の重要な教材である可能性が示唆された。

（キーワード：初期研修医，振り返り，メンターシステム，医学教育，初期研修医教育）