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Establishing safety standards in liver transplantation operating room nursing care



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ABSTRACT

Objective: The liver transplant operation is a lengthy procedure where the operating room (OR) nurse is expected to maintain adequate safety measures to protect the patient from physical injuries such as hypothermia, position-related injuries and thermal-related injuries from electrocautery. Our aim is to review the effectiveness of our perioperative patient care precautions.

Methods: A retrospective review of all perioperative liver transplant records from January 2006 to December 2008 of recipients and live liver donors was performed. From January 2007 onwards, a standardized nursing care protocol designated for liver transplant-related patients was developed by the nursing department. Perioperative injuries related to poor nursing preparation were recorded.

Results: A total of 462 patients were included. There were a total of 13 (13.5%) perioperative nursing complications which included 7 skin integrity defects, 3 temporary nerve injuries, and 3 hypothermia episodes below 36 °C. All these injuries (13 out of 96 patients) were seen from January to December 2006 prior to the implementation of a standardized perioperative nursing protocol. From 2007 onwards, physical facilities' improvement was instituted with the acquisition of leg compression cuffs and silicon-based cushions. The OR air conditioning was improved by self-adjusting monitoring devices to keep the OR temperature and humidity at 24 °C and 50%, respectively. There has been no reported complication from January 2007 to December 2008.

Conclusion: The establishment of objectively assessable perioperative OR nursing care standards in liver transplantation operation is important to avoid installation-related complications.

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1. Introduction

Liver transplantation (LT) is known to be a lengthy procedure often requiring 12 or more hours of immobilization in supine position on the operating table. Pressure sores, nerve injuries, deep vein thrombosis, hypothermia and electrocautery-related thermal burns are inherent to

this prolonged immobilization of the patient in a cooled operating room (OR). We would like to investigate the effectiveness of our preoperative installation measures on our patients.

2. Patients and methods

A retrospective review of all perioperative LT records from January 2006 to December 2008 of recipients and

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Fig. 1. Legs are first wrapped with cotton wool (C) and then put in a sock (S) (left leg). The legs are then placed on silicon pads (A) at the level of heels and ankles before installing in anti-deep venous thrombosis leg compression cuffs (P). A plastic cast is used to maintain the ankle at 100° (dashed arrow) (right leg).

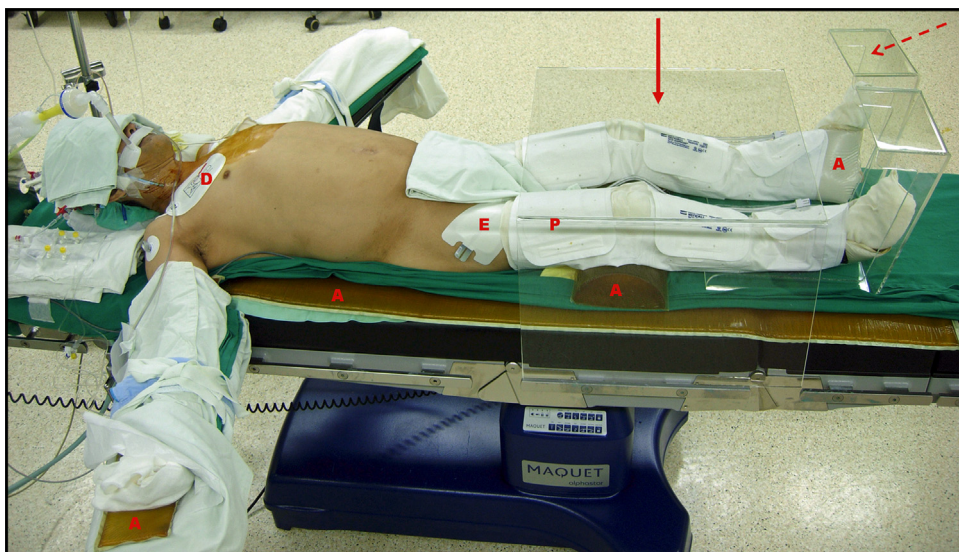


Fig. 2. Supine position with whole body resting on silicon pads (A). A plastic leg cover (arrow) is used to protect legs from iatrogenic compression. (E), electro-pad; (D), defibrillator pad; (P), anti-deep venous thrombosis leg compression cuffs; (dashed arrow), 100° plastic ankle cast.

live liver donors was performed at the Kaohsiung Chang Gung Memorial Hospital Medical Center, Kaohsiung Taiwan. From January 2007 onwards, a standardized nursing care OR protocol with clear illustrated instructions designated for LT-related patients was developed. Patients were placed in supine position with both arms extended. Both legs were wrapped with protective cotton wool as a first layer, then covered with a cotton sock as an additional isolating layer and finally covered with anti-deep vein thrombosis compression cuffs (SCD EXPRESS™ compression system Covidien®) (Fig. 1). Electro-pads were placed on each thigh to earth the current coming from the electrocautery (Force 2™ Valleylab, Covidien®). Pressure points such as the elbow-, knee-, and heel-joints, cranium and dorsal back were protected with silicon-based cushions (Actionpad, Action®) (Fig. 2). The ankle joint was maintained in a 100° position through a custom-made plastic cast (Fig. 1). The head was protected with a cap and a heat

lamp was shined onto the head part to prevent excessive heat loss through the head. A plastic custom-made rectangular cover was placed over the legs to limit iatrogenic compressive injuries to the legs by surgical staff or scrub nurse (Fig. 2). Operative draping was performed in three layers with cotton based drapes in order to provide an isolating effect on the body. An antimicrobial incise drape with collecting bags (3M™ Ioban™) was then finally used to cover the operating site. Prior to January 2007, the protocol was performed on a teacher-to-student basis and instructions were transmitted verbally without written standardized instructions, and also did not include anti-deep vein thrombosis leg compression cuffs, silicon based protective cushions (Actionpad, Actionpad®) or the plastic leg protector cover.

All perioperative complications related to poor nursing preparation noted during intra- and postoperative periods were recorded in a database. These injuries were retrieved

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