Results of Using a New Technology to Improve the Identification and Preservation of Nerve Tissue during Robotic-Assisted Laparoscopic Radical Prostatectomy

Presented by Dr. Ronald Kuhn at the AUA Annual Meeting 2013

Introduction & Objectives

Efforts to improve continence after robotic-assisted laparoscopic radical prostatectomy (RALRP) have focused on preserving periurethral and bladder neck tissue and techniques involving posterior reconstructions and anterior suspensions. Many patients, however, still have varying degrees of urinary incontinence. Literature has shown that nerves innervating the levator ani (LA) contribute to continence and anatomic landmarks are not accurate in determining their location. Inadvertent damage to these nerves may therefore contribute to post RALRP incontinence.

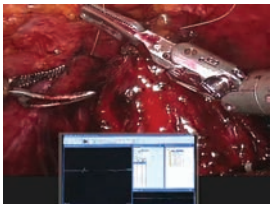
Intra-operative identification of nerve tissues using a stimulated EMG produces a waveform known as a compound motor action potential (CMAP) and is standard of care in brain, spine, and facial surgery. The Author used a new technology that elicits and records CMAP's during RALRP and evaluated the ability to identify and preserve the nerves innervating the LA.

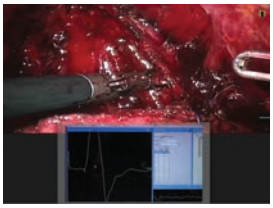
Methods

20 consecutive patients underwent RALRP using a posterior dissection of the seminal vesicles without bias for stage, age, BMI, or comorbidities. After opening the endopelvic fascia and the dividing the bladder neck, two 0.2mm diameter electrodes were passed through the anterior abdominal wall using an introducer and placed into the LA bilaterally. A stimulatory signal was delivered through a daVinci bipolar instrument and CMAP's were recorded and used to identify the nerves to the LA during the procedure. 8 weeks post-op patients completed an EPIC score to measure urinary incontinence.

Results

The nerves innervating the LA were identified in 100% of the cases as demonstrated by eliciting a CMAP that corresponded to known CMAP's from other motor nerves. The use of this technology added less then 2 minutes to procedure times. A correlation was seen between increasing CMAP amplitude and increasing proximity to the nerve. Additionally, EPIC scores at 8 weeks post RALRP revealed that improved post-operative continence was associated with shorter intra-operative CMAP latency.





Conclusion

Real-time intraoperative monitoring of the otherwise invisible nerves that innervate the LA during RALRP is reproducible and efficient using this new technology. The information gained by using this technology correlates with proximity to the nerve and post-operative continence. Therefore, the use of this technology and the intra-operative information it provides, accompanied by careful anatomic dissection demonstrates great promise in improving continence after robotic prostatectomy. Further study is warranted in exploring how using the technology may improve postoperative continence following RALRP.

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