

General Anaesthesia: The Importance of Protecting a Patient's Eyes during Surgery

Introduction:

Over 2.7 million patients in the UK had surgery under general anaesthesia in 2014¹. Common practice is to tape the patient's eyelids closed using surgical adhesive tape. This tape is removed post-surgery by a nurse. This removal is known to cause skin abrasion, increasing the risk of post-surgery infection. The most common damage which can occur to the eye during and after Anaesthesia²

Current Practice:

Taping:

Some of the common eye protection methods used today include surgical tape, sterile adhesive dressings, specialised occlusive eye dressings, eye patches and ointments².

The method used is determined by factors including cost, availability, clinical preference, ease of application, the risk of infection and

the condition of the eyelid and surrounding skin pre-operatively. It has been suggested that taping the eye immediately following anaesthesia and removing the tape after the procedure with the use of eye ointment is also an option³. However, the most common method of eye protection remains to use a roll of surgical tape with an acrylic adhesive.

Challenges to Current Practice:

Infection:

At any point in time, over 1.4 million people worldwide suffer from infection complications acquired in hospitals (HAI)⁴. As a result, the significance of infected rolls of tape cannot be understated. This is an issue which has been documented for over 40 years. Berkowitz et al (1974)⁵ commented on the threat of infection via adhesive products. Surgical adhesive tapes can be seen as a potential reservoir of pathogenic bacteria⁶ and fungi⁷.

Common areas for storage are used by multiple clinicians and can all be sources for possible contamination. These include clinician's pockets, drawers, IV poles and counter. A study by Redelmeier and Livesley (1999)⁶ showed that 74% of the partially used

tape rolls they sampled had some bacterial growth. In a study in 2012, 11 of 21 tape batches tested for MRSA and/or VRE were found to be contaminated. The study found four tested positive for MRSA, 10 for VRE and three for both. *Bacillus cerues*, non-multiresistant *Enterobacteriaceae*, *Pseudomonas ssp*, *Acinetobacter ssp* were all found⁸

As a countermeasure, stringent hand washing and cleanliness protocols are in place across medical facilities alongside the purchasing of single-use products. However, formal protocols around the use of adhesives tapes and their contamination risk factors are far less common.

Skin Abrasion:

Medical adhesive-related skin injury (MARS) is an everyday, under-recognised and avoidable complication⁹ that affects around 1.5 million patients per annum¹⁰. Common effects of MARS are dermal bruising, skin tears, irritation of the skin and the possible removal of some eyelashes. All of these factors contribute to a lower overall quality of

patient experience. The risk of trauma is affected by multiple factors, some widely known. These include age, pre-existing skin conditions, exposure and hydration. Other contributors include the side effects of prescribed or non-prescribed medicines and creams as well as the general health and nutrition of the patient.

Corneal Abrasion:

It is not always certain why or how corneal abrasion happens during general anaesthesia. Around 6 in 10 patients do not close their eyes completely during the Anaesthetic¹¹. As a result the cornea is exposed to the air and can become dry. The lacrimal gland also produces fewer tears, leading to the drying of the eye¹².

When the cornea is dry, it can stick to the inside of the eyelid, possibly leading to an abrasion when the eye is opened again.

Corneal abrasions can also occur if something rubs against the eye during a procedure. As a result Anaesthetists must take great care to ensure the eyes remain closed and protected during general anaesthesia.

Combating the Risk:

A mild adhesive eye protector (iPRO eye protector, Skintact, Fannin Ltd) is an affordable, single-use product that can be used as an alternative to adhesive tape during surgery. iPRO is made of a light, translucent material that can be easily applied to the patient's eye during induced anaesthesia, enabling the orbital area to remain in its pre-surgery condition. The use of a non-adhesive tab allows the clinician to remove and alter the positioning of the protector easily. The mild adhesive significantly reduces the likelihood of impact on the skin and helps to keep the eye closed. Packaged in a closed box, on convenient single use sheets, the risk of

contamination is reduced when compared with rolls of tape.

As the number of HAIs increase, an alternative and superior method to surgical taping is one key factor in reducing the risk of ocular complications during anaesthesia. With the sole purpose of protecting the patient's eye, enhancing the overall surgical experience whilst also reducing the risk of skin tears, iPRO eye protectors provide a safer method of surgical eye care. More information can be found online at www.fannin.eu or emailing salesll@fannin.eu

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- ¹BJA: British Journal of Anaesthesia, Volume 113, Issue 4, 1 October 2014, Pages 575–584
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- ³ Cucchiara, R and Black, S. 1998. Corneal abrasion during anesthesia and surgery. *Anesthesiology* vol 69, pp. 978–9.
- ⁴ World Health Organization. 2002. Prevention of hospital-acquired infections : a practical guide / editors : G. Ducl, J. et al. 2nd. ed. Geneva, Switzerland : World Health Organization.
- ⁵ Berkowitz, D. et al. 1974. Adhesive tape: potential source of nosocomial bacteria. *Applied Microbiology* vol 28(4), pp. 651-654
- ⁶ Redelmeier, D. and Livesley, N. 1999. Adhesive tape and intravascular-catheter-associated infections. *Journal of General Internal Medicine* vol 14, pp. 373-375.
- ⁷ Garg, J. et al. 2009. Nosocomial cutaneous zygomycosis in a patient with diabetic ketoacidosis. *International Journal of Infectious Diseases* vol 13(6), pp.e508-e510.
- ⁸ Harris, P. et al. 2012 Adhesive Tape in the Health Care Setting: Another High-Risk Fomite? *Medical Journal of Australia* vol. 196(1), pp. 34.
- ⁹ McNichol, L. et al. 2013. Medical Adhesives and Patient Safety: State of the Science: Consensus statements for the assessment, prevention, and treatment of adhesive-related skin injuries. *Journal of Wound Ostomy and Continence Nursing* vol 40(4), pp. 365-80.
- ¹⁰ Konya, C. et al. 2010. Skin injuries caused by medical adhesive tape in older people and associated factors. *Journal of Clinical Nursing* vol 19, pp. 1236-42.
- ¹¹ White, E. and Cross, M. 1998. The aetiology and prevention of peri-operative corneal abrasions. *Anaesthesiology* vol 53, pp. 157–161.
- ¹² Contractor, S. and Hardman, J. 2006. Injury during anaesthesia. *Continuing Education in Anaesthesia Critical Care & Pain* vol 6(2), pp. 67–70.