INTRODUCTION

The purpose of this work is to present our positive experience using combined laparoscopic-endoscopic procedure and to review current literature in resolving joint appearance of trichobezoars and gastric polyps. A formation of undigested material in the gastrointestinal tract is bezoar [1]. In a situation of a long-term ingestion of hair, i.e. trichophagia, this type of bezoar is called trichobezoar, which is at the same time the most common form of bezoar [2]. Hair cannot be digested and due to its smooth nature also cannot be propelled by peristalsis, which causes formation of a bezoar within the stomach over a certain period. The hair in a trichobezoar always appears black because of the influence of gastric acid on hair proteins [1, 3]. In literature, the association between bezoars and gastric polyps is relatively frequently described; however, it is not so widely appreciated. Even though biopsies of gastric polyps usually show an inflammatory origin, in some cases their malignant alteration was found [4]. A multidisciplinary approach with early diagnosis and surgical removal of gastric bezoars and polyps are essential [1, 3, 5].

CASE REPORT

Our case was a 15-year-old girl with abdominal pain and vomiting after feeding. The vomit included undigested food and sometimes hair. Due to occasional gastrointestinal bleeding she appeared extremely pale. Her abdomen was non-distended without palpable mass. Positive history of trichotillomania and trichophagia led us to believe that trichobezoar could be the reason for her problems. Her mother noticed that she had lost weight. Laboratory values did not show any abnormalities, especially serum proteins and particularly albumins, amylase, and lipase levels, and reactants of acute phase of inflammation such as C-reactive protein and erythrocyte sedimentation rate. At endoscopy and ultrasound examination a trichobezoar occupying almost the entire capacity of the stomach, as well as one oval polyp in the prepyloric area of the antrum. Simultaneous combined laparoscopic-endoscopic rendezvous procedure was performed. The trichobezoar (14 × 6 cm) and the gastric polyp (2.2 × 1.7 cm) were completely removed laparoscopically through anterior gastrotomy, with great support of an adequate endobag and mechanical fragmentation of trichobezoar. The postoperative course was uneventful.

SUMMARY

Introduction Trichobezoars and gastric polyps are very rare conditions in children and may pose a diagnostic and therapeutic challenge. The purpose of this work is to present our successful experience using combined laparoscopic-endoscopic procedure for simultaneous treatment of a trichobezoar and gastric polyp in the same patient.

Case outline We present an unusual case of a 15-year-old girl whose symptoms included abdominal pain, non-bilious vomiting after feeding, including undigested food and sometimes hair. Positive history of trichophagia indicated that a trichobezoar could be the reason for her problems. Endoscopy and ultrasound examination revealed a trichobezoar occupying almost the entire capacity of the stomach, as well as one oval polyp in the prepyloric area of the antrum. Simultaneous combined laparoscopic-endoscopic rendezvous procedure was performed. The trichobezoar (14 × 6 cm) and the gastric polyp (2.2 × 1.7 cm) were completely removed laparoscopically through anterior gastrotomy, with great support of an adequate endobag and mechanical fragmentation of trichobezoar. The postoperative course was uneventful.

Conclusion This case shows that diagnostic endoscopy is valuable and that the combined laparoscopic-endoscopic technique is feasible, safe and recommended treatment for simultaneous removal of a gastric trichobezoar and gastric polypectomy.

Keywords: trichobezoar; gastric polyp; laparoscopy; endoscopy
trotomy incision, to exclude the possible existence of the Rapunzel syndrome, and to navigate surgeon to find the gastric polyp. The most important part of endoscopy during the above mentioned procedure is to control bleeding. After endoscopic navigation, laparoscopic exploration of the entire intestine was the first part of the operation. The trichobezoar (14 × 6 cm) was completely removed laparoscopically through created anterior gastrotomy (Figure 1), also using specially modeled endobag (Endo Catch™ 15 × 10 cm; Covidien Ltd., Dublin, Ireland) (Figure 2). Incision of the first umbilical port was minimally enlarged, and before complete extraction of the trichobezoar from the
abdomen, its mechanical fragmentation in the endobag was performed without spilling into the abdominal cavity (Figure 3). The trichobezoar had a highly offensive smell, which was the reason for smearing, culturing and administering antibiotics postoperatively. Additionally, gastric polypectomy (dimensions 2.2 × 1.7 cm) was also done laparoscopically using the Ultracision™ Harmonic™ (Ethicon Endo-Surgery Inc., Cincinnati, OH, USA) scalpel and gastroscopy through the same (Figure 4). After resection and exact hemostasis, the polyp was removed from the abdominal cavity by placing an endoscopic extraction basket (Roth Net®, US Endoscopy, Mentor, OH, USA) through one of the created ports. Histopathological examination confirmed it to be a hyperplastic gastric polyp.

Firstly, mucosal defect after polypectomy was sutured using absorbable sutures 4-0; afterwards, the gastric wall was closed by using intracorporeal suturing. Omentoplasty completed the procedure (Figure 5). For that we used non-absorbable 3-0 interrupted suture extramucosally. The same stiches were applied for omentoplasty. Finally, the nasogastric tube was placed. The endoscopist controlled the intraluminal hemostasis throughout the procedure. The postoperative course was uneventful, per oral nutrition started after three days (Figure 6). The gastroenterologist and psychiatrist continued the treatment.

DISCUSSION

Trichobezoars (“hair ball”) are usually located in the stomach. Incidentally, a gastric trichobezoar can extend through the pylorus into distal parts of the gastrointestinal tract. This rare type is called Rapunzel syndrome. Between many complications of this condition, the most frequent are mucosal erosion, ulceration or even perforation of the stomach and intestine, intestinal invagination, jaundice, pancreatitis, and extremely rarely even death [1].

In child population, trichobezoars are found in 90% of the cases. On the other hand, they are an uncommon condition of which only approximately 300 cases have been reported in papers [2]. Main causes are habitual hair pulling called trichotillomania and ingestion of hair called trichophagia, which are usually related to obsessive-compulsive disorders and/or depression [2]. In our case, the child was not controlled preoperatively by a psychiatrist. Physicians should always keep in mind the possibility of a bezoar formation especially after gastric surgery, in case of celiac disease, diabetes mellitus, myotonic muscular dystrophy, cimetidine therapy, etc. [1, 2, 6]. In our case, positive history of trichophagia and visible weight loss pointed us to the right direction in diagnosis and appropriate treatment.

Standard clinical findings are usually non-specific. In literature, Lamerton’s sign, a large mobile epigastric mass, is described as a typical clinical manifestation. It is clear that it may pose a diagnostic challenge when during clinical examination it is not found [1].

Ripolles et al. [7] compared conventional abdominal radiographs, sonography, and computed tomography. A typical computed tomography image shows a well-defined intraluminal ovoid heterogeneous mass with interspersed gas [2, 4]. However, endoscopy is essential and the best choice in the diagnosis process [8]. In our case, sonography and endoscopy revealed huge trichobezoar and polypoid mass in the antrum of the stomach.

The endoscopist should closely monitor if the pylorus is normal and that there is no distal obstruction. It is well-known that in 17% of cases trichobezoar can be multiple. Also, distal migration of the subsidiary fragments may cause complete or incomplete small bowel obstruction [8]. This is the reason why the entire digestive tract should be examined thoroughly to prevent secondary ileus [8]. We also started the operation with endoscopic navigation and laparoscopic exploration of the entire intestine.

Current data propose many therapy solutions such as endoscopy, standard laparotomy, minimal invasive surgery, and even ineffective medical treatment with enzymatic degradation [1, 2, 9, 10].

Many authors suggest standard open surgery as appropriate treatment for children with trichobezoars, because of better results of this method in comparison with endoscopy and laparoscopy [1, 11]. Occasional reports inform about new therapeutic methods like extracorporeal shock wave lithotripsy, laser, and the combination of endoscopy and laparoscopy. The last report from China even claimed 100% success rate in resolving trichobezoars using a new “explosive” technique through the endoscope [6]. However, clinical experience is still modest for their promotion or suggestion.

Except removal by conventional laparotomy, in some papers, a minimal invasive approach, such as laparoscopy is also proposed. Nirasawa et al. [12] reported successful laparoscopic removal of a trichobezoar for the first time. After this presentation only six other similar reports were published [10]. Still, progression in the laparoscopic technique, in general and particularly for the removal of trichobezoars, and exploration of the entire intestine, is not so easy to achieve [13, 14].

Despite the fact that literature describes combined laparoscopy and endoscopy in the management of trichobezoars, there is only one publication addressing this combined technique for the same pathology. [14] We have used this technique at our institute since 2009.

A particularly limiting factor for complete laparoscopic or combined laparo-endoscopic procedure is the size of a trichobezoar. In our case, the largest available endobag measuring 15 × 10 cm allowed for laparoscopic removal of a trichobezoar. However, to prevent abdominal contamination it was necessary to gently pull trichobezoar from the stomach into the endobag. Also, the only way to insert the trichobezoar into the endobag was to pull it down and place it in its width. In the literature, minimal and maximal dimensions of gastric bezoars are 6 × 6 × 5 cm and 15 × 10 × 10 cm, respectively, and for intestinal bezoars the measurements are 3 × 3 × 4 cm to 4 × 7 × 7 cm [8]. Specified sizes of trichobezoars allow their placement in standardized and commercially available endobags. This is also important because laparoscopic approach in trichobezoar treatment may seem less attractive due to
Our first successful result using combined laparoscopic-endoscopic procedure gave us hope that combining minimal invasiveness with optimal efficiency provides a safe and efficient therapy. Only one similar therapeutic approach can be found in current literature, where trichobezoar fragmentation was made laparoscopically while endoscopy was used for removal of the fragments [13, 14]. In any case where there is information about trichotillomania and trichophagia it is advisable to perform an endoscopic examination.

A combined laparoscopic-endoscopic technique is a feasible and recommended treatment for simultaneous removal of a gastric trichobezoar and gastric polypectomy.

REFERENCES