A PROSPECTIVE SUTDY OF ETIOLOGICAL FACTORS IN NONDEFLATABLE FOLEY'S URETHRAL CATHETERS AND EVALUATION OF A DEFLATION TECHNIQUE

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Abstract: A prospective study was conducted on 27 cases of non-deflatable self-retaining foley's urethral catheters, comparing a number of variables like age, sex, disease, duration of catheterization, and type of catheter used. In addition, evaluation of a simple method of deflation of the balloons in stuck catheters carried out and the procedure is described. No definite conclusion is drawn as for the cause of obstruction to the balloon concerned. However, percutaneous suprapubic needle puncture without ultrasonic or radiographic assistance is found to be a safe, simple and effective technique for deflation of obstructed balloons of the catheters.

Introduction

Inability to deflate the balloon is a well recognised occasional complication of indwelling urethral catheters.[1] Phosphatic encrustation of balloon[1] and blockage of inflation channel[2] are supposed to be the major factors in causing failure of deflation of balloons. As yet there is no available documentary evidence regarding the share which these two factors hold in causation of this complication. Similarly, no study is available regarding the effect of variables which could possibly be a factor in blocking the inflation channel.

Various methods of removal of such non-deflatable retained catheters have been documented in literature,[1-5] which include, chemical dissolution, passage of ureteral catheter stilet through inflation channel, Urethrotomal puncture and suprapubic needle puncture under radiological or ultrasonic control.

In this article study of a number of possible variables which could lead to the obstruction of the inflation channel is carried out. In addition, a safe and simple technique of deflation of catheters is discussed.

Material and Methods

Details of Age, Sex, disease necessitating the catheterization, duration of catheterization, quality of catheter and fluid used for the inflation of balloons were documented for each case of non-deflatable latex foley's catheter.

A procedure was adopted to deflate the balloons. Initially 5-10 mls of water in a syringe is tried to be injected through inflation channel in order to negotiate any temporary obstruction due to debris. If no success is achieved to deflate the balloon, the catheter was labelled as obstructed.

Following techniques were tried to achieve deflation.

1. Suprapubic needle puncture: In this method slight traction on catheter is maintained by an assistant. The balloon is further fixed with the help of a finger put in the rectum of the patient. LP needle is then inserted through suprapubic region per cutaneously in the direction of balloon angling it downwards and backwards till the balloon gives a feel of deflation to the finger inserted in rectum. As soon as deflation is achieved the catheter is pulled out by the assistant who is already exerting mild traction on it.
2. Percutaneous needle puncture through perineum: This method was used in one case where balloon got stuck in a false passage during catheterization.
3. Two cases of encrustated balloons where above methods failed and inflation channel was patent, 15 mls of Ether was injected and the encrustated balloons were dissolved.
   All cases were followed up for one week for complications.

Results

In all 22 males and 5 females presented with this complication over a period of one year. The ages of the patients varied between five years to eighty years with the mean age of 52 years. Thirteen out of twenty-seven cases were above the age of fifty years.

Following is the split of diseases for which catheterization was done: —

Name of the Disease	*No. of Cases*
Benign prostatic hypertrophy	10
Post Operative	6
Bladder Stone	2
Spinal Injury	2
Road Traffic Accidents	2
Neurological Disease	3
Miscellaneous	2

Duration for which patients remained catheterized ranged from six hours to twenty-eight days with a mean of nine days.

Sixteen out of twenty-seven (59.3%) catheters used were of cheap brands while the rest were of well recognised reputable manufacturers. In two of the cases the fluid used for inflation was distilled water, while in twenty-two cases boiled water from sterilizer was used and in remaining five cases exact history was not traceable.

Percutaneous suprapubic puncture technique of deflation was used in twenty-four cases without evidence of a single complication. One case of retention of catheter in urethral false passage was treated through perineal percutaneous needle puncture and he remained uneventful. However, in both

the cases of chemical dissolution with Ether gross chemical cystitis followed which eventually subsided over few days.

Discussion

No significant correlation between the age, sex and disease necessitating catheterization to the obstructed balloons could be established in this study. Regarding the relation of duration of catheterization to nondeflatability of balloons it has been documented that catheters left in bladder for prolonged period may develop harding due to phosphatic encrustation and may not deflate even when the water of balloon is completely evacuated. In most of our cases the cause of nondeflatability was blockage to the inflation channel rather than encrustation. This blockage could not be correlated with duration of catheterization as one catheter was found stuck after six hours only. It is therefore, speculated that the cause of block is either a manufacturing fault or channel deposition of the salt present in water used from the sterilizer. Further study is required to establish the above mentioned hypothesis.

Regarding deflation procedure our method of percutaneous suprapubic needle puncture without help of special aids has proved to be simple, cheap, free of complication and convenient. Various methods mentioned in the literature involve either X-Ray or ultrasonic control for percutaneous puncture. These methods are not readily available everywhere in Pakistani Hospitals or BHUs and are perhaps un-necessary for most of the cases.

Chemical dissolution of balloons must be avoided far as possible due to its danger of causing chemical cystitis and necrosis of bladder mucosa.

Conclusion

1. Possible variables responsible for causation of nondeflatability of balloons in self-retaining foley's catheters were compared and no definite correlation could be established. (Further study is suggested to establish the cause of inflation channel blockage by comparing the effect of boiled water with distilled water used for inflation of Catheters).
2. A simple, convenient and safe technique of deflation of the balloons by suprapubic needle puncture in such catheters is described.

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