

Repeated laparoscopies for pelvic pain: doing the same thing over and expecting a different outcome?

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ABSTRACT

BACKGROUND: Pelvic pain is a common and burdensome condition for women and the healthcare system. Surgery is a common treatment approach; however, as this is not always successful many women receive repeated procedures, often with diminishing benefits. In order to try and reduce the frequency of this high-cost, low-value approach, the New Zealand endometriosis clinical care pathway recommends that multidisciplinary review is undertaken prior to a third operation.

AIMS: To quantify the current practice of repeated laparoscopic procedures, informing the requirement for multidisciplinary meeting capacity.

METHODS: A retrospective audit was undertaken of the elective gynaecological laparoscopies performed for pelvic pain within the Canterbury District Health Board in the 2019 calendar year. De-identified data were also obtained from private insurance providers for the same time-period.

RESULTS: Of the women receiving a publicly funded laparoscopy, 34% had previously undergone at least one similar procedure (range 1-7). Although the data from the private sector have limitations, these also demonstrate a high number of repeated procedures – particularly for those residing in the Canterbury region.

CONCLUSIONS: Despite being recognised as low-value, high-cost care, repeated laparoscopies are common management for women with pelvic pain, suggesting that further investment into multidisciplinary services is required.

Chronic pelvic pain (CPP) afflicts around one in four New Zealand women¹ and is commonly attributed to endometriosis, despite around half of those women affected not having demonstrable lesions.² Surgery to locate and treat this presumed endometriosis is often seen as the mainstay of management for CPP. Data from New Zealand's largest health insurer reported that, in 2015, surgery for endometriosis was the most common procedure for female claimants aged 21–35 and was one of the top three procedures for women under 50.³

This approach is extrapolated from oncological practice of lesion reduction; however, in direct contrast to malignancy, there is a well-recognised lack of correlation between lesion status and prognosis.⁴ In addition, the symptoms experienced are the same as the

symptoms experienced by the 40–60% of women with CPP in whom lesions are not demonstrated.^{2,5} Lesions are also commonly seen in women who do not suffer pelvic pain.⁶

The evidence base supporting surgical management of pain attributed to endometriosis is currently lacking. Some authors are questioning the practice, particularly given risks and costs associated with surgery.^{7,8} The recently released Australian Endometriosis Clinical Practice Guideline rates the evidence for the recommendation “[c]onsider laparoscopy to diagnose and treat people with suspected endometriosis” as “very low - any estimate of effect is very uncertain.”⁹

Within the limited literature, there is an indication of a “law of diminishing

returns”—that is, a lower likelihood of benefit with subsequent operations.^{8,10} Repeated surgery is cautioned against in international guidelines.^{9,11,12} However, this remains a common practice in New Zealand. An unpublished 2014 Endometriosis New Zealand patient poll found a mean number of four surgeries per respondent, with a range of 1–25 operations per respondent.¹³

In order to address this high-cost, low-value practice,⁸ the 2020 Ministry of Health clinical care pathway Diagnosis and Management of Endometriosis in New Zealand recommends that “[c]linicians considering a third or more laparoscopy on a patient should seek the opinion of a multi-disciplinary meeting [MDM].”¹⁴

An audit of numbers of repeated laparoscopies within the Canterbury District Health Board (CDHB) and in the private sector in New Zealand was undertaken to establish current practice. The results will inform capacity requirements for pelvic pain MDMs and provide a baseline to establish whether any change in practice occurs over time.

Methods

Prior to commencement of data collection, the Health and Disability Ethics Committee confirmed the audit status of this work as out of scope for requiring review.

As COVID-19 pandemic restrictions have likely skewed the most recent data on healthcare usage, the 2019 calendar year was selected as a convenience sample to provide representative audit data.

Populations

The CDHB provides services to a population of 578,000 within north and central Canterbury, New Zealand. This includes 288,000 females, of whom 134,000 are within the reproductive age group (15–49).¹⁵ A monthly pelvic pain MDM was established in 2016 and includes clinicians from the gynaecology, physiotherapy, pain management, emergency and mental health departments. The MDM is a forum for clinician collaboration in the management of complex pelvic pain presentations, with an average of six patients discussed at each meeting.

Over 35% of New Zealand women aged 15–49 had private health insurance in 2019, with the highest rates in the Auckland, Waitemata and Capital and Coast DHB regions.¹⁵

Data collection

CDHB data

Elective operating theatre list records were obtained from the CDHB Women’s Hospital surgical waitlist office for all elective gynaecology surgical procedures that were performed between 1 January and 31 December 2019. Procedures that were listed as laparoscopy for the investigation or treatment of pelvic pain were identified.

A hand search of the electronic patient records, including operation notes, clinic letters and past admission notes, was undertaken for each individual identified. The following variables were collected: National Health Index number, indication for procedure, number of previous laparoscopic procedures for pelvic pain (including indication for and funding of these) and whether the case had been reviewed at the CDHB pelvic pain MDM pre-operatively.

Private sector data

The major health insurance companies funding surgical procedures were approached and asked for data on number of procedures performed within the same time-period.

De-identified data were obtained for the number of individual members having a pelvic laparoscopy in 2019, including whether they had already received funding for a similar procedure by the same funder in the previous five years. Data were provided for policyholders residing within the Canterbury postal area and those resident in the rest of New Zealand.

Post hoc analysis

Post hoc calculation, as described in the *Results* section, was undertaken with MedCalc Software (MedCalc Software bv, Ostend, Belgium). The relative risk, its standard error and 95% confidence interval were calculated according to Altman.¹⁶

Adjustment for confounding factors was not possible owing to the limitations of the data available.

Results

CDHB data

There were 203 elective laparoscopies performed by the CDHB Women’s Health Service for the indication pelvic pain in 2019. Eight were removed from data

analysis, leaving a total CDHB 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).

Of the remaining 195 individuals, sixty-six (34%) had already undergone a similar procedure for pelvic pain, with a range of 1–7 past surgeries (Figure 1). For thirteen of the 66 women, this had been a previous “diagnostic only” procedure, and of these thirteen, no pathology was found in nine, who were therefore again left without operative intervention. Fifty-three of the women had already had at least one previous treatment laparoscopy for their pelvic pain.

The 66 women undergoing a repeat laparoscopy in the CDHB had already received a combined total of 109 procedures. Sixteen of these women were identified as having had at least one procedure in the private sector, with a range of 1–6 privately funded procedures. Overall, 30% of the previous procedures had been privately funded.

None of the 195 women had been discussed at the CDHB pelvic pain MDM prior to their 2019 operation.

Private sector data

Two of the four major providers of private surgical insurance, Southern Cross and UniMed, were able to provide de-identified data for analysis within the required time frame of the audit. Combined, these two providers represent the majority of the market.

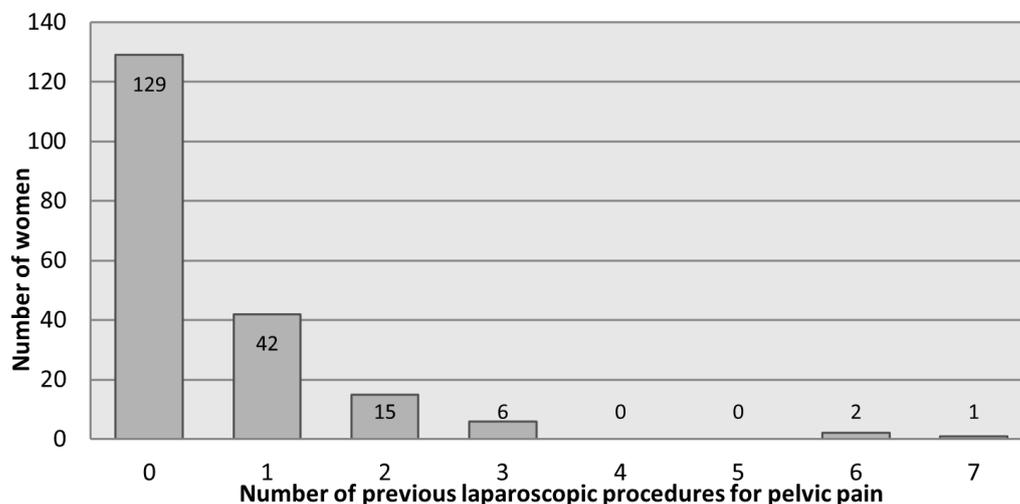
In the 2019 calendar year, 262 policy-holders residing in Canterbury underwent a total of 274 pelvic laparoscopies. Of these 262 women, twelve individuals (4.6%) had undergone two procedures in 2019, and 70 (27%) had received funding from the same insurer for at least one previous pelvic laparoscopy within the preceding five years. Indication for surgery for each individual was not available, but the majority (61%) of procedures in the whole cohort were listed as being “endometriosis surgery.”

When reviewing the data provided, an unexpected finding was made of a disparity between those living within the Canterbury region and the rest of the country (Figure 2). The relative risk of having already undergone a previous pelvic laparoscopy in the preceding five years for those residing in Canterbury, versus those outside it, was calculated.

The 1,064 women residing outside of the Canterbury area who had a privately funded pelvic laparoscopy in 2019 were significantly less likely to have had a second procedure in that year (RR 6.1 (95% CI 2.52–14.75) $P=0.0001$) or to have already undergone a similar procedure funded by their policy in the previous five years (RR 2.4 (95% CI 1.82–3.08) $P<0.0001$).

Differences between data from the DHB and private insurance cohorts were not analysed, as the datasets are not comparable.

Figure 1: Number of previous laparoscopies for pelvic pain within the CDHB cohort.



Discussion

This audit set out to estimate the number of additional cases that will need to be accommodated in the CDHB pelvic pain MDM in order to comply with the recommendations of the Ministry of Health clinical pathway.

None of the 24 women who underwent their third or greater surgical procedure within the CDHB cohort were discussed at the pelvic pain MDM. Although, notably, the recommendation to do so was not published until March 2020—after the timeframe of this audit, this forum was available for discussing non-surgical alternatives to a further operation. These data suggest that each monthly meeting will need to accommodate an extra two cases for discussion. Although it is difficult to estimate the number of those in the private sector who would need similar provision, it seems likely that the numbers could be similar, as there were sixteen women who appeared to meet this criterion from the limited dataset available.

The data from the private insurers are limited owing to the de-identified nature and shorter timeframe of inclusion of past procedures, and because the indication for the surgical procedure was not available. Despite these limitations, the unanticipated finding of a more than double relative risk of Canterbury women having had prior surgeries compared to the rest of the country is striking and warrants further investigation.

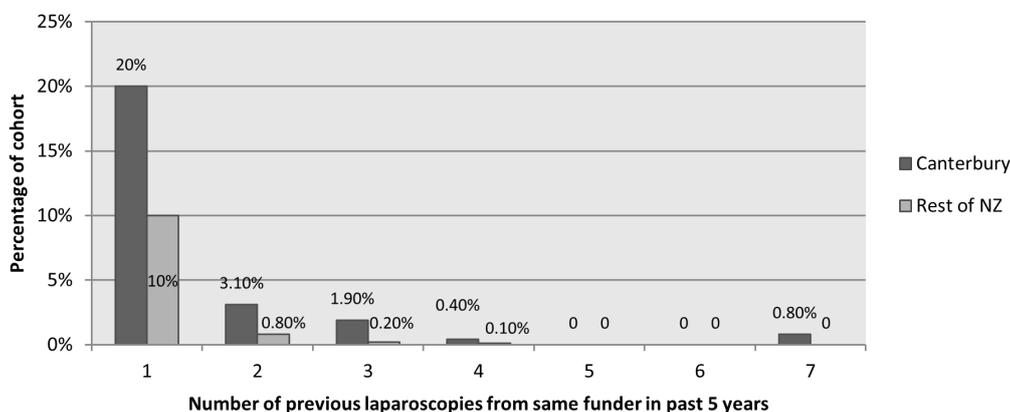
Future research directions

The recurrence of symptoms following laparoscopic treatment of pelvic pain and subsequent repeated surgical procedures is well recognised in the literature. Laparoscopic treatment of endometriosis fails to improve pain symptoms in 20–54% of cases.^{8,17,18} Of those who do obtain benefit from surgical intervention, up to 93% have a recurrence of pain.¹⁹ Cohort studies have shown the repeat surgery rate for those with endometriosis to be 50–60% by five to seven years,^{19,20,21} with an average interval of under two years.^{10,17} Around half of these women go on to receive multiple procedures.²⁰

Variation in practice of repeated surgeries has been recognised and may be related to a number of variables in patient characteristic, services available and gynaecologist decision-making. However, this variation in practice is often not based on evidence.^{22–24} Review of the literature identifies some possible factors that may contribute to these discrepancies and inform further research.

The most significant factor influencing the likelihood of having a repeat procedure is the age of the woman at the first operation, with younger age predicting probability of a repeated procedure in the future.^{20,21} Rates of repeated procedures have been reported as over 70% in those who are less than 30 years old at primary surgery.^{20,21} The reason for this has not been established. However, notably, younger age is also a risk factor for persisting pain following surgery for endometriosis.²⁵

Figure 2: Percentage of the private insurance cohort who already had prior laparoscopies funded by the same insurance provider in the previous five years by number of previous procedures in past five years.



Endometriosis New Zealand delivers the Menstrual Education programme to school students “to improve adolescent knowledge of menstrual health and endometriosis.” Outcomes published include an observed relationship between the number of years that the education programme has been running in Canterbury and the numbers of young women aged under 20 undergoing laparoscopic surgery and subsequent follow-up in the Endometriosis and Pelvic Pain Coaching Clinic, which is run by the holder of the intellectual property of the Menstrual Education programme.²⁶ If this observed relationship were to be confirmed, this could suggest there is a relationship between delivery of this programme and reduced age at first laparoscopy. It may then follow that this programme is a possible contributor to the discrepancy of repeated procedures in the Canterbury region, where it has been running the longest.

Psychosocial factors have also been shown to be predictors of healthcare usage and outcomes. Although around one in five adults in New Zealand live with chronic pain, not all seek healthcare equally. Those with high levels of symptom-related anxiety and catastrophic worry about pain are more likely to present for care.²⁷ In those with CPP, psychosocial factors including depression, anxiety and catastrophic worry correlate with increased pelvic pain severity and persisting pain following surgery for endometriosis.^{2,18, 25, 28} It is possible that this combination of increased healthcare consulting behaviour, augmented pain experience and reduced benefit from surgery could result in increased likelihood of repeated surgical procedures.

A 2019 Ernst & Young report commissioned by the CDHB reported a significantly higher rate of “mood/anxiety disorder” in Canterbury compared to the national average.²⁹ Possible reasons for this finding include that the last decade has seen a disproportionate number of stressors on the local population, including natural disasters and a terrorist attack.

An audit in the CDHB gynaecology clinic found a strikingly high level of catastrophic worry about pain among the women referred for review of CPP—a level higher than those of similar groups in the published

international literature.³⁰ Reasons for this discrepancy are unclear as there is no such difference between this variable in those seen in the population of the CDHB pain clinic and international norms, despite the shared environmental milieu. Regardless of the reasons behind this finding, it does represent a potentially modifiable risk factor for poor outcomes for those living with pelvic pain and resultant delivery of high-cost, low-value care in the region.

A study investigating decision-making by gynaecologists identified that a strong predictor for being referred for a surgical procedure for CPP was having had prior abdominal or pelvic surgery. This finding highlights the significance of the decision for the primary procedure.²³ Younger age was also associated with an increased chance of being booked for a surgical procedure, another factor that compounds the impact of gynaecologists’ decision-making on the trajectory of the woman’s future care.

An observational study in Australia reviewed the predictors of gynaecologists deciding to arrange surgery for women attending a gynaecology clinic for CPP. The strongest predictor of clinicians’ decisions to operate was randomisation to a clinic with advanced endoscopic skills rather than one with additional pain management skills.²⁴ Notably, the percentage of patients in whom endometriosis lesions were identified was the same in each cohort despite the differing operative rate.

Currently, the health-cover benefits of the major insurance companies will fund (repeated) surgical interventions but not comprehensive pain management input. Although the CDHB does have a specialist pelvic pain clinic run by a Pain Medicine Physician, this clinic has a very limited capacity. This means that the services available to women with CPP, both publicly and privately funded, are mainly delivered by endoscopic surgeons rather than by clinicians with additional pain management skills.

Limitations of study

The data for this study were obtained retrospectively and relied on existing records, which in many cases were limited in detail. For the women in the CDHB cohort,

the nuances of decision-making for undertaking a repeat operation may not have been appreciable in the electronic records. This audit also only identified those who received an elective procedure, whereas during the audit timeframe some women were likely to have undergone a similar procedure on an urgent operating list not captured in this dataset, and so the totals may be an underestimate.

It is not possible to compare the data for the two cohorts, as the data available from the private sector are non-equivalent. The insurance providers were only able to provide de-identified data, so the indication for performing the laparoscopy was not provided, meaning that some of the procedures were likely to have been performed for indications unrelated to pain. As this would be expected to be the case with the data collected from all regions in New Zealand, the discrepancy is still notable.

It is also not possible to establish whether the women in the insurance-funded cohort had previously received a laparoscopy from the same funder more than five years earlier, or funded by a different provider. Of note, 30% of the prior procedures received by the CDHB cohort had been privately funded, which suggests that women commonly access surgery via multiple funding streams. Thus the data for the insurance funded cohort may be an underestimate.

Conclusions

Despite being recognised as low-value care, the practice of repeated laparoscopies is common in both the private and public gynaecology sectors. Further prospective research, including detailing clinician and patient decision-making rationale and data collection within other public hospitals, is required to further explore the practice of repeated laparoscopic procedures for pelvic pain in New Zealand.

The limited data available suggest that this practice may be more common in Canterbury than elsewhere in New Zealand. More research is needed to understand these findings and to identify modifiable risk factors for the delivery of high-cost, low-value care. The literature identifies a number of interlinked risk factors, including younger age at first surgery and lack of specialist pain management and psychosocial interventions, which have the potential to interact into a cascade of poor outcomes from surgery and repeated operations.

International and local research has identified the need for further training in pain management skills for gynaecologists.³¹ The investment in such training and in the development of a multidisciplinary services has the potential to address some of the factors contributing to the current practice and provide an alternative care pathway.

Competing interests:

Nil.

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