

# Extravasation from the Unused Bladder During Cystography: Case Report

**Mary M. Staffa, M.D. and Allan Naimark, M.D. C.M., F.R.C.P.(C)**

*Department of Radiology, University Hospital, Boston University School of Medicine, Boston, MA, U.S.A.*

---

## Summary

*Spontaneous, asymptomatic extravasation during retrograde cystography occurred in a quadriplegic patient who had been maintained on constant Foley catheter drainage for 7 years. This phenomenon has recently been described in a few anuric patients being studied prior to renal transplant and is probably related to the chronic disuse status of the bladder. It is a self-limiting process and, in the absence of a clinical reaction, only observation is warranted.*

**Key words:** *Spinal cord injuries; Retrograde cystography; Urinary bladder rupture.*

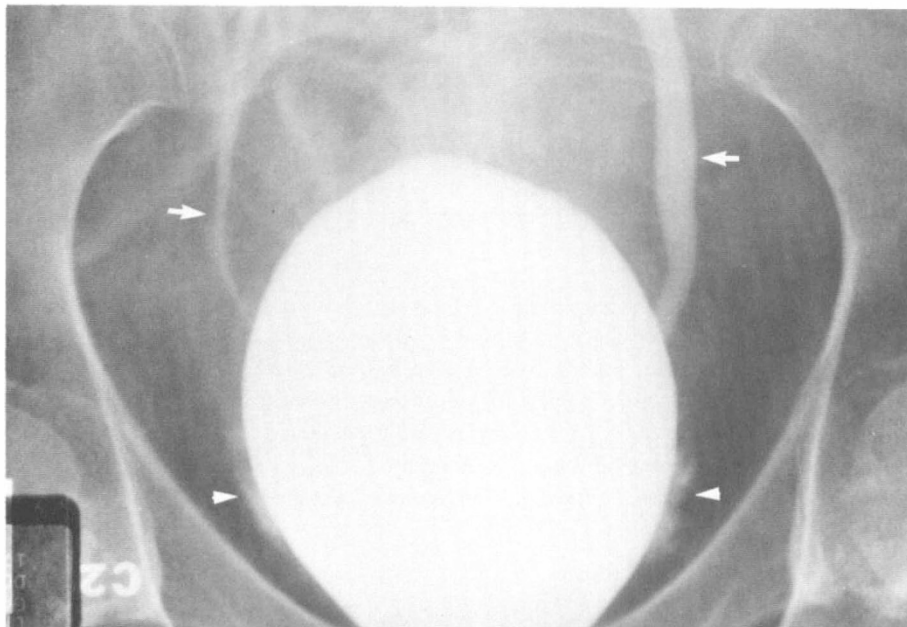
## Introduction

Asymptomatic, uncomplicated extravasation of contrast material from the urinary bladder during cystography has recently been described in anuric patients with unused bladders being evaluated as potential renal transplant recipients (Caroline 1985, Day 1985, O'Neal 1986). This phenomenon has not been described in a patient with normal renal function. We describe a patient from a totally different patient population in whom this phenomenon was observed—a patient with a neuropathic bladder on constant Foley catheter drainage.

## Case report

A 59-year-old female developed C5 quadriplegia in May, 1978 after surgery for an epidural abscess. She had been treated with constant Foley catheter drainage for a neuropathic bladder since 1978 and had developed multiple episodes of urinary tract infections. The patient was currently being evaluated for rehabilitation as her functional level had improved. She underwent retrograde

cystography as part of routine evaluation of her urinary bladder. 300 ccs of Renografin-60 (Diatrizoate Meglumine and Diatrizoate Sodium) was infused through the patient's indwelling Foley catheter using a gravity drip infusion technique. A radiograph after 200 ccs showed no evidence of extravasation. After 300 ccs of contrast material had been infused, bilateral reflux occurred and the infusion was immediately stopped. A radiograph at that time revealed extravasation of contrast material intramurally and into the perivesicular soft tissues bilaterally along the lateral aspects of the bladder wall (Fig. 1). A post-

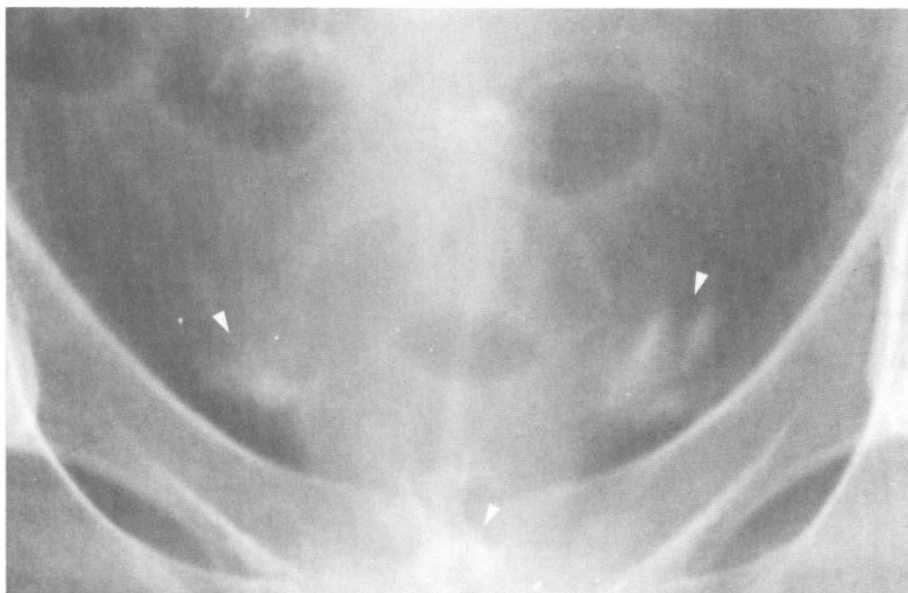


**Figure 1.** Antero-posterior view of the bladder following drip infusion of 300 cc's of contrast into the bladder via indwelling Foley catheter. Bilateral reflux (arrows) and intra-mural extravasation (arrowheads) have occurred.

drainage radiograph confirmed the presence of extravasated contrast material in the perivesicular soft tissues (Fig. 2). The patient experienced no symptoms related to the extravasation. There were no sequelae.

### Discussion

Extravasation from the urinary bladder secondary to trauma is usually a serious situation and often requires surgical treatment. Asymptomatic self-limited extravasation from the urinary bladder has recently been noted in anuric patients with unused bladders being evaluated as potential transplant recipients (Caroline 1985, Day 1985, O'Neal 1986). Since the patients studied were anuric, but with intrinsically normal bladders, Caroline (1985) theorised that the failure of the bladder to distend and empty regularly compromised its status as a water tight viscus. Caroline postulated that with sudden distention of the bladder beyond



**Figure 2.** Post drainage view of the bladder region confirms the extravasation (arrowheads).

its usual capacity, small tears could occur in the bladder mucosa, thus allowing contrast material to escape and dissect through fascial planes into the perivesicular soft tissues. Similarly Day (1985) invoked as the causative factor of extravasation in these anuric patients the hypertonicity and small size of their unused bladders leading to multiple splits in the mucosa during acute distention with cystography.

This benign, asymptomatic extravasation has not been previously described in a patient with normal renal function. The patient we describe is from a different patient population. As a result of constant Foley catheter drainage for 7 years, this patient's bladder was also 'unused'. As in anuric patients, the bladders of patients on constant Foley catheter drainage also do not undergo normal physiological distention and emptying. Thus the bladders of these patients may likewise be susceptible to mucosal injury and extravasation with acute distention during cystography. The possible contributing role of cystitis in our patient is unclear. As her clinical course was so benign, she was not cystoscoped.

At the New England Regional Spinal Cord Injury Center of Boston University, there are approximately 144 admissions each year. Fifteen percent of the patients (7.5% of the males and 49.5% of the females) are managed with constant Foley catheter drainage. All patients have a retrograde cystogram as part of their workup. Thus, a sizeable number of cystograms are performed each year at our institution in spinal cord injury patients whose bladders are 'at rest'. We cannot explain why extravasation in neurological patients of this type has not been previously reported in view of the thousands of cystograms which have been done world wide. It is doubtful that it would be missed. Most probably it is an exceedingly rare phenomenon.

The asymptomatic, self-limited, and benign nature of this phenomenon should be emphasised. Its occurrence should not preclude use of retrograde cystography in the routine evaluation of patients with neuropathic bladders on constant Foley catheter drainage. This case demonstrates, once more, the disadvantage of the Foley catheter. If intermittent catheter drainage could be used, this complication should not occur.

### References

- CAROLINE DF, POLLACK HM, BANNER MP, *et al.* 1985 Self-limiting extravasation in the unused urinary bladder. *Radiology* 155:311-313.
- DAY DL 1985 Extravasation of contrast material from unused bladders during voiding cystourethrography. *Radiology* 155:105-106.
- O'NEAL WK, NAIMARK A, BABAYAN RK, *et al.* 1986 Asymptomatic extravasation of contrast material in the unused bladder. *Transplantation* (in press).