

# Retrograde Nasal Intubation In A Case Of Subdural Haematoma With Mandible Fracture: A Case Report

R Thota, S Wadke, P Shroff, L Dewoolkar

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## Abstract

Passing a retrograde catheter or a wire into the pharynx through a cricothyroid puncture can facilitate tracheal intubation in difficult situations when a flexible fiberoptic bronchoscope is not available. This is a case report of successful retrograde nasal intubation in a patient with inadequate mouth opening with mandibular fracture for emergent evacuation of subdural haematoma. In the absence of flexible fiberoptic bronchoscope, this technique of a gliding knot and pull through technique of retrograde intubation is a very useful aid to intubation in patients with limited mouth opening due to fracture of the mandible.

## INTRODUCTION

Retrograde passage of catheter into the pharynx to aid tracheal intubation is an established technique.<sup>1,2,3</sup> It has been used with various modifications to secure difficult airway in both elective and emergency cases.<sup>4,5</sup> We performed retrograde nasal intubation in a patient with limited mouth opening due to traumatic linear mandibular fracture. All equipment essential for difficult airway like laryngeal mask airway, bougie was kept ready with a facility for emergency tracheostomy.

## CASE REPORT

An 18year old female ASA I E (emergency), weight 45 kg, height 130cms was brought to the casualty by the relatives with history of road traffic accident six hours back. History, clinical findings and investigations revealed right frontal lobe haematoma of size 5.8 x 3.2cm with complete shift of the right ventricle. Radiological view of mandible revealed a linear right-sided mandibular fracture (fig 1). Plastic surgery opinion was taken and there was no intervention from their side. There was no evidence of cervical fracture or nasal bleed. Glasgow coma scale was 10 / 15. Mouth opening was 1.5 cm. The patient had normal neck mobility and patent nostrils. As the Glasgow coma scale was deteriorating, the surgeons decided upon emergency subdural haematoma evacuation.

## Figure 1

Figure 1: X-ray Lateral view of mandible showing linear fracture (arrow).



Oral intubation was difficult and as fracture segments would get displaced during intubation, we decided to go for retrograde nasal intubation. We chose to perform the procedure with airway block and topical anaesthesia.

Inj. glycopyrrolate was given intramuscularly as premedication. 2% xylometazoline nasal drops were put in both the nostrils. The nasal cavity was then packed with roller pack soaked in 2% lignocaine with adrenaline (1:2,00,000) solution. In the operation theatre intravenous line was secured and monitors like cardioscope, pulse oximeter was attached. After preoxygenation for 5 minutes, intravenous sedation was given with injection midazolam

0.03 mg/kg and injection pentazocine 0.3 mg/kg. Bilateral superior laryngeal nerve block was given with 1.5 ml of 2% lignocaine. 4% topical lignocaine (1.5 ml of lignocaine diluted to 3ml of normal saline) was instilled transtracheally. Epidural catheter (18 gauge) was introduced via Tuohys needle through the cricothyroid membrane. The catheter was retrieved from the oral cavity with the help of magills forceps and then brought out through the nostrils by tying it to a nasogastric tube passed nasally (fig 2). The PVC endotracheal tube (6.5 no.), lubricated with lignocaine jelly was then rail roaded over the catheter, but we could not negotiate the glottic region. This was attempted for a second time, still intubation failed. The nasal end of the catheter was then passed via the Murphy's eye of the endotracheal tube and a gliding knot (fig 3) was made.

**Figure 2**

Figure 2: showing pulling of catheter from mouth via nose with nasogastric tube.



**Figure 3**

Figure 3: showing gliding knot.



The other end of the knot was made to pass through the lumen of the endotracheal tube and with steady pull of the transtracheal end of the catheter the endotracheal tube was gently introduced through the cords (fig 4). After confirming successful intubation (fig 5), we administered balanced general anaesthesia with controlled ventilation. The transtracheal end of the catheter was then cut and the catheter was removed from the lumen of the endotracheal tube. The remaining intraoperative and postoperative periods were uneventful.

**Figure 4**

Figure 4: showing pulling of endotracheal tube from cricothyroid end of catheter.



**Figure 5**

Figure 5: showing successful intubation with endotracheal tube attached to anaesthesia circuit.



**DISCUSSION**

Endotracheal intubation in patients with restricted mouth opening always remains a challenge, especially in the absence of fiberoptic bronchoscope. The retrograde catheter technique is an accepted option for management in cases where oral intubation is not possible because of restricted mouth opening or not recommended because of fear of dislodgement of fracture segments of facial bones. For nasotracheal intubation via this technique, the catheter is first retrieved through the mouth and later pulled through the nose with another nasal catheter.<sup>5</sup> The tracheal tube, instead of being slipped over the catheter, can also be pulled in to the trachea by tying one end of the catheter at the Murphy's eye of a tracheal tube.<sup>6</sup> Retrieving the catheter or wire from the pharynx can be difficult. In uncooperative patients, as in our case it requires some mouth opening so that the catheter can be removed with the help of a finger or magills forceps. The catheter can also be retrieved from the mouth with the help of suction catheter.<sup>7</sup> A guide wire that is stiffer can also be used instead of an epidural catheter. Fluoroscopic assisted retrograde passage of guide wire can also be helpful for wire guided tracheal intubation.<sup>8</sup> A pharyngeal loop can also be used for tracheal intubation in such patients.<sup>9</sup>

In our case, as the patient had 1.5 cm mouth opening we could retrieve the catheter with the help of magills forceps.

Our first attempt at rail roading the endotracheal tube over the catheter failed. We then tried for the gliding knot and pull through technique with which we could successfully intubate the patient,<sup>6, 10</sup>. This technique is fast, relatively atraumatic, easy to perform and eliminates most causes of failure.

Ideally, a flexible bronchoscope should be used for tracheal intubation in such patients. Unfortunately, because of the high purchase and maintenance costs of fiberoptic devices, few centers have such facilities. Also in cases of airway bleeding, fiberoptic bronchoscopy may fail and a suitable alternative is required. Thus in an emergency scenario, retrograde nasal intubation with a gliding knot and pull through technique could be a suitable alternative when fiberoptic bronchoscope is not available.

**CORRESPONDENCE TO**

DR. RAGHU S. THOTA 8/17, Century Qrtrs, Near Doordarshan, P.B. Road, Worli, Mumbai-400030. Ph. No. 9820796817. E-Mail Id: Ragstho24@Rediffmail.Com

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**Author Information**

**Raghu S. Thota, M.D.**

Lecturer, Department of Anaesthesiology, Seth GS Medical College & KEM Hospital

**Swetali R. Wadke, M.B.B.S.**

2nd year Resident, Anaesthesia, Department of Anaesthesiology, Seth GS Medical College & KEM Hospital

**Prerana Shroff, M.D.**

Associate Professor, Department of Anaesthesiology, Seth GS Medical College & KEM Hospital

**L. V. Dewoolkar, M.D., D.A.**

Professor & Head, Department of Anaesthesiology, Seth GS Medical College & KEM Hospital