## **CASE REPORT**

# NON-OPERATIVE MANAGEMENT OF EXTRA-PERITONEAL RUPTURE OF THE URINARY BLADDER IN A TETRAPLEGIC PATIENT

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**Summary.** A 65-year-old male sustained a cervical spine injury and simultaneous extraperitoneal rupture of the urinary bladder. Because of co-existent severely impaired respiratory function the vesical rupture was managed conservatively and bladder drainage was provided by a 24 Fr. indwelling urethral catheter. Serial cystograms performed at 4, 7 and 9 weeks post-injury showed complete healing by 63 days. We suggest that non-operative management of vesical rupture should be considered in selected patients with associated serious other body system involvement.

Key words: Tetraplegia; Urinary bladder rupture; Non-operative management.

### Introduction

THE BLADDER is infrequently injured because of its deep location within the bony pelvis. The type of injury depends upon the volume of urine contained in the bladder at the time of trauma and associated ligamentous or pelvic osseous injury. Extraperitoneal rupture comprises 44 per cent of vesical trauma. Bladder injuries are potentially fatal, so early repair of the rent and drainage is the well-known treatment modality. However, in some selected patients with associated serious trauma e.g. head, chest or spinal injury, non-operative management can also be helpful, thus avoiding the risks and complications of an additional abdominal operation in a critical situation. The following case report illustrates this opinion.

### Case report

A 65-year-old male fell some 12 feet from a roof, when he got up from sleep to urinate. Immediately after injury he was unable to sit up or move all four limbs. At another hospital he was catheterised (400 ml of blood stained urine was drained) but could not void thereafter. When he was brought to the emergency urology service of this centre 60 hours later he was found to be anaemic and dehydrated with a pulse rate of 104/minute, respiratory rate 26/minute and blood pressure of 80/60 mmHg. Air entry was poor in the right hemithorax. Sensation was diminished below C-5 and motor power was grade 'iv' in the upper limbs and grade 'o' in the lower limbs. The abdomen was not distended and there was no rigidity. No mass was palpable. Anal and bulbocavernosus reflexes were absent. Rectal examination revealed no dislocation of the prostate.



I.V.P. Bladder film shows extraperitoneal extravasation of contrast from the urinary bladder.

The blood urea was 125 mg per cent, serum creatinine 1.0 mg per cent, Hb. 9.8 G per cent and PaO<sub>2</sub> 68 mmHg. X-rays of the cervical spine showed a posterior dislocation of the C-5 vertebral body. The peak expiratory flow rate was 60 l/minute (normal: 370 L/minute). High dose excretory urography revealed normal upper urinary tracts but there was extraperitoneal extravasation of contrast medium from the urinary bladder (Fig. 1). In view of the compromised pulmonary function and acute cervical spine injury a decision was taken in favour of non-operative management of the vesical rupture. Indwelling urethral catheter drainage was established with a 24 fr. Foley catheter. Special concern was shown towards meatal catheter care with povidone iodine ointment, and a closed drainage system established. After 32 days intermittent catheterisation was instituted. Serial cystography (ultrasonography is not available in this centre yet), performed at 28 and 63 days post-injury showed gradual decrease in the extent of extravasation from the bladder (Fig. 2), which ceased totally by nine weeks (Fig. 3).

Gardner's cervical traction was applied by the neuro-surgeons for 37 days and later a cervical collar was prescribed. The hospital stay was stormy, as he aspirated gastric contents, became hypoxic and developed generalised seizures. He was maintained on intravenous alimentation for 18 days, after which steady improvement ensued. By the time of discharge, on the 66th day of hospitalisation, he could sit up with support. Motor power was grade 4 in the upper limbs and grade 3 in the lower limbs. Peak expiratory flow rate was 140 L/minute. The sacral decubitus ulcer which he developed earlier had healed.

### URINARY BLADDER RUPTURE



FIG. 2 Cystogram performed four weeks post-injury reveals a decrease in the extent of extravasation.



No extravasation of contrast is observed in the cystogram performed nine weeks post-injury.

## Discussion

Pulmonary infection/insufficiency is the commonest cause of death in tetraplegic patients (Ravichandran and Silver, 1982; Sachdeva *et al.*, 1982). It was fortunate that the present patient, who had severely compromised pulmonary function, could be managed successfully with physiotherapy and oxygen administered through a Polymask. Due to lack of facilities we could not provide respiratory rehabilitative measures of the type suggested by Cheshire and Flack (1978).

A significant number of traumatic tetraplegic patients sustain other organ injuries (Harris *et al.*, 1980; Sachdeva *et al.*, 1982). Diagnosis of associated abdominal injury in a tetraplegic could prove to be difficult as it was in this case and would require the deployment of radiological facilities without delay. Unrecognised visceral perforation often proves fatal in the spinal cord-injured (Walsh *et al.*, 1974). Although increased abdominal muscle tonus, referred pain to the shoulders, and nausea should suggest an abdominal catastrophe, it is understandably difficult to diagnose precisely the nature of such a complication. Visceral sensation from the abdominal organs is said to occur by vagal transmission, and studies have shown that tetraplegics are able to appreciate hunger pangs (Crawford and Frankel, 1971). This patient did not complain of abdominal pain even though he had an incomplete C-5 lesion. Prompt performance of high dose excretory urography based upon the history of haemorrhagic urine being recovered at the initial catheterisation helped us to diagnose associated vesical rupture.

Since emergency surgery in a traumatic tetraplegic patient would most likely increase morbidity and mortality from the associated respiratory impairment we decided on conservative management for the vesical rupture. Such management of vesical rupture by indwelling catheter drainage has been carried out in patients without associated abdominal injury (Richardson and Leadbetter, 1975), as well as in those with concomitant serious major body system injury (Hayes et al., 1983). We believe that, barring the situation where there is arterial bleeding from the rent in the wall of the bladder or where the rents are large or multiple resulting in compromise in the reservoir function of the bladder, a non-operative regimen could be considered particularly in patients with co-existent serious injuries as was the case in our patient. Such conservative measures could be adopted even in those in whom vesical rupture is diagnosed after a delay of 48 hours. Antibiotic coverage for gram-negative urinary pathogens is essential. Intermittent catheterisation can be instituted after the extent of leak from the bladder is reduced, thereby reducing the period of indwelling catheterisation.

### Conclusion

The authors report a male patient of 65 years with a cervical spine injury, complicated by an extraperitoneal rupture of the urinary bladder and impaired respiratory function. In view of the latter, the ruptured bladder was treated conservatively, without operation, with success. A plea is put forward for a conservative approach under similar difficult circumstances.

#### Résumé

Un homme âgé de 65 ans a reçu une blessure de la vertèbre cervicale et une rupture extrapéritonéale simultanée de la vessie urinaire. A cause de la coexistence d'une altération sévère de la fonction respiratoire on a traité la rupture vésicale de façon conservatrice et on a fourni un drainage vésical au moyen d'une sonde uréthrale à demeure de 24 Fr. Des cystogrammes sériaux exécutés à 4, 7 et 9 semaines après la blessure ont montré une guérison complète au bout de 63 jours. Nous proposons qu'on devrait considérer le traitement non-operatif de la rupture vésicale chez des malades choisis où il y a une implication grave d'un autre système corporel.

#### ZUSAMMENFASSUNG

Ein 65-jähriger Mann hat eine Halswirbelverletzung und einen gleichzeitigen extraperitonäalen Bruch der Harnblase gelitten. Wegen der zugleich vorhandenen stark beeinträchtigten Atmungsfunktion hat man den Blasenbruch erhaltungsmässig behandelt, und die Blasendränage durch einen urethralen Verweilkatheter von 24 Fr. vorgesehen. Serienzystogramme, die man 4, 7 und 9 Wochen nach der Verletzung ausgeführt hat, zeigten eine völlige Genesung nach 63 Tagen. Wir schalagen vor, man sollte nichtoperative Behandlung des Blasenbruchs bei ausgewählten Pazienten mit verbundenem starkem Ergriffensein von anderen Körpersystemen erwägen.

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