

## Medical Quiz Answers

A1. Esophagogram revealing a thoracic tracheoesophageal fistula.

A2. Bronchoscopy.

A3. H-Type tracheoesophageal fistula.

### DISCUSSION

Esophageal atresia with associated tracheoesophageal fistula is a rare congenital anomaly. The incidence varies from 1:2500 to 3000 of live births. Tracheoesophageal fistula and esophageal atresia are classified into five types. The most common type is esophageal atresia with distal tracheoesophageal fistula; it is 85% of esophageal atresia. Pure esophageal atresia without tracheoesophageal fistula is approximately 7% of esophageal atresia. Isolated tracheoesophageal fistula with the absence of esophageal atresia is called H-type tracheoesophageal fistula, it is approximately 4%. H-type tracheoesophageal fistula is located in the cervical area in 90% of cases and in the thoracic area in 10% of cases. Proximal fistula with associated tracheoesophageal fistula is present in less than 2% of patients, where the presence of double fistula in proximal and distal esophageal pouches with esophageal atresia, is the least common type .

Patients with H-type tracheoesophageal fistula can present early with choking and cyanosis during feeding, recurrent chest infection,<sup>2</sup> or rare abdominal distention in cases of large H-type fistulas<sup>1</sup> .

High clinical suspicion is needed to achieve the diagnosis of H-type tracheoesophageal fistula because the presentation is not specific and variable. In a study by Alsalem et al, 60% of cases were diagnosed in the first 6 months of life, and 90% were diagnosed in the first year<sup>3</sup> .

There are several methods to diagnosis H-type tracheoesophageal fistula including esophagogram, bronchoscopy and esophagoscopy. CT scan and MRI can be used to achieve a diagnosis of H-type tracheoesophageal fistula safely in neonates<sup>3</sup>.

Surgical repair can be achieved by open surgical or thoracoscopic approach. Reports of endoscopic treatment of H-type tracheoesophageal fistula or for recurrent cases, using Histoacryl glue with electrocautery proved to be a successful approach<sup>4-6</sup> .

Right-sided transcervical repair remains the choice of approach to treat cervical H-type tracheoesophageal fistula. This approach avoids injuring the right recurrent laryngeal nerve. Parolini et al reported that 77% of cases were repaired via right side cervical approach, 13% via left cervicotomy, thoracotomies in 10%, and the remaining were repaired by thoracoscopy<sup>5-7</sup>.

### CONCLUSION

**H-type tracheoesophageal fistula is a rare congenital anomaly that remains a diagnostic and management challenge for physicians. The most common location of H-type tracheoesophageal fistula is cervical. Thoracic H-type tracheoesophageal fistula is extremely rare.**

**Different modalities were advocated in the management of recurrent thoracic H-type tracheoesophageal fistula cases. A multidisciplinary team is advocated for a better outcome and improved quality of life for patients.**

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**Potential Conflicts of Interest:** None.

**Competing Interest:** None.

**Sponsorship:** None.

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**Ethical Approval:** Approved by the Department of Pediatrics, Salmaniya Medical Complex, Bahrain.

### REFERENCES

1. Al-Salem AH, Mohaidly M Al-Buainain HMH, Al-Jadaan S, et al. Congenital H-Type Tracheoesophageal Fistula: A National Multicenter Study. *Pediatr Surg Int* 2016; 32:587-91.
2. Parolini F, Morandi A, Macchini F, et al. Cervical/Thoracotomic/Thoracoscopic Approaches for H-Type Congenital Tracheoesophageal Fistula: A Systemic Review. *Int J Pediatr Otorhinolaryngol* 2014; 78:985-9.
3. Riazulhaq M, Elhassan E. Early Recognition of H-Type Tracheoesophageal Fistula. *APSP J Case Rep* 2012; 3(1): 4.
4. Ng J, Antao B, Bartram J, et al. Diagnostic Difficulties in the Management of H-Type Tracheoesophageal Fistula. *Acta Radiol* 2006; 47:801-5.
5. Killen DA, Greemlee HB. Transcervical Repair of H-Type Congenital Tracheoesophageal Fistula: Review of the Literature\*. *Ann Surg* 1965; 162:145-50.
6. Zani A, Jamal L, Cobellis G, et al. Long-Term Outcomes following H-Type Tracheoesophageal Fistula Repair Infants. *Pediatr Surg Int* 2017; 33:187-90.
7. Tzfa KT, Maxwell EL, Chait P, et al. Endoscopic Treatment of Congenital H-Type and Recurrent Tracheoesophageal Fistula with Electrocautery and Histoacryl Glue. *Int J Pediatr Otorhinolaryngol* 2006; 70:925-30.