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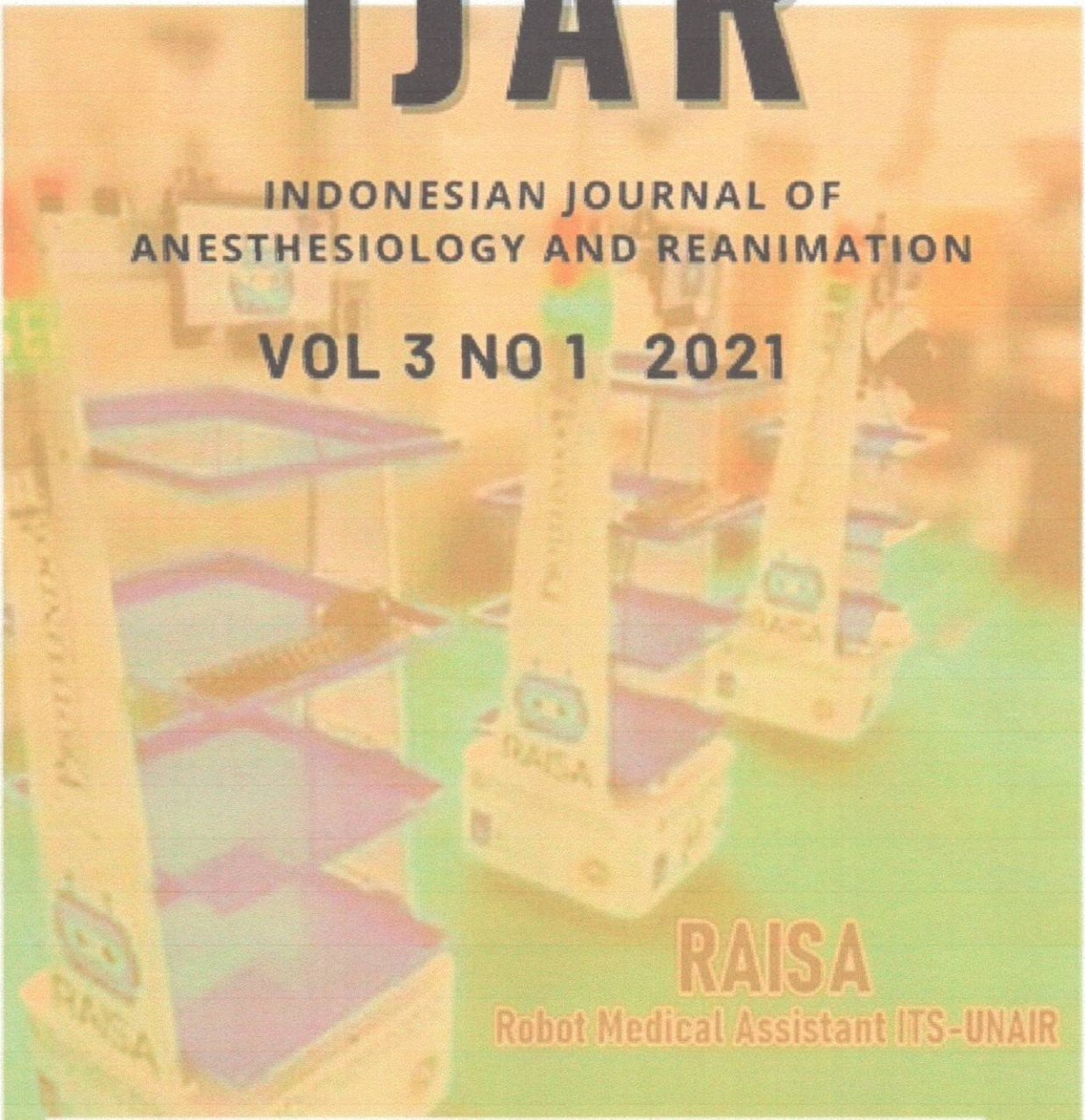

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TABLE OF CONTENTS

ORIGINAL ARTICLES

CASE REPORT

REVIEW ARTICLES

INDONESIAN JOURNAL OF ANESTHESIOLOGY AND REANIMATION
Volume 3 Number 1, January 2021 : 17-21

Original Article

OPIOID-SPARRING AND MULTIMODAL ANALGESIA AS PARTS OF ENHANCED RECOVERY AFTER SURGERY (ERAS) APPLIED IN THE *KSATRIA AIRLANGGA* FLOATING HOSPITAL

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ABSTRACT

Introduction: Enhanced Recovery After Surgery (ERAS) protocol is a perioperative multimodal service program designed to achieve a faster surgical recovery period and a better outcome, the key in reducing morbidity in surgery is by reducing the "surgical injury" and reducing the body's stress response caused by the surgery. The success of the ERAS protocol depends on the interpretation and collaboration of the multidisciplinary team, therefore though the protocol is carried out in a hospital that has sufficient facilities and resources, the obstacle in the implementation of ERAS can still happen. The implementation of ERAS protocol in the non-permanent hospital service facility becomes a challenge in itself. **Case Reports:** From the two case reports of the implementation of ERAS protocol in the *Ksatria Airlangga* Floating Hospital (RST-KA) it is obtained that the key success of the anesthesia in ERAS protocol above lies on the administration of opioid-sparring therapy where it will reduce the use of opioid. Although there are many obstacles obtained in the RST-KA, the use of ERAS protocol can be conducted by making effective use of opioid-sparring combined with the administration of multimodal analgesia. **Conclusion:** Therefore, it can be concluded that the ERAS protocol can be applied in the social service concept in the non-permanent health facility.

Keywords: Enhanced Recovery After Surgery (ERAS); Perioperative protocol; *Ksatria Airlangga* Floating Hospital

ABSTRAK

Pendahuluan: Protokol *Enhanced Recovery After Surgery* (ERAS) merupakan suatu program pelayanan perioperative multimodal yang dirancang untuk mencapai masa pemulihan pembedahan yang lebih cepat dan *outcome* yang lebih baik, kunci dalam mengurangi morbiditas dalam pembedahan yaitu dengan mengurangi "*surgical injury*" dan mengurangi stress respon tubuh akibat operasi. Keberhasilan protokol ERAS bergantung pada interpretasi serta kolabolarasi tim multidisplin, sehingga walaupun protokol tersebut dijalankan pada rumah sakit yang memiliki fasilitas dan sumber daya lengkap, hambatan dalam implementasi ERAS masih dapat terjadi. Penerapan protokol ERAS pada fasilitas kesehatan rumah sakit non-permanen menjadi sebuah tantangan tersendiri. **Laporan Kasus:** Dari dua laporan kasus penerapan protokol ERAS di Rumah Sakit Terapung *Ksatria Airlangga* (RST-KA) didapatkan bahwa kunci keberhasilan anestesia pada protokol ERAS diatas terletak pada memberikan terapi *opioid-sparring* dimana akan mengurangi penggunaan opioid. Walaupun banyak keterbatasan yang didapat di RST-KA penggunaan protokol ERAS dapat dilakukan dengan mengefektifkaan penggunaan *opioid-sparring* dipadu dengan pemberian multimodal analgesia. **Kesimpulan:** Sehingga dapat disimpulkan protokol ERAS dapat diterapkan pada konsep bakti sosial di fasilitas kesehatan non-permanen.

Kata kunci: *Enhanced Recovery After Surgery (ERAS)*; Perioperatif protocol; Rumah Sakit Terapung *Ksatria Airlangga* (RST-KA)

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INTRODUCTION

Enhanced Recovery After Surgery (ERAS) is a multimodal perioperative treatment designed to achieve early recovery for patients that underwent major surgery. The benefits of the ERAS protocol have been published in many literature. This is associated with the patients' faster recovery period, reduce morbidity rates, and the total complications post-surgery.[1] The randomized controlled trial has been confirmed the ERAS protocol safety.[2]

The main principles of ERAS Protocol include several elements such as preoperative counseling, preoperative fasting, early intake oral, faster mobilization, the appropriate use of drain and urinary catheter, perioperative euvolemia, normothermia, and multimodal analgesia, and several other components.[3,4]

Regardless of this method's success, ERAS protocol on the daily practice has some obstacles in the implementation. First, an effective ERAS implementation needs a close collaboration from the multidisciplinary team that consists of surgeons, anesthetists, nurses, physiotherapists, and nutritionists. The specialty of the perioperative comprehensive approach can lead to the situation when one of the team members is not following the protocol, then it can prevent the full implementation of this protocol.[1,5] Second, although there is a clear protocol, the interpretation of each individual from the surgeon team members on the protocol may vary, therefore it can produce individual element on the protocol, hence the effectiveness can depend on the profile and total members of the surgical team.[6]

Although the protocol is carried out by the hospital that has sufficient facilities and resources, this caused the obstacles in the implementation of ERAS protocol can still happen.[7] It becomes a challenge how the protocol is implemented in the non-conventional hospital health facility such as *Ksatria Airlangga* Floating Hospital (RST-KA), which is a non-permanent mobile hospital in the form of the sailboat, that focused on the surgery service administration for regions with an inadequate health facility. In this series of case reports, four cases will be presented where 2 cases are the implementation of ERAS protocol and 2 cases are the conventional protocol on the social service concept in RST-KA.

Figure 1. *Ksatria Airlangga* Floating Hospital (RST-KA)

CASE REPORTS

On this case report, two ERAS protocol and two ERAS non-protocol case reports which are entirely implemented regarding the social service in RST-KA will be presented.

Case I

Mr. C, Male, 48 years old, with Lateral Sinistra Inguinal Hernia, Pro Herniotomy, the patient is assessed as ASA I, the anesthesia technique used is Spinal Anesthesia Block (SAB). Post-Operative by giving Paracetamol 1 gr IV injection and then Paracetamol 3x500 mg PO and Tramadol 3x50 mg PO.

Case II

Mr. K, 58 years old, with Diabetic Foot (S) Wagner 5 Digiti 1-2, ASA 2 Comorbid drug-controlled Type II DM with Anti-Diabetic Drugs from the public health center these 6 months Pro Mutilation Digiti 1-2 and debridement, the anesthesia technique used is *Ankle Block* with Lidocaine 2%. Post-Operative is continued by giving Paracetamol 3x500 mg PO and Tramadol 3x50 mg PO.

Case III

Mr. Z, 35 years old with Lateral Sinistra Inguinal Hernia Pro Herniotomy and Hernioraphy, ASA 2, Comorbid controlled Hypertension. The anesthesia technique used is SAB, Post-Operative by giving Pethidin 50 mg IM injection.

Case IV

Mrs. W, 55 years old with Diabetic Foot (D) Wagner 3 Digiti 1-5 regio malleolus Interna Pro Mutilation Digiti 4-5 and debridement, ASA 3 uncontrolled DM, uncontrolled hypertension, recently known DM this 1 month, handled with SAB anesthesia technique. Post-Operative by giving Pethidin 50 mg IM injection.

In cases I and II ERAS Protocol are carried out by implementing the preoperative counseling, preoperative fasting, early intake oral, faster mobilization, no use of drain and urinary catheter, perioperative euvolemia, normothermia, and the administration of multimodal analgesia in the form of Paracetamol 500 mg every 8 hours PO and Tramadol 50 mg every 8 hours PO and if the Wong-Baker Face Scale (WBFS) > 4, Ketorolac 30 mg IV injection is given (in this patient does not need Rescue analgesia because WBFS 2-3).

In cases III and IV with a conventional procedure where the post-operative Pethidin opioid administration is carried out, and if the Wong-Baker Face Scale (WBFS) > 4, Ketorolac 30 mg IV is given (in this patient does not need Rescue analgesia because WBFS <4), but the patient complained of nausea and vomiting while in the recovery room, therefore the Metoklopramid 10 mg IV injection is needed.

Table 1. The Comparison of the ERAS Protocol and Conventional Use Cases

Variables	Case I	Case II	Case III	Case IV
Work Diagnosis	HIL (S)	Diabetic Foot (S) Wagner 5 Digiti 1-2	HIL (S)	Diabetic Foot (D) Wagner 3 Digiti 1-5 regio malleolus Interna
Surgical Action	Herniotomy	Mutilation Digiti 1-2 + Debridement	Herniotomy-Hernioraphy	Mutilation Digiti 4-5 + Debridement
Anesthesia Action	SAB	Ankle Blok	SAB	SAB
Post-Operative Medication	Paracetamol 500 mg PO +Tramadol 50 mg PO	Paracetamol 500 mg PO +Tramadol 50 mg PO	Inj. Pethidine 50 mg IM	Inj Pethidine 50 mg IM
WBFS	1-2	1-2	1-2	3-4
Post-operative Side effects & Complications that occur	None	None	Nausea, Headache	Nausea and Vomiting 2 times
Treatment duration	1 day	1 day	1 day	3 days

All four patients were scheduled to go home the next day after one-day of treatment in the Public Health Center. However, the fourth patient still complained of nausea and pain in the operation area, therefore needed a longer treatment, for three days.

DISCUSSION

The introduction of ERAS protocol on the social service concept in the non-permanent health facility is a very possible thing and can give a beneficial outcome associated with faster surgical recovery period and a better outcome, the key in reducing morbidity in surgery is by reducing the "surgical injury" and reducing the body's stress response caused by the surgery.[3,4]

On the case reports above it is obtained that the cases that used ERAS protocol have a lower length of stay (LOS) due to the opioid-sparring and the use of multimodal analgesia.[3,8] The duration of post-operative treatment on cases I and II are shorter than cases III and IV, where cases I and II only needed post-operative hospitalization for 1 day whereas for cases III and IV the duration of post-operative treatment is 3-4 days. The Post-Operative Nausea & Vomiting (PONV) side effects on cases I and II are rare, different from case IV where extra Antiemetic has to be given in the case.

In the cases above, the main principle in giving analgesia on ERAS protocol is by giving the opioid-sparring therapy were reducing the opioid usage by combining it with regional anesthesia, therefore, can prevent the side effects related to opioid (sedation, nausea and vomiting, urinary retention, respiratory depression, bladder dysfunction, ileus, and sleep disorders). Multimodal analgesia technique involving a combination of several pain control modalities has developed towards synthetic analgesia to reduce the consumption of opioids and their side effects. Among these various modalities, NSAID drug has been known to give moderate post-operative analgesia with the opioid sparing effect of 20-30%, with little benefit on the stress response and organ dysfunction. [3,9,10]

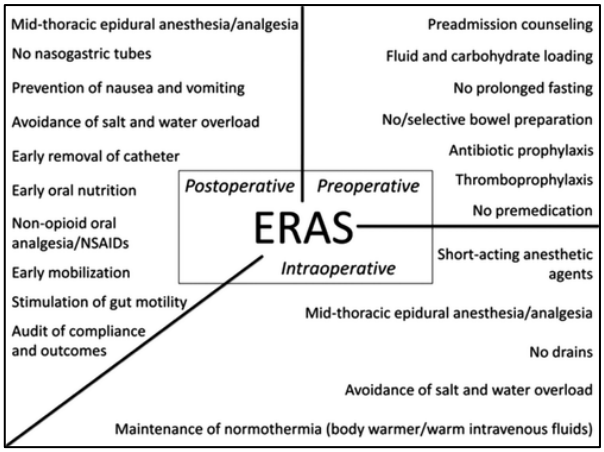

Figure 2. Components of the Enhanced Recovery After Surgery (ERAS) Protocol[11]

On the non-permanent health facility such as RST-KA with social service concept, the use of TEA is hard to do due to the limited resources. This problem can be handled by using the local anesthesia technique and other regions continue to use the opioid-sparring therapy, as in the case I, we used the Spinal Anesthesia Block technique combined with the multimodal analgesia administration in the form of Paracetamol 500 mg every 8 hours PO and Tramadol 50 mg every 8 hours PO that proven as one of the things that can accelerate the patients' recovery and minimize the anesthesia side effects in the non-permanent health facility with social service concept such as RST-KA.

CONCLUSION

ERAS protocol by maximizing the *opioid-sparring* principle and multimodal analgesia can be implemented in the Social Service Concept in *Ksatria Airlangga* Floating Hospital. However, this needs further research aims to assess the effectiveness of the ERAS protocol on the social service concept, to be used further.

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Conflict of Interest

There is no conflict of interest.

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