Improved efficacy and efficiency of robotically applied clips versus assistant applied clips during robotic assisted radical prostatectomy (RARP)

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Introduction & Objectives: Previously, we have shown that use of the robotic clip applicator on the daVinci Xi® system (Intuitive Surgical®, USA) increases efficiency of clip application, but at increased financial cost. Robotic clip application technique has been adapted to reduce total clip number, whilst also increasing efficiency. This study aims to compare the efficiency and cost-effectiveness of the updated robotic clip application versus assistant applied clips in RARP.

Materials & Methods: 25 videos of RARP cases were divided into two groups; Group 1 (n=10) being assistant applied and Group 2 (n=15) using the updated robotically applied technique. Unique redistribution of instruments was utilised to maximise robotic clip application efficiency. Video review assessed number of successfully/dropped clips, and time for clip application. Costs were analysed. Statistical analysis was performed using student-t test.

Results: Mean number of clips used was 10.9 in Group 1 and 10.3 in Group 2, p<0.05. Mean number of clips dropped was 2.3/21.9% (Group 1) and 0.6/5.5% (Group 2), p<0.05. Mean application time was 20 minutes, 54 secs. and 15 minutes, 1 secs. respectively, p>0.1. Average time per clip application was 117.38 seconds and 88 seconds respectively, p<0.05. Cost analysis shows average cost of €490.50 and €465 respectively, p<0.05.

Conclusions: Use of the robotic clip applicator is more efficient overall and per individual clip, and cheaper than assistant applied clips utilising the improved technique now being used. Full utilisation of the robotic clip applicator has significant advantages over traditional assistant performed clip application.