

# Innovative Use of a Hard Bristle Toothbrush for Deep Wound Debridement in a Road Traffic Accident Case: A Case Report

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## ABSTRACT

Wound management in trauma cases, especially after road traffic accidents, often demands meticulous debridement to prevent infection and promote healing. This case report describes a 17-year-old male who presented to the surgical outpatient department two days post-RTA with an abrasion injury and a deep, irregular wound with a visible hole. Traditional debridement methods were supplemented with an unconventional yet effective technique—using a hard bristle toothbrush for deep cleaning. The toothbrush allowed for the removal of embedded debris and necrotic tissue from the wound's irregular contours. At follow-up, the patient showed no signs of infection, and the wound healed well. This case highlights the potential of using readily available tools, like a toothbrush, for innovative wound care, particularly in resource-limited settings.

**Keywords:** Toothbrush, wound debridement, innovative wound care

## INTRODUCTION

Road traffic accidents are a leading cause of traumatic injuries, often resulting in complex wounds contaminated with debris and necrotic tissue. Debridement is a critical step in wound management, aiming to

remove foreign material and devitalized tissue to reduce infection risk and promote healing (Attinger & Bulan, 2001). Traditional debridement techniques, such as surgical, mechanical, and autolytic methods, are effective but may fall short in cases with irregular wound contours or deeply embedded debris (Steed, 2004).

This case report describes an innovative approach to mechanical debridement in a 17-year-old RTA patient with a deep, irregular wound. A hard bristle toothbrush was used to achieve thorough cleaning, particularly in areas difficult to access with standard instruments. This method was born out of necessity and resourcefulness, as specialized tools were not immediately available. It underscores the importance of adaptability in medical practice, especially in low-resource settings (Sharma & John, 2013).

## CASE PRESENTATION

A 17-year-old male presented to the surgical OPD two days after a road traffic accident. He had sustained multiple abrasions and a deep wound on his lower limb, approximately 2 cm in diameter, with a visible hole. The wound was contaminated with dirt and debris, and the surrounding tissue showed signs of inflammation. On examination, the wound edges were irregular, and the base contained necrotic

tissue and foreign material (Fig. 1) The patient was afebrile but with history of an episode of fever, and his vital signs were stable. Radiographs ruled out fractures or retained foreign bodies.

### **MANAGEMENT**

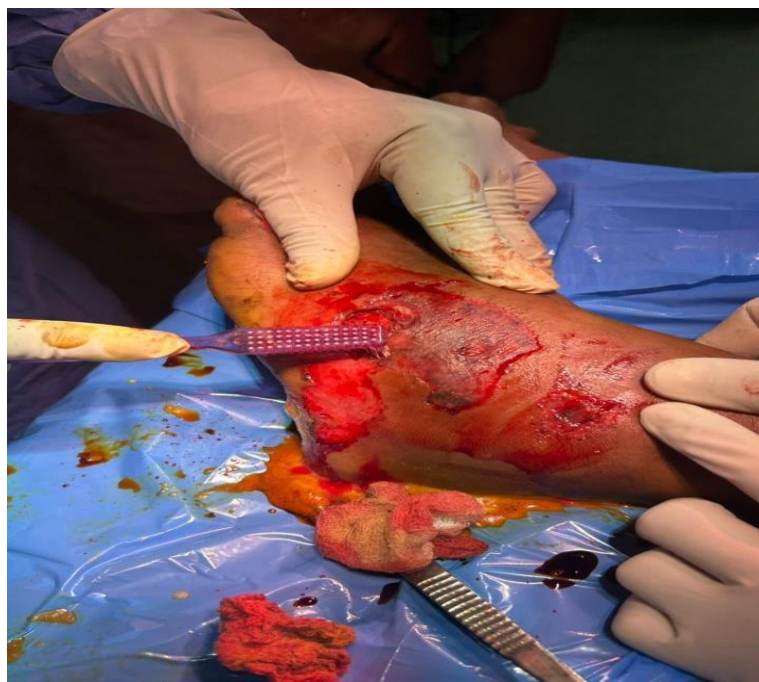
After obtaining informed consent, the wound was initially cleaned with normal saline, and surgical debridement was performed using standard instruments. However, due to the wound's irregular contours and depth, complete removal of debris proved challenging.

At this point, we considered alternative methods. A sterile, hard bristle toothbrush was soaked in povidone-iodine and used to gently scrub the wound base and edges (Fig. 2) The bristles effectively dislodged embedded debris and necrotic tissue without causing significant trauma to the surrounding healthy tissue (Bowler et al., 2001).

The wound was then irrigated with normal saline, (Fig. 3 & 4) and a sterile dressing was applied. The patient was prescribed antibiotics (amoxicillin-clavulanate) and analgesics (paracetamol) and advised to return for follow-up in one week. (Fig. 5)



**(PRE OP) (Fig.1)**



**(DEBRIDEMENT OF THE WOUND WITH TOOTHBRUSH) (FIG. 2)**



(FIG. 3)



(INTRA OP) (FIG. 4)

**Outcome:**

After one week the wound was healthy and showed adequate signs of healing



(LATE POST OP) (FIG. 5)

## DISCUSSION

Mechanical debridement is a cornerstone of wound management, particularly in contaminated traumatic injuries (Singer & Dagum, 2008). Traditional methods, such as scalpel debridement and irrigation, are effective but may have limitations in cases with irregular wound contours or deeply embedded debris (Frykberg & Banks, 2015).

In this case, the use of a hard bristle toothbrush offered several advantages:

1. Accessibility: The bristles could reach into the irregular contours and depths of the wound.
2. Cost-effectiveness: Toothbrushes are inexpensive and readily available.
3. Efficacy: The technique allowed for thorough removal of debris and necrotic tissue.

While this method was effective, it's worth noting that it was used as a supplementary technique in a resource-limited setting. Further studies or case reports could explore its broader applicability and safety in different clinical scenarios.

### *Declaration by Authors*

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**Conflict of Interest:** No conflicts of interest declared.

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