

## ASPECTS OF DIAGNOSIS\*

# 'Beehive on the bladder': a sign of colovesical fistula

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### Summary

*The 'beehive' sign on the bladder as seen in cystograms is valuable in diagnosing the presence of colovesical fistula and is invariably associated with the vesical end of the fistulous tract.*

### Introduction

Williams (1) surveyed a collective series of 148 cases of intestinovesical fistulae and found that 23 were due to diverticulitis, 54 to carcinoma of the colon or rectum, 10 to carcinoma of the bladder, 8 to Crohn's disease of the lower ileum, 22 to trauma, and 11 to miscellaneous other causes. Of the several forms of faecal fistulae that may arise in connection with diverticulitis undoubtedly the most common is the colovesical. The estimated frequency of colovesical fistula with diverticulitis differs widely. Lett (2) found it to be about 4% in a consecutive series of 172 cases of diverticulitis and Edwards (3) noted a roughly similar incidence in 79 cases, while at the Lahey Clinic Colcock and Sass (4) reported that 7 (14%) of a group of 50 patients with diverticulitis had colovesical fistulae. In 75% of cases the patient is male as the uterus and adnexa provide a partial barrier in women (5). Pneumaturia is the most frequent presenting complaint.

Demonstration of the fistulous track has proved unusually difficult with a series of recommended investigative methods given in the literature (6). Intravenous pyelography in particular has been regarded as a poor contributor among the battery of tests proposed, but this paper reviews the study and suggests that it can be of value.

### Anatomical and clinical features

An understanding of the pattern of development of the colovesical fistula helps in defining the approaches to diagnosis (7). The involved bowel first becomes fixed to the peritoneal sur-

face of the bladder over an area of approximately 4 cm<sup>2</sup>. Limitation of movement of the bladder wall impedes efficient contraction, resulting in infection due to stasis of urine. Signs of bladder irritability may be associated with oedema of the bladder wall throwing up glistening folds of mucosa that may progress to ulceration. Fistula formation is nearly always associated with secondary infection; this is of particular relevance in cases of primary bowel carcinoma as it is not necessarily due to bladder wall invasion by the growth.

### Radiological diagnosis

Barium enemata may show the underlying cause but rarely the fistula itself, although 2 of our cases were in fact demonstrated in this way. In children colovesical fistulae are always associated with imperforate anus and therefore the intestinal end cannot be examined (8). Introduction of sterile iodised oil into the bladder has been tried, but also without success. An effervescent methylene blue preparation was given as an enema, but it still failed to show the fistulous track. Cystoscopy may fail to show the fistulous opening because of oedema of the bladder mucosa and cystitis glandularis, which may also be generalised in the bladder (9). Intravenous pyelography is an integral part of the routine investigation of these patients and we have observed the presence of distinctive bladder changes in 5 cases admitted over a 12-month period. The appearance of a triangular elevated part of the bladder wall has been directly related to the point of attachment of the fistulous tract at open surgery (Fig. 1). The bladder changes—namely, oedema and elevation of the bladder wall and mucosal folds—give a 'beehive' appearance on the cystogram (Fig. 2). These 5 cases included 4 with diverticular disease of the colon and one with Crohn's disease. The 'herald' sign as described by Sussman and Newman (8) suggests a crescent-

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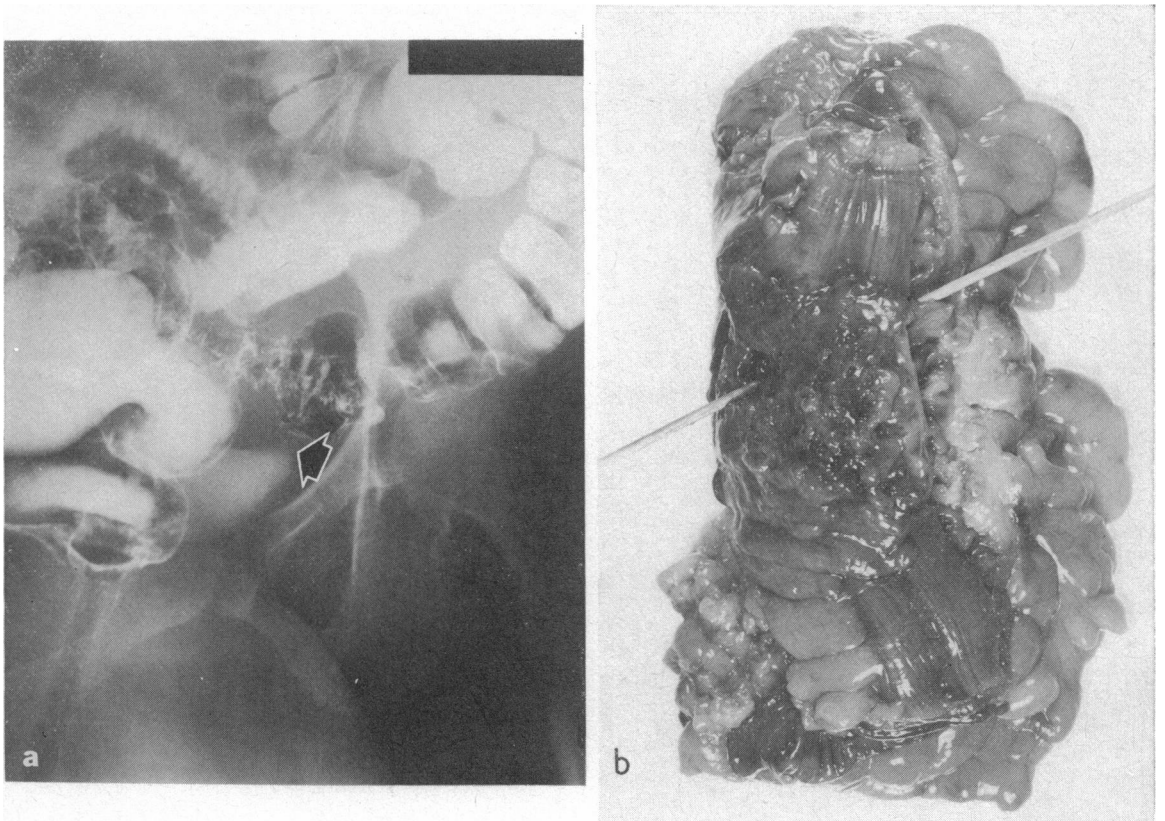


FIG. 1 Female patient aged 69 with diverticular disease of the colon. (a) Combined barium enema and cystogram showing the fistulous track and 'beehive sign'. (b) Mucosal and serosal surfaces of colonic part removed showing rod through fistulous track.

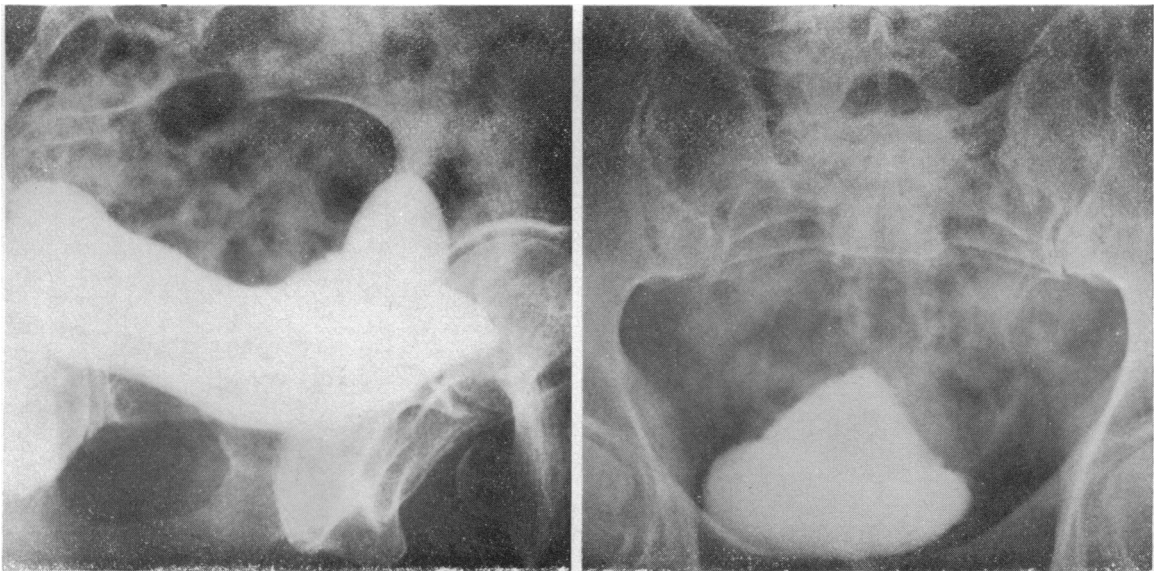


FIG. 2 Intravenous urograms (bladder views) in 2 cases showing 'beehive sign'.

tic defect on the upper margin of the bladder seen best in oblique views; it is suggested that this represents a perivesical abscess. In our experience the appearance of the bladder on the pyelogram shows a distinctively biconvex triangular defect—that is, a 'beehive'—ending in a clearly defined point which has invariably been associated with the vesical end of the fistulous tract at laparotomy.

This sign could be helpful in picking up colovesical fistulae in what is necessarily a routine investigative procedure in patients presenting with pneumaturia.

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