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Title (type in CAPITAL LETTERS)	A COMPARISON OF NORMAL SALINE AND UROGRAFIN 150 FOR CYSTOMETRY IN WOMEN

Aims of Study Normal saline is often used to fill the bladder during urodynamics whilst Urografin 150 is commonly used for video-urodynamics but these agents have quite different pH and viscosity. Urinary pH affects storage during physiological bladder filling in women (Lavin et al, 1997) but no data is available for the effects of pH during cystometry. Classical theory of rigid-tube fluid dynamics suggests that viscosity fundamentally modulates the parameters of flow. However, in a study of the effects of viscosity on voiding in men (Mortensen et al, 1979), no significant differences were detected in voiding saline or Urografin. However, the men in this study always voided saline first and then Urografin which means that, unfortunately, the authors did not account for any changes in the parameters of voiding which might occur as a result of a second micturition. Therefore, the aim of this study is to determine whether using Urografin as an alternative to saline has any effect on either the filling or voiding phase of cystometry in women.

Methods 24 women attending for urodynamics following surgery for stress incontinence had their bladder function assessed with normal saline at body temperature instilled at 100 ml/min. The assessment was repeated immediately with a random selection of either normal saline again or Urografin 150.

Results Maximum cystometric capacity was unaltered in those whose repeat cystometry was carried out with saline (n=10; 476 vs 499 ml; p=0.053) but it was slightly reduced in those who had Urografin (n=14; 469 vs 439 ml; p=0.039). Stress leakage demonstrated during the first cystometry was always seen again if the test was repeated with saline whereas one woman who had stress leakage on her first cystometry, failed to exhibit the same phenomenon with Urografin in the bladder. Two women who had uninhibited detrusor contractions during the first cystometry with saline were completely stable on repetition; one with saline,

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one with Urografin. One woman who had a stable bladder on the first cystometry was completely unstable on repetition with Urografin.

With regard to voiding, in the women who were refilled with saline the second voiding was associated with a small increase in maximum flow rate (21.1 vs 23.3 ml/s; $p=0.068$), a significant increase in average flow rate (9.5 vs 11.9 ml/s; $p=0.007$) and a significant decrease in the detrusor pressure required to generate that flow (24.5 vs 19.4 cm H₂O; $p=0.037$). This implies that voiding is more efficient when urodynamics is immediately repeated. However, no changes in voiding parameters were found when Urografin was used as the filling agent. This implies that voiding Urografin is a little more difficult than voiding normal saline. However this difference is not as much as might be expected from the 40% difference in viscosity; presumably because there is sufficient urethral elasticity in this group of women to almost compensate for the different viscosities.

Conclusions Urethral resistance in this select group of women, appears to have the ability to vary considerably so that only small differences are encountered when voiding substances of substantially different viscosities. Although the use of agents with different characteristics appears to produce some changes in urine storage, the numbers are too small to determine whether the differences in the manifestation of instability are due to the substances themselves or the inability of urodynamics to reproducibly detect instability. Therefore until these effects have been investigated more fully, caution is needed when comparing cystometric findings between centres who use these two different agents.

References

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