Analysis of surgeon physical stress during open and robotic radical cystectomy with electromyography and motion sensor analysis

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Abstract
Rationale
There is question as to whether a radical cystectomy should be performed using robotics or in the traditional open manner. The purpose of this project is to objectively measure the physical stress on surgeons performing a radical cystectomy with the da Vinci® robotic surgical platform versus the open approach. This data will help answer the question of which surgical technique provides the most overall benefit.

To our knowledge, only surveys/questionnaires to surgeons have been utilized to determine the ergonomic disparities between open and robotic surgical approaches. There is a lack of experimental data in this area to support any claims of ergonomic benefits. Our goal is to identify objective data with the use of wireless motion sensors and electromyography data to compare whether the robotic platform offers a true benefit for the operating surgeon in the context of robotic radical cystectomy versus open radical cystectomy.

Questions, objectives, and purpose
The use of robotically-assisted laparoscopic radical cystectomy decreases surgeon physical strain compared to open radical cystectomy as measured by motion sensors and electromyography.
Objective 1: Quantify and compare the physical strain of surgeons during ORC and RALC.
Objective 2: Compare surgical outcomes with the use of ORC and RALC.