

## A RARE COMPLICATION OF ARMORED TUBE KINKING IN PRONE POSITION

Kannan Santhanakrishnan<sup>1</sup>, M.Premkumar<sup>2</sup>

<sup>1,2</sup>Assistant Professor, Saveetha Medical College and Hospital, Chennai.

### ABSTRACT

Armored tubes are being widely used in anaesthesia practise where surgeries involving procedures in which kinking is anticipated. Kinking of armored tubes is uncommon but it can happen when a reusable tube is used and there have been reports of armored tube kinking both intraorally and extraorally. Hence prompt anticipation of tube kinking is mandatory even when armored tubes are used. Herewith we report a case of unusual complication of armored tube kinking in prone position.

**Key words:** Armored tube, Kinking, prone position

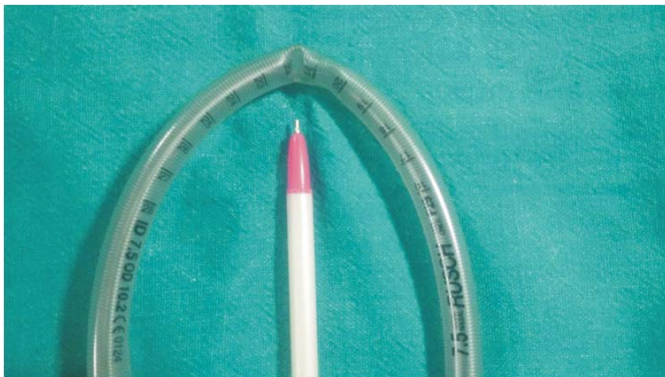
### CASE REPORT

A 60yr old female patient weighing 50 kg diagnosed with prolapsed intervertebral disc L3/L4 was posted for discectomy. Preanaesthetic assessment was done and the patient was a known diabetic on treatment with glimepride 2mg and no other comorbid illness were present. Basic blood investigations were done and haemoglobin was 13 g/dl, random blood glucose was 113 mg/dl, HbA1C of 6 %, serum urea and creatinine were within normal limits. Electrocardiography and chest x ray was normal. Patient was taken up for surgery under ASA physical status II. Monitoring was done with 5 lead electrocardiography, SpO<sub>2</sub>, non invasive blood pressure. General anaesthesia was planned and the patient was premedicated with midazolam 2mg and induced with intravenous propofol of 2 mg/kg, fentanyl 2 microgram/kg and vecuronium 5 mg and maintained with oxygen, nitrous oxide and isoflurane 1-2 %. Patient was intubated with 7.5mm flexometallic tube (RUSCH F29 portex reusable reinforced tracheal tube). The haemodynamics, etco<sub>2</sub> and spo<sub>2</sub> were normal. The patient was turned to prone position and connected to the ventilator and after 5 minutes, there was sudden rise in peak airway pressure from 15 cm H<sub>2</sub>O to 50 cm H<sub>2</sub>O with shark fin appearance of etco<sub>2</sub> on the monitor with etco<sub>2</sub> of 56 mm hg and increased resistance to manual bag ventilation and we ruled out the possible causes with respect to machine,

ventilator, circuit, endobronchial intubation, extraoral kink and inadequate depth of anaesthesia. To rule out endotracheal tube kinking intraorally, we introduced a 16 Fr suction catheter but we couldn't advance it beyond 13 cm from the endotracheal tube connector. We suspected tube kinking intraorally and we introduced a oropharyngeal airway in order to rectify the kink but the obstruction was still not relieved. we turned the patient to supine position and the resistance to bag ventilation was reduced and became normal and air entry was equal on both sides. Then we connected the circuit to the ventilator and the airway pressure was 15mmhg and the etco<sub>2</sub> tracings became normal. We were able to negotiate the suction catheter through the endotracheal tube in the supine position. It was decided to postpone the surgery and the patient was extubated. Postop chest x ray was normal.



**FIGURE 1 : 1. Armored tube in partial kinking when the tube is straight. (as shown in orange tip of pen between 21-22 markings)**



**FIGURE 2 : 2. Armored tube in complete kinking when the tube is acutely angulated as in prone position. (as shown in pink tip of pen between 21-22 markings)**

## DISCUSSION

In our case flexometallic tube spirals were loosened from the tube wall due to repeated use so the tube externally appeared as though it was normal and though the stylet could be passed easily through the tube, the spirals were dislodged at the kinked site. The detached spirals of the armored tube may go for complete kinking once it gets angulated in the prone position.

We routinely reuse armored tubes in our hospital after ethylene oxide (ETO) sterilization, although the manufacturer recommends them as single-use tube. Intraoperative high airway pressure and upsloped appearance in capnography may indicate ventilator malfunction, obstructed expiratory valve, circuit kink, endotracheal tube kink, secretion, loosened spirals, cuff herniation, endobronchial intubation, bronchospasm, pneumothorax and any pulmonary pathology<sup>1</sup>. Obstruction of ETT by mucus, blood or a kink is not uncommon, whereas obstruction by a loosened spiral is a rare event. Most of the armored tubes do not have Murphy's eye, hence any blockade at the bevel can cause

obstruction<sup>2</sup>. The recommended maneuvers for a suspected obstruction of ETT include passing a suction catheter<sup>3</sup> through the tube and performing a fiberoptic examination. Fiberoptic inspection of the tube could also reveal the cause of obstruction<sup>4</sup>.

We conclude that the presence of armored tube may be manufactured kink resistant<sup>5</sup> but not the full assurance of a patent airway and intraoral kink should be suspected in case of upsloping on capnography and increased airway pressure. We suggest that in developing countries where reusable armored tubes is a common practice, armored tubes should be well inspected both externally and internally for any loosened spiral before using and by passing a suction catheter to rule out intraoral kink. Hence we emphasize the fact that whenever we are reusing the armored tube we should be extremely alert and vigilant enough to anticipate the tube kinking.

## REFERENCES

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