



CT 1

2 . 2 .

: CT 19 CT
 : CT , 17 (89%) 가
 2 (11%) 가 . 6 (32%)
 (encapsulating wall) . 17 13
 (haziness) , 6 (32%) . 18 (95%)
 MR (sequence) . MR 1
 : CT 가

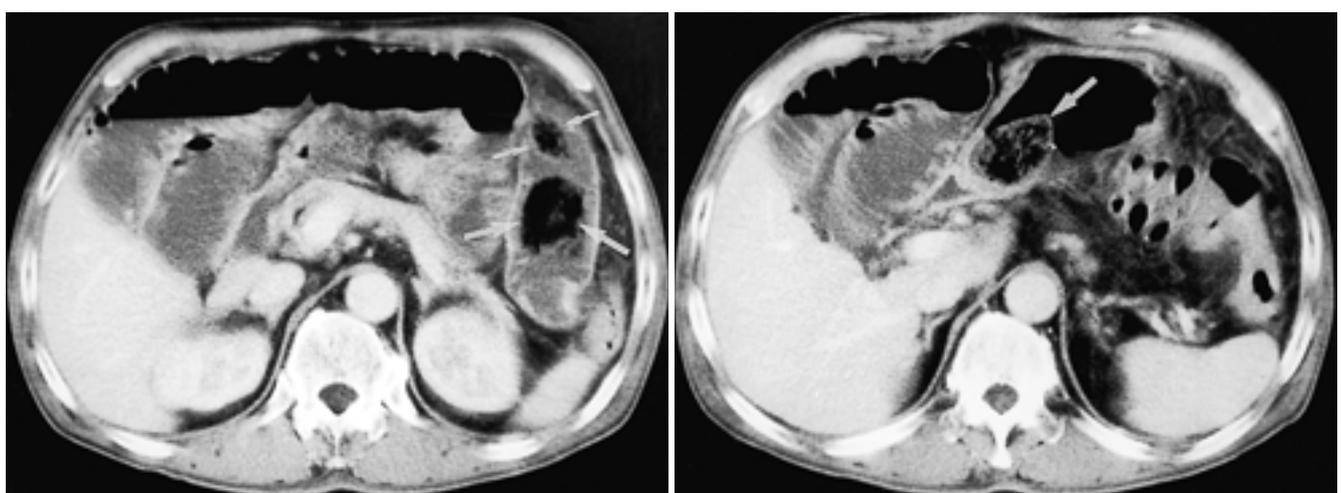
가 , , CT (14-17). CT
 (mottled) 가 가 가
 (1, 2). , ,
 (14, 15). (high-grade)
 가 (3-7). CT
 (truncal vagotomy) (10, 14, 18, 19). ,
 가
 (2). 가
 (8, 9). CT
 , , , MR
 (1, 8).

1999 3 1991 10
 49
 , 22 ,
 가 (10-13). 26 19 CT (18), CT
 MR (1) . CT
 MR , 2 (enteroclysis) 8
 19 가 6 가 13 ,

¹
²
 2000 6 19 2000 12 11

27 82 60 19 5
 4
 19 1
 1
 (18), (12)
 12 (1-65)
 19 14 13
 , 1 . CT
 4 (0-16).
 가
 . 19 5
 가
 (20).
 CT 9800 Quick System (General Electric Medical
 Systems, Milwaukee, U.S.A.) scanner Somatom Plus-S
 and Plus-4 (Siemens, Erlangen, Germany) scanner
 8-10 mm, 8-10 mm
 . 8
 1 600-900 ml (E-Z-CAT; E-Z-
 EM, Westbury, U.S.A.) 11
 가
 120 ml (Iopamiro 300;
 Bracco, Milan, Italy or Ultravist; Schering, Berlin, Germany)
 3 ml/sec
 MR
 (body phased-array coil)
 1.5-T superconductive unit (Magnetom Vision;
 Siemens, Erlangen, Germany) T1

(two-dimensional fast low-angle shot,
 FLASH) T2 (half-
 Fourier acquisition single-shot turbo spin-echo, HASTE)
 ()가
 , , , , ,
 ,
 가
 (round), (ovoid), (tubular)
 가 , 가
 (5 cm
), (5-10 cm) (10 cm
)
 (haziness)
 가 가
 가 가
 (21). 가
 12 , 7
 13 (68%) , 6 (32%)
 (Fig. 1); 4 2 , 1 3 , 1 4
 가 6
 가 1 , 가 1 , ,
 가 1 , 가
 2 . 2.1-5.2 cm (;
 3.2 cm) 2.2-11.0 cm (; 5.2 cm) . 9



A **B**
Fig. 1. 56-year-old man with small intestinal obstruction due to phytobezoar after endoscopic fragmentation of gastric phytobezoar. **A.** Contrast-enhanced CT scan shows ovoid masses (arrows) containing gas bubbles in dilated proximal jejunal loop. Encapsulating wall is noted in smaller phytobezoar (small arrows) **B.** Contrast-enhanced CT scan 2 cm cephalad to (A) shows residual phytobezoar (arrow) in prepyloric antrum of stomach.

, 6 , 4 (; 3.6 cm) . 17 (89%)
 가 가 가 19 17 (89%), 가 가 - 가
 가 2 (11%) (Fig. 2). 6 (32%) 17 13 (76%) , 11 ; 7
 가 5-10 mm (8 mm)
 3-5cm . 1



A



B

Fig. 2. 46-year-old man with phytobezoar mimicking small bowel tumor.
A. Contrast-enhanced CT scan shows a solid-appearing mass (arrow) in distal ileum. Note bowel wall thickening at obstructed site and regional mesenteric haziness (arrowheads).
B. Enteroclysis 1 week after CT scanning shows no evidence of intraluminal mass and small bowel obstruction.



A



B

Fig. 3. Phytobezoar in 68-year-old man who had a recent history of persimmon ingestion.
A. Contrast-enhanced CT scan shows ovoid mass (M) containing mottled gas along with encapsulating wall (arrows) at distal jejunum. Note diffuse concentric bowel wall thickening (arrowheads) at obstructed site as well as at small bowel loop proximal to obstructed site.
B. Small bowel follow-through shows low-grade small bowel obstruction with polypoid intraluminal filling defect (arrows) at obstructed site. Also note diffuse small bowel fold thickening (arrowheads) in the loop proximal to obstruction. A phytobezoar was found at surgery.

, 1 , 11
 . 2

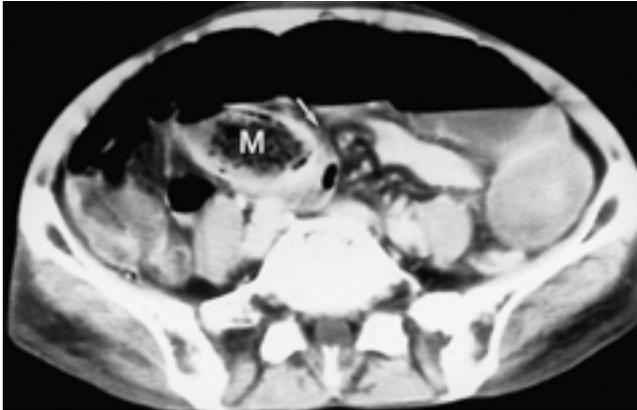


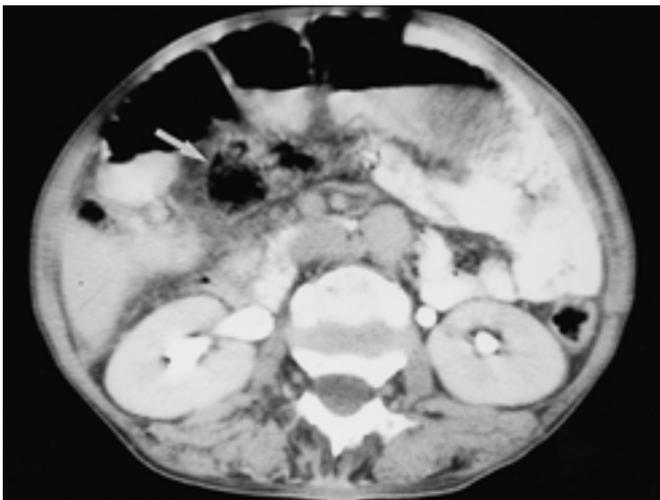
Fig. 4. Phytobezoar in 53-year-old man with small-bowel obstruction due to adhesions and bands. Contrast-enhanced CT shows a gas-containing mass (M) in dilated small bowel loop proximal to obstructed site (arrow). At surgery, gas-containing mass was proved as a phytobezoar.

(Fig. 4)
 (Fig. 5)

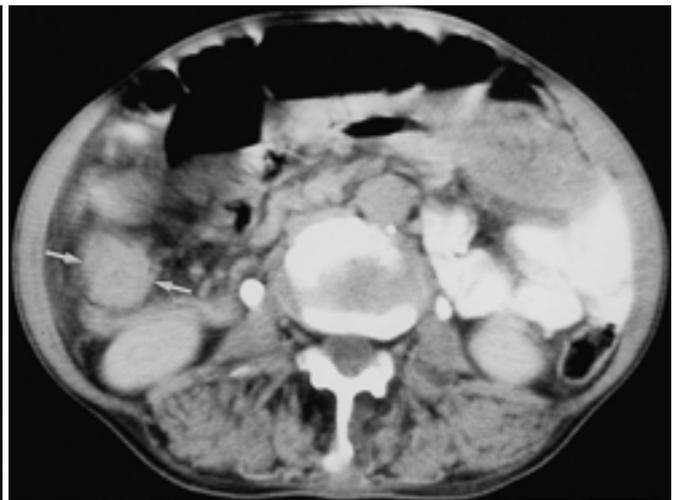
1
 1
 18 (95%)
 6 (32%) 가 .
 MR 1 , T1 -
 T2 -
 . T1 , T2
 (Fig. 6).

가 , 가

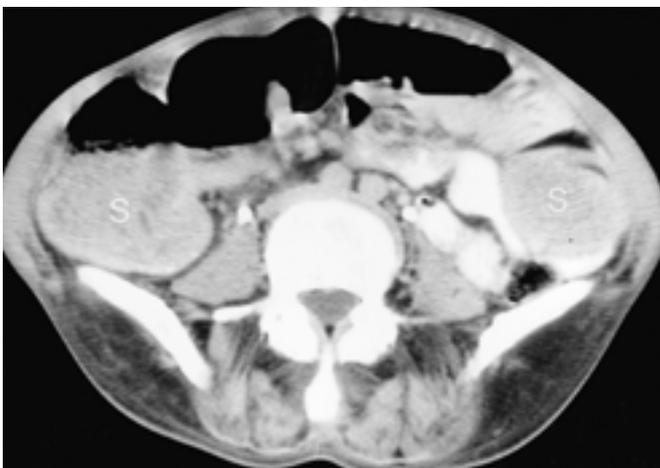
- - (2).



A



B



C

Fig. 5. 62-year-old woman with phytobezoar associated with tuberculous strictures.

A. Contrast-enhanced CT scan shows round, gas-containing mass (arrow) in jejunum. Note diffuse bowel dilatation due to tuberculous stricture of distal ileum.

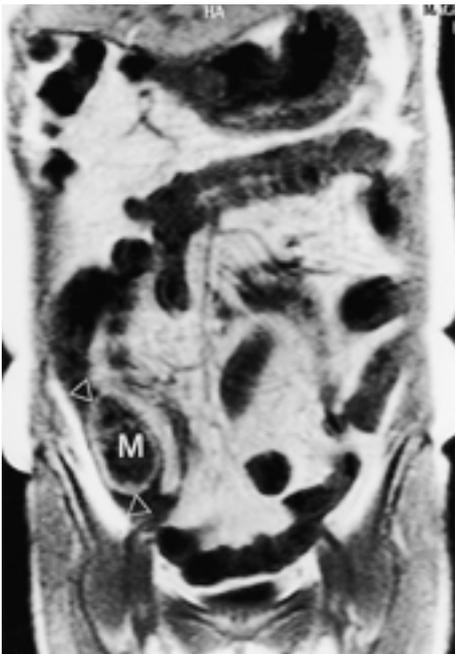
B. Contrast-enhanced CT scan 5 cm caudad to (A) shows concentric bowel wall thickening (arrows) of distal ileum with severe luminal narrowing. Right hemicolectomy was performed and multiple phytobezoars were found in small intestine at surgery.

C. Contrast-enhanced CT scan shows diffuse dilatation of the proximal small bowel loops (S).

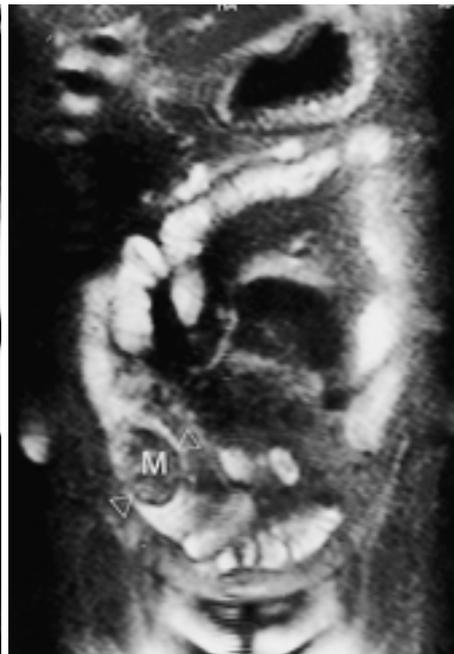
가 (22). 가 (23). 가 (14, 15). 가 (3, 5, 23). 가 (5). 가 (24). 가 (24, 25). 가 (17, 11, 13). 가 (wall) 가 CT (encapsulating wall) 가 CT (5). 가 CT (24). 가 CT (24, 25). 가 CT (17, 11, 13). 가 (wall) 가 CT (encapsulating wall) 가 CT (5). 가 CT (24). 가 CT (24, 25). 가 CT (17, 11, 13).



A



B



C

Fig. 6. 58-year-old woman with small bowel obstruction due to phytobezoar. **A.** Contrast-enhanced CT scan shows ovoid, gas-containing mass (M) at obstructed site. Note bowel wall thickening (arrows) at proximal loop remote from obstructed site. **B, C.** Coronal two-dimensional FLASH (117/4 [TR msec/TE msec], 70 ° flip angle) and HASTE (4/59 [TR msec/TE msec], 140 ° flip angle) MR images obtained 4 days after CT scan show hypointense intraluminal mass (M) in ileum. Note thin-rim of encapsulating wall (arrowheads) with hyperintensity on FLASH MR image (B) and hypointensity on HASTE MR image (C).

가 2

가

가

가

CT

가

(10, 14, 18, 19),

CT

가

MR

가

MR

T1 -

T2 -

가 가

T1

, T2

MR

가

(26).

MR

CT

가

가

CT

MR CT

, CT

가

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CT Imaging Features of Phytobezoar Associated with Small Bowel Obstruction¹

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Purpose: The purpose of this study was to evaluate the CT findings of phytobezoar associated with small bowel obstruction.

Materials and Methods: In 19 patients with phytobezoar associated with small bowel obstruction, two of whom had underlying small bowel disease, we analyzed the morphological characteristics of phytobezoars and changes in the bowel and perienteric regions, as revealed by abdominal Ct imaging.

Results: On CT, phytobezoars appeared as single or multiple, gas-containing masses in 17 patients (89%) and as a solid mass without gas in the remaining two (11%). An encapsulating wall was noted in six patients (32%). Among the 17 without underlying small bowel disease, the bowel wall was thickened in 13 (76%) at the obstructed site and/or the bowel proximal to the obstruction. Mesenteric vascular engorgement and haziness were seen in 18 patients (95%) and a small amount of ascites in six (32%). MR images of one patient showed the phytobezoar as a hypointense mass on all sequences.

Conclusion: CT imaging is useful for the diagnosis of phytobezoar associated with small bowel obstruction.

Index words : Bezoar

Intestines, stenosis or obstruction

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