

DOES THE URINE STREAM INTERRUPTION TEST CAUSE DYSFUNCTIONAL VOIDING?

Hypothesis / aims of study

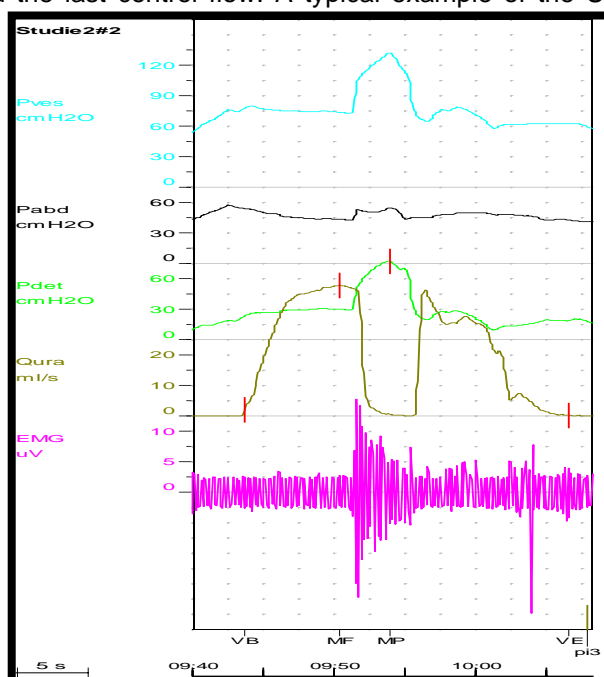
Urine stream interruption test (UST) or pipi-stop is the voluntary interruption of the urine flow by contracting the striated urinary sphincter muscle during micturition. The UST can be used to measure detrusor contractility, to evaluate pelvic floor muscle function or to train the pelvic floor muscles (1). Although it is generally accepted that the UST could cause voiding dysfunction, it has never been proven. The aim of this study was to assess the influence of the UST on bladder contractility and to see whether it could induce dysfunctional voiding.

Study design, materials and methods

Six female healthy nulliparous volunteers between 18 to 25 years old were included in this study. Pelvic floor muscle strength was clinically scored by vaginal digital assessment on a five point scale. A five channel urodynamic unit was used for the experiments, with measurements of the intravesical pressure, the abdominal pressure obtained by a rectal balloon catheter and the urinary flow rate. Detrusor pressure was continuously calculated electronically by subtracting abdominal pressure from intravesical pressure. Pelvic floor muscle contraction was displayed by surface EMG on the perineum. In each individual, five bladder fillings were performed until a strong desire to void was reported. After the first and the last filling, the volunteers were asked to void normally (X and Y controls). After the other fillings, the volunteers were asked to interrupt the urinary flow during three seconds in the first (A), middle (B) and third (C) part of the micturition phase, as estimated on the X control. The volunteers were told on beforehand to immediately proceed voiding after the three seconds of interruption. Voidings A, B and C were randomized. The occurrence of dysfunctional voiding and the detrusor contractility are described qualitatively

Results

All volunteers had normal pelvic floor muscle strength ($\geq 3/5$). The storage phase showed no abnormalities in any of the bladder fillings. All volunteers could perfectly perform the UST. Mean voiding duration was 35 ± 18 , 37 ± 9 , 41 ± 11 , 39 ± 12 and 33 ± 21 seconds for voiding X, A, B, C and Y respectively. Voiding interruption occurred 4 ± 1 , 17 ± 3 and 25 ± 2 seconds after initiation in voiding A, B and C respectively. Mean interruption time was 3.0 ± 0.5 seconds. Immediately after voluntary contraction of the striated sphincter, urinary flow ceased and an increase in detrusor pressure was noted. After relaxation of the sphincter, urinary flow immediately continued in all volunteers, and the bladder was emptied completely. No residual urine was found after the voids without interruption nor after voids with voluntary interruption. The difference in detrusor pressure was noted immediately after relaxation of the striated sphincter compared to just before the contraction of the sphincter. No difference was found between the first and the last control flow. A typical example of the UST performed at the middle of the urinary flow is shown in the figure.



Interpretation of results

1. Our study shows that in young healthy volunteers interruption of the urine stream by active contraction of the pelvic floor does not induce incomplete bladder emptying.
2. It does not make any difference whether the flow was stopped in the beginning, the middle or the end of the flow.
3. This study does not permit to make any conclusion on the effect of the UST in pathologic cases or in chronic use as tool to train pelvic floor muscles, as the UST was performed only shortly in healthy volunteers with normal bladder and sphincter function.

Concluding message

Urine stream interruption test, if done shortly, does not seem to be harmful for normal micturition.

(1) The urine stream interruption test and pelvic muscle function in the puerperium. Int J Gyn Obst 78 (2002): 235-239.