Editorial

Bridging the gap: use of scaffolding tissue bio-grafts to bolster vesicourethral anastomosis during salvage robot-assisted prostatectomy reduced leak rates and catheter times

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Salvage Robot Assisted Radical Prostatectomy (sRARP) for recurrent prostate cancer is considered a higher risk procedure due to its inherent risk of increased intra- and post operative complications. Of note, vesicourethral anastomosis (VUA) leak can occur in up to one third of cases (1). Contributing factors are often attributed to prior therapy and include increased tissue friability and postoperative necrosis, and despite efforts to ensure a high quality of surgical anastomosis, poor surrounding tissue quality can result in anastomosis disruption (2). The deleterious effects of a VUA leak are numerous; urethral stricture formation, bladder neck contracture, urinary peritonitis and paralytic ileus. In addition, prolonged urethral catheterization or drain placement can result in secondary infection, protracted inpatient hospital stay or necessitate a second reconstructive procedure.

Minimising VUA leak is therefore essential to reducing the morbidity of this procedure. Ogaya Pinies *et al.* evaluate a novel use of Matristem (ACell, Columbia, MD, USA), a connective tissue scaffold reinforcement of the VUA and distal bladder in preventing VUA disruption during sRARP (2). This acellular, reabsorbable material is derived from porcine urinary bladder (3).

In this retrospective review patients were divided to three groups (groups 1–3, with a 1:3:3 match). Group 1 were patients who underwent sRARP with extracellular matrix scaffold wrapping (15 patients, 80% of whom underwent prior external beam radiation therapy to the prostate, the remainder having undergone proton beam therapy, cryotherapy, and high intensity focused ultrasound therapy (HIFU)). Group 2 were patients who underwent sRARP with no extracellular matrix scaffold wrapping (45 patients). Group 3 were patients who underwent primary RARP alone (45 patients) and served as a control group.

The scaffold itself is shaped to simulate a 2×2 inch truncated triangle. One edge is sutured to Denonvilliers fascia after the prostate is removed and posterior reconstruction completed. It therefore lies against the posterior aspect of the VUA. The free edges are subsequently wrapped around the bladder neck and urethral stump enveloping the continuous 2–0 Quill modified Van Velthoven anastomosis over a catheter.

All patients underwent a cystogram at day 10 and if evidence of a significant contrast leak (greater than 2 cm), a repeat cystogram was performed one week later. Patients were reviewed at 6 weeks, 3, 6, 9, 12 and 24 months post operatively.

The results revealed no evidence of VUA leak in the control group (group 3) with an average length of catheterisation being 6.3 days (5–7 days). In group 2 (no extracellular matrix scaffold wrapping), a clinically significant VUA disruption was noted in 35.5%

(16 patients). The resultant median catheterization time was 17.4 days (9–47 days). In stark contrast, patients in group 1 (with extracellular matrix scaffold wrapping) only 6.66% (1 patient) demonstrated a significant anastomotic leak on cystography, and reduced catheterization duration of 11.2 days (10–52 days).

Urinary bladder extracellular matrix scaffold has a role in promoting tissue recovery, repair and regeneration (4). The authors advocate its use of into the VUA during sRARP. They demonstrate that it is a promising method for accelerating healing and preventing VUA breakdown. In this series, the scaffold has reduced VUA disruption by 84% and reduced catheterisation time by a median of 6.4 days.

The authors must be commended for performing this study. It is acknowledged that any institution would be hard pressed to identify similar numbers of sRARP cases performed by a single surgeon. Whilst the rationale for using porcine bladder extracellular matrix is clear, there are limitations of this paper. Firstly, this remains a retrospective analysis of a prospectively maintained dataset and with it comes the partiality associated with an observational study. Although the volume of cases from the unit are more than seen in many units worldwide, it must be noted that overall the sample size remains small when interpreting the statistics.

As a result, the subgroup analysis offered is difficult to interpret. Questions remain as to which initial modality of primary prostate cancer treatment would result in greater or lesser risk in VUA breakdown. Is the effect of external beam radiotherapy disadvantageous when compared to brachytherapy, cryotherapy or HIFU with respect to VUA disruption. Future pooled datasets eliminating confounding factors may go some way to address this.

Interestingly, there was no significant difference in UVA strictures or bladder neck contracture across all groups after a median follow-up of 12 months (range 9–17 months). This is despite there being a significant increase in UVA leaks in group 2. The same is noted when examining postoperative continence. There was no statistically significant difference in long-term continence rates between group 1 and 2 at 12 months follow-up (53.3% versus 48.8%, P=0.765). Based on these findings, this would therefore suggest that despite presence of UVA leaks detected on cystogram, the vast majority do not translate to problems in continence or stricture formation (perhaps a reflection of the small study numbers). One could argue that simply routinely leaving the catheter 2 to 3 weeks following a sRARP prior to a trial of void or cystogram would negate the cost benefit offered by utilizing the extracellular matrix scaffold wrap. The authors correctly point out that further prospective and randomized data is required with larger sample size, and we eagerly await these results.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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