

Where is the orogastric tube going in this preterm neonate?

Bárbara Marques,¹ Ana Teresa Sequeira,¹ Mariana Lemos,² Margarida Abrantes³

¹Pediatric Service, Department of Pediatrics, Academic Medical Center of Lisbon, Hospital Santa Maria-CHLN, Lisbon, Portugal
²Pediatric Cardiology Service, Hospital Santa Cruz, Centro Hospitalar Lisboa Ocidental, Carnaxide, Portugal
³Service of Neonatology, Department of Pediatrics, Academic Medical Center of Lisbon, Hospital Santa Maria-CHLN, Lisbon, Portugal

Correspondence to

Dr Bárbara Marques, barbaralsmarques@hotmail.com

Accepted 30 November 2018

DESCRIPTION

A male preterm neonate was born at 27 weeks of gestation by emergency caesarean section due to severe maternal pre-eclampsia, weighing 960 g. Apgar scores were 8/9. Pulmonary surfactant was administered after endotracheal intubation due to increased need for oxygen. He was transferred to the Neonatal Intensive Care Unit under mechanical ventilation. An orogastric tube was placed and chest radiography performed. A left-sided pneumothorax was identified, but the orogastric tube was not visualised (figure 1), so it was replaced. The radiography was immediately repeated showing an abnormal position of the tube along the left hemithorax (figure 2) without pneumothorax. The neonate remained stable. Oesophageal perforation (OP) was assumed and the tube was immediately removed. Additionally, broad-spectrum antibiotic therapy with meropenem and vancomycin, total parental feeding and proximal oesophageal suction were started. At 11 hours of life, he suffered clinical deterioration with increased oxygen requirement, respiratory distress and haemodynamic instability. Chest radiography showed left pneumothorax and pneumomediastinum (figure 3). Thoracic drainage was performed, and chest drain was removed on day 8 of life. On day 24, we performed an esophagography which showed an intact oesophagus with no contrast leak, and enteral feeding was started. He was discharged home by day 65 of life.

OP in neonates is usually iatrogenic and commonly associated with placement of enterogastric tubes, endotracheal intubation and nasotracheal suctioning.^{1,2} Although rare, it is more common in infants weighing less than 750 g and is associated



Figure 2 Abnormal position of the orogastric tube along the left hemithorax, without pneumothorax, 5 min after the first radiography.

with high mortality (21%–30%), although most deaths are related to complications of prematurity.³

The most frequent location of OP in neonates is the pharyngo-oesophageal junction as it is the narrowest point in the oesophagus and instrumentation leads to a reflex muscular constriction. Also, neck hyperextension during intubation attempts leads to compression of the oesophageal wall against the cervical spine with risk of perforation.²

OP should be suspected in a neonate with sialorrhoea, choking, coughing or cyanosis after repeated attempts at endotracheal or enterogastric

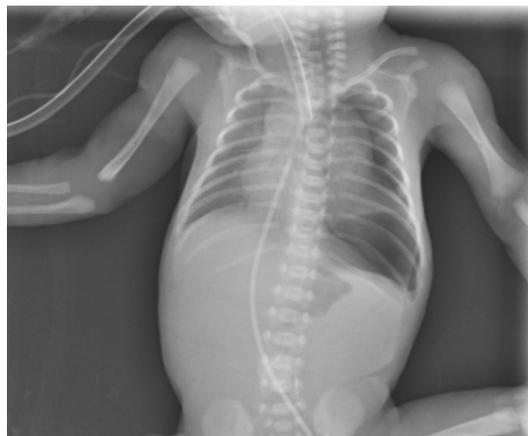


Figure 1 First radiograph after orogastric tube placement, which was not visualised, showing a left-sided pneumothorax.

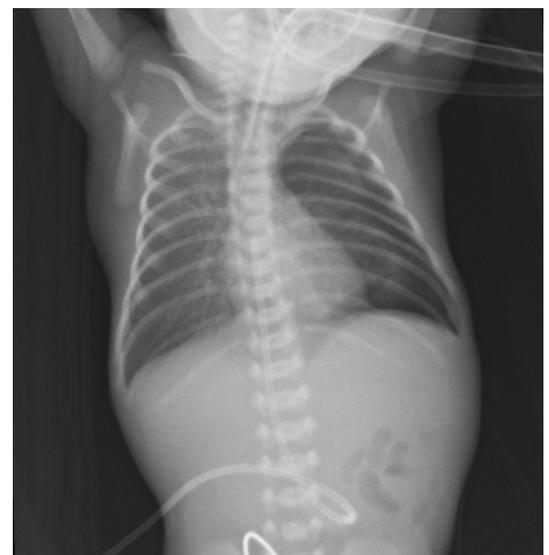


Figure 3 Large left-side pneumothorax and pneumomediastinum.



© BMJ Publishing Group Limited 2018. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Marques B, Sequeira AT, Lemos M, et al. *BMJ Case Rep* 2018;**11**:e227286. doi:10.1136/bcr-2018-227286

Images in...

intubation. Aspiration of bloody content of an enterogastric tube is also suggestive of diagnosis.^{1,3}

Chest radiography is essential for diagnosis of the condition and its complications (pneumothorax or pleural effusion).³ However, it can be normal in up to 33% of cases. In cases of strong suspicion, contrasted studies or endoscopy can be used for diagnosis.^{1,2} By esophagography, three types of injury can be identified: localised cervical leak, submucosal perforation and free perforation.²

Although surgical treatment has been common practice for years, currently it is reserved for patients with clinical deterioration, infection or persistent leak.¹ Conservative treatment is now the standard of care, specially for those with a submucosal perforation or a small retropharyngeal collection. It consists of intravenous antibiotics, nil per os status, total parenteral nutrition

and drainage of associated complications. Antibiotic therapy should be kept for at least 7–14 days and should cover both aerobic and anaerobic micro-organisms.^{1–3}

Resolution of perforation usually occurs a week after the lesion, when a contrast study must be performed in order to document healing and initiate oral feeding safely.^{1,3}

In our case, we have identified two risk factors for OP: endotracheal intubation and placement of an orogastric tube. Initiating early antibiotic therapy may have prevented infectious complications. Pneumothorax and pneumomediastinum are frequent complications of OP, requiring drainage for resolution, as in our case.

Acknowledgements The authors would like to thank Inês Girbal (Neonatologist), Miroslava Gonçalves (Pediatric Surgeon) and Luísa Lobo (Radiologist) from Santa Maria Hospital for their support.

Contributors BM was responsible for conception and design of the work, as well as data collection, analysis and interpretation. AS and ML were responsible for data collection, analysis and interpretation. BM drafted the manuscript, which was critically revised by AS, ML and MA. All the authors read and approved the manuscript. All of the authors participated in the care of the presented patient.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Parental/guardian consent obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Rentea RM, St Peter SD, Sd SP. Neonatal and pediatric esophageal perforation. *Semin Pediatr Surg* 2017;26:87–94.
- 2 Gander JW, Berdon WE, Cowles RA. Iatrogenic esophageal perforation in children. *Pediatr Surg Int* 2009;25:395–401.
- 3 Hesketh AJ, Behr CA, Soffer SZ, et al. Neonatal esophageal perforation: nonoperative management. *J Surg Res* 2015;198:1–6.

Learning points

- ▶ Oesophageal perforation is a rare but life-threatening event, and can occur in premature and low birthweight infants submitted to endotracheal and enterogastric instrumentation.
- ▶ Performing chest radiography after intubation or placement of an enterogastric tube is critical to document correct tube location. An anomalous position of an enterogastric tube makes the diagnosis of oesophageal perforation.
- ▶ Complications are possible. Pneumothorax and pneumomediastinum can occur after oesophageal perforation and should be considered when this diagnosis is made.
- ▶ Conservative treatment may be effective, specially for those with a submucosal perforation or a small retropharyngeal collection.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <https://www.bmj.com/company/products-services/rights-and-licensing/permissions/>
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow