The passage of a nasogastric tube does not always exclude an oesophageal atresia

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This short report is submitted to you as a possible learning point for publication in the *African Journal of Paediatric Surgery*. I have seen this problem a couple of times and I thought it might be worth reporting.

A 36-week-old male baby delivered by elective caesarean section presented with respiratory distress at delivery. Clinical findings were in keeping with hyaline membrane disease and 8 ml of surfactant was given via the endotracheal tube. The infant's condition improved sufficiently to allow extubation with nasal continuous positive airway pressure for respiratory support. The child was kept at nil by mouth overnight. A 5 French-sized nasogastric feeding tube (NGT) was inserted without difficulty. A chest X-ray was taken to confirm the diagnosis of hyaline membrane disease and to check the correct placement of the NGT, showing that the tip was clearly evident in the stomach [Figure 1].

Over the next 48 h, the infant continued to experience periods of oxygen desaturation and was very "chesty". Small volume feeds were instituted but these pooled in the mouth and precipitated coughing episodes. Feeding was changed to small volume feeds of expressed breast milk via the NGT. There were repeated reports of regular suctioning required to cope with the pooling of saliva in the mouth during the nursing process. The NGT was displaced once during this period and reinserted "with some difficulty", but again was confirmed to be in the stomach on X-ray.

At this stage, the differential diagnosis considered included incoordinate swallowing, oesophageal narrowing from intrinsic and extrinsic pathology and gastrooesophageal reflux. A contrast swallow, meal and follow through to better delineate the oropharyngeal, oesophageal and gastroduodenal anatomy clearly demonstrated an oesophageal atresia with overflow and aspiration into the trachea. The film further showed a carinal, tracheooesophageal fistula that communicated with the distal oesophagus. The distal oesophagus was in continuity with the stomach by a small blush of contrast in the gastric fundus [Figures 2 and 3].

On review of the chest X-ray [Figure 1], one can clearly see a subtle midcervical vertebral abnormality and a large blind ending proximal oesophagus that is better demonstrated on the lateral chest X-ray [Figures 2b and 3]. This infant had a classic type C oesophageal atresia. He subsequently underwent uneventful primary repair of the atresia and closure of the tracheooesophageal fistula (TOF) via right extrapleural thoracotomy.

The clinical features of oesophageal atresia were all classically demonstrated in this patient. Radiological features of the condition were obvious by hindsight, yet the pathognomonic feature of an oesophageal atresia (the inability to pass an NGT into the stomach) was absent. How was it possible that an NGT was inserted on more than one occasion?

Gross[1] described five types of a variable combination of oesophageal atresias and tracheooesophageal fistulae [Figure 4]. The anatomy of the type-5 lesion (TOF without

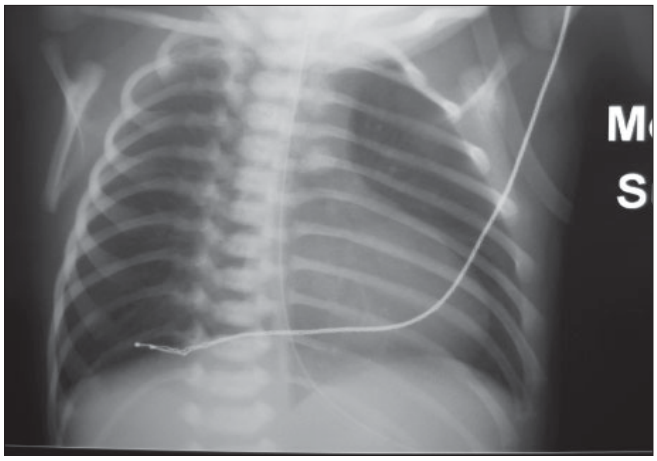


Figure 1: Plain chest X-ray showing the position of the nasogastric tube, with the tip lying in the stomach

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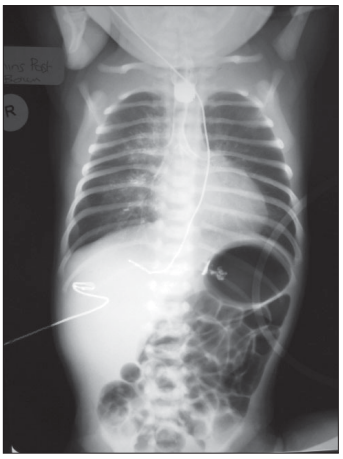


Figure 2: (a) Contrast swallow showing an oesophageal atresia, overflow of contrast into the bronchial tree and a distal tracheooesophageal fistula with contrast in the stomach



Figure 2: (b) Lateral chest X-ray demonstrating a contrast-filled blind ending proximal oesophagus and trachea outlined by aspirated contrast

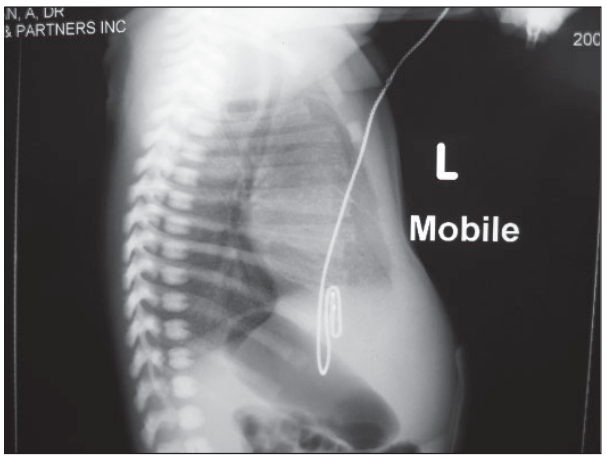


Figure 3: A lateral chest X-ray showing an air filled distal oesophagus with communication with the stomach through the diaphragm

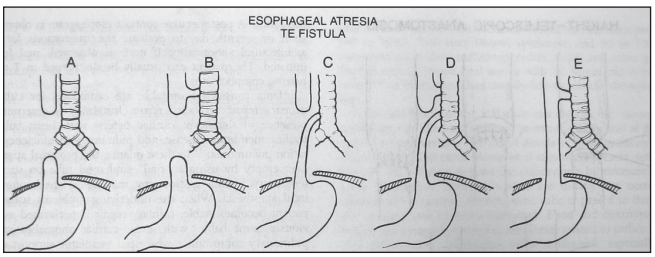


Figure 4: Gross' [1] classification of the spectrum of disease that includes oesophageal atresia and tracheo-oesophageal fistulae

an atresia) would most easily explain the inconsistency in this case, but radiology clearly demonstrated a blind ending proximal atretic oesophagus. The anatomy of the type-4 lesion (double fistula) could account for the passage of the NGT, but the contrast study showed no such proximal fistula and, in Figure 1, which is slightly rotated, the NGT is lateral to the proximal oesophageal stump. This leaves us with only one other possibility, that of a type-3 lesion. This infant was found to have just such a lesion at surgery.

It appears that the NGT was inserted through the vocal chords into the trachea.[2] This misplacement was not initially detected because of the background of coughing and respiratory distress that accompanied any manipulation of the upper aerodigestive tract. From the trachea, the tube was passed through the tracheooesophageal fistula into the distal oesophagus and then into the stomach.

Oesophageal atresias with distal fistula are the most common lesion accounting for up to 90% of the described cases. They are commonly associated with other congenital abnormalities, including vertebral defects (present in this infant), anorectal, cardiac, renal and limb abnormalities, which should be excluded before surgery. Other abnormalities that have featured in our series are tracheal clefts and small bowel atresias.

A diagnosis of oesophageal atresia is suspected in any infant who fails to clear secretions and feeds, especially when combined with respiratory embarrassment.

When looking at X-rays, the widest possible differential diagnosis should always be entertained, "what you don't look for you won't see".

The passage of an NGT into the stomach does not exclude the presence of an oesophageal atresia.

REFERENCES

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