

Laparoscopic Versus Abdominal Myomectomy: Practice Patterns and Health Care Use in British Columbia

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Abstract

Objective: To examine the relative frequency and surgical outcomes of laparoscopic myomectomy compared with abdominal myomectomy in British Columbia.

Methods: A linked database containing hospital admission, operating room, and emergency room data from 2007 to 2011 from eight Vancouver Coastal Health and Providence Health Region hospitals in British Columbia was used to conduct a retrospective cohort study of women who had myomectomy for uterine fibroids. All consecutive women who had abdominal or laparoscopic myomectomy at five hospitals were included in the study. Patients who had submucosal fibroids or hysteroscopic procedures were excluded. Abdominal and laparoscopic myomectomies were contrasted in terms of patient characteristics and surgical outcomes. Statistical significance was assessed using *t* tests, Wilcoxon, chi-square, and Fisher exact test; a two-sided *P* value < 0.05 was considered significant.

Results: Of eight hospitals offering gynaecologic surgery, myomectomies were performed at five hospitals located in metropolitan areas. Of 436 women undergoing myomectomy, 88 cases (20.2%) were laparoscopic, 342 (78.4%) were abdominal, and 6 (1.38%) were laparoscopic with conversion to laparotomy. Women who had laparoscopic rather than abdominal myomectomies were slightly older (mean 38.7 vs. 37.4 years, respectively, *P* < 0.05). No significant difference was observed in median operative time (106 vs. 95 min), but length of stay was decreased for laparoscopic myomectomies (median 1 vs. 2 days, *P* < 0.01). No significant differences were observed between laparoscopic and abdominal routes in the rates of admission to intensive care, prolonged hospitalization (> 3 days), or rehospitalization.

Conclusion: Myomectomies are performed in urban, metropolitan areas in British Columbia, and a significant fraction of myomectomies are performed by laparoscopy. Compared with abdominal myomectomies, laparoscopic myomectomies in pre-selected patients are associated with decreased length of stay and comparable perioperative surgical outcomes.

Résumé

Objectif : Examiner la fréquence relative et les issues chirurgicales de la myomectomie laparoscopique, par comparaison avec la myomectomie abdominale, en Colombie-Britannique.

Méthodes : Une base de données liées contenant des données obtenues au moment de l'hospitalisation, dans la salle d'opération et dans la salle d'urgence entre 2007 et 2011 au sein de huit hôpitaux de la *Vancouver Coastal Health and Providence Health Region*, en Colombie-Britannique, a été utilisée pour mener une étude de cohorte rétrospective auprès de femmes ayant subi une myomectomie en raison de la présence de fibromes utérins. Toutes les femmes consécutives qui ont subi une myomectomie abdominale ou laparoscopique au sein de cinq hôpitaux ont été admises à l'étude. Les patientes qui présentaient des fibromes sous-muqueux ou qui ont subi des interventions hystérosopiques ont été exclues. Les myomectomies abdominales et laparoscopiques ont été comparées en fonction des caractéristiques des patientes et des issues chirurgicales. La signification statistique a été évaluée au moyen des tests *t*, de Wilcoxon, de chi carré et exact de Fisher; une valeur *P* bilatérale < 0,05 a été considérée comme étant significative.

Résultats : Parmi les huit hôpitaux offrant des services de chirurgie gynécologique, les cinq hôpitaux qui ont mené des myomectomies étaient situés en région métropolitaine. Chez les 436 femmes ayant subi une myomectomie, 88 interventions (20,2 %) ont été menées par laparoscopie, 342 (78,4 %) l'ont été par voie abdominale et 6 (1,38 %) ont été menées par laparoscopie ensuite convertie en laparotomie. Les femmes qui ont subi une myomectomie laparoscopique, par comparaison avec celles qui ont plutôt subi une myomectomie abdominale, étaient légèrement plus âgées (moyenne : 38,7 vs 37,4 ans,

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respectivement, $P < 0,05$). Bien qu'aucune différence significative n'ait été constatée en matière de temps opératoire médian (106 vs 95 min), la durée de l'hospitalisation était moindre dans le cas des myomectomies laparoscopiques (médiane : 1 vs 2 jours, $P < 0,01$). Aucune différence significative n'a été constatée entre les voies laparoscopique et abdominale pour ce qui est des taux d'admission aux soins intensifs, d'hospitalisation prolongée (> 3 jours) ou de réhospitalisation.

Conclusion : En Colombie-Britannique, les myomectomies sont menées en région urbaine et métropolitaine; une proportion considérable de ces myomectomies sont menées par laparoscopie. Par comparaison avec les myomectomies abdominales, les myomectomies laparoscopiques menées chez des patientes présélectionnées sont associées à une durée d'hospitalisation moindre et à des issues chirurgicales périopératoires comparables.

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INTRODUCTION

Fibroids (leiomyomata) are benign tumours that are common in women of reproductive age, affecting nearly 80% of premenopausal women.¹ Symptoms of fibroids include heavy menstrual bleeding and increased abdominal pressure, causing significantly decreased quality of life.² Surgical treatments for uterine fibroids tend to be invasive and expensive, but they are associated with increased quality of life.³ While hysterectomy remains the definitive treatment for fibroids, myomectomy is the preferred option for women who wish to retain their uterus for childbearing. Myomectomy performed by laparoscopy is associated with decreased blood loss and a faster recovery than abdominal myomectomy.⁴ However, laparoscopic myomectomy is an advanced laparoscopic skill that requires the ability to suture effectively and efficiently, and recent national surveys show that the majority of gynaecologists in Canada do not offer laparoscopic myomectomy.^{5,6} While several studies to date have found differences in surgical outcomes for different routes of myomectomy,^{4,7} little is known about actual practice patterns, geographic distribution, and health care use associated with laparoscopic versus abdominal myomectomies.

The purpose of this study was to quantify the proportion of myomectomies performed by laparoscopy, to assess the geographic practice patterns of myomectomies in British Columbia, and to compare surgical time, length of stay in hospital, emergency visits, and re-hospitalizations for laparoscopic versus abdominal myomectomies.

METHODS

We conducted a study of all women undergoing laparoscopic or abdominal myomectomy for a benign indication between April 1, 2007, and September 15, 2012, in any hospital within

the regions of British Columbia serviced by the Vancouver Coastal Health and Providence Health Care authorities. Together, these health authorities serve more than one million people (more than one quarter of the provincial population) and cover urban and rural geographic areas that include the city of Vancouver, Vancouver's North Shore, Richmond, the Sea-to-Sky Highway, Sunshine Coast, Bella Bella, Bella Coola, the Central Coast, and surrounding areas.

Patient hospitalization records from the Discharge Abstract Database were linked to the Operating Room Management Information System (ORMIS) database and the Emergency Department Surveillance System.

The Discharge Abstract Database is a national hospital administrative database that captures consecutive patients using consistent data collection procedures with routine validation and quality control,⁸ and the majority of the information used for this study was derived from this data source. The ORMIS is an established and validated database system dedicated to the capture of detailed clinical and resource use information pertaining to each surgical episode,⁹ and this dataset was used to obtain additional information regarding the surgical cases and the operative times. The Emergency Department Surveillance System was developed by the Vancouver Coastal Health Authority to capture emergency room visits from nine acute care hospitals across the region for the purpose of population surveillance,¹⁰ and this information was useful for determining whether an emergency room visit occurred in the observation period for each case. Together, the linkage of these three databases provided a dataset that captured hospitalization, surgical, and emergency room information.

Only women who had undergone an elective abdominal or laparoscopic myomectomy and who were residents of British Columbia at the time of surgery were included. Women with submucosal fibroids or any concurrent procedure that involved the use of hysteroscopy were excluded.

The Canadian Classification of Health Interventions (CCI) and ORMIS procedure codes were used to distinguish between different types of partial uterine excision and routes of myomectomy. The International Classification of Diseases, 10th Revision, diagnostic codes were used to determine indication for surgery and the type of uterine fibroid. Myomectomies were classified into abdominal (CCI code 1RM87LAGX) and laparoscopic procedures (CCI code 1RM87DAGX). Conversion from the laparoscopic to the abdominal route of myomectomy was identified by concurrent abdominal myomectomy and laparoscopy codes (CCI codes 20I70DA and 2RM70DA). The type of fibroid was identified by ICD-10CA codes: D251 for intramural, D252 for subserosal, and D259 for fibroids of unspecified type.

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