

# Psychogenic urinary retention associated with head down tilt bed rest: A rare medical complication

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## INTRODUCTION

We describe a case of recurrent urinary retention (UR) during 12 degree head down tilt (12° HDT) bed rest during the 2-campaign Space-COT study.

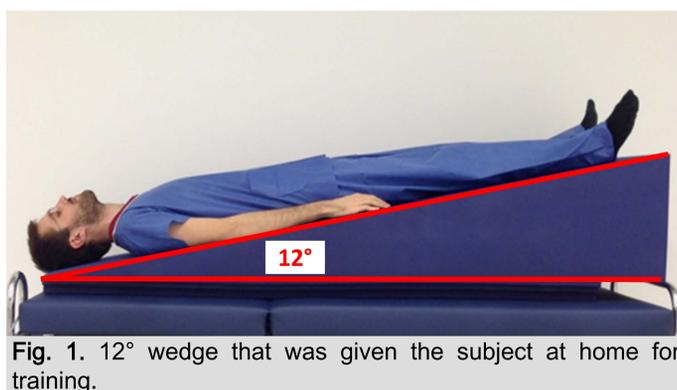


Fig. 1. 12° wedge that was given the subject at home for training.

## CASE

A 47 yr. healthy ♂ subject with no previous urological conditions developed recurrent, UR during 12° HDT. The first episode occurred 3 h after transition from upright to HDT. A bladder ultrasound scan confirmed a highly distended bladder.

The subject was given further time to void but developed lower abdominal pain, and was still unable to void. A disposable straight catheterization was performed to empty the bladder, which returned > 1000 ml of urine with immediate relief of discomfort.

During the next urinary collection, the subject was again not able to urinate in HDT position. Thus the decision was made to place an indwelling urinary catheter (Fig. 2). The catheter was placed uneventfully, but had to be removed the following night on request of the subject due to persistent urethral discomfort.

On the following day, it was decided by the medical team to allow temporary interruption of the 12° HDT angle to facilitate urination.



Fig. 2. Subject after catheterization of the bladder in 12° HDT.

At 10° head up tilt (HUT) the subject easily urinated. Using this procedure, the subject had no further issues of urinary retention during the first campaign.

In preparation for campaign 2, one week later, the subject was given a large 12° wedge (Fig. 1) and urinary bottles to practice micturition at home. He reported no voiding disturbances in HDT position at home.

During campaign 2, the UR immediately reappeared during HDT, and resolved with body angle change to supine position.

| Category of UR       | Cause  |
|----------------------|--|
| <b>obstructive</b>   | <ul style="list-style-type: none"> <li>Prostata hyperplasia</li> </ul>                                     |
| <b>pharmacologic</b> | <ul style="list-style-type: none"> <li>Scopolamine</li> <li>Promethazine</li> </ul>                        |
| <b>psychogenic</b>   | <ul style="list-style-type: none"> <li>unknown</li> </ul>  |
| <b>neurogenic</b>    | <ul style="list-style-type: none"> <li>Intracerebral lesion</li> <li>Lower motor neuron disease</li> </ul> |

## DISCUSSION

UR has been reported for spaceflight [1, 2] but not for HDT bedrest. Given in our case that UR appeared only during 12° HDT during the study, but not in the same position at home suggests that situational anxiety played a role.

Alternatively, it is possible that the subject had an undiagnosed urological condition that may have contributed to urinary dysfunction, along with psychological stress; however, no previous urological symptoms had ever been reported

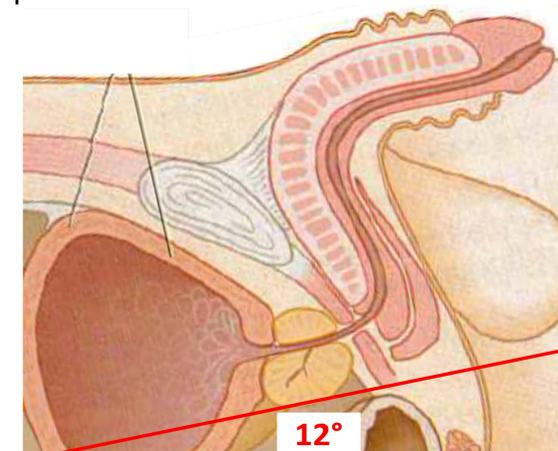


Fig. 3. Anatomical situation of lower urinary tract in 12° HDT. Adapted from [3]. Support of gravity of the voiding process disappears in supine and even more in 12° HDT position.

## CONCLUSION

UR, particularly during 12° HDT bed rest, can compromise study success but may be excludable in advance by testing the 12° HDT urination procedure during the medical selection process of the subjects.

## REFERENCES

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