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**Columns: Case Report**

**Successful endoscopic submucosal dissection of a giant polyp in a 21-month-old female**

Jung EY *et al*. Successful ESD in a 21-month-old female

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**Abstract**

Endoscopic submucosal dissection (ESD) is now recognized as the preferred treatment modality for gastrointestinal epithelial lesions. A 21-month-old female was admitted with a giant hyperplastic polyp causing a gastric outlet obstruction. Successful ESD was performed with caution. The post-procedural course was uneventful without a bleeding episode. Although further study of the feasibility of ESD in early children is necessary, ESD could be applied to avoid laparotomy even in young children.

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**Key words:** Obstruction; Endoscopic submucosal dissection; Infant; Hyperplastic polyp

**Core tip:** The present case is the youngest patient reported to date globally. we performed successful endoscopic submucosal dissection (ESD) for giant hyperplastic polyps that obstructed the gastric outlet in a 21-month-old female patient. ESD could be applied to avoid surgery even in a young child.

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**INTRODUCTION**

Endoscopic submucosal dissection (ESD) is now recognized as the preferred treatment modality for gastrointestinal epithelial lesions without lymph node metastasis. ESD achieves high rates of *en bloc* and complete resection with an acceptable range of complications such as bleeding and perforation. However, most ESD results have been obtained in adults, and ESD in children is rare. Here, a 21-month-old female with a giant hyperplastic polyp causing a gastric outlet obstruction was treated successfully by ESD.

**CASE REPORT**

A 21-month-old female (11 kg, 85 cm), who had no remarkable medical or family history, was admitted with vomiting, abdominal distension, and epigastric pain. Ultrasonography and computed tomography with intravenous contrast showed a large, nodular soft tissue mass occupying the pylorus and duodenum with a markedly distended stomach (Figure 1). A broad-based giant sessile polyp was located on the anterior wall of the distal antrum with extended to the duodenum on esophagogastroduodenoscopy (EGD) (Figure 2A). The giant polyp had a cauliflower-like appearance and easily slid down to the duodenum. An endoscopic biopsy showed a hyperplastic polyp. An upper gastrointestinal series with double contrast showed a lobulating giant mass causing a gastric outlet obstruction. The mass was endoscopically removed under general anesthesia using ESD in a 2.5-h procedure using a ClearCut knife (I-type, FINEMEDIX Co. Daegu, Korea) and a Hook knife (Olympus Co., Tokyo, Japan**).** The procedure starts an injection of lifting solution into submucosal layer, followed by an endoscopic circumferential incision, and dissection starting at the lateral edges, working through the lifted submucosal layer until the lesion is resected in one piece (Figure 2B)[[1](#_ENREF_1)]. The polyp was retrieved by segmentation because it was too large to remove as one piece (Figure 3). A pathological examination showed hyperplastic polyps with thick-walled vessels and organized thick bundles of arborizing smooth muscle with a prominent basal glandular component (Figure 4). The post-procedural course was uneventful without a bleeding episode. The patient was discharged at day 6 after the procedure and is doing well 4 months after discharge without symptoms.

**DISCUSSION**

The prevalence of gastric polyps in the pediatric population is low compared with that in adults (0.7% *vs* 6.35%)[[2](#_ENREF_2), [3](#_ENREF_3)]. The most common pathological types in children are hyperplastic polyps, and most are asymptomatic and do not require removal. However, symptoms such as abdominal pain, heartburn, dyspepsia, and/or upper gastrointestinal bleeding may occur[[4](#_ENREF_4)]. It is rare for these polyps to cause a gastric outlet obstruction. However, once they occur, they must be removed. Few case reports of management of hyperplastic polyps causing gastric outlet obstruction in a pediatric patient are available. Surgical laparotomy enables removal of a pedunculated or giant polyp in infants[[5](#_ENREF_5), [6](#_ENREF_6)]. Endoscopic procedures such as snare polypectomy[[7](#_ENREF_7)] or endoscopic mucosal resection (EMR)[[8](#_ENREF_8)] could also be considered treatment options. However, in pediatric patients, removing giant polyps by using endoscopy is challenging because any bleeding from the large feeding vessels could induce unexpected hypovolemic shock. In particular, if the patient is an early toddler, as in this case, < 50 cc of bleeding (which thought to be minor bleeding in adult) might cause hypovolemic shock.

ESD is an option that may avoid the problems associated with EMR. ESD can be used for larger lesions regardless of their location. Although ESD techniques require a higher level of skill, ESD may assist bleeding control by means of careful submucosal dissection avoiding improper vessel cutting and applying appropriate coagulation under direct vision. A successful ESD in a 11-year-old male has been reported, which is the youngest case in the previous literature[[9](#_ENREF_9)]. However, the present case is to our knowledge the youngest patient reported to date globally. We used ESD rather than conventional EMR or laparotomy even though ESD is technically difficult to perform in an early toddler. Maintaining the airway, keeping the child motionless, and careful dissection of the submucosal layer with vessels are important aspects of the endoscopic procedure if a grave situation is to be avoided in an early toddler.

In conclusion, we performed successful ESD for cauliflower-like giant hyperplastic polyps that obstructed the gastric outlet in a 21-month-old female patient. ESD was applied to avoid surgery even in a young child, although further investigation of the feasibility of ESD in early children and careful follow-up for recurrence is needed.

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**Figure 1 Imaging figures with intravenous contrast.** A: Ultrasonography shows marked thickening of the mucosal and muscular layered lesion at the pylorus and duodenum; B: Abdominal computed tomography scan shows a large, nodular soft tissue mass occupying the pylorus and extending to the duodenum.

**Figure 2 Endoscopic views.** A: It shows diffuse hyperemic and edematous and a giant lobulating tumor from the pylorus to the duodenal inlet; B: The tumor lifted well and resected in one piece endoscopically.

**Figure 3 Retrieved pieces of the large polyp were reconstructed.**

**Figure 4 Photomicrograph shows a polyp with thick-walled vessels and organized thick bundles of arborizing smooth muscle with a prominent basal glandular component.**