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ORIGINAL ARTICLE

Robotic-assisted gynaecological surgery – establishing training criteria; minimizing operative time and blood loss

Michael C. Pitter,[1]*
Patrick Anderson,[2]
Amelia Blissett[2] and
Nicola Pemberton[2]

[1]*Department of Minimally Invasive Gynecology, Newark Beth Israel Medical Center, Newark, NJ, USA*

[2]*Department of Gynecologic Oncology, Newark Beth Israel Medical Center, Newark, NJ, USA*

*Correspondence to:
Michael C. Pitter, Department of Minimally Invasive Gynecology, Newark Beth Israel Medical Center, Newark, NJ, USA.
E-mail: mptmd@aol.com

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Abstract

Background The objective was an evaluation of operative time and estimated blood loss (EBL) as a function of experience in gynaecological robotic surgery.

Method A retrospective analysis of 40 consecutive cases (approximately one case/week) over a 1 year period using the da Vinci® robotic system was performed, using data from two institutions, Newark Beth Israel Medical Center and Hackensack University Medical Center. Information was obtained from a single surgeon. Among the 40 cases there were 17 hysterectomies and 23 myomectomies. Each patient met the criteria of benign disease. In each institution, a da Vinci® system using three instrument arms and a camera arm was employed for every operation.

Results Tests of differences in means were performed to compare the two groups. In group I (cases 1–20) the mean uterine volume was 863.0 cc and was similar to Group II (cases 21–40) at 632.6 cc. There was no significant difference between the groups when comparing blood loss; means were 86 cc for group I and 62.5 cc for group II. Operative time between groups, however, showed a significant difference (mean of 211.8 min for group 1 compared to 151 min for group 2; $p < 0.05$) and console time demonstrated a similar trend (mean for group 1 was 159.8 min compared to 90.8 min for group 2; $p < 0.05$). There were no conversions to laparotomy. Body mass index (BMI) and prior abdominal surgery were not significantly different. Multivariate regressions on operative time and EBL were performed, controlling for uterine weight and volume. The effect of experience on operative time was significant and negative; the coefficient on EBL was not significant.

Conclusion This study demonstrates statistical improvement in operative time after the first 20 cases for a single surgeon. This information could be used to establish criteria for training surgeons. Copyright © 2008 John Wiley & Sons, Ltd.

Keywords robotic surgery; learning curve; gynaecological robotic surgery; training criteria; operative time

Introduction

The use of laparoscopy to treat a variety of benign gynaecological conditions has been documented in the literature for over 20 years. Harry Reich described the first laparoscopic hysterectomy in 1989 (1). Today, both laparoscopic myomectomies and hysterectomies provide a minimally invasive alternative to patients in