

## CARCINOMA IN THE BLADDER LEFT BEHIND

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Most transitional cell neoplasms of the bladder are thought to be caused by the excretion of unknown urinary carcinogens.<sup>1</sup> A defunctionalized bladder after ileal loop diversion would be protected from such carcinogens.<sup>2</sup> However, there is also strong clinical evidence that some vesical neoplasms, such as squamous cell carcinoma and

on severe chronic infection in bladders left behind after ileal loop diversion for neurogenic disease.<sup>6-8</sup> The proliferative inflammatory lesions associated with such infection might be expected to undergo neoplastic degeneration despite isolation from the urinary stream.<sup>9</sup> We recently observed this in 2 young paraplegic patients.

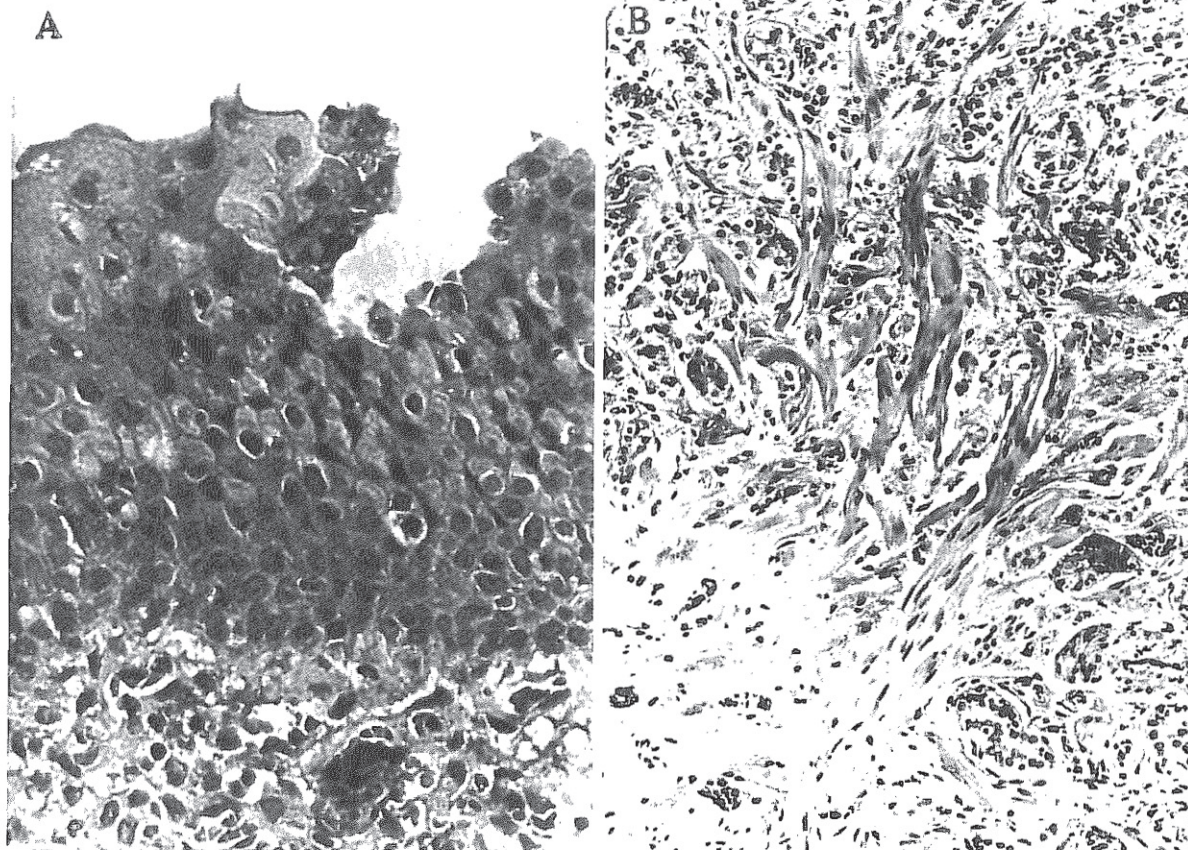


FIG. 1. A, carcinoma of bladder in situ with pyocystitis. B, invasive adenocarcinoma in smooth muscle of bladder with pyocystitis.

adenocarcinoma, are related to local irritation and inflammation.<sup>1, 3-5</sup> There are a number of reports

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<sup>1</sup> Jewett, H. J.: Tumors of the bladder. In: *Urology*. Edited by M. F. Campbell and J. H. Harrison. Philadelphia: W. B. Saunders Co., p. 1006, 1970.

<sup>2</sup> McDonald, D. F. and Lund, R. R.: The role of the urine in vesical neoplasm. 1. Experimental confirmation of the urogenous theory of pathogenesis. *J. Urol.*, **71**: 560, 1954.

<sup>3</sup> McIntosh, J. F. and Worley, G., Jr.: Adenocarcinoma arising in exstrophy of the bladder: report of two cases and review of the literature. *J. Urol.*, **73**: 820, 1955.

### CASE REPORTS

**Case 1.** A 25-year-old white man had had L3 spastic paraplegia since an automobile accident 3 years previously. He was treated with an indwell-

<sup>4</sup> O'Kane, H. O. and Megaw, J. M.: Carcinoma in the exstrophic bladder. *Brit. J. Surg.*, **55**: 631, 1968.

<sup>5</sup> Reddy, D. B., Rao, N., Venkateswararao, K. and Venkateswararao, N.: Squamous cell carcinoma of renal pelvis: associated with the calculus of the kidney. (A study of four cases with review of literature.) *Indian J. Cancer*, **6**: 27, 1969.

<sup>6</sup> Kickham, C. J. E. and Keegan, J. J.: The bladder "left behind". *J. Urol.*, **89**: 689, 1963.

<sup>7</sup> Kemp, D. R.: The forgotten bladder after urinary diversion. Report of a case of a sealed bladder. *Brit. J. Surg.*, **53**: 236, 1966.



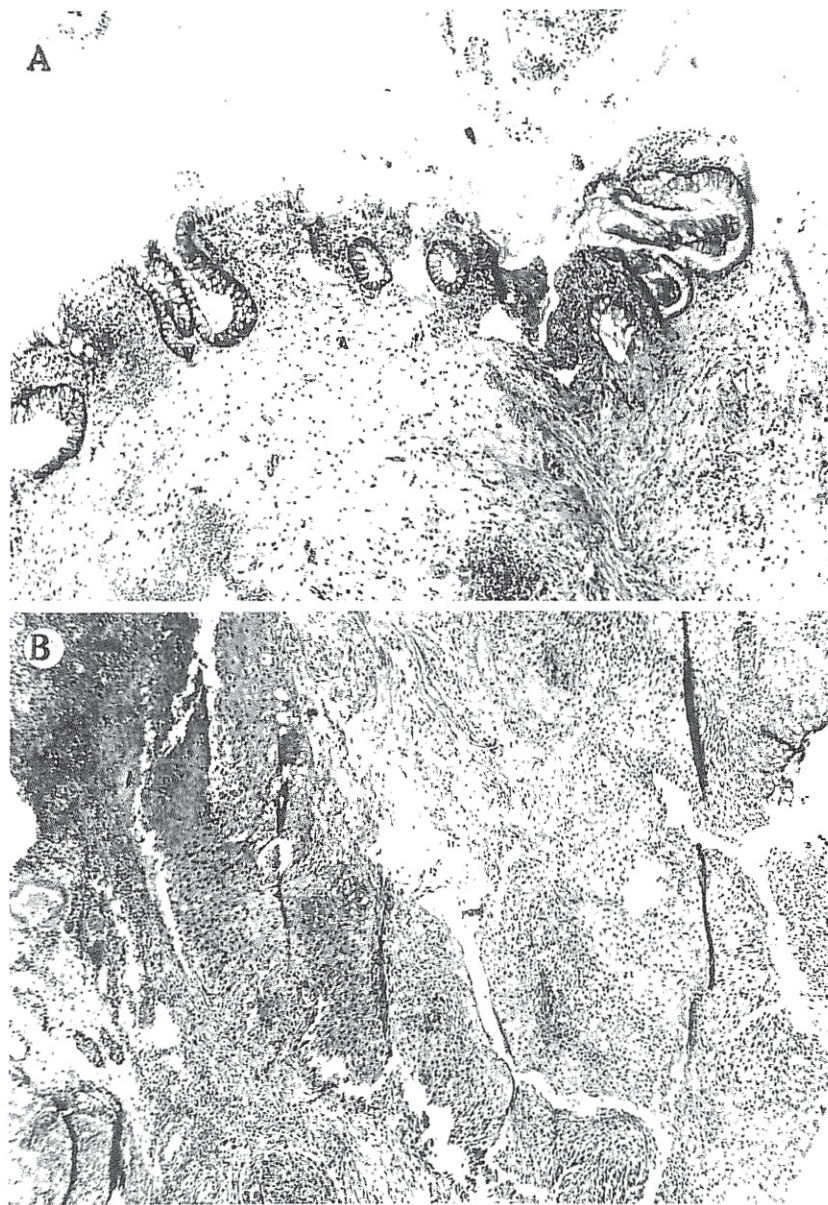


FIG. 2. A, columnar and squamous metaplasia in bladder with pyocystitis. B, poorly differentiated, invasive squamous carcinoma in bladder with pyocystitis.

ing Foley catheter for 2 years and then underwent ileal loop diversion for urethritis and recurrent sepsis. Since that time he had had a number of episodes of recurrent sepsis and a green purulent urethral drainage. He was seen by us 1 year after the diversion.

An excretory urogram revealed normal upper tracts and an ileal loopogram was normal. Serum creatinine was 0.7 mg. per cent and the blood urea nitrogen was 10 mg. per cent. A Foley catheter placed in the bladder per urethram drained 300 cc pus. The patient then became afebrile. Efforts at treatment with intermittent catheterization were

unsuccessful and the patient did not desire a bladder drainage procedure. Therefore, total cystectomy was performed and convalescence was uneventful.

Microscopic examination of the bladder revealed generalized squamous cell carcinoma in situ and invasive adenocarcinoma (fig. 1). The patient has been followed for a year with no evidence of metastasis.

*Case 2.* A 36-year-old white man had had C7 spared quadriplegia for 16 years. He had been managed with a urethral Foley catheter for 6 years and was switched to condom drainage after undergoing transurethral resection (TUR) of the membranous urethra. The urine remained continually infected but the upper tracts remained completely normal on pyelography. Three years previously he passed a small calculus per urethram and a year

<sup>a</sup> Gross, M. and Moore, C. A.: Management of the bladder left behind. *J. Urol.*, **103**: 612, 1970.

<sup>b</sup> Mostofi, F. K.: Potentialities of bladder epithelium. *J. Urol.*, **71**: 705, 1954.

later underwent litholapaxy for a large bladder calculus. Endoscopy revealed a superficial bladder tumor that was treated with wide TUR followed by cobalt irradiation (6,500 rads).

A year later the patient was doing well with no evidence of metastases. Endoscopy revealed no tumor but multiple mucosal biopsies revealed squamous and columnar metaplasia and dysplasia but not invasive carcinoma (fig. 2, A). An ileal loop diversion was performed and convalescence was uneventful. When he returned in 3 months for endoscopy frankly invasive squamous cell carcinoma was noted (fig. 2, B). Numerous cutaneous lesions developed which also demonstrated squamous cell carcinoma. The patient had a rapid downhill course and died.

#### DISCUSSION

Gross and Moore described 6 cases of severe pyocystitis in bladders left behind, 4 of which required cystectomy. One patient had squamous metaplasia but none showed neoplastic changes. Kemp reported a case of cystitis cystica and glandularis but no tumor.<sup>7</sup> In 1963 Kickham and Keegan warned that the severe inflammation and chronic irritation in such bladders could lead to neoplastic degeneration although this had not occurred in their patient.<sup>6</sup>

Mostofi outlined the potentiality of bladder epithelium to undergo pre-cancerous polypoid and metaplastic changes. He emphasized that columnar and squamous metaplasia can be a stage in the progression to adenocarcinoma and epidermoid carcinoma.<sup>9</sup> Edwards and associates reported a

well documented case of cystitis glandularis progressing to frank adenocarcinoma.<sup>10</sup> Other investigators demonstrated the deterioration of normal epithelium in the exstrophic bladder to adenocarcinoma.<sup>3, 4</sup> Reddy and associates noted 4 cases of squamous cell carcinoma of the renal pelvis associated with a staghorn calculus and severe chronic infection.<sup>5</sup>

The 2 cases reported herein emphasize the malignant potential of the diseased bladder left behind and often forgotten. In the first case the only reason for cystectomy was unmanageable pyocystitis in a young man. The neoplasm was in no way expected. The bladder had been isolated from any urinary carcinogenic effect for a year. If the cystitis had been managed more conservatively, the diagnosis would probably have been significantly delayed.

In the second case the patient was also young. However, in addition to being chronically infected the bladder had remained in contact with the urinary stream for 16 years. When neoplasm was first discovered, cystectomy would have been the best procedure. However, there was no evidence of recurrent neoplasm when we first saw the patient. The severe dysplastic changes were not ameliorated by isolation from the urinary stream with ileal loop diversion.

These cases show the need for cystoscopic followup of patients undergoing supravescical diversion.

<sup>10</sup> Edwards, P. D., Hurm, R. A. and Jaeschke, W. H.: Conversion of cystitis glandularis to adenocarcinoma. *J. Urol.*, 108: 568, 1972.