Augmentation gastrocystoplasty in a child with orofacial syndrome and dysfunctional voiding

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We report the case of a child diagnosed with orofacial syndrome with dysfunctional voiding and elevated serum creatinine in whom augmentation gastrocystoplasty was performed to manage urinary incontinence. *Ann Pediatr Surg* 14:105–107 © 2018 Annals of Pediatric Surgery.

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Introduction

Augmentation cystoplasty using ileum, cecum, or sigmoid colon, has been well documented in the literature [1,2]. Creation of such urinary reservoirs may also be responsible for a number of metabolic complications. Innovative work carried out by several investigators, including Sinaiko [3] and Leong [4], demonstrated that the stomach could be used to augment the bladder successfully. This paved the way for the application of the gastrocystoplasty to the pediatric population [2].

The use of stomach to augment the bladder facilitates net excretion of chloride ions. Gastrocystoplasty actually protects a child with chronic renal failure from the acidosis [5]. The presence of acid in the urine may also contribute to reduced infections in these patients. We report a case of augmentation gastrocystoplasty in a child with orofacial syndrome and dysfunctional voiding.

Case report

A 12-year-old male child presented to the hospital with urinary incontinence, constipation, and recurrent episodes of urinary tract infections. On examination, the child was anemic and had typical grimacing expression (urofacial or ochoa syndrome). Serum creatinine was 3.7 mg% and ultrasound imaging showed bilateral hydronephroureterosis with a small-capacity bladder. Voiding cystourethrogram revealed bilateral grade V vesicoureteric reflux. A vesicostomy was created so as to allow proper and adequate drainage of the system. The child showed improvement during the follow-up period, moving bowels adequately, and serum creatinine settled down to 2.2 mg%. It was decided to close the vesicostomy and augment the bladder using a segment of stomach.

The bladder was explored first and opened in sagittal plane in the midline. The stomach was brought well into the surgical field and the right gastroepiploic artery (GEA) was then carefully evaluated. The greater omentum was then incised parallel to the right GEA several centimeters inferior to this vessel (Fig. 1). The triangular gastric wedge was next selected with the apex of the wedge close to a lesser curvature of the stomach. The length along the greater curvature was about 10 cm in length. The short arteries from the right GEA to the stomach flap were kept intact. The wedge of the stomach was excised and placed in the pelvis. The repair of the stomach resection was made in two layers. An outer layer of interrupted 3-0 silk sutures in the muscularis and serosa, and an inner layer of through and through running 3-0 vicryl suture was used (Fig. 2). A nasogastric tube was then positioned across the suture line and was left in place until the bowel motility was appreciated in the postoperative period.

The wedge-shaped gastric flap was then brought with its blood supply through the mesentery of the transverse colon and through the root of the small bowel mesentery. The wedge flap was then opened to form a parallelogram-shaped flap. The posterior apex was then sutured into the area of the posterior bladder wall close to the trigone. Running locking through and through 3-0 vicryl sutures were then used to sew the back wall in place. A second layer of 3-0 vicryl sutures through the muscularis and serosa was applied to ensure a watertight anastomosis. A suprapubic Foleys catheter was placed through the native bladder before the anterior segment of the augmentation was sutured in place. The anterior portion of the augmentation was then completed and the bladder was tested to make sure that the suture lines were watertight. Postoperatively, the serum electrolytes were within normal limits and urine pH was 6.0.

Discussion

The initial approach to any child undergoing augmentation cystoplasty remains similar regardless of the bowel segment to be used. Leong and Ong [6] first described the use of the entire gastric antrum with a small rim of body for bladder replacement using the left GEA as a vascular pedicle. Adams *et al.* [7] used a gastric wedge based on the midportion of the greater curvature. The right GEA is more commonly dominant and thus more frequently used. Postoperatively, the drainage of the bladder and stomach is similar to intestinal

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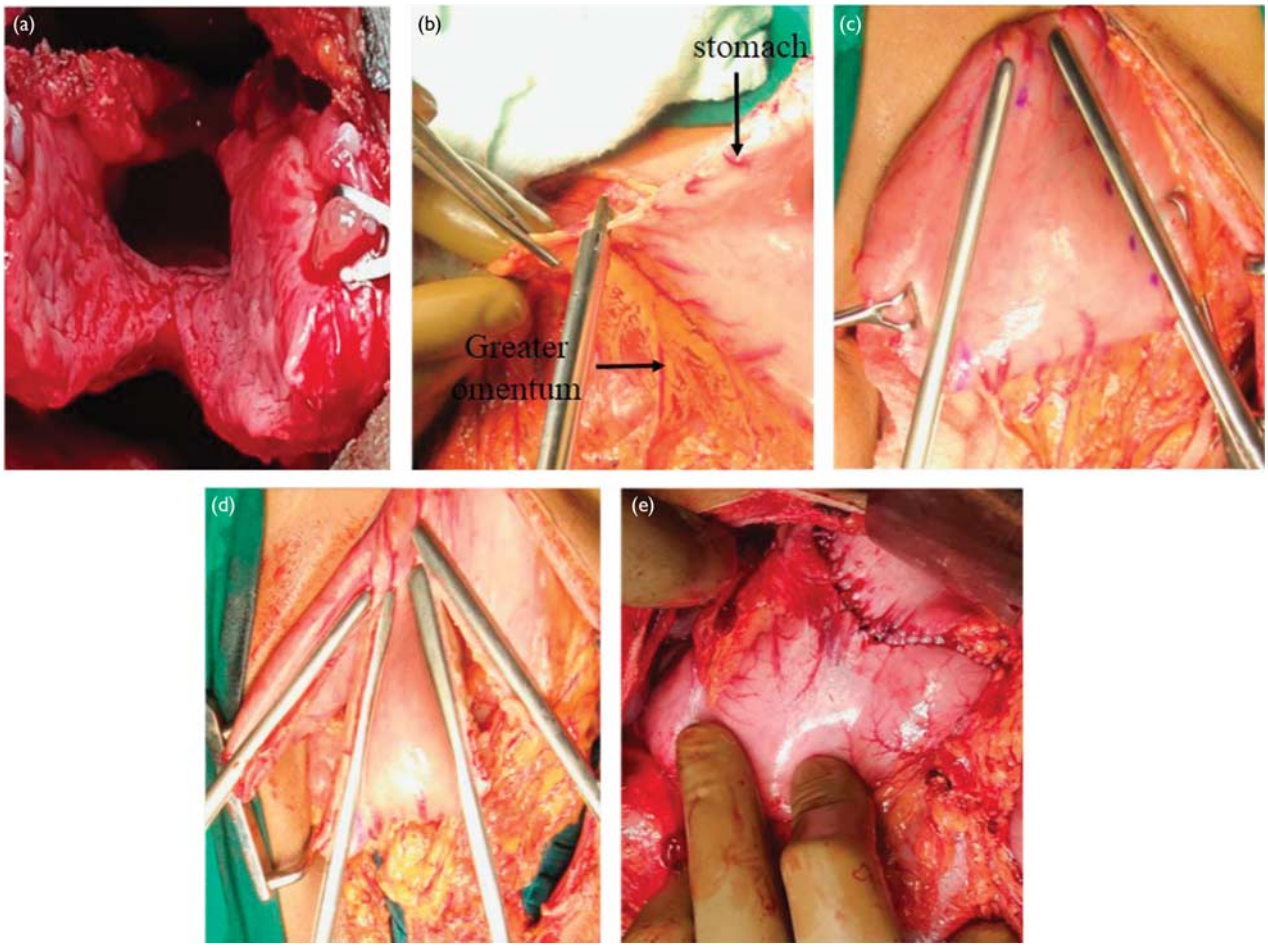
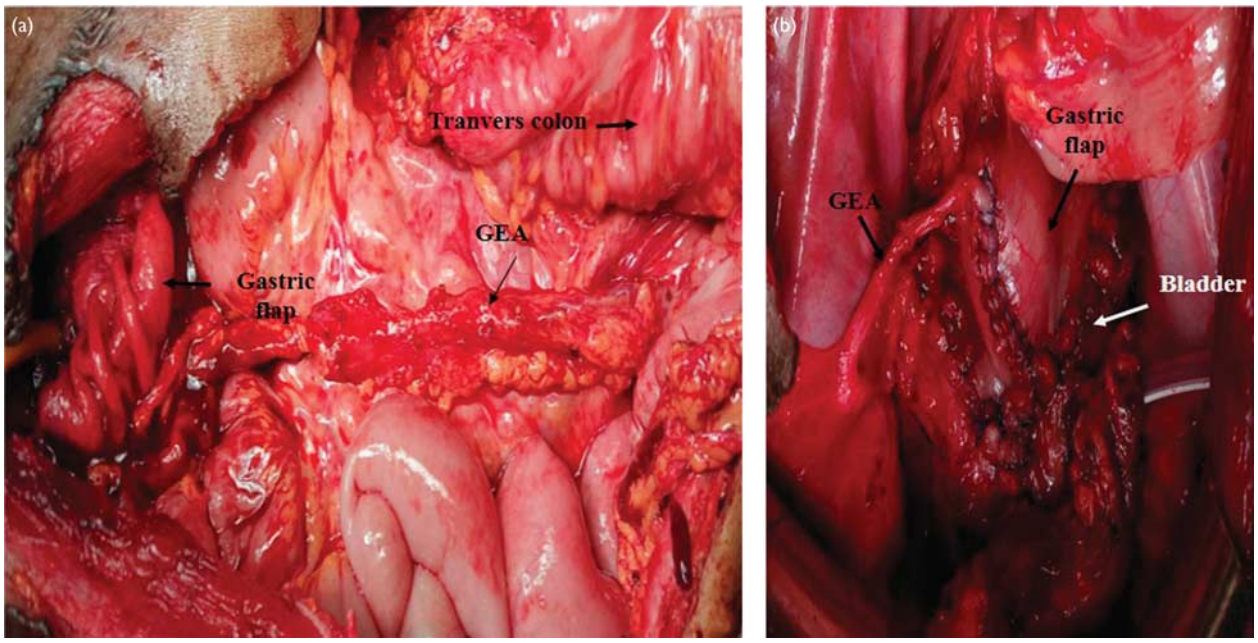
Fig. 1



(a) Open Bladder; (b) The gastroepiploic vessels being dissected out; (c) Clamps applied for partial gastrectomy; (d) partial gastrectomy specimen along with the feeding vessels; (e) Gastrectomy ends closed.

Fig. 2



Gastric flap been anastomosed to the bladder. GEA, gastroepiploic artery.

cystoplasty. Histamine-2 blockers are necessary in the postoperative period to reduce the acid secretion and to promote healing.

In up to 62% of patients, rhythmic contractions have been noted after gastrocystoplasty [7]. Gastric mucosa not only secretes hydrochloric acid but is a barrier to chloride and acid resorption [8,9]. The gastric mucosal secretions may at times be detrimental to the patient and can result in two unique complications of gastrocystoplasty – namely, episodes of hypokalemic and hypochloremic metabolic alkalosis. Acid secretion by gastric mucosa is known to result in another unique problem after gastrocystoplasty – that is, the hematuria–dysuria syndrome.

Conflicts of interest

There are no conflicts of interest.

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