

A Barium Chemobezoar in an Infant

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ABSTRACT

A case report is presented of an infant who developed a large barium concretion proximal to a jejunal anastomosis. A brief literature review outlines the issues involved in the indications for, and choice of, contrast material for use in the precise radiological diagnosis of upper intestinal obstruction in infants.

Quimobezoar de Bario en un Neonato

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RESUMEN

Se presenta el reporte de un caso de un neonato que desarrolló una concreción grande de bario cercana a una anastomosis yeyunal. Una breve revisión de la literatura esboza los problemas involucrados en las indicaciones y selección del material de contraste para uso en un diagnóstico radiológico preciso de la obstrucción intestinal superior en los neonatos.

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INTRODUCTION

Bezoars are rarely formed in the upper gastrointestinal tract of children. A new-born infant developed prolonged postoperative obstruction after the impaction of a barium concretion at the anastomosis used to correct a small bowel atresia. The implications of this complication for the appropriate management of upper intestinal obstruction in infants are discussed.

Case Report

A baby girl was born by normal vaginal delivery, at 37 weeks gestation, to a 22-year old mother. Her birthweight was 2.7 kg. She had significant bile-stained gastric residue which cleared with gastric lavage. Despite the introduction of *ad lib* feeding, no stools were apparent over the following two days, and only a clear mucus plug was produced after the insertion of a glycerine suppository. By the third day of life abdominal distension had developed, accompanied by bilious vomiting and increasing jaundice. Plain abdominal radiographs showed scanty intestinal gas with no evident fluid levels (Fig. 1). A surgical consultation was requested.

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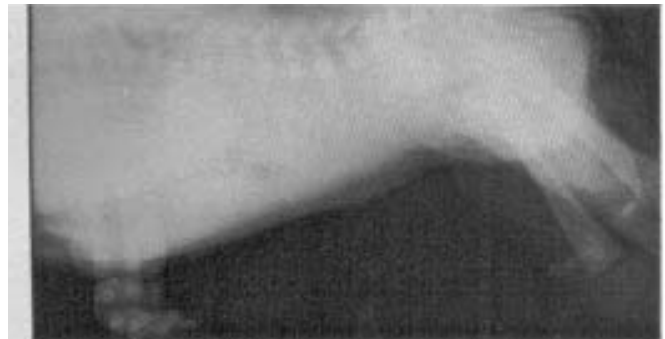


Fig.1: The lateral decubitus view of the abdomen shows a scarcity of intestinal gas shadows.

In view of the clinical presentation suggestive of an upper intestinal obstruction, an upper gastrointestinal series was requested which showed complete upper jejunal obstruction (Fig. 2).

At laparotomy, a Type 11 atresia of the proximal jejunum was found. The proximal distended bowel was resected, patency of the distal bowel confirmed, and a jejuno-jejunostomy performed. Postoperatively, a delay in the passage of stool was observed but the baby remained clinically well. A plain film of the abdomen taken one week after surgery showed a large barium concretion in the duodenum with fragments of dye distally as far as the rectum. Parenteral nutrition was given while dissolution of the concretion was awaited. This gradually occurred and the first bowel action was recorded ten days postoperatively. Serial radiographs confirmed progressive breakdown of the impaction (Fig. 3).

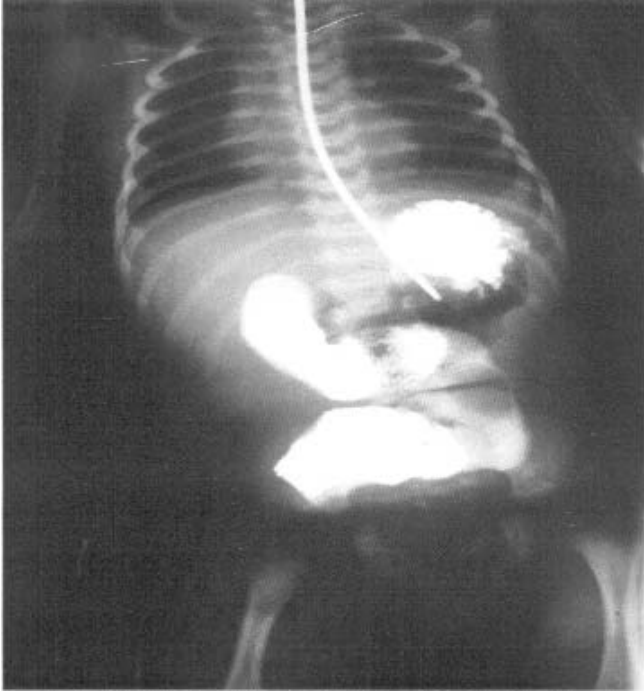


Fig. 2: The radio-opaque meal confirms a complete upper jejunal obstruction.

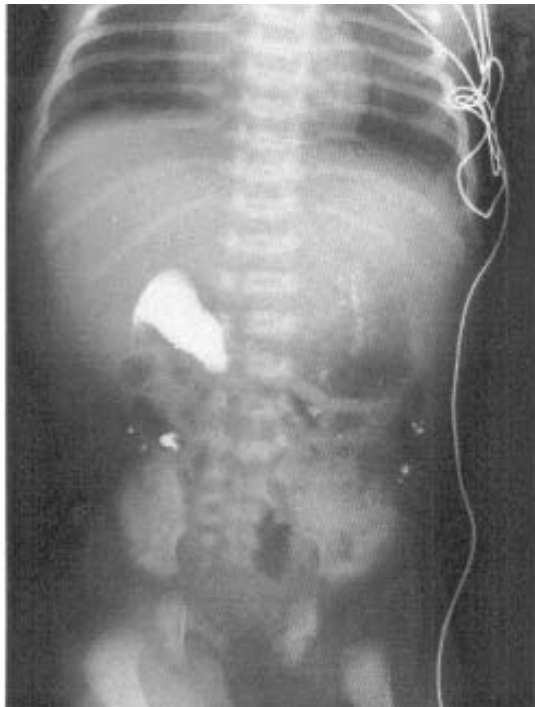


Fig. 3: A plain film taken on postoperative day 19 shows a residual concretion in the duodenum, as well as small radio-opaque fragments in the distal bowel.

Oral feeds were eventually introduced on the 25th day after surgery and the absence of residual radio-opaque material was confirmed on a plain film taken three days later. The baby was discharged home after another week.

At postoperative review at the age of nine months, she had made good progress and was gaining weight satisfactorily.

DISCUSSION

There has been a report of the development of a duodenal bezoar in an infant after the repair of a jejunal atresia complicated by anastomotic dysfunction but this was not associated with barium ingestion (1). A solitary literature report of the formation of a barium chemobezoar describes its occurrence in the large bowel of an elderly patient after a barium enema (2). Although physical examination and plain abdominal X-rays are usually enough to make a specific diagnosis in infantile intestinal obstruction, contrast studies are still occasionally required for clarification (3). This is particularly the case when few intestinal gas shadows are visible on plain abdominal films (4) as happened with this infant.

The approach to imaging of the gastrointestinal tract in neonates, including both the method of examination and the choice of contrast medium requires close cooperation between surgeon and radiologist (3). However, the best possible circumstances do not always apply and it might be useful to review the principles of management.

The literature documents the possibility of ingested barium contributing to bowel obstruction. Impaction typically occurs in the distal small bowel or colon in patients with delayed transit when continuing absorption of water from the barium preparation has permitted precipitation of the barium salt out of solution. This may occur several days after the study due to a variety of circumstances. These include abnormally viscid bowel contents in cystic fibrosis (5) or delayed passage in such conditions as myxoedema (6) or scleroderma (7). The paralytic ileus that follows laparotomy and anastomosis has a similar negative effect on transit and may give rise to the problem at a much higher level in the gut.

Despite this, barium is still advocated for the investigation of small bowel obstruction in adults, primarily because of its advantages over hyperosmolar water soluble agents such as gastrografin. The latter tends to attract additional fluid into the gut and this may lead to dilution and poor resolution increasing intravascular depletion and acid-base disturbances, as well as the risk of severe pulmonary oedema and reflex bronchospasm on aspiration. There is particular concern about the use of these agents in children (8).

Criteria for the choice of contrast agents are fairly well defined, influenced by considerations of the chemistry, advantages and disadvantages of various groups of these agents (9). Water soluble contrast materials, such as metrizamide, which are isotonic, have been available for some time. They possess many advantages over barium and hypertonic water-soluble agents, and the excellent gastrointestinal tract visualization they produce makes them agents of choice

in many clinical situations. However, metrizamide may not be stable in an acid environment such as the stomach, and its use in that situation is contentious (10).

Further developments have produced water soluble media which are non-ionic, such as iopamide. These are safe for use in upper gastrointestinal examination in children, even when there is suspected leakage or obstruction (11) but considerations of cost limit their availability.

In conditions which are not ideal, air, although nowadays rarely considered a suitable medium, may be introduced through the nasogastric tube to provide excellent contrast in cases of suspected complete obstruction (8). Alternatively, if barium has been used, the material may be evacuated through the opened proximal bowel prior to construction of the anastomosis. Either of these approaches would have simplified the management of the patient being presented.

Gastrografin has been successfully used to clear residual barium inspissated in the colon after barium meal examination (12). However, for reasons previously detailed, its use during the neonatal period may be unwise. These considerations, as well as the availability of parenteral nutrition, led to expectant management for this baby, with an outcome that was eventually satisfactory. In the event of non-availability of parenteral alimentation, early surgical intervention may be unavoidable for the expeditious removal of the impaction and institution of early enteral feeding.

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