

Emergency department attendances for persistent pelvic pain are not reduced following laparoscopic surgery for women with or without endometriosis

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ABSTRACT

AIM: To explore the change in emergency department (ED) attendances for persistent pelvic pain (PPP) following laparoscopic treatment of endometriosis.

METHODS: A retrospective service evaluation was conducted on a convenience sample of 1 calendar year of elective gynaecological laparoscopies for PPP. Data were collected on ED visits for surgical complications, and for PPP in the 12 months prior to and following surgery.

RESULTS: Of the 195 women undergoing laparoscopy, 30 had attended the ED owing to their PPP in the preceding year. Endometriosis was found and treated in 51% of the cohort and no cause for pain was found in the other 96 women. Eighteen women suffered post-operative complications. In the subsequent 12 months, 31 of the cohort attended the ED for PPP. Likelihood of unscheduled hospital visits for post-operative complications and for exacerbations of pain in the year prior to and following surgery was independent of the presence of endometriosis lesions.

CONCLUSIONS: In a cohort of women living with PPP, laparoscopic surgery failed to reduce the need to attend the ED owing to their pain. Further investigation into interventions that can reduce the burden of pain on these women and the healthcare system is required.

Persistent pain perceived in structures related to the pelvis affects around one in four women, and is commonly associated with negative cognitive, behavioural, sexual and emotional consequences.¹

Persistent pelvic pain (PPP) is recognised internationally as posing a high burden on health services.^{2,3} Women living with PPP commonly experience flare-ups of pain and these may lead to presentation to acute hospital services. Abdominal pain is the presenting concern for around half of high frequency users of emergency departments (ED) and approximately 40% of acute hospital gynaecological presentations are for pelvic pain for which no cause is found during the visit.⁴⁻⁶

EDs are specialist services for those with acute illness or injury, and the complex difficulties associated with chronic pain are not well managed in this setting.^{7,8} Women attending ED for PPP often undergo numerous investigations with high cost and low probability of finding any abnormality, and report dissatisfaction with their care.^{6,9}

Initiatives such as Choosing Wisely encourage

consideration of healthcare resources in clinical decision making.¹⁰ There is, however, a paucity of evidence on cost effectiveness to guide these decisions.¹¹

Surgery to diagnose and treat presumed endometriosis lesions is often seen as the mainstay of management for PPP. Such surgery is widely anticipated to reduce acute healthcare use—either by removing the “pain generator” or, in the case of a negative laparoscopy, providing reassurance and allowing engagement with persistent pain services. This hypothesis, however, has not been proven, with some evidence that healthcare costs increase following surgical intervention.^{12,13}

This study aimed to explore the change in use of acute hospital services by women with PPP in the year prior to and following a laparoscopy intended to treat their pain.

Population

The Christchurch Women’s Hospital (CWH) provides services to a population of 288,000 females within north and central Canterbury,

New Zealand. This includes 134,000 women in the reproductive age group (15–49) who are most commonly affected by pelvic pain. New Zealand data indicate a PPP prevalence of 25%; therefore, approximately 33,000 women live with PPP in this region.¹⁴

As the COVID-19 pandemic has had substantial influence on surgical waiting lists since 2020, the calendar year 2019 was selected to provide a convenience sample.

Methods

Elective operation booking records were obtained from the CWH surgical waiting list office for all planned surgical procedures between 1 January and 31 December 2019. Procedures listed as laparoscopy for the investigation or treatment of PPP without abnormality on pre-operative imaging were identified.

A hand search of the electronic patient records was undertaken for each individual identified. Variables collected included: indication for procedure; surgical findings and intervention including

histopathology; post-operative complications requiring hospital treatment; and ED visits for PPP in the 12 months prior to and following surgery.

A Chi-squared test of association was performed using MedCalc Software (MedCalc Software, Ostend, Belgium) to determine whether there was a difference in ED attendances. A p-value of 0.05 was considered significant.

On application to Health and Disability Ethics Committee, it was deemed that as an audit this study was out of scope for needing review.

Results

Two hundred and three elective laparoscopies were performed for the investigation or treatment of pelvic pain in 2019. Eight were removed from data analysis, leaving a dataset of 195. Reasons for exclusion were: the procedures were part of a planned staged operation (4), listed indication also included infertility (3), and missing operative note (1).

Endometriosis was visually identified (E+) and treated in 99 cases (51%). The lesions were histo-

Table 1: Presentation to ED by endometriosis lesion status.

	E+ (n=99)	E- (n=96)	P-value
Unplanned admission for post-operative complications	12 (12%)	6 (6.3%)	p=.16
Presented to ED in 1 year prior to operation	15 (15%)	15 (16%)	p=.93
Presented to ED in 1 year post-operation	13 (13%)	18 (19%)	p=.28

ED = emergency department; E+ = endometriosis identified and treated at laparoscopy; E- = no endometriosis identified; X², p-value of 0.05 considered significant.

Table 2: Presentation to ED in the year prior to and following surgery.

	Pre-operation year ED attendance for PPP	Post-operation year ED attendance for PPP	P-value
E+	15 (15%)	13 (13%)	p=.17
E-	15 (16%)	18 (19%)	p=.57
Whole cohort	30 (15%)	31 (16%)	p=.89

ED = emergency department; PPP = persistent pelvic pain; E+ = endometriosis identified and treated at laparoscopy; E- = no endometriosis identified; X², p-value of 0.05 considered significant.

logically confirmed in 86, not confirmed in 5, and in 7 cases ablation only was performed with no histology taken. In 96 cases (49% of the cohort), no endometriosis was found (E-).

One hundred and sixty-four women were discharged on the day of surgery and 31 women required an inpatient stay post-operatively (total 33 bed-nights). Costings provided by the hospital estimate a total of NZ\$2.3 million for surgery and post-surgical stay for this cohort.

Eighteen women suffered surgical complications requiring unscheduled hospital care: 12 who had received treatment for endometriosis and six who had a normal pelvis at laparoscopy. Complications were all minor and included uncontrolled pain (10), wound infection (4), bleeding (3), urinary retention (1), and port site endometrioma (1). There was no difference in likelihood of complication requiring hospital care by lesion status, X^2 (1 N=195) = 2.0, $p=.16$

There was no change in number of women from the study cohort presenting to the ED for their PPP between the 12 months pre-operatively (30 women, 15 E+, 15 E-; totalling 44 visits) and the 12 months following their surgical intervention (31 women, 13E+ and 18E-; totalling 42 visits) X^2 (1 N=195) = 0.02, $p=.89$.

The proportion of women who attended the ED for their PPP did not differ by endometriosis lesion status at surgery during the pre-operative year X^2 (1 N=195)=0.01, $p=.93$; or post-operative year X^2 (1 N=195)=1.2, $p=.28$.

Discussion

This study aimed to explore the impact of laparoscopic surgical intervention on the requirement to attend the ED for PPP. The results identified that NZ\$2.3 million (excluding management of complications) invested into elective laparoscopic surgical intervention did not reduce this healthcare burden on the acute hospital services in the following 12 months. This finding is consistent with a study in the United Kingdom, which found that reduced access to surgery for PPP during the pandemic lockdowns did not result in increased ED attendance for exacerbations of pain.⁶

Endometriosis was identified in 51% of the women, which is concordant with published literature that states endometriosis lesions are found in 40–60% of those with PPP.¹⁵ A growing volume of evidence supports that, for women with PPP, the presence of endometriosis lesions does not predict the amount of pain or suffering experienced.^{16,17} In

this study, the presence of lesions did not predict likelihood of attending ED for PPP either pre- or post-operatively. This is consistent with a British study, which found that half of women presenting to the ED with a flare-up of PPP have a diagnosis of endometriosis.⁶

As need for ED attendance for PPP in the year pre-operatively was independent of lesion status it is perhaps unsurprising that surgical removal of these lesions did not alter this in the subsequent year for the E+ cohort. The evidence base supporting surgical management of PPP or pain attributed to endometriosis is limited, and typically utilises reduction in pain intensity scores as outcomes.^{18,19} Pain by definition has both sensory and emotional components not captured in such unidimensional outcome measures. Change in pain intensity alone has been shown to be a poor predictor of future disability and quality of life in persistent pain conditions.²⁰

The impact of pain on functioning and the decision to attend acute services is, however, predicted by psychosocial factors. Those with high levels of symptom-related anxiety and worry are more likely to attend healthcare.²¹

An audit of attendees to the CWH gynaecology clinic with pelvic pain found a strikingly high level of catastrophic worry about pain and other psychosocial yellow flags.²² Surgical intervention is unlikely to improve these factors. There is, however, evidence that multidisciplinary (MDT) pain clinics where interventions address such psychosocial domains improve quality of life and reduce healthcare costs by over 90% for those living with musculoskeletal pain.²³ Specialist MDT interventions for women living with PPP have shown comparable outcomes across a range of domains including reduction in pain-related worry,^{24–26} and have also been shown to reduce subsequent attendances at the ED.^{25,27,28} Currently, however, there is very limited access to such MDT pain services in New Zealand.²⁹

Limitations

This retrospective study has limitations. It was not possible to establish if there was any change in attendance at non-hospital healthcare including community or private sector services, or to explore the decision making behind the ED attendances. The data also lack detail on differences between ED attenders and non-attenders, aside from endometriosis lesion status. As patient-reported outcome or experience measures are

not obtained following surgery at CWH it was not possible to determine if there were any changes in pain experience or other outcome measures such as quality of life.

The follow-up period of this study includes March–May 2020 when New Zealand was under COVID-19 “lockdown” restrictions. It is possible that this event influenced decision making behind ED attendances during this time.

Conclusions and future directions

While the data have limitations, this study adds further information on the costs and implications of current healthcare for PPP. Further prospec-

tive research is required to explore the efficacy and cost effectiveness of current management approaches, including systematic collection of patient-reported outcome measures across a number of domains including quality of life measures. Such information would allow individuals and funders to make informed treatment decisions, and also provide baseline data to compare with alternative models of care.

A move from the current high-cost biomedical-focussed model of care to a wider socio-psycho-biomedical approach via MDT services carries potential for benefits to both those living with PPP and the health services that provide them with care.

COMPETING INTERESTS

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