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CASE REPORT

# Secondary Esophagus Perforation caused by Insertion of Nasogastric Tube: A Case Report

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## Abstract

Nasogastric tube (NG) insertion is a usual technique in any neonatal intensive care unit. This procedure is undertaken for the children who are in need of invasive care. Sometimes, the insertion of nasogastric tube in infants with esophagus friable anatomy tissues may have some dangerous side effect, but such problems are not very common. Esophageal perforation is a rare but known complication of these procedures. In this study, we present the case of an infant with esophageal perforation. This infant was diagnosed incidentally on X-rays. This problem is usually associated with critically ill patients in the NICU.

**Key Words:** Esophagus Perforation; Nasogastric Tube; Children; NICU

## Introduction

The insertion of nasogastric tube is a common care for infants. This procedure is carried out for many children who are in need of invasive care [1]. When inserting nasogastric tube; adequate precaution should be taken to perform it properly. Nasogastric tube is a thin soft tube that is passed through the child's nostril (nose)[2]. It is usually inserted quickly and the tube goes down easily if the infant is relaxed.

Sometimes, the insertion of nasogastric tube in infants with esophagus friable anatomy tissues may cause some dangerous side effect [3], the most serious is the perforation of esophagus. In this paper, a patient with esophagus perforation was reported. This problem is associated with critically ill patient seen the NICU.

## Cases

The subject was a newly born baby who spent first day of his life. With a weight of around 2800gr.he was the first child of his parent, who did not have any precedent of this disease. The fetus was in 39th week of pregnancy, which required an elective surgery. The Apgar of the infant at the time of birth was about 9. At the first 24hours, the infant was breastfeed and in all feeding times after that he was vomiting. In the interval between each breastfeeding, slight salivary secretion was observed in the infant. Meconium was observed in the first 24 hours and following the vomiting of the patient, Nasogastric tube no. 8f tube was applied

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for the patient.

Nasogastric tube insertion was first time tried in NICU.The tube which was inserted in the esophagus was about 5 cm of esophagus hit to hurdle. After that, the simple radiography of thorax was performed.

Nasogastric tube was observed in the first intercostal space, which indicated the atresia of esophagus. (Figure 1).Thus, the infant was sent to more specialized department. In the assessment carried out in the first 48 hours, all laboratory tests were in normal range.

**Figure 1: chest and abdomen X-ray showing the nasogastric tube**

Nasogastric tube was rechecked to see whether tube could go down deeper in esophagus. Antibiotic were begin in a long rang and the infant was put in upright position.

The assessment was done in the infant ICU. During the second 24 hours after birth, urgently graphy and echocardiography were implemented, with both showing normal results. X ray showed that air was in stomach and loops of intestine.

Because of considering the darkness of cornea, an ophthalmologist's consultation was done. The diagnosis was congenital cataract, examination was done under anesthesia.

In the second 24 hours, the infant had slight salivary secretions in his mouth and in the suction of Nasogastric tube. These secretions were about 1 to 2 cc in each time. When transferring the patient to different centers, Nasogastric tube was pulled out and re-inserted in the next care center. The tubes were entered through his mouth. Also, the radiography was performed to check out position of the chest tube in all centers.

Fig 2 shows the perforation of esophagus during insertion of Nasogastric tube to thorax, which is indicative of pneumothorax. Infant fairly has been done ready for limited thoracotomy. In the thoracotomy radioactive liquid leaking in to pleural cavity and mediastinum. It was clear. During all the procedure, the assessment of 1/3 of the upper part of esophagus was performed with nasogastric tube in the lateral position, and the tube was extracted from its place.

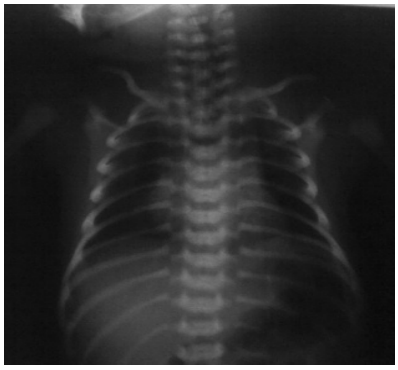

**Figure 2: chest and abdomen X-ray showing the perforation of esophagus after insertion of the Nasogastric tube**

The Nasogastric tube was pulled out. The primary care of esophagus was started when all parts of distal and proximal parts of esophagus were assessed, and no sign of tightness in tissue of ectopic cartilage was observed. Thorax was washed and drained. 72 hours after surgery, ophthalmologist did an eye examination under anesthesia, and the congenital cataract was diagnosed. After omitting chest tube and ensuring the stability of the infant's condition, he was transferred to Ophthalmology Department.

## Discussion

Nasogastric tube insertion is a common practice in pediatric critical care. Although esophageal perforation is quite rare, but this complication has been reported in some premature or mature infants born with friable tissues. The life of these infant can be prolonged with the help of modern medical technical instrument and care. In care centers, even the simple procedures should be done by a professional medical team.

Esophageal perforation mainly occurs in infants born pre-term with low birth weight. Our patient put up struggles to reject NG tubes and suction catheters. It usually happens in the cervical region of the esophagus, which is due to the anatomy of this region.

In these cases, infants may show respiratory distress, blood stained secretions, cyanosis, vomiting or difficulties in breastfeeding, which can delay full feeding process [4].

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Most babies can be treated conventionally although surgical intervention may be required in severe cases [3, 4]. There is no difference in the reported rate of survival when treated either medically or surgically [5]. There is no apparent advantage to routine surgical exploration though, complications such as mediastinitis and mediastinal mass formation may require surgical intervention [6], in this study, and however, we observed mediastinitis after the insertion of NG tube into the pleural site. Preventive steps may include proper training about the installation of NG tubes.

## Conclusion

In conclusion, esophageal perforation is a rare complication in the modern neonatal intensive care setting, but it can happen even for the most experienced specialists. Conventional treatment in uncomplicated cases may result in complete recovery in most neonates. These cases suggest that esophageal perforation can be caused in the procedures of inserting NG tube.

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