# SURGICAL RETRIEVAL OF A POSTERIOR NECK METALLIC FOREIGN BODY WITH A MINIMAL INCISION: A CASE REPORT

#### ABSTRACT

A 21-year-old male, self-employed, was admitted to our hospital. Three days prior to admission, the patient fell onto a steel fence, hitting the right side of his face against the fence. After the accident, the patient regained consciousness but presented with an open wound on the right cheek and pain in the posterior right neck region. He was initially brought to a local emergency facility, where the wound was cleaned, and X-ray examination revealed a metallic foreign body in the posterior neck region. After 3 days of treatment of local hospital, the patient requested to transfer to 108 Military Central Hospital for better treatment. We performed a computed tomographu with 3D reconstruction of the patient's cervical spine which allowed for precise localization of the foreign body and assessment of its relationship with nearby structures, aiding in surgical planning. Considering the risk of potential complications, including vascular injury and nerve damage, early intervention was crucial. The foreign body removal surgery was performed with the patient under endotracheal anesthesia. The surgical procedure involved a 2 cm incision directly over the foreign body, ensuring its safe removal without damage to major blood vessels.

*Keywords:* Foreign body, Neck injury, *Minimally invasive surgery, Case Report* 

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#### I. INTRODUCTION

Frequent injuries in the head and neck region caused by various foreign objects have been extensively reported in the medical literature.<sup>1-5</sup>The main causes of these injuries are accidents in daily life, traffic accidents, and explosions. Despite advancements in diagnostic imaging and techniques, removal surgical the of penetrating foreign bodies in the head and neck region can still be challenging, as the foreign object may be situated close to vital structures or difficult to access, necessitating an expanded surgical approach to locate the foreign body.<sup>2</sup> There is still no consensus on the timing of surgical removal for deep foreign bodies in the cervical region. In this report, we present a case of a sharp foreign body in the right posterior neck region, adjacent to the C1-C2 vertebrae, arries a risk of vascular and neurological damage, managed through a minimally invasive surgical approach after a short period of injury.

#### **II. CASE PRESENTATION**

A 21-year-old male, self-employed, was admitted to our hospital. Three days prior to admission, the patient fell onto a steel fence, hitting the right side of his face against the fence. After the accident, the patient regained consciousness but presented with an open wound on the right cheek and pain in the posterior right neck region. He was initially

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brought to a local emergency facility, where the wound was cleaned, and X-ray examination revealed a metallic foreign body in the posterior neck region. The patient was prescribed antibiotics and had the wound dressed, but foreign body removal surgery was not performed at that time. Three days later, the patient requested transfer to our hospital due to persistent symptoms of the wound, including a 1.5cm wound below the right ear, swelling, tenderness, and restricted cervical spine movement due to pain. Palpation of the left posterior neck region elicited pain, but there were no neurological impairments. A lateral X-ray image showed a metallic foreign body extending from behind C1 to nearly the base of the spinous process of C2 (Figure 1). Computed tomography (CT) images with 3D reconstruction revealed



*Figure 1:* X-ray shows the image of a metallic foreign body extending horizontally from the posterior arch of C1 to the spinous process of C2.

a flat metallic foreign body measuring approximately 1.5x2 cm located just outside the right lateral mass of C1, close to the vertebral artery foramen, and approximately 0.5 cm from the C2 transverse process (Figure 2). We decided to remove the metallic foreign body due to the risk of fragment migration causing vascular or spinal cord injury at the C1-2 level. The foreign body removal surgery was performed with the patient under endotracheal anesthesia in a left lateral decubitus position. The wound over the foreign body location was exposed, and a 2 cm incision was made over the site, revealing the foreign body through the skin, subcutaneous tissue, and muscles. The foreign body was easily removed (Figure 3), and the wound was irrigated, drained, and sutured (Figure 4).



*Figure 2:* The image shows the foreign body located outside the lateral mass of C1 and directed towards the transverse foramen of C2.

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Figure 3: Image of the foreign body after removal

#### **III. DISCUSSION**

Although soft tissue injuries in the head, face, and neck region are quite common, retained foreign bodies in this area still pose a fear for patients and their families. The usual causes are gunshot or stab wounds.<sup>3</sup> Rare cases of foreign bodies such as parts of chopsticks or pen tips have also been reported in the literature.<sup>3,6</sup> However, to our knowledge, there has been no report of a large-sized, flat, sharp metallic foreign body in this region. In most cases with an entry point through the mouth, neck, or face, foreign bodies in the neck region are usually located anterior to the vertebrae or in the prevertebral space.<sup>4</sup> We report a case where the patient had a foreign body in the right posterior neck region, with the entry point from the mouth, through the parotid gland to the vicinity of the lateral mass of C1 and the C1-2 interspace posteriorly toward the vertebral artery.

Accurate localization of the foreign body is crucial for successful removal and minimizing complications.<sup>5</sup> CT scans and magnetic resonance imaging (MRI) are



Figure 4: Image of the entry wound (arrow above) and the surgical incision (arrow below)

valuable tools for detecting foreign bodies in the neck region, helping determine the foreign body's location and its relationship with major blood vessels and other important structures. In this clinical case, CT scans with 3D reconstruction were helpful in determining the size and location of the foreign body. It was found to be located outside vertebral artery foramen. the allowing for complete foreign body removal through a small incision directly over the foreign body. Intraoperatively, we originally planned to use fluoroscopy for localization. However, during the surgery, we were able to locate the foreign body by tactile examination using our fingers. Therefore, we did not use fluoroscopy as initially anticipated. After palpating and securing the foreign body with a 2 cm incision directly over the foreign body, we could expose it directly without concern for major vascular injury since the CT images had clearly shown that the foreign body was outside the vertebral artery.

Currently, there is no consensus among surgeons regarding the management of

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metallic foreign bodies in the neck region. Some surgeons believe that immediate exploratory surgery for all cases of neck foreign bodies is mandatory (1), while others advocate for selective exploration in cases of neck foreign bodies.<sup>6</sup> Asesio et al<sup>7</sup> conducted a literature review on this issue but did not find an advantage for one viewpoint over the other. However, proponents of immediate exploratory surgery for all cases argue that it may help remove the foreign body early, as foreign bodies can migrate, leading to complications such hematoma, as hemorrhage, infection, and injury to major blood vessels and nerves. In this clinical case, due to the presence of a flat and sharp metallic foreign body located near the vertebral bodies and the C1-2 interspace, delayed removal might risk injury to the vertebral artery, hematoma or hemorrhage due to disruption of the C1-2 venous plexus, or even nerve damage at the C1-2 level, as well as possible infection in the C1-2 region. Although injuries like our this case presetation have been reported in the literature, our reporting of this case serves to emphasize that the timing of surgical removal of foreign bodies entirely depends on the specific injury of the patient. In cases with sharp foreign bodies and the risk of damaging vital organs, early surgical removal is necessary.

## **IV. CONCLUSIONS**

We successfully managed a case of a metallic foreign body in the posterior neck region using a minimally invasive surgical approach. Accurate localization with CT scans and 3D reconstruction aided in safe and efficient removal. Early intervention proved crucial in avoiding potential complications associated with migration. This case underscores the importance of meticulous planning and timely surgical exploration for foreign bodies in the head and neck region. Further research and consensus among surgeons will improve standardized protocols for managing such cases.

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