

# Severe Eyelid Skin Injury after a Long Surgery: The Impact of Adhesive Materials

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## Case Report

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## Abstract

A 75 year old patient who had a long lasting cardiac bypass surgery was consulted to the department of ophthalmology from the intensive care unit with abrasions and hemorrhage on the both eyelids. The adhesive tape used for occluding the eye was consisted of acrylate adhesive with a soft (nonwoven) cloth backing material. The findings were found to be consistent with the medical adhesive related skin injury (MARSİ). Although MARSİ is observed very frequently and its mild clinical findings can make it an underestimated clinical condition, it might very rarely cause serious skin related problems as in our case. To prevent encountering serious skin injuries after general anesthesia, it might be better to prefer silicone material rather than acrylate adhesive material for the occlusion of eyes. In conclusion, here we report severe MARSİ case after general anesthesia to emphasize the broad spectrum of this condition.

**Keywords:** Abrasion; Adhesive Tape; Skin Injury; Skin Trauma; Periorbital

**Abbreviations:** ICU: Intensive Care Units; MARSİ: Medical Adhesive Related Skin Injury.

## Introduction

Adhesive tapes are widely used in medical practice for various reasons such as affixing of medical devices, dressings etc on the skin, occlusion of the eyelids during anesthesia or the eyelids of the patients in intensive care units (ICU). Despite its frequent use, it can cause a wide range of irritating results on the skin which was termed as medical adhesive related skin injury (MARSİ). Here we report a 75 year old case who developed eyelid abrasion with hemorrhage probably due to adhesive tape which was used for occlusion of the eyelids during general anesthesia [1].

## Case Report

A 75 year old male patient was consulted to the department of ophthalmology in our faculty. He was in the intensive care unit after three-vessel cardiac bypass surgery together with intraaortic balloon pump operation. After 7 hour long surgery he had developed periorbital ecchymosis and upper and lower eyelid abrasion with hemorrhage. The operation team of the cardiac surgery realized the problem at the end of the surgery after removing the adhesive tape.

Questioning his medical history revealed that he had diabetes mellitus and hypertension for 30 years, coronary artery disease for 10 years. He had smoked 15 pack-years and quitted smoking 10 years ago. He was using oral

metformin, perindopril, metoprolol, atorvastatin and isosorbide mononitrate. His preoperative biochemical and complete blood evaluation had resulted as normal.

During his bedside examination, he was unconscious and his pupils were round and reactive to light. Ophthalmological examination revealed that ecchymosis on the upper and lower eyelids at both sides were present. There were approximately 1x1 cm abrasion on the right upper eyelid, 2.5 cm long abrasion on the left upper eyelid and 1.5 cm long abrasion on the left lower eyelid (Figure 1). On all of the abrasions, oozing hemorrhage was seen. Ocular surface was seen normal bilaterally. He was prescribed occlusion with eye patches, fusidic acid 2 % ointment twice daily during the dressing of the wound.



Figure 1: Oozing hemorrhages and ecchymosis are observed just after having removed the adhesive tape.

After one week of treatment he was still in the ICU and the examination was done at the bedside. Development of crusts was observed on the eyelids at the areas of abrasion with a regular treatment; however, abrasion on the right upper eyelid started bleeding during the dressing procedure. One day after the last examination the patient died due to a cardiac arrest.



Figure 2: Healing of the wound with crusts is seen 7th day after having removed the adhesive tape.

## Discussion

A medical adhesive is any product used to approximate wound edges or to stabilize an external device such as

tape, dressing, catheter, electrode, pouch, or patch onto the skin. Medical adhesives, although being used widely, can cause serious skin injuries and MARSIS is a prevalent but under recognized clinical problem. MARSIS is any type of problem in which erythema and/or other manifestation of cutaneous abnormality such as a vesicle, bulla, erosion or tear persists for 30 minutes or more after adhesive removal. MARSIS is thought to develop in several forms; skin (epidermal) stripping, tension injury or blister, skin tear, irritant contact dermatitis, allergic dermatitis, maceration and folliculitis [2]. In our case there were abrasions on the eyelids which seemed close to skin tear defined by McNichol, et al. However we also observed oozing hemorrhage on the lesions which made us think that the lesion could be categorized as abrasions [1].

There are several categories of medical adhesives with different designs and materials. The anatomy of a medical adhesive include three or four different layers; backing layer, adhesive layer, primer layer for bonding between backing and adhesive and some of them also have release coating for unwind [1]. The material was found to be related with the skin injury rate; for example, rigid tape backings can lead to injury if there is skin movement in areas where there is great movements such as on joints [3]. Types of backings include paper or a paper blend, plastic, silk (woven polyester), soft (nonwoven) cloth, traditional cloth, or foam and/or elastic. Types of adhesives include acrylates, silicones, hydrogels, hydrocolloids, and polyurethanes, natural-rubber latex based or zinc oxide based materials. In our case, the cardiovascular surgery team preferred acrylate adhesive with a soft (nonwoven) cloth backing material. Since it was a severe injury, the surgical nurse might have removed the medical adhesive powerfully and combining this great force with the rigid backing material might be a definition for this catastrophic result.

MARSIS was found to be related with some intrinsic and extrinsic risk factors [1]. Most importantly Konya et al. observed that old people tend to have greater risk for MARSIS and they also found that the most frequent concomitant disease was cerebrovascular diseases followed by pressure injuries and cardiovascular diseases [4]. Certain medications were also showed to be related with MARSIS including anti-coagulants. Old age, anti-coagulant usage and concomitant cardiovascular disease of our case might also be related with this catastrophic result [5].

In their study Zeng et al. compared the use of two different adhesive materials (silicone vs. acrylate) on the

eyelids of the patients under anesthesia. They found that the use of silicone adhesive material resulted with a greater patient satisfaction and lesser skin injury. Thus, silicone rather than acrylate seems to be a safer option for the occlusion of eyelids during anesthesia [6].

### Conclusion

In conclusion, MARSİ is a serious condition which should always be taken into consideration for a better healthcare. In this report, we presented a 75 year old case with a severe skin injury that had concomitant cardiovascular disease together with the use of anticoagulant. We suggest that during anesthesia silicone adhesive materials should be used for the occlusion of the eyelids and the medical adhesive should be removed slowly with a great attention to prevent the occurrence of MARSİ.

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**Conflict of interest:** The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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