

# Incidence Of Urinary Tract Infection After Urodynamic Study: Are Prophylactic Antibiotics Necessary?

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## Abstract

**Introduction:** Urinary incontinence is a common and distressing gynaecological problem. Urodynamics is a valuable investigation in the management of urinary incontinence. However, urinary tract infection (UTI) is a known complication of catheterising the bladder.

**Objective:** To evaluate the incidence of urinary tract infection following cystometry study and whether prophylactic antibiotics are necessary following the study.

**Methods:** This was a prospective study of 40 women who attended the urodynamic clinic.

**Results:** Only one out of 40 women developed UTI following the urodynamic testing giving a UTI rate of 2.9 %.

**Conclusion:** The incidence of UTI was very low in our unit. Prophylactic antibiotics were not needed but it is recommended that all women should be counselled about UTI during consent taking for the procedure.

## INTRODUCTION

Urinary incontinence is a distressing problem in women, the incidence of which is reported between 10 to 40 %.<sup>1</sup> The Norwegian EPINCONT survey reported that 25% of respondents had urinary incontinence. Of the women studied, 50% had stress incontinence, 11 % had urge incontinence and 36% had mixed incontinence. Women may present with urgency, urge incontinence, stress incontinence, daytime and nocturnal frequency, nocturnal enuresis and voiding symptoms.

Clinical evaluation of such patients includes a detailed history, physical examination and appropriate investigations.

The bladder, however, is an 'unreliable witness' and the symptoms very seldom correlate with the underlying pathology. Urodynamics studies are the only objective functional tests of bladder and urethral function.

Urodynamics study comprises free flow study and cystometry. Cystometry involves catheterising the urinary bladder.

Catheter associated urinary tract infection is the commonest nosocomial infection in hospitals.<sup>2</sup> Risk factors include female gender, catheter insertion outside operating theatre and urology service. UTI after urodynamics are well documented, with centres reporting incidence ranging from 3% to 13%. This study aimed to find out the incidence of UTI after urodynamics and to recommend measures to decrease the incidence of UTI following the study.

## MATERIAL AND METHOD

We undertook a quantitative study of women attending the urodynamics clinic at Colchester General Hospital over a four-month period from September 2005 to December 2005. All women were given an information leaflet explaining the purpose of the audit. Verbal consent was taken for recruitment into the study. Urine collected during the free flow study was sent for culture sensitivity testing.

The bladder was catheterised with a size 8 French dual channel catheter. The operator washed hands and used alcohol rub before wearing sterile gloves. The vulva and external urethral meatus was cleaned with sterile normal

saline. The catheter was inserted in an aseptic manner without touching the vulval skin. The flow meter, trolley and bed were cleaned with antiseptic wipes after each study.

All women were given a labelled form and container to take home and asked to give a mid-stream sample of urine for culture sensitivity test on the third day after the urodynamic test.

Forty women were recruited in the study. We aimed to find out

- Number who had UTI prior to cystometry
- Number who developed UTI as a result of cystometry
- Common pathogen for UTI and antibiotic sensitivity pattern
- Recommend measures to decrease rates of UTI
- Whether prophylactic antibiotics were needed following the study.

UTI was defined as presence of significant bacteriuria and pyuria in the urine report. Significant bacteriuria was taken to be a colony count of greater than 10<sup>5</sup> CFU/ml (colony forming unit). Pyuria was defined as greater than 10 white cells per litre of uncentrifuged urine in a haemocytometer. Bacteriuria without pyuria was considered as bacterial colonisation of bladder and not an infection.

**RESULTS**

A total of 40 women underwent urodynamic study during the study period. Of these, 35 women gave a sample of urine on day three following the test. 23 (66.7%) women showed no evidence of UTI either pre or post urodynamic study.

Of the remaining 12 women, 6 had bacteriuria in the post cystometry urine sample. This was considered as bacterial colonisation and not urinary infection. 2 women (5.8%) women had UTI in both the pre and post cystometry urine samples. 3 women (7.9%) women had pyuria and growth of mixed organisms. The urine test was repeated and found to have no UTI.

Only one woman developed UTI following the urodynamic testing giving a UTI rate of 2.9 %.

**Figure 1**

Table 1: Percentage of women with UTI, Bacteriuria and Mixed Organisms in Urine

<b>Total</b>	<b>35</b>	
Women with no UTI	23	66.7%
Bacteriuria	6	15.8%
Mixed Organisms	3	7.9%
UTI pre and post cystometry	2	5.8%
UTI post cystometry	1	2.9%

E.coli was the commonest pathogen and sensitive to nitrofurantoin in all cases. (Table 2)

**Figure 2**

Table 2: Sensitivity pattern of UTI

Pathogen	Cephalexin	Trimethoprim	Amoxicillin	Nitrofurantoin	Nalidixic acid
E coli		S	S	S	
E coli	S	R		S	S
E coli	S	R		S	S
E coli	R	R		S	S
E coli	R	R		S	S
E coli	S	S		S	
E coli		S	S	S	
E coli		S	S	S	

S=Sensitive R= Resistant. Total = 8 women (1 woman had UTI post cystometry, 2 had UTI pre and post cystometry, 3 had UTI in OPD sample )

**DISCUSSION**

The incidence of UTI following urodynamics in our unit was 2.9%. This incidence was comparable to most published reports. However, 5.8 % of women had UTI at the time of urodynamic testing. Although UTI is an uncommon cause of incontinence, it will aggravate any existing urinary symptoms. In addition, the presence of a UTI can invalidate the results of urodynamics. Urinalysis is mandatory before urodynamics but there are no standards as to when this should be done .The policy in our unit was do a urinalysis when the patient was first seen in the outpatient department (OPD). The waiting time for urodynamic study is 4 to 6 weeks in our department. We recommended that all women be tested with a urine reagent strip prior to cystometry study. Nitrite and leukocyte have a specificity rate of 99.5% for UTI. This would exclude women with an ongoing UTI from undergoing urodynamic testing.

The commonest pathogen for UTI was E. coli. This was sensitive to nitrofurantoin in all cases. We recommended that nitrofurantoin be used in empirically treating UTI instead of trimethoprim or amoxicillin. These findings were consistent with a previous study, which reviewed antibiotic resistance rates in E. coli in the UK.<sup>3</sup>

We also recommended that UTI be included as a potential complication while counselling women for urodynamic

study.

**References**

1. Hannestad YS, Rortveit G, Sandvik H, Hunskaar S.A community- based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. Epidemiology of incontinence in the County of NordTrondelag. J Clin Epidemiol 2000; 53:1150-7

2. Stamm WE. Catheter-associated urinary infections: Epidemiology, pathogenesis and prevention. Am J Med 1991; 91(Suppl 3B):65S-71S.

3. Livermore DM, Stephens P, Weinberg J et al. Regional variation in ampicillin and trimethoprim resistance in Escherichia coli in England from 1990 to 1997, in relation to antibacterial prescribing. J Antimicrob Chemother 2002;49:411-22

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