

## Editorial

# The Urethroplasty Evolution and Rise of the Non-transecting Techniques for Bulbar Urethral Strictures

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Urethral stricture disease is a relatively common urologic condition with an estimated incidence of 9/100,000 men younger than 65 years. The risk of stricture is markedly increased in patients older than 65 years with an incidence of 21/100,000, which is almost half the incidence for urolithiasis in this population. This indicates the importance and high burden of strictures.<sup>1</sup> Symptomatic patients typically present with obstructive urinary symptoms (e.g., incomplete emptying, straining, weak stream, etc.) and occasionally have a history of recurrent infections, hematuria, bladder stones, or renal failure.<sup>2</sup> More than half of strictures arise in bulbar urethra.<sup>3</sup>

Urethroplasty is the preferred treatment for urethral stricture in most cases. It is underused compared to endoscopic management.<sup>4</sup> The optimal surgical technique for bulbar urethral strictures continues to be an area of much debate among reconstructive urologists. Excision and primary anastomosis (EPA) via a perineal incision is historically the gold standard for short bulbar strictures (<2 cm). In cases of longer strictures (>2 cm), substitution techniques can be used. Some have shown excellent results using EPA in longer proximal bulbar strictures.<sup>5</sup> Previous series have reported an almost perfect long-term success rate of 90.8 to 98.8% with EPA.<sup>6,7</sup> Complete resection of fibrotic tissues is achieved with EPA. This is particularly beneficial in traumatic strictures where the vascular density of spongiosal tissue is diminished.<sup>8</sup> However, the necessity of EPA has been questioned in the past decade as it requires complete transection of urethra which may cause damage to neurovascular structures. When using EPA for non-traumatic strictures, there is a significant portion of the excised tissue that is healthy, well vascularized, and could be saved.<sup>9</sup> The ischemic damages incurred by transection are considered to be partly offset by retrograde

blood circulation of the corpus spongiosum. Although several studies suggest an increased risk of sexual dysfunction after transecting urethroplasty,<sup>6,10</sup> current evidence has not proven that EPA results in more sexual dysfunction compared to non-transecting techniques.<sup>11,12</sup>

In 2012 Andrich and Mundy developed a modified technique for non-transecting anastomotic bulbar urethroplasty.<sup>13</sup> It was a modification of the “spongiosal-sparing” anastomotic urethroplasty technique originally described by Jordan *et al.* in 2007.<sup>14</sup> The concept behind these techniques is that full transection of urethra could be avoided when the whole circumference of urethra is not involved with spongiofibrosis. The more recent technique starts with a dorsal stricturotomy and continues in a stepwise approach beginning with simple stricturoplasty (for short membrane-like strictures), progressing to non-transecting excision of scarred tissue and the surrounding spongiofibrosis via dorsal approach with an end-to-end anastomosis (for intermediate strictures), and ultimately anastomosis with augmentation using dorsal patch (for long strictures).<sup>9</sup> This dorsal non-transecting approach allows the surgeon to evaluate the length and degree of spongiofibrosis intraoperatively and decide which further steps are required to repair the stricture. We have found excellent results by simply incising the scar dorsally and closing in a Heineke-Mikulicz fashion. We have applied this technique to proximal bulbar strictures of varying lengths (some greater than 4 cm) with success. It also takes the advantages of minimizing the surgical trauma and mitigating the risk of ventral spongiosal vasculature and neuronal damage. The approach once learned is technically less demanding than a traditional transecting approach and faster. A multi-institutional comparative analysis showed

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comparable patency outcomes to traditional transecting techniques while non-transecting techniques led to significantly lower rate of persistent de novo sexual dysfunction (4.3% vs. 14.3%).<sup>15</sup>

Urethroplasty techniques are steadily progressing. Recently, Bogdanov *et al.* published the outcomes of their pilot study on a modified vessel-sparing non-transecting technique.<sup>16</sup> It involves intraoperative identification of the distal end of the stricture by a bougie, extending the incision ventrally up to the proximal margin of the stricture, and dissection of the scarred tissues. This technique was associated with less dissection and full sparing of dorsal semi-circumference of the corpus spongiosum. Currently, a multicenter randomized controlled trial is being held to investigate the non-inferiority of vessel sparing techniques compared to transecting techniques which may help end the debate.<sup>17</sup> The outcomes of this trial may also elucidate the hypothetical value of spongiosal artery preservation on functional outcomes after urethroplasty.

#### Conflict of Interest

None declared

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