

## Jehovah's Witness Patient Undergoing Major Surgery: Methods to Minimize Blood Loss

Büyük Cerrahiye Giren Yehova Şahidi Hastaları: Kan Kaybını Azaltma Yöntemleri

T. Kumaravadivel Dharmalingam<sup>1</sup>, Constance Liew Sat Lin<sup>2</sup>, Rajesh Kumar Muniandy<sup>2</sup>

<sup>1</sup>Department of Anaesthesia and Intensive Care, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia

<sup>2</sup>Department of Medicine Based Disciplines, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia.

### ABSTRACT

Jehovah's Witnesses are a group of people who refuses to get blood transfusions and blood products due to their faith. Due to this, Jehovah's Witness patients who are planned for major surgical procedures are always a challenge for both surgeons and anaesthetist. Surgical and anaesthetic techniques must be aimed at minimising blood loss. We are reporting a peri-operative management for a Jehovah's Witness patient scheduled for a major surgery. This article emphasizes the techniques to minimize blood lose, in order to avoid blood transfusion.

**Key Words:** Jehovah's Witnesses, Blood transfusion, Perioperative period

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### ÖZET

Yehova'nın Şahitleri inançlarından dolayı kan nakli ve kan ürünleri almayı reddeden bir grup insandır. Bu nedenle, önemli cerrahi prosedürler için planlanan Yehova'nın Şahidi hastaları hem cerrahlar hem de anestezi uzmanları için her zaman bir zorluktur. Cerrahi ve anestezi teknikleri kan kaybını en aza indirmeyi hedeflemelidir. Büyük bir ameliyat için planlanan bir Yehova Şahidinin hastası için peri-operatif bir yönetim raporu ediyoruz. Bu makale, kan transfüzyonunu önlemek için kan kaybını en aza indirme tekniklerini vurgulamaktadır.

**Anahtar Sözcükler:** Yehova Şahitleri, Kan nakli, Perioperatif dönem

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**ORCID IDs:** T.K.D. 0000-0002-8840-4186, C.L.S.L. 0000-0003-2474-6598, R.K.M. 0000-0002-5554-2769

**Address for Correspondence / Yazışma Adresi:** Rajesh Kumar Muniandy MD Department of Medicine Based Disciplines, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Jalan UMS, 88450 Kota Kinabalu, Sabah, Malaysia. E-mail: rajeshkumar@ums.edu.my

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## INTRODUCTION

The management of blood loss during surgery has always been a part and parcel of surgical management. Studies have shown that severe anemia (Hb less than 5g/dL) has been identified as a predictor of adverse outcome in the peri-operative period, with mortality rate exceeding 30%(1). Therefore, it is of utmost importance to prevent and rectify major blood losses during surgery. However, it may not be easy in all patients.

Jehovah's Witnesses are a group of people who refuses to get blood transfusions and blood products due to their faith(2). Due to this, Jehovah's Witness patients who are planned for major surgical procedures are always a challenge for both surgeons and anaesthetist. We are reporting a peri-operative management for a Jehovah's Witness patient scheduled for a major surgery.

## CASE REPORT

A 24-year-old Jehovah's Witness patient presented to the hospital with numbness over his right lower limb and low back pain. A lumbo-sacral MRI was done, which showed a peripheral nerve sheath tumour involving the right lumbar and sacral plexus. The tumour extended anteriorly to the pre-vertebral space and was in contact with the inferior vena cava. Medially, it was encasing the common iliac vessels. The patient was scheduled for laminectomy and excision of tumour. The biggest concern of surgery was the expected blood loss due to the tumour's close proximity to major vessels. Estimated blood loss was two litres.

Due to his belief as a Jehovah's Witness, he firmly refused the possibility of receiving transfusions of whole blood, packed erythrocytes, platelets, white cells or plasma. The patient's pre-operative Haemoglobin was 12.2 g/dl, Haematocrit 37, Platelet  $266 \times 10^3$ /dl and INR 0.96. He was started on subcutaneous erythropoietin injection 300 units per kilogram 10 days before the surgery. His Haemoglobin one day prior to surgery was 14.8 g/dl.

Anaesthesia was induced with intravenous fentanyl, followed by a titrated dose of propofol. After loss of consciousness, intravenous rocuronium was administered. Airway was secured with an endotracheal tube sized 7.5. A central venous catheter was placed in his right internal jugular vein, and left radial artery cannulation was done. Intra-operatively monitoring included intra-arterial blood pressure, temperature, ECG, and intermittent arterial blood gases. Intravenous tranexamic acid was given.

During surgery, controlled hypotension with a reduction of Mean Arterial Pressure (MAP) to 55-65 mmHg was achieved with volatile agents, while maintaining the MAC (Mean Alveolar Concentration) at 1-1.2. The blood pressure returned to normal prior to completing the surgery. Normothermia ( $36.7 - 37.4^\circ\text{C}$ ) was kept with the warming blanket and a fluid warmer.

The surgery lasted for seven hours. Overall blood loss was estimated at 1000 ml. Total intra-operative fluid replacement was 3 liter of crystalloids and 500ml of colloids. Patient was extubated well and monitored in the High Dependency Ward (HDU). His post-operative Haemoglobin level was 11.7 g/dl and Hematocrit was 39. Intravenous Iron Dextran 100mg per day was prescribed for two days. Patient was closely monitored and intravenous morphine was used for analgesia. He was stable postoperatively and discharged well 1 week later.

## DISCUSSION

The beliefs of Jehovah Witnesses are based on the Bible teachings of Charles Taze Russell, where the transfusion of whole blood, packed red cells, platelets, white cells, plasma or even pre-donation of blood for the purposes of later auto transfusion is unacceptable(3). Certain groups of Jehovah Witnesses do accept post-operative autologous blood transfusion or the use of cell salvage machines intra-operatively(4). However, it is unlawful to administer blood transfusion to a Jehovah's Witness who has expressly forbidden it.

Pre-operative planning, preparation and an experienced team are essential for a successful surgical outcome when managing a major surgery in a Jehovah Witness patient.

Pre-operatively, the correction of existing anemia and keeping the haematocrit levels above 40 % is very important(5). Erythropoietin may be considered for patients with a haematocrit of less than 40%. Erythropoietin stimulates the bone marrow to maximize red blood cell production.

However, not all Jehovah's Witnesses will accept this medication, as this drug is packaged with 2.5mL of albumin per dose(6).

Our patient had a thorough pre-operative evaluation to investigate possible coagulation deficiencies. His pre-operative blood investigations were within normal parameters.

Surgical consent in this regard is crucial. Any Jehovah's Witness patient in a life-threatening surgery must be reviewed by experienced anaesthetist and surgeons. The patient must be aware of the gravity of the situation and hospital legal experts should be consulted where needed. All options should be discussed and a management plan should be clearly documented.

Suess *et al.* reported that mean surgical times were longer for spinal interventions in JW patients compared to control group. This may be attributed to a more careful and thus slower surgical technique and to longer and more extensive hemostasis. The length of hospitalization was 15% longer for Jehovah's Witnesses than for controls(7).

There were cases reported that minimally invasive surgical approach for the treatment of lumbar intra-spinal tumors could minimize intra-operative blood loss(8). However, we could not perform this due to lack of equipment and facilities in our centre.

Intraoperative blood salvage device was not used in this case as our concerns were the risk of adding tumor cells into the systemic circulation(9). Tranexamic acid was used for the patient to improve the hemostasis process. One of the options we had was hypotensive anesthesia, which helped reduce the extent of intra-operative blood loss (10) The Mean Arterial Pressure (MAP) was maintained at 50-65mmHg throughout the surgery.

In case of Jehovah Witnesses, surgical and anaesthetic techniques must be aimed at minimising blood loss. Intra-operatively, we can consider hypotensive anaesthesia, haemodilution, avoidance of acidosis and maintainance of normothermia. Intravenous iron supplement can also be used to minimize the need of blood transfusion during operation.

## CONCLUSION

It is recommended that all institution establish a blood conservation protocol to help surgeons avoid blood transfusions, especially when dealing with Jehovah Witnesses. These protocols may be customized according to the hospital's facilities and capabilities.

## Conflict of interest

No conflict of interest was declared by the authors.

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