
Hospital Topics

Management of obstructed balloon catheters

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Abstract

Failure of a balloon catheter to deflate is not uncommon and prevents its removal. Methods of overcoming the problem include traction, bursting the balloon by over-inflation, dissolving it with solvents, puncturing it percutaneously with a needle, or puncturing it with a wire stylet passed through the catheter. All except the last technique have major disadvantages and are of questionable safety. Transcatheter puncture of the balloon was used in 16 patients to remove obstructed balloon catheters without any technical difficulty, distress to the patient, or complication. The procedure is safe, simple, and does not require an anaesthetic. If necessary it could be performed safely by nursing or paramedical staff without the patient having to be admitted to hospital. It is the method of choice for the management of this problem.

Introduction

Balloon catheters are widely used in medical and surgical practice most commonly in the urethra to decompress the urinary bladder. They are also sometimes used in more inaccessible places, such as the intestine, gall bladder, and renal pelvis. Removal of the catheter is difficult or impossible when the self retaining balloon fails to deflate after aspiration of its

contents has been attempted. Unless there is a faulty inflation valve, which can simply be cut off to permit spontaneous decompression of the balloon, this is most likely to be due to intraluminal obstruction of the balloon inflation channel or to a primary defect of the balloon itself.

Many different methods of overcoming this problem have been described.¹⁻³ One of the most simple and effective is to thread a ureteric catheter wire stylet along the balloon inflation channel to dislodge the obstruction or puncture the balloon. Although this technique has been used routinely by urologists for at least 30 years, it is not widely known to those outside the urological specialty. We describe the procedure in detail and report the results obtained in 16 patients.

Materials and methods**EQUIPMENT**

The equipment, which must be sterile, consists of a size 3-5 French gauge ureteric catheter (Portex, Hythe, Kent CT21 6JL), a catheter tipped irrigating syringe (C R Bard International, Sunderland, Tyne and Wear SR4 9EW), 500 ml saline or water for irrigating the bladder (Travenol Laboratories, Egham, Surrey TW20 8HY), water soluble lubricating jelly (Johnson and Johnson, Slough, Berkshire SL1 4EA), scissors (Rolon, Watford, Hertfordshire WD2 4XX), and sterile gloves (LRC Products, London E4 8QA). In addition, disposable drapes, swabs, forceps, a receiver, and a sachet of antiseptic solution are required; these items or suitable alternatives are readily obtainable in sterile catheterisation packs prepared by most area health authorities or available commercially (Johnson and Johnson). If the bladder is to be recatheterised a new self retaining Foley catheter and sterile catheterisation pack should also be available. A good light such as an Anglepoise is essential, and a trolley on which the equipment can be assembled is helpful.

PREPARATION

Before starting it is advisable to make sure that help is available, the equipment complete, and the patient properly prepared. Ideally

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two operators should be present: one to perform the procedure and the other to open equipment and position the patient, although it is possible to carry out the procedure singlehandedly.

The equipment is opened taking care to maintain sterility. The operator scrubs and puts on sterile gloves; the assistant should also wear sterile gloves. The operator opens the catheterisation pack and places a sterile drape flat on the trolley or, if this is not available, on a suitable "clean" surface conveniently near the patient. Using a non-touch technique, the assistant opens the ureteric catheter, irrigating syringe, and scissors and places them on to the drape. Some irrigating fluid is poured into the receiver, and a generous portion of lubricant dropped on to a swab. The operator withdraws the wire stylet from the ureteric catheter and discards the catheter. Finally, the equipment is checked and made ready for use (fig 1).

It is important to explain to the patient what is happening and what the procedure entails. Premedication with diazepam, to dispel undue anxiety and help the patient to relax, should be administered before the equipment is assembled to give it time to take effect. The procedure is best performed with the patient supine but can also be done with him seated—for example, in a wheelchair. The assistant should make sure that the patient is comfortable, there is adequate access to the external genitalia and retained catheter, and the light is properly adjusted. Finally, the assistant collects a catheter specimen of urine, which is sent to the laboratory for culture.

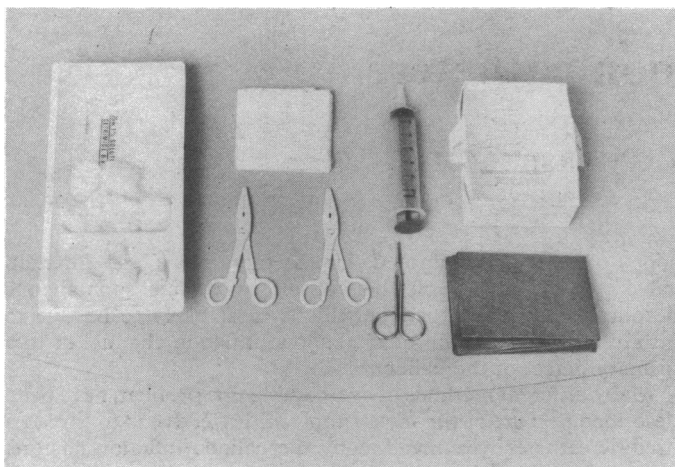


FIG 1—Assembled equipment ready for use with wire stylet in foreground.

TECHNIQUE

Every effort must be made to keep the procedure aseptic and reduce the risk of infection. Firstly, the genitalia and retained catheter are thoroughly cleaned with antiseptic solution applied with swabs held

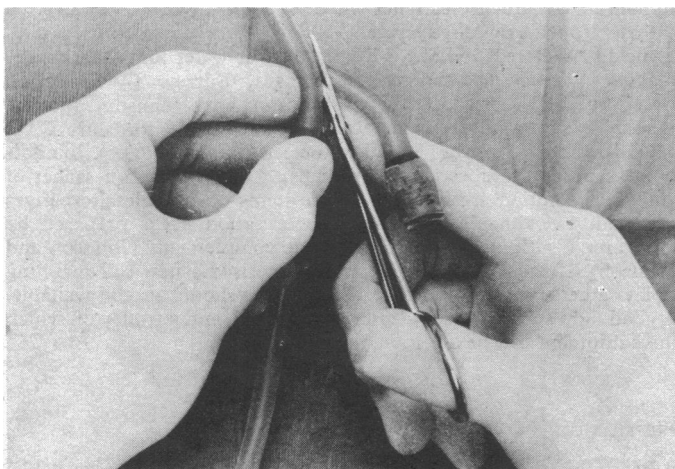


FIG 2—Inflation valve cut off flush with catheter.

in forceps. Sterile drapes are arranged around the genitalia and beneath the catheter to define the operating field. The inflation valve of the balloon is cut off flush with the body of the catheter (fig 2) and discarded. The ureteric wire stylet, liberally smeared with lubricant, is then carefully inserted into the inflation channel through the cut (fig 3). Care is required to ensure that it does not become contaminated by touching the skin of the operator or patient. Using a gentle side to side rotation, the stylet is moved slowly along the lumen of the inflation channel. If its progress is stopped by an obstruction, which is usually a particle of foreign material, this is easily dislodged by further manipulation of the wire, and the balloon slowly deflates after the stylet is removed. Alternatively, the stylet is advanced until it enters the self retaining balloon itself, when further manipulation punctures the balloon and results in sudden decompression (fig 4); the stylet is then withdrawn. Provided that the catheter is in the bladder, before it is finally removed the bladder should be thoroughly irrigated to wash out any foreign bodies or retained fragments of balloon. If the catheter is impacted in the urethra, however, irrigation of the bladder should not be attempted.

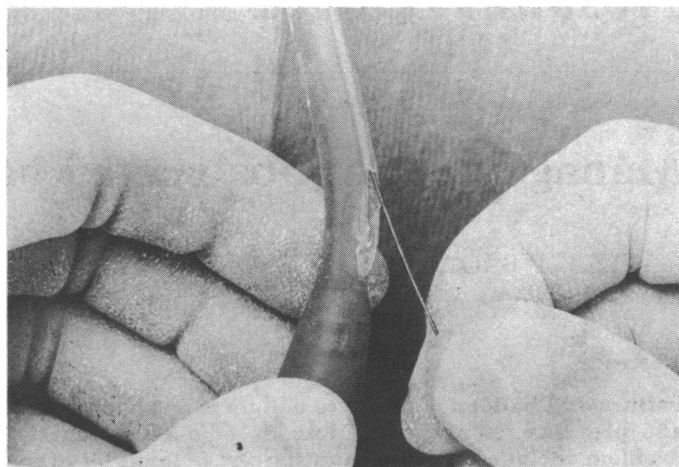


FIG 3—Lubricated stylet introduced into balloon inflation channel and moved to site of obstruction.

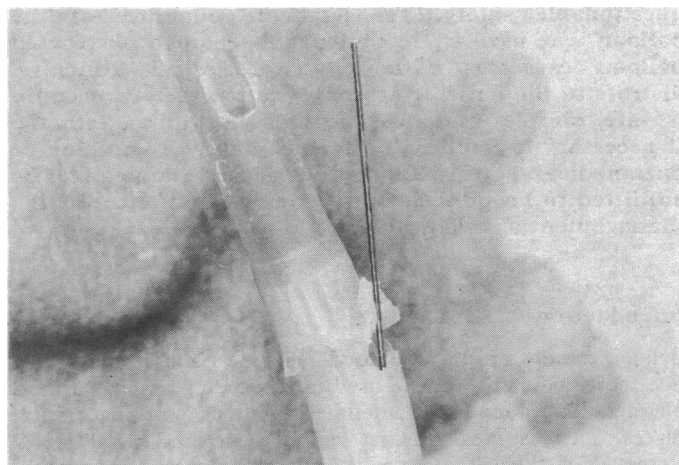


FIG 4—Obstructed balloon punctured by end of wire stylet (note fragmented balloon latex).

Patients and results

Balloons were punctured as described above in 16 patients (nine women and seven men aged 47-83 (mean 61) years) to permit removal of obstructed catheters. The catheters were in the bladder (11 patients), the caecum (three), and the gall bladder (two). Five patients with bladder catheters were referred to hospital specifically for management of the retained catheter, and in the remaining 11 numerous previous attempts to remove the catheter had failed. In all cases the

catheter was easily removed with no technical difficulty, distress to the patient, or complications. Three women required heavy sedation to allay anxiety because of previously unsuccessful attempts to remove the catheter.

Discussion

Many different methods of removing obstructed self retaining catheters have been described. These include forceful or gradual traction,¹ rupture of the balloon by overinflation,¹ dissolution of the balloon by injection of organic solvents,¹⁻³ and percutaneous puncture of the balloon using a spinal needle.^{1,2} The outcome of all except the last of these procedures is unpredictable, and it is not uncommon for several different methods to be attempted before the catheter is finally removed. Two of them depend on a patent balloon inflation channel for injection of sterile water or solvent into the balloon, but obstruction of its lumen is often the root cause of the problem. Percutaneous balloon puncture is usually recommended only under ultrasound or radiological control² and local or even general anaesthesia, and the patient may need to be transferred to a hospital where specialist services are available. These methods therefore have major disadvantages and limited applications.

The advantages of the technique we describe are obvious. It is non-invasive, does not injure adjacent organs, and can be used at any anatomical site without fear of complications. As there is no discomfort to patients an anaesthetic is not required. Moreover its safety, simplicity, and reliability make it ideal for use outside hospital. The number of patients reported on is small, but this is a tribute to the quality control of manufacturers of catheters as faulty catheters are relatively rare. Nevertheless,

a self retaining catheter stuck fast in a patient is troublesome, and our results show that transcatheter puncture of the balloon is a safe and reliable method of removal.

A not inconsiderable number of patients undergoing long term urinary drainage with self retaining catheters are managed in the community. Many are elderly, incapacitated, or chronically sick, and routine catheter changes may have to be carried out by the general practitioner or district nurse in the nursing home, general practitioner's surgery, or patient's home. Failure of a catheter balloon to deflate often results in the patient being admitted to hospital for further management, which puts a disproportionate strain on health care resources. In addition, unexpected transport to hospital is often difficult and distressing for patients who are immobile or have other major disabilities. It could be avoided by nursing or paramedical staff using the technique of transcatheter puncture of the balloon. Whatever may be said about hospitals, patients do not like them. Anything that permits safe treatment within the community and reduces the need for hospital referral is surely of value. A greater awareness of this procedure should help the management of patients with self retaining balloon catheters.

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References

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Are homosexual men vulnerable to contracting diseases from intestinal organisms. If so what are the diseases?

Intestinal organisms may be transferred between male homosexuals as a result of sexual activity, and an increasing number of cases are being reported from the clinics. The mode of transmission is usually directly by oroanal transfer or in some cases indirectly by orogenital contact. Group sex is another factor in the spread of intestinal infections. A wide range of infectious organisms such as giardiasis, amoebiasis, shigellosis, and enterobiasis have been reported, and occasionally unusual organisms are detected. Doctors responsible for the medical care of homosexual men should be alert to the possibility that gastrointestinal symptoms in these patients may result from intestinal bacterial or parasitic infections. Symptomless infections and a carrier state may also occur, so careful microbiological and parasitological tests are essential.—R D CATTERALL, retired consultant physician in genitourinary medicine, London.

I have been told that if a patient is taking the pill she should be advised to take additional contraceptive precautions when a broad spectrum antibiotic is prescribed. Is this true, and should girls with acne who are taking low dose tetracycline do so?

Broad spectrum antibiotics interfere with the enterohepatic circulation of both natural and synthetic oestrogens, which is dependent on intestinal bacteria. This effect leads to increased faecal excretion and reduced blood concentrations of these steroids. Thus the safety margin for contraception is reduced but the risk appears to be small: only 23 cases of oral contraceptive failure associated with treatment with penicillins (mainly ampicillin alone or in combination) were listed in a recent review.¹ Probably the recent tendency towards using lower dose oral contraceptives has reduced the margin of efficacy so that a relatively minor interference with absorption can lower oestrogen concentrations (below those required to inhibit ovulation) more readily than is the case with 50 µg pills. There is a large interindividual variation in blood concentrations from similar doses and identifying those at risk is difficult, though breakthrough bleeding is an early sign of low blood oestrogen concentrations. Since treatment with broad spectrum antibiotics is usually given for short

periods, additional contraceptive cover would seem wise, particularly if treatment is given in the first half of the cycle. It should be remembered that the risk of contraceptive failure (which is greater the lower the dose of oestrogen) is also dependent on compliance, is increased if drug absorption is reduced by diarrhoea or vomiting, and may even be greater in vegetarians, in whom changes in intestinal bacteria lead to an increased faecal loss of oestrogens and lower blood concentrations compared with omnivores.² Contraceptive failure is unlikely in girls treated with low dose tetracycline for acne, though a 50 µg oestrogen pill is recommended.³—S L JEFFCOATE, professor of obstetrics and gynaecology, London.

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What might be the cause of a foul smelling nipple in a woman? There is no apparent discharge.

The important question is whether the foul smell is noted by the medical attendant or complained of by the patient. If the former, and the odour is confined to the breast alone, there must be an organic basis and this should be discovered on careful and, if necessary, repeated examination. The possibilities are an infected and discharging gland of Montgomery (one of the modified sebaceous glands of the nipple areola); an infected mamillary fistula, which gives rise to recurrent breast infections; or duct ectasia, which may produce the discharge of cheesy material from the nipple. Often the underlying bacterial infection is due to a mix of organisms, including anaerobic *Bacteroides fragilis*, which is responsible for the odour. Away from the nipple itself, intertrigo in the submammary fold in an obese woman may give rise to a most unpleasant odour. If it is the patient who is the complainant and there is nothing clinically amiss on careful examination, then we must suspect a psychogenic cause, just as in patients who complain bitterly of bad smells from other parts of the body with nothing obvious to the observer.—H E ELLIS, professor of surgery, London.