

Gynecological diseases in rural India: A critical appraisal of indications and route of surgery along with histopathology correlation of 922 women undergoing major gynecological surgery

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ABSTRACT

Objective: The aim of the study was to generate baseline data for indications of gynecological surgeries, and to assess route of surgery and histopathology correlation in women undergoing major gynecological surgery in a rural tertiary level teaching hospital in India.

Materials and Methods: Surgical indications, route of surgery and histopathology findings were reviewed and analyzed retrospectively, in 922 patients (≥ 35 years age) who underwent gynecological surgery at Dr. Rajendra Prasad Government Medical College, Kangra, Himachal Pradesh, India from January 1, 2011 to May 31, 2013.

Results: Of 922 surgeries, 65 had malignancy (7%). Pelvic organ prolapse (POP) (32.3%) and leiomyoma uterus (29%) were two most common benign indications for hysterectomy. Ovarian tumors were present in 13% (25% of these were malignant). Postmenopausal bleeding (PMB) was seen in 5.5% (55% of these were malignant).

Conclusions: All except 10% surgeries were done in the absence of definite histopathology diagnosis that is dysfunctional uterine bleeding ($n = 42$ [45%]), chronic pelvic pain/severe dysmenorrhea ($n = 34$ [36%]) and recurrent PMB ($n = 17$ [19%]). Majority of surgeries had histopathological correlation except for six cases (0.6%) of malignancy, which were missed on initial work-up. Majority of the surgeries were done abdominally. In rural areas of developing countries poverty, lack of regular follow-up, resource constraints and lack of technical skills (with respect to laparoscopic/robotic surgeries) pose major challenge in providing quality health care.

Key Words: Developing countries, histopathological correlation, hysterectomy, rural

INTRODUCTION

Hysterectomy is one of the most common major surgical procedures performed in gynecology.^[1] Newer and lesser invasive treatment options for gynecological diseases, are leading to fall in the trends for total abdominal hysterectomy (TAH) with or without salpingo-oopherectomy in developed world.^[2] In developed world focus is increasing on minimally invasive management options for benign gynecological diseases such as endometrial ablation, thermal balloon therapy, uterine artery embolization or levonorgestrel releasing intrauterine system, laparoscopic hysterectomy, or robotic surgery.

However, the condition is exactly opposite in developing countries, especially in rural areas. Due to limited resources available, women usually present very late to health care facility and desire a permanent cure to their disease at the cheapest rates available.^[3] The newer and lesser radical treatment options for gynecological conditions like laparoscopic hysterectomy and robotic surgery are not available in remote areas. A number of minimally invasive surgical options for hysterectomy do exist now and are promising like endometrial ablation, thermal balloon

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therapy and uterine artery embolization, but restricted availability, poor knowledge and high cost limit them from being widely used,^[4] more so in rural areas. Therefore, hysterectomy; abdominal or vaginal, still remains the widely accepted and practiced treatment of choice for majority of gynecological diseases in rural areas.

Data concerning major gynecological surgery is scarce in Indian sub-continent. We did a pubmed database search for literature on indications for hysterectomy in India, published in English literature between 1946 and 2013 using keywords “hysterectomy, indications, India.” Only limited studies with histopathology correlation were found. No single study evaluating the incidence, prevalence and frequency of major gynecological surgeries in Indian subcontinent was found.

In recent times, there has been controversy regarding indications for hysterectomy for benign gynecological diseases in Indian sub-continent.^[5] Surgery for malignant disease is life-saving, whereas for that benign indications is done to improve the quality of life. It was observed that hysterectomy is not only a cost-effective modality for managing menorrhagia but also associated with better quality of life and satisfaction rates as compared to conservative therapies such as pharmacological therapies and endometrial ablation.^[5] In developed countries like UK, there is national registry for reporting of hysterectomies. In Indian subcontinent, no such system exists. Hence, majority of surgeries go unreported. Moreover, majority of the health care is being provided by unregulated private hospitals (provide about 80% of all out patient care and 60% of all in patient care).^[6] There is an urgent need for comprehensive data from public sector institute to serve as standard of care.

The rates of hysterectomy vary not only between regions, but also between hospitals within the same region, and even between consultants within the same hospital.^[5] None the less, a baseline data is necessary for comparison, auditing and future planning for improvement of existing gynecological practice. No such study has been conducted in Indian subcontinent recently. Hence, this retrospective study was done to determine a baseline data on indications and route of surgery along with histopathology correlation of surgeries conducted for benign gynecological diseases.

MATERIALS AND METHODS

This retrospective study was performed in the Department of Obstetrics and Gynecology, in collaboration with Department of Pathology at Dr. Rajendra Prasad Government Medical College Kangra at Tanda, Himachal Pradesh, India. This is a tertiary level teaching institute catering to the needs of adjoining rural and tribal population. All women ≥ 35 years

(reproductive age group or postmenopausal) who underwent major gynecological surgery (TAH with or without bilateral salpingo-oophorectomy (BSO), vaginal hysterectomy (VH), staging laparotomy for carcinoma endometrium or suspected carcinoma ovary, Wertheim’s hysterectomy, Fothergill’s operation, Purandare’s cervicopexy, unilateral salpingo-oophorectomy (USO) or TAH with USO with effect from January 2011 to May 2013, were included in this study. Emergency and obstetric (peripartum) hysterectomies were excluded.

Base line data were collected from in-patient files and histopathology reports, to determine the indications for surgery, pattern of gynecological diseases, distribution with respect to age and final histopathology correlation. Statistical analysis was performed using Microsoft Office excel 2007.

RESULTS

A total of 922 women had undergone major gynecological surgery during the study period. Of these, there were 65 gynecological malignancies based on final histopathology examination (carcinoma cervix 15, carcinoma endometrium 16, malignant ovarian tumors 29, leiomyosarcoma four and one fallopian tube carcinoma).

Total abdominal hysterectomy and BSO was the most common surgery ($n = 330$ [36.4%]), followed by VH in ($n = 267$ [29.5%]), TAH in ($n = 148$ [16.3%]), staging laparotomy ($n = 144$ [15.9%]), Wertheim’s Hysterectomy ($n = 11$ [1.2%]) and others Fothergill’s operation ($n = 14$ [1.5%]), nondescent VH ($n = 8$ [0.8%]), Purandare’s cervicopexy ($n = 6$ [0.6%]) and with TAH USO ($n = 6$ [0.6%]), as shown in Figure 1. Overall, 469 women were postmenopausal (50.8%), of these 196 underwent TAH BSO, 172 VH, 62 staging laparotomy, 26 TAH and four had nondescent VH.

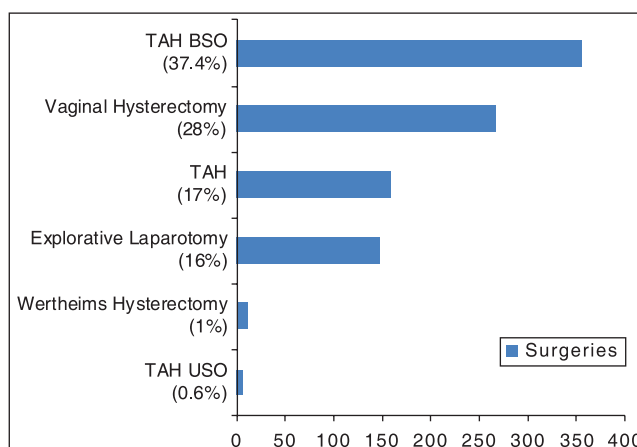


Figure 1: Total surgeries in the study period (TAH BSO: Total abdominal hysterectomy with bilateral slpingo-oophorectomy, TAH: Total abdominal hysterectomy, TAH USO: Total abdominal hysterectomy with unilateral salpingo-oophorectomy)

The most common indication for surgery was abnormal uterine bleeding (AUB) ($n = 475$ [52.5%]). A total of 287 (31%) women had pelvic organ prolapse (POP); VH was done in 267, Fothergill's repair in 14 and Purandare's cervicopexy in six. There were ($n = 110$ [12%]) women with ovarian cyst/tumor. Of these, conservative surgery, that is, USO was done in 25 women (all were premenopausal) and remaining 85 had staging laparotomy for suspected ovarian carcinoma (out of which 31 were malignant ovarian neoplasms after histopathology), cervical and endometrial malignancies ($n = 27$ [2.8%]). Other less common indications ($n = 50$ [5.5%]) included, recurrent postmenopausal bleeding (PMB) ($n = 20$ [2.2%]) (17 had atrophic endometrium and three had degenerated uterine leiomyoma as only plausible explanation for PMB), pelvic inflammatory disease (PID) not responding to medical management 1.1% ($n = 10$), complex hyperplasia with atypia 1.1% ($n = 10$), and high-grade squamous intraepithelial lesion (HSIL) 1.1% ($n = 10$), as shown in Figure 2. Among women who had hysterectomy for PID not responding to medical treatment, four had bilateral hydrosalpinx, three had unilateral hydrosalpinx, two had bilateral tuberculomas (histopathologically confirmed tuberculosis) and one had infected ovarian cyst. All women for AUB had abdominal hysterectomy except eight where nondescent VH was done.

Of all women with hysterectomy for AUB ($n = 475$ [52.5%]), leiomyoma uterus was indication in ($n = 239$ [50.3%]), adenomyosis in ($n = 70$ [14.7%]), both leiomyoma and adenomyosis in 51 (10.7%), abnormal bleeding (menorrhagia, metrorrhagia or both) in ($n = 42$ [8.8%]), chronic pelvic pain/severe dysmenorrhea in ($n = 37$ [7.8%]), as shown in Table 1. There were six missed cases of malignancy (1%); two each of carcinoma cervix, carcinoma endometrium and leiomyosarcoma (missed on initial preoperative work-up, but diagnosed after histopathology). In women with abnormal bleeding with no

definite preoperative diagnosis ($n = 70$), endometrial polyp was found in 4.2% ($n = 20$) on histopathology. Hence, the diagnosis of dysfunctional uterine bleeding was confirmed in 8.8% ($n = 42$) cases (no definite pathology identified), as shown in Table 1.

The preoperative indication of chronic pelvic pain/severe dysmenorrhea was explained in only 3 of 37 women (as endometriosis) after histopathology examination. No specific cause could be identified either intraoperatively or after histopathology in remaining 34 women.

Majority of women requiring hysterectomy for leiomyoma uterus ($n = 227$) were in fourth decade of life ($n = 150$ [66%]) followed by ($n = 49$ [21%]) in 35-39 years age group and ($n = 28$ [11%]) in 50-59 years age group, as shown in Table 2. The peak occurrence of adenomyosis ($n = 97$) was also observed in fourth decade ($n = 52$ [53.6%]), followed by ($n = 17$ [17%]) in fifth decade and ($n = 16$ [16%]) in third decade, as shown in Table 2.

However, POP ($n = 287$) was the most common in 50-59 years age group ($n = 89$ [31%]) closely followed by ($n = 82$ [28.6%]) in 40-49 years age group, ($n = 73$ [25.4%]) in 60-69 years age group and ($n = 14$ [4.9%]) in 35-39 years age group. In 70-79 years age group ($n = 25$ [8.7%]) and in >80 years ($n = 4$ [1.4%]) had POP. In these elderly women (age ≥ 70 years), a total of 42 surgeries were done and POP constituted 69% ($n = 29$) of these, as shown in Table 2.

Age-wise distribution of all gynecological malignancies ($n = 65$ [7%]) is shown in Figure 3. Carcinoma cervix and endometrium is predominantly seen in postmenopausal women (two cases each were premenopausal). Carcinoma ovary had more ubiquitous distribution, with 10 cases in premenopausal age group. Remaining 21 cases were postmenopausal. Peak incidence of carcinoma ovary is seen in fourth decade, carcinoma cervix in fifth decade and carcinoma endometrium in sixth decade, respectively. There were four cases of leiomyosarcoma (two missed in initial preoperative evaluation). All except one were in postmenopausal age group.

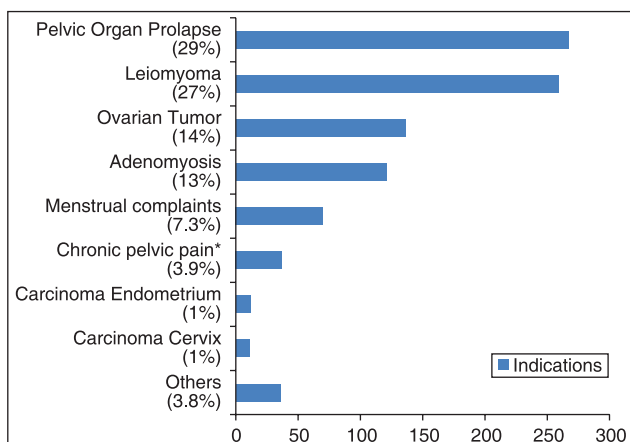


Figure 2: Indications for surgeries (*or severe dysmenorrhoea)

Table 1: Causes of AUB

AUB (Total = 475) (%)	
Leiomyoma	239 (50.3)
Adenomyosis	70 (14.7)
Leiomyoma and adenomyosis	51 (10.7)
Menorrhagia	42 (8.8)
Chronic pelvic pain/dysmen*	37 (7.8)
Endometrial/cervical polyp	20 (4.2)
Malignancy (missed cases)	6 (1.3)
Others (HSIL, LSIL)	10 (2.1)

*severe dysmenorrhoea. AUB: Abnormal uterine bleeding, HSIL: High-grade squamous intraepithelial lesion, LSIL: Low-grade squamous intraepithelial lesion

Table 2: Age wise distribution of major benign and malignant gynecological disorders

Age in years (total)	Benign					Malignant				
	Total	AUB and (leiomyoma)	POP	Adenomyosis	Benign ovarian tumor	Total	CA EM	CA CERVIX	CA OVARY	MISC
35-39 (93)	89	68 (49)	14	16	20	4	0	0	4	0
40-49 (437)	421	303 (150)	82	52	34	16	3	2	10	1
50-59 (221)	200	80 (28)	89	17	18	21	4	7	9	1
60-69 (100)	87	0	73	6	6	13	6	3	3	1
70-79 (36)	32	0	25	6	3	4	1	1	2	0
≥80 (6)	5	0	4	0	0	1	0	0	1	0
Total	834	451 (227)	287	97	81	59	14	13	29	3

AUB: Abnormal uterine bleeding, POP: Pelvic organ prolapse, CA: Carcinoma, EM: Endometrium, MISC: Miscellaneous

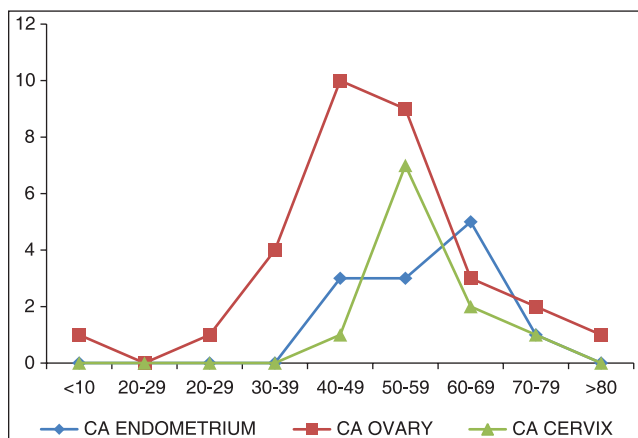


Figure 3: Age wise distribution of common gynecological malignancies

On histopathology examination of all the uteri $n = 897$ (25 women out of total 922 had SO), 351 women had leiomyoma uterus (39%). Associated benign gynecological pathologies seen with leiomyoma were; adenomyosis (14%), endometrial polyp (6.3%), endometriosis (2.3%) and PID (0.8%). Majority of these had normal endometrium (87%), however disordered proliferative endometrium (DPE) was seen in 32 cases (9.2%), simple hyperplasia without atypia in nine (2.6%) cases and simple hyperplasia with atypia in one case (0.3%). Complex hyperplasia without atypia in two (0.6%) and complex hyperplasia with atypia was seen in one case (0.3%), as shown in Table 3. One woman out of all these had smooth muscle tumor of uncertain malignant potential.

Adenomyosis was confirmed in 13.4% ($n = 121$) of all uteri ($n = 897$) after histopathological examination. On further evaluation of all these cases, 42% ($n = 51$) had leiomyoma, 5% ($n = 6$) had endometrial polyp, 2.5% ($n = 3$) had endometriosis and 0.8% ($n = 1$) had PID, as shown in Table 3.

There were 110 cases of ovarian tumors (including cysts) for which surgery was done (25 of these had USO alone and remaining 85 had staging laparotomy. In benign tumors/cysts serous cystadenoma was most common

Table 3: Association of leiomyoma and adenomyosis with other gynecological diseases after histopathological examination

Association of gynecological diseases with leiomyoma uterus	Leiomyoma (total = 351) (%)	Adenomyosis (total = 121) (%)
Leiomyoma	—	51 (42)
Adenomyosis	51 (14)	—
Endometriosis	8 (2.3)	3 (2.5)
Endometrial polyp	22 (6.3)	6 (5)
PID	3 (0.8)	1 (0.8)
Endometrial pathology		
Normal	309 (88)	44 (94.2)
DPE	32 (9.2)	3 (2.5)
Simple hyperplasia		
Without atypia	9 (2.6)	4 (3.3)
With atypia	1 (0.3)	—
Malignancy		
Endometrium	5 (1.4)	1 (0.8)
Cervix	5 (1.4)	1 (0.8)
Ovary	12 (3.4)	3 (2.5)

PID: Pelvic inflammatory diseases, DPE: Disordered proliferative endometrium

(43%), followed by mucinous cystadenoma (25%), teratoma (22%), endometrioma (16%) and fibroma (6%). Out of these benign ovarian tumors three were bilateral (3%) (two were serous cystadenomas and one was mucinous cystadenoma). Borderline ovarian tumors were seen in three women (borderline serous cystadenoma) as shown in Table 3. Among malignant ovarian tumors ($n = 31$), there were 19 (61%) serous cystadenocarcinoma, five (17%) mucinous cystadenocarcinoma, two (6%) granulosa cell tumors, and two (6%) immature teratomas. One case each of malignant Brenner's tumor, Sertoli Leydig cell tumor and poorly differentiated carcinoma was identified, as shown in Table 4.

Postmenopausal bleeding was seen in $n = 42$ (4.5%). Causes of PMB were atrophic endometrium ($n = 17$ [40%]), carcinoma endometrium ($n = 7$ [17%]), carcinoma cervix ($n = 5$ [12%]), endometrial polyp ($n = 4$ [9.5%]), degenerated leiomyoma ($n = 3$ [7.1%]), and others ($n = 6$

[14.4%]) (leiomyosarcoma ($n = 2$), carcinoma fallopian tube ($n = 1$) and HSIL ($n = 3$), as shown in Table 5.

On histopathology examination of endometrium in all the hysterectomy specimens (897), abnormal endometrium was seen in 138 (15%) uteri. DPE was seen in ($n = 95$ [69%]), simple hyperplasia without atypia in ($n = 25$ [19.5%]), simple hyperplasia with atypia ($n = 6$ [4.7%]) and complex hyperplasia without atypia ($n = 2$ [1.8%]) and complex hyperplasia with atypia in ($n = 10$ [8%]), as shown in Table 6.

DISCUSSION

Pelvic organ prolapse (31%) closely followed by symptomatic leiomyoma uterus (27%) were the two most common benign gynecological diseases leading to hysterectomy in the present study. In review of literature, leiomyoma uterus is the most common indication for hysterectomy worldwide.^[7-13] However, our observation of POP being the most common indication for benign gynecological surgery could be due to higher number of unsupervised home conducted vaginal births with tendency for premature bearing down during labor in rural and tribal populations. Younger women in third decade of life were offered conservative approach of Fothergill's operation and Purandare's cervicopexy, whereas definite surgery, that is, VH with pelvic floor repair was done in elderly women. Moreover, POP is associated with stigma in rural/tribal population that it might progress to malignancy. This myth could be associated with more women seeking medical care for prolapse.

Overall, the prevalence of adenomyosis has been reported to be 5-70% with mean frequency of 20-30%,^[14,15] which is consistent with our observation of 14.7%. Endometriosis was observed in hysterectomy specimens in only 1.7% in rural India. Further, of all women with leiomyoma uterus, only 2.3% had associated endometriosis. Studies that have analyzed the frequency of endometriosis in women who underwent surgery for leiomyoma have suggested a prevalence of about 10%.^[16] Our observation of this very low prevalence could be due to early marriage, early age of first pregnancy, high fertility rate, frequent teen-age pregnancy and protracted breast-feeding observed in rural setting,^[17] further supporting the hypothesis that reduced exposure to menstrual cycles is protective to this pathology. It is noteworthy to mention that all women (except three) with endometriosis diagnosed on histopathology had ovarian mass. Thereby implying that inaccessibility to health facilities and virtually innocuous presentation of dysmenorrhea, might be a factor for not seeking medical care for this condition. Only when large endometriomas developed, leading to intractable symptoms and mass effect of the tumor that medical help was sought.

Table 4: Classification of ovarian tumors (benign, borderline and malignant)

Total ovarian neoplasms (120)	
Benign ovarian tumors (96) (%)	
Serous cystadenoma	37 (38)
Unilateral	35
Bilateral	2
Mucinous cystadenoma	23 (24)
Unilateral	22
Bilateral	1
Teratoma	19 (20)
Endometrioma	12 (12)
Fibroma	5 (5)
Borderline ovarian tumors (3) (%)	
Borderline serous cystadenoma	3
Malignant ovarian tumors (31) (%)	
Serous adenocarcinoma	19 (61)
Mucinous adenocarcinoma	5 (17)
Granulosa cell tumor	2 (6)
Immature teratoma	2 (6)
Malignant Brenner tumor	1 (3)
Sertoli Leydig cell tumor	1 (3)
Poorly differentiated carcinoma	1 (3)

Table 5: Causes of PMB

PMB (total 42) (%)	
Atrophic endometrium	17 (40)
Carcinoma endometrium	7 (17)
Carcinoma cervix	5 (13)
Endometrial polyp	4 (9)
Leiomyoma	3 (7)
Others	6 (14)

PMB: Postmenopausal bleeding

Table 6: Endometrial hyperplasia on histopathological examination

Endometrial hyperplasia (128)	
Disordered proliferative endometrium	95 (74)
Simple hyperplasia	
Without atypia	25 (19.5)
With atypia	6 (4.7)
Complex hyperplasia	
Without atypia	2 (1.8)
With atypia	Nil

Only 9.4% surgeries (87 out of 922) were done for premalignant (HSIL 10, complex hyperplasia with atypia 10) and malignant indications (67 malignancies; carcinoma ovary 31, carcinoma endometrium 16, carcinoma cervix 15, leiomyosarcoma four and one case fallopian tube carcinoma). Though this rate mirrors

that for high income countries,^[18] but there are many lacunae in our observations. Majority of the women who presented with malignancy were in advanced stage and hence inoperable. They were referred for radiotherapy and were not included.

No definite pathology was identified in 10% (93 out of 922) women who underwent hysterectomy. Of these 42 had dysfunctional uterine bleeding (associated with severe anemia requiring multiple blood transfusions), 34 had severe dysmenorrhea/chronic pelvic pain (not responding to conventional treatment), and 17 had recurrent PMB. Due to nonavailability of adequate screening tests at regular intervals in rural areas, nonavailability of pathologists, higher cost and inability to attend health facilities regularly, definite treatment is preferred by women in rural areas. Furthermore, with the introduction of National Health Insurance Program (Rashtriya Swasthya Bima Yojana [RSBY])^[19] for people living below poverty line in India, where free medical services are provided for in hospital surgical procedures, but not for outpatient treatment, there is bias in minds of poor to get definite treatment free of cost rather than to spend hefty amounts on conservative treatment options. Also, in our opinion, time is not a constraint for poor, unemployed rural population; who are willing to spend a week in hospital for TAH rather than to spend hefty amounts of money on minimally invasive surgery (laparoscopy) and get back to home early.

Majority of the surgeries (excluding POP) for benign gynecological diseases have been performed abdominally during the study period (except eight nondescent vaginal hysterectomies). This practice has long been abandoned by developed world, in favor of vaginal and laparoscopic surgeries as these routes are associated with fewer complications and rapid recovery rates.^[20-22]

Total abdominal hysterectomy BSO was done in 45% of premenopausal women (162 out of 361), as shown in Figure 1. Screening for high risk mutations (BRCA 1, 2) and regular postoperative follow-up, is nonexistent in rural areas. Moreover, in most of the women even family history cannot be evaluated thoroughly due to poor record keeping of relatives who underwent gynecological surgery. Furthermore, majority of women who were offered ovarian conservation refused. However, as per standard of care ovarian conservation before menopause is especially important in patients with a personal or strong family history of cardiovascular or neurological disease. Conversely, women at high risk of ovarian cancer should undergo risk-reducing bilateral salpingo-oophorectomy.^[23]

Our department serves the needs of women in most plausible manner. Ideally, newer and lesser invasive treatment options should be offered to women like levonorgestrel intrauterine system, endometrial ablation and operative hysteroscopy and laparoscopy, for benign pathologies. Moreover, women should be offered not only vaginal route for surgery, but also newer surgical techniques like laparoscopic and robotic surgeries. Further recurrent PMB with no identifiable cause should be kept on close follow-up. However, the constraints of poor patient compliance, absence of regular follow-up, poverty, lack of latest equipments and technical skill, ignorance of poor patients, inability to regularly attend health care facilities, free in hospital treatment for major surgeries are major hurdles in providing ideal standard of care in these women. Further, if the benefits of National Health Insurance Scheme (RSBY)^[19] are extended for outpatient treatment hysterectomies for benign indications can be reduced further. Finally, maintenance of national registry of all the major surgeries and their indications will go a long step forward in proper audit, and improvement of existing health facilities.

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Legends for the figures/images should be included at the end of the article file.