

## URETHROPLASTY USING AUTOLOGOUS URETHRAL TISSUE-EMBEDDED ACELLULAR PORCINE BLADDER SUBMUCOSA MATRIX GRAFTS FOR THE MANAGEMENT OF LONG-SEGMENT URETHRAL STRICTURE IN A RABBIT MODEL

### Hypothesis / aims of study

To evaluate the combined effect of acellular bladder submucosa matrix (BSM) and autologous urethral tissue for the treatment of long segment urethral stricture in a rabbit model.

### Study design, materials and methods

To prepare the BSM, porcine bladder submucosa was processed, decellularized, configured into a sheet-like shape, and sterilized. In 15 male New Zealand rabbits, urethral stricture was generated by excising a 5×20 mm<sup>2</sup>-sized distal and ventral portion. One month after the procedure, 10 rabbits were randomized to receive either nontransected ventral onlay-augmented urethroplasty using BSM (5×20 mm<sup>2</sup>) only or BSM/autologous urethral tissue (n=5 per group). Stricture only and sham-operated rabbits served as control groups (n=5 per group). Retrograde urethrography was performed at 4, 8, and 12 weeks postoperatively, and the grafted specimens were harvested at week 12 to evaluate urethral reconstruction through histopathologic and immunohistochemical analysis.

### Results

The mean urethral width of the control, stricture, BSM, and BSM/autologous urethral tissue groups at week 12 was 10.3±0.80, 3.8±1.35, 8.8±0.84, and 9.1±1.14 mm, respectively. The histopathologic study revealed that the BSM/autologous urethral tissue graft had a normal area of urethral lumen, compact muscular layers, complete epithelialization, and progressive infiltration by vessels in the regenerated urethra. In contrast, the BSM grafts revealed keratinized epithelium, abundant collagenized fibrous connective tissue, and were devoid of bundles of circular smooth muscle.

### Interpretation of results

Long-segment urethral stricture was effectively managed by urethroplasty using autologous urethral tissue-embedded BSM graft and this was confirmed grossly and histopathologically.

### Concluding message

Nontransected ventral onlay-augmented urethroplasty using an acellular BSM scaffold combined with an autologous urethral tissue graft represents a feasible procedure for urethral reconstruction.

### References

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### Disclosures

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