CONTROL ID: 2829090

TITLE: BLADDER MORPHOLOGY, EMPTYING, AND RESIDUAL VOLUME WITH 2 BLADDER CATHETERS

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INSTITUTIONS (ALL):

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ABSTRACT BODY:

Objectives: To demonstrate the differences in empty bladder morphology, and residual volume with 2 different drainage catheter designs.

Methods: Bladders of 3 subjects were filled with 300cc of fluid, using 2 different catheter types. Catheter (A) was a 16 Fr Foley Catheter (Bard Urological, Covington, GA). Catheter (B) was an flush-tip, 16 Fr silicone Cystosure® catheter (Emmy Medical, Inc, Holliston, MA). Post fill, catheters were clamped, and supine MRIs were obtained. The bladder was drained, and empty bladder MRI scans were obtained and this captured the morphology of the empty bladder as it draped around the indwelling catheter, and also the residual fluid in the bladder following drainage. Three dimensional models of the full and empty bladder walls, including fluid and catheter were reconstructed and rendered after the bladder, contained fluid, and catheter were manually segmented. The shape of the full and empty bladder was rendered, and the empty residual bladder volume was obtained. Renderings and midsaggital MR images of empty & full bladders are shown (Figure); bladder fluid is green, air is dark peach, balloon is gray, and drainage tube/tip is in blue.

Results: The full bladder wall morphology was similar (Figs a, c). For the empty bladder, the Foley catheter deformed the bladder wall to an irregular shape: The bladder draped around the balloon with a “tenting” effect at the tip (Fig b). The Cystosure catheter left the bladder wall in a spherical shape, matching the outline of the balloon(Fig c). The residual bladder volume after gravity drainage tended to be lower with the Cystosure catheter, and the residual air in the bladder was similar with both catheters.

Conclusions: Under gravity drainage, the open-tip, low-profile Cystosure catheter maintained the empty bladder wall in a regular spherical shape, whereas the Foley catheter’s tip deformed the empty bladder wall due to the prolonged tip. This finding suggests that the Cystosure catheter may be less likely to contort and irritate the bladder mucosa when the bladder is empty.

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TABLE TITLE: (No Tables)

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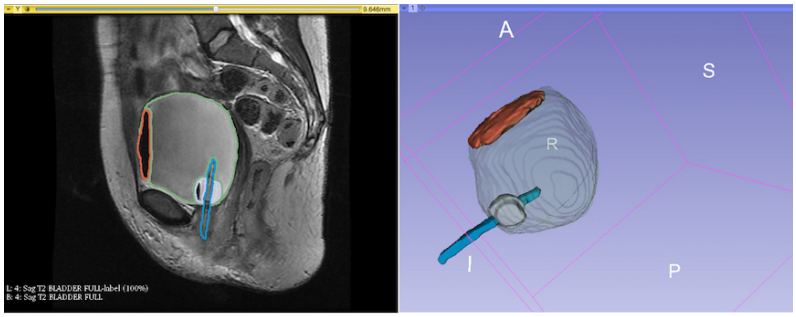
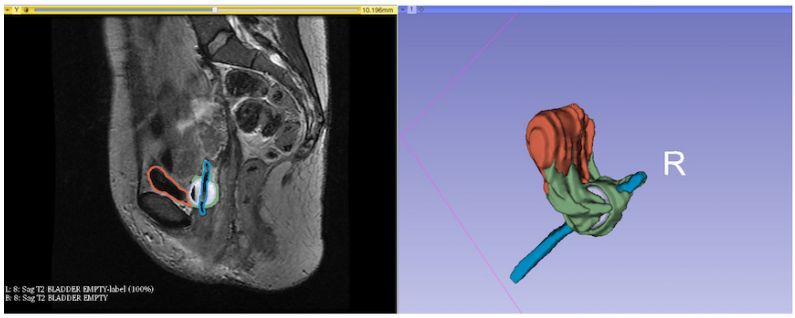
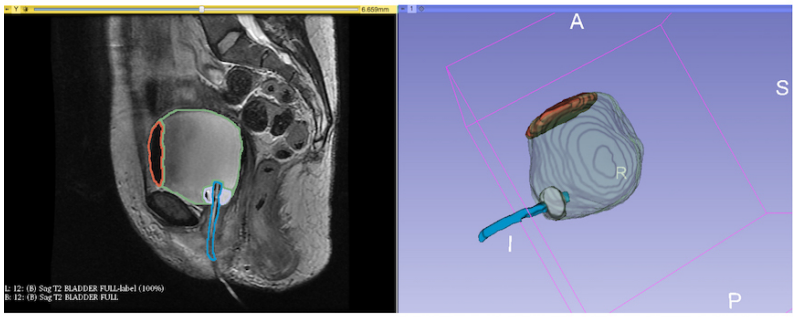
TABLE FOOTER: (No Tables)



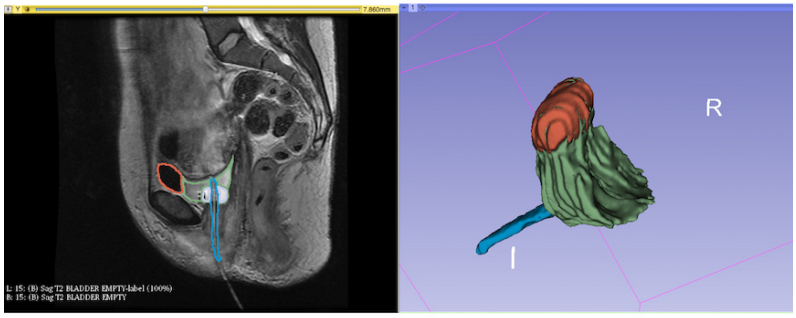
(a) Cath A Full (bladder dimmed for clarity)



(b) Cath A Empty



(c) Cath B Full (bladder dimmed for clarity)



(a) Cath B Empty

IMAGE CAPTION:

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