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Medical management prior to hysterectomy for benign indications: Trends from a tertiary-care centre

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Abstract

Objective: Women historically had a hysterectomy for benign gynaecological indications (fibroids, abnormal uterine bleeding, pelvic organ prolapse and chronic pelvic pain). Multiple effective medical therapies now exist for all of these indications, with variable use. As various provinces in Canada move towards a quality-based model of funding, this study aimed to understand trends in usage of these medical therapies prior to proceeding to hysterectomy to identify potential areas for quality improvement.

Methods: A retrospective chart review was conducted of all hysterectomies performed for benign indications over a 6-month period at a tertiary care institution focusing on three major areas: medical management prior to proceeding to hysterectomy (how many therapies tried and for how long), pre-operative optimization once hysterectomy was decided and surgical approach (vaginal, laparoscopic or abdominal).

Results: Thirteen percent of women did not have documentation of receiving any counseling about alternative medical therapies. When women were counseled regarding one or more medical therapies, 30% declined to try any of the options and 57% tried at least one. Only 19.9% of women tried more than one form of medical management prior to proceeding to hysterectomy.

Conclusion: Our study indicates that medical management is not being adequately discussed, trialed, and documented in women undergoing hysterectomy for benign indications

Introduction

Hysterectomy is currently identified as a Quality-Based Procedure (QBP), meaning that funding for this procedure will become tied to evidence of improved quality of care and will have standardized care delivery across provinces for improved cost efficiency. There is significant geographical variation in hysterectomy rates within the province of Ontario [1]. As institutions across the country transition towards this new model of funding, there is a need to understand existing practice trends in hysterectomy, in order to identify target areas to improve quality of care. At our tertiary care centre in Southwestern Ontario, with a catchment area of 1 million women, our process of Morbidity and Mortality (M&M) rounds has identified potential areas of improvement in our use of hysterectomy for benign indications. Specifically, we found that women presented at M&Ms were repeatedly identified as never having a trial of medical management prior to having a hysterectomy, not having minimally invasive surgical approach to hysterectomy and not having adequate pre-operative optimization of medical co-morbidities. This sparked an interest in understanding the overall practice trends in benign hysterectomy for all women at our centre. Coming at a time when provinces, including Ontario, are moving away from global hospital funding and towards funding based on specific procedures and patient outcomes, we initiated a chart review of practice trends in benign hysterectomy in our institution to identify gaps in quality care and prepare our institution for QBP.

Hysterectomy has been described as a "one-size-fits-all" solution for benign gynaecology [2]. The majority of hysterectomies are done for benign indications, the most common being fibroids and abnormal uterine bleeding. There are increasingly available medical and minimally invasive alternatives for common benign indications. The Women's Health and Hysterectomy Project (2000) demonstrated a gap in clinicians exploring these alternatives prior to hysterectomy [3]. For example, seventy percent of recommendations for hysterectomy were inappropriate (367/497 cases), the majority due to lack of one or more diagnostic and/or therapeutic investigations prior to hysterectomy. 77% of women with pelvic pain did not have a diagnostic laparoscopy, 45% of women with abnormal uterine bleeding did not have endometrial sampling and 21% of women with pain or bleeding did not get offered a trial of medical treatment.

When the decision is made to offer or proceed with hysterectomy, the American Congress of Obstetricians and Gynecologists (ACOG) and the Society of Obstetricians and Gynecologists of Canada (SOCG) both recommend vaginal hysterectomy as first choice of approach, being safer and more cost effective than abdominal hysterectomy [4,5]. However, literature shows that the abdominal approach is performed more often (TAH 66%, VH 22% in the United States), despite recommendations. Thus, current quality improvement initiatives in the use of hysterectomy for benign disease include an improvement in use of medical management alternatives, as well as promotion of vaginal approach [6-8].

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Understanding trends within our institution may serve as a reflection of trends across our region and province and may assist multiple institutions to identify and target quality improvement initiatives in anticipation of QBP. In this observational study, we performed a retrospective chart review of hysterectomies performed for benign indications over a 6 month period at our institution, and chose to focus on three major areas: medical management prior to proceeding to hysterectomy, pre-operative optimization once hysterectomy was decided upon and surgical approach.

Methods

All study procedures and data acquisitions were performed through Cerner PowerChart, the electronic medical record used within London Health Sciences Centre (LHSC). This study was performed as a quality improvement initiative. All hysterectomies performed during the alternating months of July 2016 to May 2017 were identified using Cerner SurgiNet. From these, hysterectomies performed for 4 major benign indications –uterine fibroids, pelvic pain, abnormal uterine bleeding and pelvic organ prolapse - were included in the review. These were identified using the "Pre-operative diagnosis" in the dictated operative note on PowerChart. These indications were not mutually exclusive as patients often had more than one benign indication for why the hysterectomy was being performed. Hysterectomies performed for obstetrical, oncological, gender transition, or non-electively (on call) indications were excluded. All patient EMRs were accessed under a quality improvement initiative through the Hysterectomy Pathway Subcommittee, part of the Gynaecology Quality Care Committee, to understand hysterectomy trends within our own institution. The subcommittee was comprised of 3 general gynecologists, 1 gynecologic oncologist, 1 high-risk obstetrician and 2 Obstetrics/Gynaecology residents. Over 2 meetings, this subcommittee identified three major areas of interest in understanding hysterectomy trends: medical management prior to proceeding to hysterectomy, pre-operative optimization and post-operative complications. The four benign indications which were the focus of our chart review all have multiple options for medical management prior to consideration of surgical management. We looked at how many women who went on to have a hysterectomy had an adequate trial of one or more of these options. Once a decision was made to proceed, we looked at patient co-morbidities and whether pre-operative consultations were made to Anesthesia and/or Internal Medicine. Finally, we looked at the immediate post-operative period, prior to discharge from hospital as well as the 6 weeks after discharge for potential early and late complications respectively.

The chart review was performed by a junior Obstetrics/Gynaecology resident and a senior medical student. Indication of hysterectomy was identified as described above. Initial consultations, pre-operative clinic reports, operative note, discharge summary and post-operative clinic notes were read to identify variables of interest. Additionally, bloodwork, imaging and pathology reports were reviewed.

Results

Demographics

During alternating months between July 2016 and May 2017, there were 186 women who had a hysterectomy for benign indications. They ranged in age from 18 to 84 years old with an average age of 48.5 years old (Table 1). Nineteen women were nulliparous, 96 women delivered exclusively by vaginal deliveries, 18 women had delivered exclusively by Cesarean section, and 14 women delivered by at least one vaginal and one Cesarean section. Thirty-nine women did not have their GTPAL status reported anywhere in their dictated electronic notes.

Trial of medical and minimally invasive management

Benign indications for hysterectomy in our population were pelvic organ prolapse (66 women, 35.4%), abnormal uterine bleeding (61 women, 36.3%), uterine fibroids (30 women, 16.1%), and pelvic pain (29 women, 15.6%). Table 2 shows the breakdown of women in whom non-surgical therapies were discussed, declined, and/or attempted respectively.

Pelvic organ prolapse: Sixty-six women (35.4%) had a pre-operative diagnosis of pelvic organ prolapse. Of these 66 women, 9 women (13.6%) had a an adequate trial of topical hormone replacement therapy (defined as at least 3 months), 2 women (3.0%) had topical HRT discussed and declined to use it and for 55 women (83.3%) it was not documented as being discussed. 29 women (43.9%) had a trial of pessary use (at least 3 months) prior to proceeding to hysterectomy, 24 women (36%) declined to use it and for 13 women (19.7%) it was not documented as being discussed.

Uterine fibroids: Thirty women (16.1%) had a pre-operative diagnosis of uterine fibroids. Providers discussed at least one form of medical management with 25 women (83.3%). The most common medical management discussed was ullipristal acetate (Fibristal), discussed with 15 women (50.0%) and 11 women (36.7%) had a trial (at least 3 months) prior to proceeding to hysterectomy. Mirena intra-uterine system was discussed with 9 women (30%) and 4 women (13.3%) had a trial (at least 3 months) prior to proceeding to hysterectomy. The oral contraceptive pill was discussed with 8 women (26.7%) and 6 women (20%) had a trial (at least 3 months) prior to proceeding to hysterectomy. Minimally invasive methods of managing fibroids, such as hysteroscopic ablation, myomectomy and uterine artery embolization (UAE), were discussed with a total of 17 women (56.7%), 3 women had an ablation (10%), 4 women had a myomectomy (13.3%) and 3 women (10%) had a UAE.

Chronic pelvic pain: Twenty-nine women (15.6%) had a pre-operative diagnosis of pelvic pain. Providers discussed at least one form of medical management with 26 women (89.7%). The most common medical management discussed were the oral contraceptive pill and Mirena IUS, both discussed with 12 women (41.4%). 8 women

Table 1. Age breakdown

Age Range	Number of patients	Percentage
<30	1	0.5%
30 – 39	33	17.7%
40 – 49	83	44.6%
50 – 59	30	16.1%
60 – 69	28	15.0%
>=70	11	5.9%

Table 2. Number of women attempting medical therapy based on indication for hysterectomy

	Pelvic organ prolapse	Uterine fibroids	Chronic pelvic pain	Abnormal uterine bleeding	Total
None discussed by provider	11 (16.7%)	5 (16.6%)	3 (10.3%)	5 (8.2%)	24 (12.9%)
Declined all	23 (34.8%)	4 (13.3%)	7 (24.1%)	18 (29.5%)	52 (30.0%)
One	29 (43.9%)	16 (53.3%)	11 (37.9%)	13 (21.3%)	69 (37.0%)
Two or more	6 (9.0%)	5 (16.6%)	8 (27.5%)	18 (29.5%)	37 (19.9%)

(27.6%) had an adequate trial of an OCP and 4 women (13.8%) had an adequate trial of Mirena IUS prior to proceeding to hysterectomy. An endometrial ablation was discussed with 7 women (24.1%) and 5 women (17.2%) had an ablation prior to proceeding to hysterectomy. A diagnostic laparoscopy was discussed with 3 women (10.3%) and 2 women (6.7%) had a diagnostic laparoscopy prior to proceeding to hysterectomy.

Abnormal uterine bleeding: Sixty-one women (36.6%) had a pre-operative diagnosis of abnormal uterine bleeding. Providers discussed at least one form of medical management with 56 women (91.8%). The most common medical management discussed was the oral contraceptive pill (38 women, 62.3%) and Mirena IUS (33 women, 54.1%). 18 women (29.5%) declined to try any form of medical management at all. 31 women (50.8%) tried at least one form of medical management, 16 women (26.2%) attempted a second form of medical management and 2 women (3.3%) tried three forms of medical management prior to proceeding to hysterectomy. Providers discussed at least one form of minimally invasive management with 45 women (73.7%) and 19 women (31.1%) had an endometrial ablation prior to proceeding to hysterectomy.

Pre-operative Optimization

Once a decision for hysterectomy was made, 169 women (91.0%) had a pre-operative Complete Blood Count (CBC) including Hemoglobin drawn at least 3 months prior to surgery. The Hysterectomy Pathway Sub-Committee identified pertinent co-morbidities in women undergoing hysterectomy, these are outlined in Table 3. 128 women (68.8%) of women were otherwise healthy, with no identified co-morbidities, of these 14 women (10.9%) had a pre-operative consultation with Anesthesia, Medicine or both. 58 women (31.1%) had at least one identified co-morbidity. Of these, 28 women (46.6%) with one or more co-morbidities identified had a pre-operative consultation with Anesthesia, Medicine or both. 26 women (44.8%) with one or more co-morbidities did not have a pre-operative consultation with Anesthesia or Medicine. 89 women (47.8%) had some form of pre-operative imaging performed, most commonly this was a Pelvic Ultrasound, performed in 65 women (35.0%). 97 women (52.1%) had no pre-operative imaging performed.

Of the 61 women who were having a hysterectomy for abnormal uterine bleeding, 34 women (55.7%) did not have some form of endometrial sampling. Of the 27 women (44.2%) who did have endometrial sampling, 23 women (37.7%) had an endometrial biopsy and 4 women (6.6%) had endometrial curettings from a dilatation and curettage.

Surgical Approach

Surgical approach to hysterectomy is shown in Table 4. The most common surgical approach was a laparoscopic assisted vaginal hysterectomy (LAVH), performed in 66 women (35.5%) followed by a vaginal hysterectomy in 56 women (30.1%). Total abdominal hysterectomy (TAH) was performed for 22 women (11.8%), for 10 women (5.4%) there was no reason stated in pre-operative notes for planning an abdominal approach. 9 women (4.8%) had a TAH due to large fibroids which were felt would not be removable vaginally, 2 women (1.1%) had known adhesions from previous abdominal surgery and 1 woman had an elevated BMI which was felt to preclude a minimally invasive approach. Robot-assisted total laparoscopic hysterectomy was performed for 16 women (8.6%), for 3 women (1.6%) there was no reason stated in pre-operative notes for planning a robot-assisted approach. Other reasons for a robot-assisted TLH were adhesions (3 women, 1.6%), large fibroid (1 woman, 0.5%) and patient request (1 woman, 0.5%). A sub-total abdominal hysterectomy was performed in 11 women (5.9%), for 1 woman (0.5%) this was a conversion intra-operatively from an LAVH for extensive adhesions, for 10 women (5.4%) it was performed for pelvic organ prolapse with a planned abdominal anti-incontinence procedure.

Table 3. Breakdown of comorbidities

Comorbidities	Total	Percent
No co-morbidities	128	68.8%
BMI > 35	38	20.4%
Hypertension	28	15.0%
Chronic pain	18	9.7%
Respiratory disease	17	9.1%
Type 2 Diabetes Mellitus	13	7.0%
Dyslipidemia	11	5.9%
Cardiovascular disease	9	4.8%
History of venous thromboembolism disease	7	3.8%

Table 4. Surgical approach taken for hysterectomy

Route	Indication	Patients
Laparoscopic assisted vaginal hysterectomy (n=66)	AUB	26
	Fibroids	5
	Pelvic Pain	16
	POP	19
Vaginal hysterectomy (n=56)	AUB	19
	Fibroids	1
	Pelvic Pain	2
	POP	34
Total abdominal hysterectomy (n=22)	AUB	3
	Fibroids	12
	Pelvic Pain	4
	POP	3
Robot assisted total laparoscopic hysterectomy (n=16)	AUB	3
	Fibroids	6
	Pelvic Pain	7
Total laparoscopic hysterectomy (n=15)	AUB	11
	Fibroids	3
	Pelvic Pain	1
Subtotal abdominal hysterectomy (n=11)	AUB	1
	POP	10

Discussion

This was an observational study to examine current trends in practice when performing hysterectomy for benign indications in our institution. The retrospective chart review focused on (i) medical management prior to proceeding to hysterectomy (ii) pre-operative optimization once hysterectomy was decided and (iii) surgical approach. There were 186 women who underwent hysterectomy for benign indications during our study period, with the majority occurring in women in the 40-49 years old age range (83 women, 44.6%). The most common indications were pelvic organ prolapse (66 women, 35.4%) and abnormal uterine bleeding (61 women, 32.7%). Uterine fibroids (30 women, 16.1%) and pelvic pain (29 women, 15.6%) were only half as common.

Medical and minimally invasive management

Our study indicates that medical management is not being adequately discussed, trialed, and/or documented in women undergoing hysterectomy for benign indications. Eight to sixteen

percent of women (depending on indication for hysterectomy) did not receive any counseling about alternative medical therapies at all. This may reflect poor documentation, as dictated notes may not be capturing the extent of discussion prior to hysterectomy, or lack of counseling. Having a checklist outlining available medical therapies based on indication could help providers easily identify and document what was discussed and also serve as a trigger to discuss options to consider [9]. When women were counseled regarding one or more medical therapies, a proportion of women (13-34% depending on indication for hysterectomy) declined to try any of the options. The reason for declining specific medical therapies was not captured in our study, as it was often not documented in dictated notes. Improving counseling strategies and evaluating resistance to trying medical therapies highlights an important area of quality improvement. When one therapy was tried, only some women went on to try another (9-27% depending on indication for hysterectomy). Since therapies have different mechanisms of action and side effect profiles, certain therapies may be more efficacious for specific women. Implementing an opportunity and mechanism to find out why women move to hysterectomy after failing one form would contribute to quality care and potentially reduce the frequency of unnecessary hysterectomy.

In women undergoing hysterectomy for pelvic organ prolapse, providers discussed trial of pessary use with 80.3% of women, but only 43.9% of women had an adequate trial of pessary use (at least 3 months) before the decision was made to proceed with hysterectomy. 36% of women declined to try a pessary at all. Pessaries are a non-invasive, relatively cheap and effective method of managing many cases of pelvic organ prolapse. The poor uptake of use within our population may suggest either a failure in adequate counseling or underlying cultural bias against its use in our population. Given the significant recurrence rate of prolapse after surgery, and the complications associated with mesh-based procedures, the need for promoting non-invasive therapies cannot be overstated.

In women undergoing hysterectomy for uterine fibroids, cheap management options like the OCP were discussed much less commonly than expensive ones like ullipristal acetate (Fibristal) and Mirena IUS. The low rate of providers discussing OCP (26.7%) was surprising and signals that providers are not routinely offering OCP to women with uterine fibroids. This may be a reflection of providers' bias against OCP use as it is not specifically marketed for this indication and may be less likely to help with bulk symptoms. Fibristal is a relatively expensive medical management option, but one that is marketed for use in women with fibroids. It was discussed with 50% of women, and providers may have only discussing it with patients whom they knew would be able to afford it or had pre-existing drug coverage. The Mirena IUS was discussed with 30% of women. Mirena IUS is also a relatively expensive medical management option and low rates of discussion and trial may be reflective of overall low access to expensive options in our population. Uterine artery embolization (UAE), a minimally invasive procedure for uterine fibroids, was discussed with 13.1% of women; the lower rate may reflect providers discussing it as an option with women with favourable prognostic factors for UAE (submucosal fibroids, small number of fibroids etc.).

In women undergoing hysterectomy for pelvic pain, medical management options were overall poorly discussed and trialed. Options such as the OCP (12 women, 41.4%), Mirena IUS (12 women, 41.4%), gonadotropin receptor hormone agonists such as leuprolide (6 women, 20.6%) and Visanne (5 women, 17.2 %) were discussed with a small portion of women with pelvic pain. Especially since hysterectomy is not always definitive management for pelvic pain, it is important to understand the reasons behind the low levels of counseling and uptake for medical management options. Diagnostic laparoscopy was also done in very few cases (2 women, 6.7%), suggesting another area of improving management prior to proceeding to hysterectomy.

In women undergoing hysterectomy for abnormal uterine bleeding, providers were better at discussing medical management options, with at least one option being discussed with 91.8% of women. This is a better rate than in the Women's Health and Hysterectomy Study, where 21% of women were not offered a trial of medical management[3]. However there was a low uptake in their use, with 29.5% of women declining to try any form of medical management. Only 50.8% of women tried at least one form of medical management, and after failure of this, very few went on to try a second (26.2%) or third (3.3%) option. There appears to be a gap in the use of medical management options in AUB. Providers discussed endometrial ablation with 73.7% of women, but similarly to medical management options, only 31.1% of women actually had one prior to hysterectomy. Improving providers' counseling strategies for medical and minimally invasive options in AUB and understanding and addressing women's resistance to these options may improve their uptake.

Pre-operative Optimization

22% of our population was categorized as healthy, with no significant co-morbidities which might affect the procedure and post-operative recovery. However, despite the majority of women having at least one co-morbidity, only 26.2% of women were evaluated by Anesthesia or Medicine prior to their procedure. This may reflect variance in the severity of co-morbidities such as hypertension and type 2 diabetes, and provider clinical judgement on whether consulting another service is necessary.

The majority of women (55.7%) proceeding to hysterectomy for abnormal uterine bleeding did not have any form of endometrial sampling performed prior to their procedure. This is higher than the rate (45%) found in the Women's Health and Hysterectomy Study and confers risk to the patient [3]. 65.7% of these women were 40 years old or older, when the standard of care is to evaluate any abnormal uterine bleeding with a endometrial biopsy. However, malignant and pre-malignant pathology from endometrial sampling may affect who performs the surgery (general gynecologist versus gyne-oncologist), the surgical approach (if a concurrent lymphadenectomy needs to be performed) and post-operative follow-up. A post-operative review of all women without endometrial sampling in our study did not show any malignant or pre-malignant pathology. Although none of these women had endometrial malignancies or atypical hyperplasia on final pathology after hysterectomy, this does represent a routine step in evaluation of abnormal uterine bleeding that is being missed. A pre-operative checklist for abnormal uterine bleeding may help address this gap, as this type of intervention has had success in other quality improvement initiatives[9].

Surgical approach

Overall, providers were appropriate in choosing minimally invasive surgical approaches, as most cases were LAVH (35.5%) or VH (30.1%). These rates reflect a greater adoption of minimally invasive approaches compared to the literature, where TAH was performed 66% of the time[4]. Almost all sub-total abdominal hysterectomies (91%) were performed when concurrent abdominal anti-incontinence procedures such as

Burch procedures or paravaginal defect repairs were being planned. When TAH were performed, for almost half of them (45.4%), there was no clear indication from the patient's chart on why this approach was being taken. Examining trends based on provider may show that certain providers defaulted to performing abdominal approaches in their practice, as opposed to using them when necessary. The other half of TAH were performed when felt to be surgically necessary, the majority for large fibroids which were felt to preclude minimally invasive approaches.

Recommendations: Creation of a hysterectomy pathway/ checklist

To address these gaps in use of hysterectomy for benign gynaecological indications, our group has developed a checklist for providers to use both during counseling as well as pre-operatively once hysterectomy is decided upon. There has been previous research in the use of a standard protocol or pathway to follow when considering treatment of benign gynaecological disease. Hullfish et al (2012) did a before-after comparison of rate of hysterectomy and proportion of cases with nonconfirmable pathology when a pre-operative checklist was introduced for fibroids, DUB and chronic pelvic pain [10]. They found a significant decrease of 15% in the rates of hysterectomy for these indications and an overall significant decrease of 50% in cases where no pathological abnormality was identified. In 2016, Sanei-Moghaddam et al. developed a treatment algorithm for hysterectomy procedures with goal to reduce variations in surgical care and reduce TAH overuse [11]. After implementation of a clinical decision pathway in 2012, there was a significant reduction in the proportion of TAH procedures, from 27.8% in fiscal year 2012 to 17% in fiscal year 2014.

Our checklist aims to address the gaps evident in our chart review: many women are not attempting a trial of medical therapy prior to hysterectomy, they are not having adequate pre-operative workup and a vaginal/minimally invasive surgical approach is not always used. The checklist is tailored to the indication (AUB, fibroids, pelvic pain and prolapse) and lists all medical therapies available for each condition. To increase uptake, it may be useful to have a paper copy available to be attached to the patient's chart. Providers can easily document which options were discussed, the reasons specific therapies were declined or not discussed (medical contraindications or financial reasons), which options were attempted, and why they were discontinued. This pathway is expected to improve documentation of counseling as well as serve as a reminder for providers to optimize quality care. Once a hysterectomy is decided, providers will additionally benefit from having a checklist to ensure patients are optimized for the Operating Room. This would include pre-operative bloodwork to assess for anemia, imaging and tissue sampling, especially in abnormal uterine bleeding and a list of medical co-morbidities to trigger a consult to Anesthesia and Medicine. The final area of the checklist will prompt the provider to document justification for surgical approach, which aims to reduce the number of abdominal hysterectomies performed with no documented reason to preclude a vaginal or minimally invasive approach. In our center, we plan to utilize the pathway during case presentations at gynaecology morbidity and mortality rounds, which is predicted to facilitate perceived relevance and uptake of the pathway.

Conclusion

Currently, we have multiple effective medical therapies available for benign gynaecological indications that women historically had a hysterectomy for. Despite this availability, they are not always being documented as offered and discussed in women considering a hysterectomy. When they are discussed, a sizeable portion of women choose not to try any before moving on to hysterectomy. Improving counseling and understanding resistance to use of medical therapies represent important areas for quality improvement in management of benign gynaecological issues. Our group is developing a checklist covering medical management options and pre-operative optimization as a quality improvement initiative in the use of hysterectomy for benign gynaecological indications in our institution.

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