Hypothesis / aims of study
We compared the functional and anatomical differences among 3 different orthotopic bladder substitutes, as defined by urodynamic and images collected using multidetector row CT (MDCT) with subsequent 3D and multiplanar reconstructions.

Study design, materials and methods
Between June 1995 to February 2002 on a total of 102 patients who underwent a radical cystectomy with a continent orthotopic diversion, 34 were able to participate in the evaluation of their respective neobladder by 3 – D CT and video urodynamics. Three different types of orthotopic neobladder reconstruction were identified (I: ileal; IC: ileocecal; S: sigmoid). There were 7 ileocecal, 15 sigmoid and 12 ileal neobladders. The populations studied were all greater than 12 months post surgery. Multiple anatomic parameters provided by 3-D CT and urodynamic variables were measured. This data has never previously been published.

The following measurements and observations were obtained from the reconstructed CT images: the distance from the center of the neobladder to the symphysis (DPS), to the coccygeal line (DC), distance of neobladder wall to the femoral head bilaterally (DRF,DLF), the neobladder volume (V), the sphericity (SP), the neovesical-urethral angle (NVUA), assessment for the presence of neocystocele (CYS), recesses (R), internal folds (IF), reflux (RE), and the thickness of the neobladder wall (TH).

The following functional data were obtained from the urodynamic exam: stress incontinence, maximal capacity (maxC), pressure at the maximal capacity (PmC), maximal flow (maxQ), pressure at the maximal flow (PmQ), Valsalva leak point pressure (VLPP), post voidal residual (PVR).

Statistical analysis for this study employed a linear regression test and an odds ratio calculation (using StatSoft V. 5.1).

Results
In comparing of the 3 different neobladders, no significant difference in incontinence rates, post void residual or neobladder capacity (maxC 431-524 ml) were noted. Radiographically, there is a statistical difference regarding the presence of internal folds between S and I, as well as the thickness of the wall between I and IC. Looking at the entire population, the following association was statistically significant: the maxC and the V, the PmQ and the DPS (linear correlation), the PmQ and the TH (linear correlation), the PmC and the DPS (linear correlation), the maxQ and DLF (inverse correlation), the PVR and the PmQ in order to completely void the neobladder itself. On the latero-lateral plane it is interesting to notice the linear correlation of the Max Q and DLF.

In summary:
1. The more the neobladder is far away from the pubic symphysis the higher the PmC and the PmQ are.
2. The more the neobladder is far away from the coccyx, the higher the PVR is.
3. The more the center of the neobladder is distant from the right femur head, the higher the risk of incontinence.
4. The more the neobladder is distant from the left femur the less is the Q Max and the higher is the PVR.

On a theoretical point of view we could describe a possible “Incontinence/High pressure pelvic area” located in the left-posterior part of the pelvis.

Concluding message
The study seems to show no significant anatomical or functional difference among the three different types of neobladders. A correlation between the position of the neobladder and urinary incontinence is suggested, recognizing further study in a larger population is required.

Specify source of funding or grant None
Is this a clinical trial? No
What were the subjects in the study? HUMAN
Was this study approved by an ethics committee? Yes
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<th>Lahey Clinic Ethics Committee</th>
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<td>Was the Declaration of Helsinki followed?</td>
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<td>Was informed consent obtained from the patients?</td>
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