



Novel use of glycopyrrolate (Robinul) in the treatment of anastomotic leak after repair of esophageal atresia and tracheoesophageal fistula

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Abstract Anastomotic leak after tracheoesophageal fistula repair is a well-known complication and can represent a challenging clinical scenario. We present the case of an infant girl with VACTERL syndrome who underwent repair of a type C esophageal atresia and tracheoesophageal fistula repair, which was complicated by an anastomotic leak. Glycopyrrolate (Robinul), an anticholinergic agent, was successfully used to decrease copious salivary secretion and promote spontaneous closure of the leak. This report represents the first description in the medical literature of the use of glycopyrrolate in the treatment of an esophageal anastomotic leak. Glycopyrrolate may be a useful adjunct in the management of anastomotic leak after tracheoesophageal repair.

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A well-known complication of esophageal atresia with or without tracheoesophageal fistula (EA/TEF) repair is anastomotic leak, which may occur in the setting of poor blood supply or tension with the anastomosis. We report an 8-week-old infant female who underwent surgical repair of a type C EA/TEF with a subsequent anastomotic leak, which was treated with glycopyrrolate (Robinul). To our knowledge, this is the first reported use of glycopyrrolate in the treatment of an EA/TEF anastomotic leak.

1. Case report

A 37-week-gestational-age infant was delivered by cesarian section because of transverse position with a birth weight of 3.22 kg. The pregnancy was complicated by severe polyhydramnios and diet-controlled gestational diabetes. Shortly after birth, she was diagnosed with VACTERL association, including esophageal atresia, imperforate anus with a vestibular fistula, shortened right limb, equinovarus, polydactyly, patent ductus arteriosus, and an ectopic right kidney, which was later found to be residing in the right hemipelvis.

The absence of gas in the stomach on abdominal radiograph suggested the presence of a pure esophageal atresia (Waterston type A). On day of life 2, the patient underwent a gastrostomy tube placement and a colostomy

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creation at an outside institution. After transfer to our institution, the patient was taken to the operating room with a diagnosis of pure esophageal atresia at 8 weeks of life. We performed a right posterolateral thoracotomy through an extrapleural approach, and rather than a pure esophageal atresia, a variant of a type C tracheoesophageal fistula was discovered [1]. In addition to proximal esophageal atresia, the distal esophagus was found to narrow into an atretic fibrous cord, followed by a patent esophagus distally. As a result, a primary extrapleural anastomosis was performed under moderate to high tension, and a chest tube was placed adjacent to the anastomosis.

On postoperative days 1 and 2, a moderate amount of serous drainage was noted in the chest tube. By postoperative days 5 and 6, increasing volumes of 41 and 75 mL of clear bubbly fluid were drained from the chest tube. On postoperative day 6, an esophagram was performed, which demonstrated a moderate anastomotic leak (Fig. 1). In an effort to decrease salivary secretion and promote spontaneous closure of the anastomotic leak, glycopyrrolate was started on postoperative day 6. During the subsequent 2 hospital days, a significant reduction in chest tube output was noted. By postoperative day 8, the chest tube output was 0. A repeat esophagram was performed 1 week after the first study

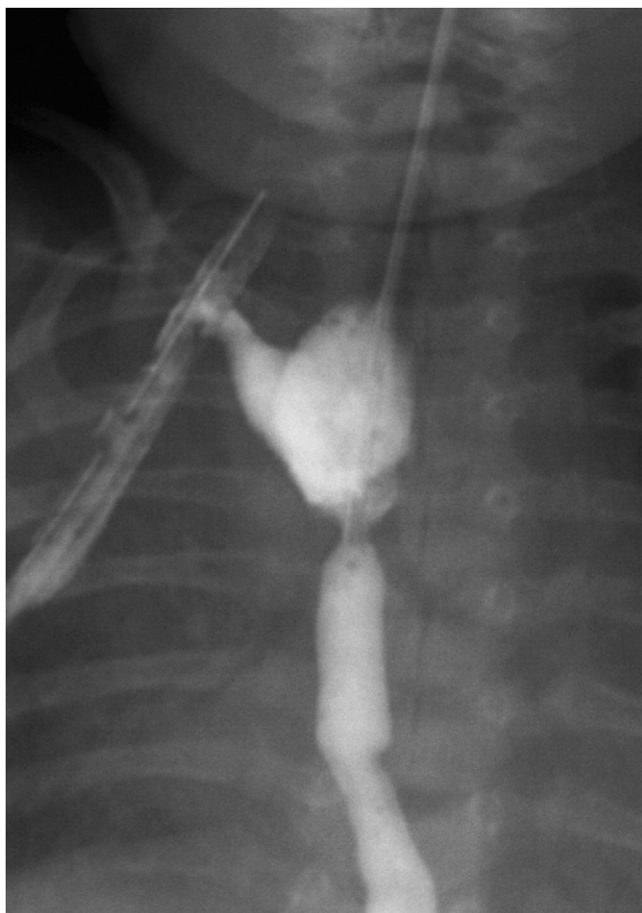


Fig. 1 Esophagram on postoperative day 6, which demonstrates an anastomotic leak with contrast flowing into the chest tube.



Fig. 2 Esophagram on postoperative day 13, which demonstrates resolution of the anastomotic leak after the administration of glycopyrrolate.

(postoperative day 13) and demonstrated resolution of the anastomotic leak (Fig. 2). Glycopyrrolate was discontinued the next day, the child was initiated on oral feeds, and the chest tube was subsequently removed without incident. The child was discharged home once full oral feedings were attained.

2. Discussion

Anastomotic leak is a well-known complication of TEF/EA repair, with a reported incidence as high as 21% [2-4]. It is associated with significant patient morbidity because of the risk of infection, stricture formation, respiratory distress, and delayed onset of feeding [4]. The most common etiology includes excessive tension at the anastomosis and poor blood supply. Long segment repairs are at particularly high risk for developing anastomotic leaks because of the tension between limbs [5,6]. In a study of 59 infants by McKinnon and

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