

High Jejunal Obstruction as a Sequela of Necrotizing Enterocolitis

Soon-Ok Choi, M.D., Woo-Hyun Park, M.D., and Joong-Shin Kang, M.D.

Division of Pediatric Surgery, Department of Surgery, Keimyung University School of Medicine, Taegu, Korea

A case of high jejunal obstruction due to stricture is reported. It is a rare form of late sequelae of neonatal necrotizing enterocolitis(NEC). Barium contrast study of the small bowel is recommended for earlier diagnosis and treatment before discharge from the hospital, even is an asymptomatic patient.

Key Words : *Intestinal obstruction, Stricture, Stenosis, Nectrotizing enterocolitis.*

INTRODUCTION

Intestinal obstruction due to stricture is the most common of a variety of late complications following recovery from acute neonatal necrotizing enterocolitis(NEC). It is reported to occur in 11%(Pokorny et al., 1986) to 38%(Born et al., 1985) of recovered patients, and its locations are usually in the colon and terminal ileum (Rowe, 1987). High jejunal strictures are very rare and resection is required.

CASE REPORT

A 47-day-old boy, who had been discharged from our hospital 4 days ago after treatment of neonatal NEC, was readmitted with bilious vomiting and irritability that began on the day of admission. He was born at 35 weeks' gestation, weighing 2,190gm, on September 22, 1989 at our hospital to a healthy, gravida 4, para 1, 27-year-old mother by spontaneous vaginal delivery after an uncomplicated pregnancy and managed in an incubator.

Address correspondence to : *Dr. Soon-Ok Choi, Division of Pediatric Surgery, Keimyung University, Dongsan Medical Center, 194 Dongsan Dong, Taegu, Korea 700-310(053-250-7323).*

On the 6th day of life, poor feeding, vomiting, and abdominal distention developed. Abdominal X-ray showed pneumatosis intestinalis in

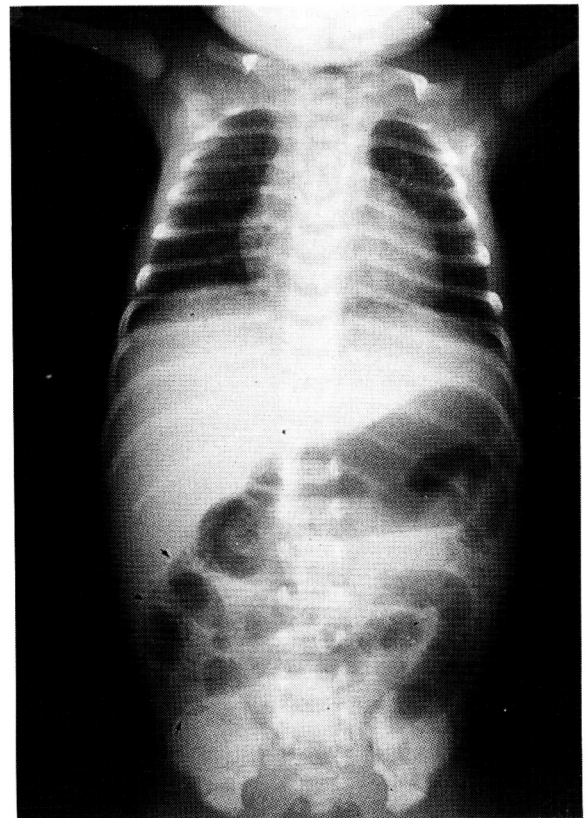


Fig. 1. Plain radiograph shows pneumatosis intestinalis (arrows) in the right abdomen and slightly dilated bowel loops.

the right abdomen and slightly distended bowel loops (Fig. 1).

Portal vein gases in the peripheral portion of both lobes of the liver and ascites were noted on ultrasonogram. Under diagnosis of enterobacter sepsis with NEC, he was given TPN and antibiotics through central venous catheterization. On serial follow-up abdominal X-rays, the pneumatosis intestinalis was gone and the baby's condition continued to improve.

Feeding was begun with sugar water 2 weeks after the onset of NEC. He was discharged on November 3, 1989 with a gain in weight to 2,900gm. After discharge, postprandial regurgitation developed 2 to 3 times per day and gradually increasing in frequency, and eventually regurgitation changed to bilious. The baby had 10 episodes of vomit-

ing on the day of admission.

On examination at admission, he looked dehydrated and his behavior was irritable. His abdomen was soft but slightly distended in the upper portion. His body temperature was 36.8° C, pulse rate 132/min, and respiration rate 43/min. Body weight at admission was 2,550gm. Laboratory investigations revealed Hb 15.2gm/dl, Hct 45.2%, and WBC 18,000 (seg 45%, lympho 44%, mono 7%, eosino 3%, baso 1%). Serum electrolytes were Na 128mEq/L, K 4.4mEq/L, and Cl 95mEq/L. Urine was unremarkable.

A simple abdominal X-ray showed marked gastric dilation. Upper gastrointestinal contrast study with small bowel follow-through showed a narrowing of the proximal jejunum and dilation of more proximal jejunum and duodenum (Fig. 2). Passage was markedly

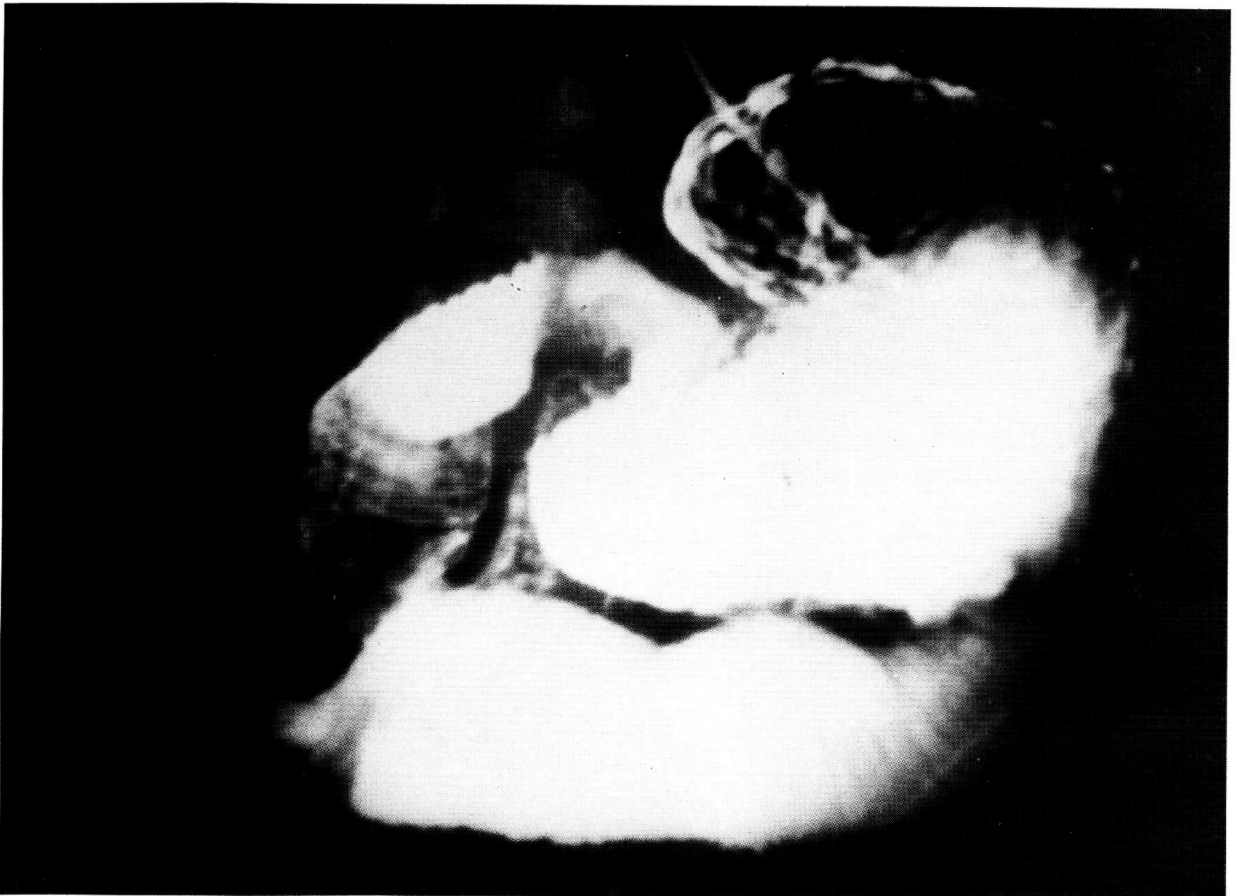


Fig. 2. Barium contrast small bowel study demonstrates area of narrowing in the proximal jejunum.



Fig. 3. Operative findings of the stricture are seen.

delayed through the stenosis, but there was no obstruction on the distal bowel.

At laparotomy, a stenosis was found 30-cm distal to the Treitz ligament. The proximal jejunum to the stenosis was dilated with a thickened wall and increased vascularities, and the bowel distal to the stenosis was collapsed (Fig. 3). There were no more strictures in the distal small and large bowels. The stricture and the dilated proximal and collapsed distal jejunum was resected, and end-to-end single layer anastomosis was performed using interrupted 5.0 black silk sutures. Microscopic examination of the excised specimen showed a slough-off the mucosa, infiltration of neutrophils, lymphocytes, and plasma cells, and abnormal vascular proliferation with various wall thicknesses in the submucosa. The postoperative course was uneventful. The patient began feeding on the 4th postoperative day (POD)

and was discharged on the 8th POD. He has been well on OPD follow-up checks and gaining weight comparable with his age.

DISCUSSION

Neonatal NEC is one of the most common gastrointestinal emergencies in neonatal intensive care units. The initial treatment of NEC is medical, and operations are reserved for infants with evidence of intestinal perforation or gangrene. The survival rate among infants with NEC has steadily improved in the past decade, but a substantial number of the survivors develop a recognized late complication and surgical problem: intestinal obstruction. The obstruction is secondary to stricture as a consequence of cicatricial healing of an ischemic area that did not perforate. Stricture occurred after both medical and surgical treatment, and the most

common site is the colon. The majority of patients develop single strictures.

Schillinger *et al.* (1981) reported that 11(22%) out of 51 surviving NEC infants developed late ischemic stricture of the colon: 8 in the colon, 2 in both colon and ileum, and 1 in the ileum. Pokirny *et al.* (1981) experienced 18 stenotic segments of intestine (2 in the jejunum, 3 in the terminal ileum, and 13 in the colon) in 14 patients who had been nonsurgically treated for acute NEC. In Ross *et al.*'s report(1989), intestinal stricture developed in 51(32%) out of 159 survived NEC infants. Those occurred in 24% of the medically treated group and 39% of the surgically treated group, and locations of the strictures were the colon in 47 patients, small bowel in 1, and both in 3.

Many investigators(Kosloske *et al.* 1980; Pokorny *et al.*, 1981; Janik *et al.*, 1981; Schwatz *et al.*, 1982; Kosloske *et al.*, 1989) recommend a routine barium enema before discharge from the hospital in nonoperative patients and before closure of enterostomy in operative NEC patients in order to detect possible colonic stricture or stenosis, because locations of the stricture are, in general, in the terminal ileum and colon. However, a routine barium contrast study of the small intestine is not generally recommended in asymptomatic infants because post-NEC ischemic stricture is very rare in the small bowel.

Born *et al.* (1985) emphasized that contrast enemas have no advantage over clinical follow-ups in the detection of intestinal obstructions as a complication of NEC, and they did not recommend a routine contrast study in asymptomatic patients.

Even though obstruction of the small intestine is rare after NEC, the present case was discharged with silent stenosis and became symptomatic immediately after discharge. So we feel that routine barium contrast study of the small bowel is highly valuable in infants surviving acute NEC prior to discharge from the hospital for early diagnosis before any obstructive symptoms develop. Also,

the parents should be advised to bring their children to clinics an immediate medico-surgical check-up as early as possible whenever an infant becomes symptomatic.

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