



Letter to Editor

Prone to success: Navigating airway management in penetrating back injuries**Gunjan Sabharwal¹, Lalit Gupta^{1*}, Kirti N Saxena¹**¹Dept. of Anaesthesiology, Maulana Azad Medical College and Associated Hospital, New Delhi, India**Received:** 23-12-2024; **Accepted:** 14-01-2025; **Available Online:** 15-07-2025

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Dear Editor,

Airway management in the prone or semi-prone positions poses significant challenges, as it is not the usual position for airway management, hence requires a careful approach to diagnosis and management.^{1,2} Challenges associated with prone position are difficult mask ventilation, impaired orotracheal intubation by direct laryngoscopy and reduction of pulmonary compliance.² However anaesthetic management of trauma victims with penetrating back injury requires airway securement and induction of anaesthesia in prone or semi-prone positions as these patients cannot lie in supine position. We present a unique case scenario involving a 20-year-old male impaled by the iron rod piercing the gluteal region after an accidental fall.

A 20-year-old male construction worker fell and was impaled by an iron rod that pierced his gluteal region and exited diagonally (**Figure 1**). The patient was transferred on a spine board in the semi-prone position as supine position was not feasible due to a suspected spinal injury. Upon examination, his vital signs were normal, and his peripheral oxygen saturation was 98% on room air. Cervical spine injury was ruled out through a computed tomography (CT) scan. The exact position of the iron rod was marked and documented on the CT scan. Preoperatively, the patient was optimized in the same position with two peripheral intravenous cannulas, resuscitation using intravenous fluids, and administration of 8 mg of intravenous morphine for pain relief.



Figure 1: Lateral view of impaled iron rod passing through the gluteal region in emergency room

The airway management strategy involved tracheal intubation using an i-gel® supraglottic device under general anaesthesia in the prone position, with a backup plan for fiberoptic intubation to prevent patient movement and neurovascular compromise. The patient was preoxygenated and para-oxygenated using nasal prongs while his head was placed on a cushioned head ring and rotated laterally. Induction was achieved with intravenous fentanyl (2 µg/kg) and titrated doses of propofol, ensuring adequate mask ventilation and maintaining oxygenation with 100% O₂ and sevoflurane (2–3%). Once sufficient anaesthetic depth was achieved, the lower jaw was extended, and a size 4 i-gel® was successfully inserted. Ventilation was confirmed by observing adequate chest rise and capnography.

A 7-mm cuffed endotracheal tube (ETT) was passed blindly through the i-gel® on the first attempt. Intubation was verified through bilateral chest auscultation, chest rise, and capnography. The i-gel® was subsequently removed, and the ETT was secured in place. Neuromuscular relaxation was achieved with intravenous vecuronium (0.1 mg/kg), and

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anaesthesia was sustained with 66% nitrous oxide in oxygen and sevoflurane. The iron rod was successfully removed, with an intraoperative blood loss of 650 mL. At the conclusion of the surgery, the neuromuscular blockade was reversed with intravenous neostigmine and glycopyrrolate, and the trachea was extubated. The patient was discharged three days postoperatively.

Airway management in a prone position presents numerous challenges and difficulties, as it is not a usual position for airway management. Options available for airway management in a prone position include direct laryngoscopy and oral intubation, blind nasal intubation, awake fibreoptic intubation, and intubation using a supraglottic device.³ Awake fibreoptic intubation requires the patient's cooperation, specialized equipment, and comprehensive training, along with suitable topical anaesthesia and nerve blocks, which may not be feasible in emergencies.⁴⁻⁶ This method was avoided in our case, as the patient preferred sedation during airway manipulation. Direct laryngoscopy and oral intubation in prone or semi prone positions come with their own risks like limited time for airway manipulation and the risk of unsuccessful intubation due to an impaired laryngoscope, making it unsuitable in this scenario.⁴ Given the urgent nature of the situation along with the unconventional positioning of the patient, we concluded that this technique might not be the most suitable for the patient. Video-laryngoscopy and fibreoptic guided intubation could be considered as an alternative to secure the airway in such cases; however, it requires muscle relaxation, operator skill and prior experience, which can be challenging in emergencies with complex anatomy.^{2,6,7} Limited time, emergent situation, unavailability of video-laryngoscope and the difficulty in manipulating the airway led us to consider other alternatives.

We opted for the i-gel® supraglottic airway due to its ease of insertion, better patient cooperation, and reduced need for airway manipulation.^{7,8} Additionally, it served as an effective conduit for ventilation and ETT placement. We preferred i-gel® over other existing supraglottic airways such as the Intubating Laryngeal Mask Airway (LMA Fastrach) due to our familiarity with the device, leading to a higher success rate.

In conclusion, in cases where the patient must remain in the prone position, endotracheal intubation through an i-gel® or similar supraglottic device offers multiple advantages and is a good choice for airway management.

1. Informed Consent and Patient Confidentiality

Informed consent was obtained from the parents to use the images for medical publication with measures taken to maintain the anonymity of the patient.

2. Conflict of Interest

None.

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