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A missed scalp laceration causing avoidable sequelae

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ABSTRACT

INTRODUCTION: We present the case of an overlooked scalp laceration in an 81-year-old lady who presented with polytrauma following a fall down stairs. Complications that developed required more extensive treatment compared to what would have sufficed with early identification.

PRESENTATION OF CASE: Imaging on admission to hospital showed multiple vertebrae and rib fractures as well as a large cranial subcutaneous haematoma with no intracerebral bleed. Before the laceration was identified, the patient developed acute anaemia requiring transfusion. Continued reduction in haemoglobin levels called for a more thorough examination of the scalp. Investigation, following copious irrigation, revealed a large laceration. The presence of infection and necrotic tissue necessitated a general anaesthetic for debridement and closure.

DISCUSSION: Diagnostic errors are more common in patients presenting with multiple or severe injuries. Initial management in trauma cases should focus on more evident or life threatening injuries. However, it is important that reflections and recommendations are continually made to reduce diagnostic errors, which are higher in polytraumatised patients.

Various factors including haemodynamic instability and patient positioning added to the elusive nature of this wound. Adequate examination of lacerations requires thorough cleaning as coagulated blood and other material may obscure findings. This is particularly important in scalp lacerations where the overlying hair can form a barrier that is effective at hiding the wound edges.

CONCLUSION: This case highlights the importance of a thorough secondary survey; an effective examination technique would have avoided the need for extensive treatment to manage the sequelae of the missed scalp laceration.

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1. Introduction

Scalp lacerations are extremely common head injuries, yet they are often missed in polytraumatised patients. These patients can present in various medical states (such as cardiogenic shock) that can minimise bleeding from the scalp due to low perfusion pressures. The injury may also be overlooked as a clinician's attention is, understandably, focused on more evident or life threatening injuries.

Once the patient is stabilised and their blood pressure is re-established, the lesions can begin to bleed. Overlooked scalp lacerations can, consequently, result in significant blood loss leading to acute anaemia and potentially hypovolaemic shock. In addition, delayed treatment of scalp lacerations increases the possibility of contamination that could cause a significant infection. These infections, along with the resultant tissue changes, may necessitate

more extensive debridement before closure of the wound can be achieved. General anaesthesia is usually required in such cases.

These sequelae, along with the more invasive and complicated treatments required, can lead to increased morbidity and poorer outcomes. Moreover, discharge from hospital can be delayed causing further inconvenience for patients as well as the obvious economic implications.

2. Presentation of case

An 81-year-old woman presented with numerous injuries following a fall down a flight of stairs. Paramedics who accompanied her to the emergency department noted 500 mls of blood loss from a scalp wound which required bandaging.

On assessment, in the emergency department, the patient scored 15 on the Glasgow coma scale (GCS) but it was noted that she appeared pale. She reported retrograde amnesia as well as feeling dizzy. She had no recollection for her reasoning to go up the stairs. On removal of the head bandage, there was no bleeding from the scalp which had the appearance of a haematoma.

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Fig. 1. Extent of scalp laceration evident following irrigation.



Fig. 2. Laceration following primary closure. Note the friable edges, particularly posteriorly.

Computed tomography (CT) of the chest and abdomen showed multiple rib and vertebrae fractures. Cranial CT revealed a posterior soft tissue injury with no skeletal or intracranial involvement.

The patient's medical history was remarkable for mild vascular dementia, asthma, angina, hypothyroidism and congestive heart failure. She lives with her daughter and sleeps in a bedroom situated on the ground floor due to mobility issues. She is a non-smoker and does not consume alcohol.

3. Investigations

Blood tests on admission showed a raised white cell count ($16.03 \times 10^9/L$) and neutrophils ($14.17 \times 10^9/L$). Urinalysis was positive for nitrites and cultures grew *Escherichia coli* species. Initially, the haemoglobin level recorded was 99 g/L. Initial CT imaging taken in the primary survey showed multiple undisplaced rib fractures on the right side, a displaced fracture of the T8 vertebra and a fracture of the left lateral process of the L3 vertebra. Cranial CT showed significant soft tissue injury with a large subcutaneous haematoma posteriorly over the parietal bones. It was negative for any intracranial anomalies.

Due to the patient's T8 fracture, it was decided that a log roll was contraindicated, thus limiting the clinical examination. Further

plain film radiographs were carried out, as part of the secondary survey, which revealed no further injuries.

The patient required a blood transfusion after haemoglobin levels gradually deteriorated to 75 g/L. The undetermined cause of the normocytic anaemia called for further investigations. A thorough clinical examination of the scalp wound revealed that there was a laceration in addition to the haematoma. This was a large lesion spanning from the occipital protuberance across to the parietal bone and its depth was extending to the sub-galeal layer (Fig. 1). Retraction of the wound flap revealed a liquefying haematoma with signs of infection; there was frank discharge of pus and the area contained necrotic fat.

4. Differential diagnosis

This patient had a complex medical history with multiple factors that could have contributed to the fall. The increased neutrophils and presence of a urinary tract infection (UTI) may have contributed towards an altered mental state that caused her to uncharacteristically venture up the stairs unaccompanied. Failure to identify any

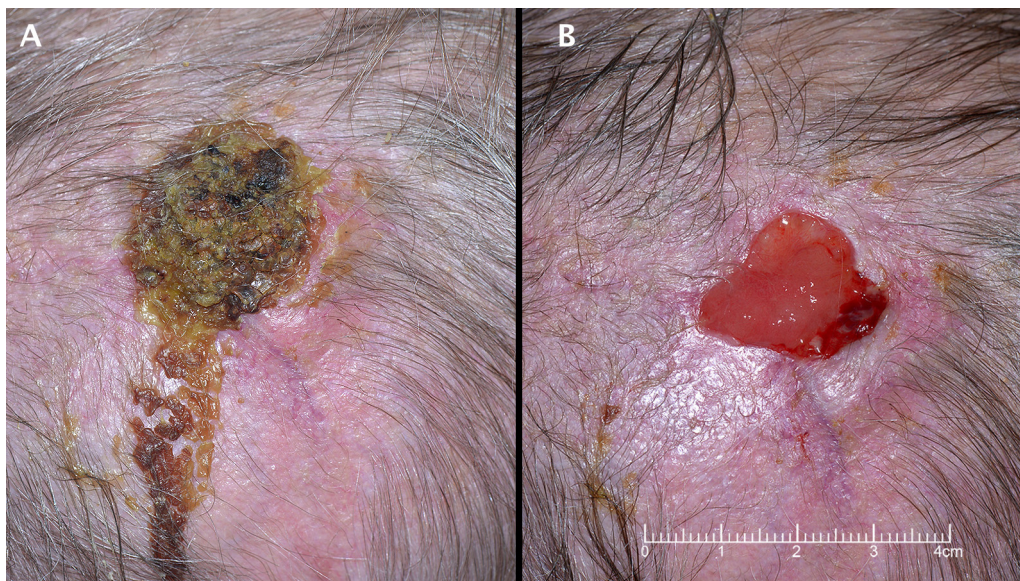


Fig. 3. Lesion on first review. (A) Before cleaning (B) after cleaning, to reveal granulating tissue.

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