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Case Series

Laparoscopic management of cervical fibroids: a case series

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ABSTRACT

Cervical fibroids present unique challenges due to their proximity to the ureter and potential impact on fertility and pelvic anatomy. Laparoscopic techniques offer advantages such as reduced blood loss; shorter hospital stays and faster recovery times as compared to the traditional open methods. We report a case series of 10 cases of cervical fibroid management using laparoscopic methods (laparoscopic myomectomy and total laparoscopic hysterectomy with prophylactic uterine artery ligation in selected cases) performed at our institute Shreeji Hospital, Bhilad between February 2020-January 2024. Laparoscopic hysterectomy was the most common procedure performed (70%), followed by laparoscopic myomectomy (30%). The mean operative time was 96 minutes, with minimal intraoperative complications observed. Postoperatively, patients experienced significant improvement in symptoms such as pelvic pain, abnormal uterine bleeding, and urinary symptoms. Preservation of fertility was achieved in 30% candidates.

Keywords: Cervical fibroid, Laparoscopy, Myomectomy, Total laparoscopic hysterectomy, Uterine artery ligation

INTRODUCTION

Cervical fibroids are a rare subtype of uterine fibroids, predominantly located within the cervix or extending into the cervical canal. While uterine fibroids are fairly common, cervical fibroids are found in only 0.6% of cases.[1] These fibroids can be classified based on their location: extra-cervical (subserosal myomas) or intracervical myomas. Further classification can be made into anterior, posterior, lateral, or central types depending on their exact positioning within the cervix.

Typically, cervical fibroids develop in the supravaginal part of the cervix, and as they grow, they can distort the cervix or even increase its length. These fibroids may also push the uterus upwards or potentially obstruct the cervix. Estrogen plays a role in their development, as the growth of these tumors accelerates during periods of heightened ovarian activity, such as pregnancy and lactation.[2] Fibroids are present in approximately 20-40% of women during their reproductive years and in 11-19% of perimenopausal women.[3]

Common symptoms associated with cervical fibroids include pelvic pressure, abnormal uterine bleeding, pelvic pain, dyspareunia, and urinary or bowel issues. As fibroids grow with age, surgical intervention becomes necessary. The choice between hysterectomy and myomectomy depends on factors such as the size of the tumour, patient symptoms, age, and desire for fertility preservation.[4]

Laparoscopic removal of cervical fibroids offers several advantages over open surgery, including smaller incisions, reduced postoperative pain, and quicker recovery. The technique also allows for enhanced visibility and precision, which are crucial when navigating the altered pelvic anatomy and protecting surrounding organs. However, there are risks, including bleeding, infection, organ injury, or the need to switch to open surgery. Despite these risks, careful patient selection, skilled surgical techniques, and adherence to best practices can minimize

complications, leading to favourable outcomes for patients. Recent advances in laparoscopic technology, such as high-definition imaging and robotic-assisted systems, have further improved the safety and effectiveness of these procedures.

CASE SERIES

We conducted a retrospective analysis of ten consecutive cases of cervical fibroid management at Shreeji Hospital, Bhilad, between February 2020 and January 2024 (4 years). Data collected included patient demographics, clinical presentation, preoperative imaging, surgical approach, intraoperative findings, postoperative outcomes and follow-up information. All procedures were performed by experienced laparoscopic surgeons following established protocols for cervical fibroid management.

In our study, we performed laparoscopic myomectomy (Figure 1) and total laparoscopic hysterectomy (Figure 2) with prophylactic uterine artery ligation in selected cases. Additionally, during myomectomy, vasopressin was administered and ICG dye was used to visualize the ureter in more complicated cases.

Inclusion criteria

Women diagnosed with cervical fibroids presenting with abdominal or pelvic mass, pain, infertility, menstrual irregularities, or symptoms related to the bowel or bladder were included in the study.

Exclusion criteria

Women with cervical fibroids who were pregnant were excluded from the study.

In the present study, majority of them - 6 (60%) belonged to age group 41-50 years, 2 (20%) patients each were of 31-40 years and >50 years respectively. Out of 10 women, 4 (40%) were of parity >3, 3 (30%) women had parity of 2, 2 (20%) had parity 1 and 1 (10%) woman was nulliparous (Table 1).

Menstrual abnormality was the commonest complaint which included heavy menstrual bleeding, menorrhagia, metrorrhagia and others, as seen in 6 (60%) patients. abdomino pelvic mass was seen in 2 (20%) women. Chronic pelvic pain was present in 1 (10%) patient and 1 (10%) patient presented with infertility. None presented with bowel and bladder symptoms. 5 (50%) women had symptoms for duration of 6-12 months, while 3 (30%) had symptoms for 12-24 months and 2 (20%) had symptoms for >24 months duration.

Majority were lateral cervical fibroid, seen in 4 (40%) women. 3 (30%) women each had posterior and anterior cervical fibroids respectively. 3 (30%) women had fibroid of less than 5 cm size while 7 (70%) had cervical fibroid of size of 5-10 cm. 90% of the fibroids were intracervical, as seen in 9 women.

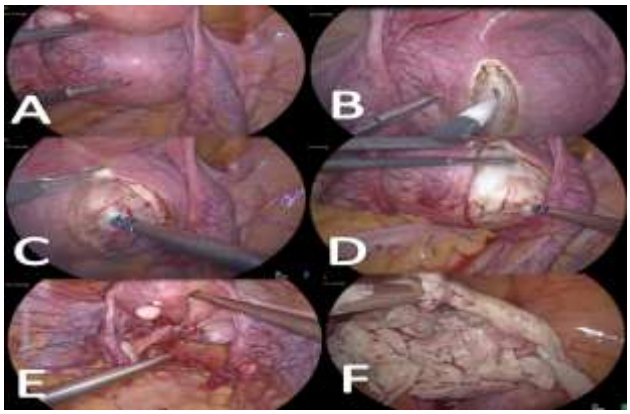

Figure 1: Laparoscopic myomectomy in a posterior cervical myoma, (A) injection vasopressin is injected at the base of the myoma, (B) vertical incision is placed on myoma, (C) the myoma is exposed with the aid of a myoma screw, (D) dissecting into the myoma capsule and exposing the myoma, (E) the cervical endothelium, the muscle layer, and serosa are sutured with continuous PDS suture, and (F) technical morcellation is performed.

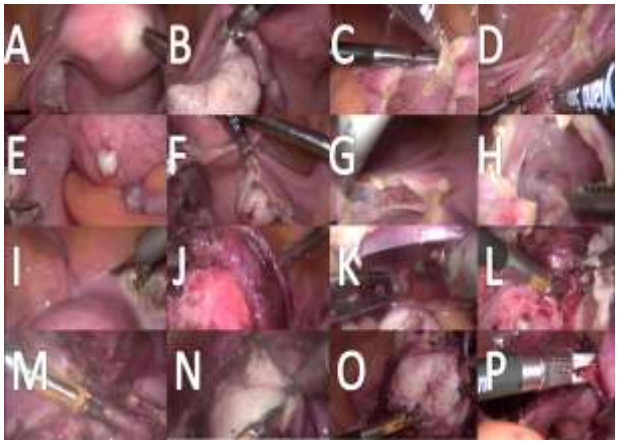

Figure 2: Total laparoscopic hysterectomy in an anterior cervical myoma, (A) myoma screw is inserted at the fundus, (B) taking the adnexal structures, (C) dissecting the anterior fold of broad ligament, (D) dissecting the posterior fold of broad ligament, (E) visualizing the ureter in the lateral pelvic wall, (F) taking adnexal structures on other side, (G) dissecting the anterior and posterior folds of broad ligament, (H-J) dissection of the vesico-uterine space, and pushing the bladder away, (K) identifying the ureter in the left paracervical region, (L and M) taking the uterine pedicle on both sides, (N) exposing the anterior cervical myoma, (O) dissecting the myoma out, and (P) colpotomy.

Table 1: Patient characteristics.

Case no.	Age (years)	Parity	Chief complaint	Duration of complaint (months)	Size (mm)	Location	Depth
1	56	3	Pain abdomen	12-24	51×45	Posterior	Intracervical
2	49	4	Mass abdomen	12-24	10×194	Anterior	Intracervical
3	45	2	Menstrual irregularity	6-12	53×42	Left lateral	Intracervical
4	33	0	Infertility	>24	30×34	Anterior	Intracervical
5	42	1	Menstrual irregularity	12-24	89×57	Left antero-lateral	Subserosal
6	45	2	Menstrual irregularity	6-12	72×68	Anterior	Intracervical
7	53	3	Mass abdomen	>24	42×42	Right lateral	Intracervical
8	47	3	Menstrual irregularity	6-12	51×43	Left lateral	Intracervical
9	49	2	Menstrual irregularity	6-12	22×20	Posterior	Intracervical
10	38	1	Menstrual irregularity	6-12	58×46	Posterior	Intracervical

In the current study, 4 (40%) women had fibroids at other sites, while 3 (30%) had adenomyotic uterus (Table 2).

Table 2: Additional finding on USG/ CT scan.

Additional findings	N	Percentage (%)
Fibroids at other site	4	40
Adenomyosis	3	30
None	5	50

In the present study, myomectomy was done in 3 (30%) women and hysterectomy was done in 7 (70%) women. 1 (10%) patient suffered from an unfortunate partial ureter transection injury which was repaired by end-to-end anastomosis after ureteric stenting. Vaginal morcellation by coring was done in 7 (70%) patients while 3 (30%) underwent mechanical morcellation. The mean operative time was 96 minutes. There was no conversion to laparotomy and blood transfusion was required in 1 (10%) case (Table 3).

Table 3: Intraoperative parameters.

Case no.	Surgery	Operative time (mins)	Conversion to laparotomy	Organ injury	Blood transfusion	Specimen retrieval method
1	Hysterectomy	95	No	No	No	Vaginal morcellation
2	Hysterectomy	130	No	Ureteric injury	Yes	Vaginal morcellation
3	Hysterectomy	90	No	No	No	Vaginal morcellation
4	Myomectomy	70	No	No	No	Mechanical morcellation
5	Myomectomy	100	No	No	No	Mechanical morcellation
6	Hysterectomy	120	No	No	No	Vaginal morcellation
7	Hysterectomy	85	No	No	No	Vaginal morcellation
8	Hysterectomy	95	No	No	No	Vaginal morcellation
9	Myomectomy	65	No	No	No	Mechanical morcellation
10	Hysterectomy	110	No	No	No	Vaginal morcellation

Out of 10 women, 2 (20%) patients underwent uterine artery ligation at the origin, ICG dye was injected in 4 (40%) patients for visualization of the ureter and injection vasopressin was injected in 3 (30%) patients to facilitate myomectomy (Table 4).

Table 4: Additional measures required.

Additional measures	N	Percentage (%)
Uterine artery ligation	2	20
Pre-op ureter stenting	0	0
ICG dye injection	4	40

Out of 10 women, 7 (70%) patients were discharged on post-operative day 2 and 2 (20%) patients went home on day 3. 1 (10%) patient was discharged on post-operative day 5 (Table 5).

Table 5: Hospital stays.

Hospital stays (days)	N	Percentage (%)
2	7	70
3	2	20
>4	1	10

DISCUSSION

Managing cervical fibroids surgically can be challenging, requiring a high level of skill and experience from the surgeon; in fact, the presence of a cervical leiomyoma has

been identified as an independent factor affecting operation time in minimally invasive surgery.[5]

Cervical fibroids are typically diagnosed using ultrasonography, MRI, or CT, either alone or in combination. Ultrasonography is a reliable method for identifying these fibroids. On ultrasound, cervical fibroids appear as well-defined, hypoechoic masses with a thin hypoechoic edge that bulges from the cervix. Doppler ultrasound imaging typically shows reduced blood flow within the fibroid compared to the surrounding uterine tissue.[6] MRI, due to its high-resolution soft-tissue imaging, remains the most effective tool for evaluating the normal cervical anatomy and identifying cervical lesions. MRI is also particularly useful for distinguishing cervical fibroids from adnexal masses.[7]

Laparoscopic myomectomy and hysterectomy have gained popularity over open surgery for treating uterine fibroids due to their numerous advantages.[8] Open surgery for cervical fibroids is associated with higher morbidity and longer recovery times, whereas laparoscopic surgery offers benefits such as reduced blood loss, shorter hospital stays, and quicker recovery. Although laparoscopic myomectomy can be used for most uterine fibroids, cervical fibroids require a more tailored surgical approach. Surgical safety in laparoscopic procedures for cervical fibroids depends on modifying techniques to account for the specific challenges posed by the location of the fibroids.[9] Cervical fibroids are situated near vital organs like the bladder, ureters, and rectum, necessitating adjustments in the surgical approach based on fibroid location. Surgical difficulties may include limited access to the area, challenging suturing, higher blood loss, and distorted anatomy of neighbouring pelvic structures.[10] To minimize bleeding, strategies like vasopressin injections, bilateral uterine artery ligation, and the use of internal iliac artery balloon occlusion have been employed4. Interventional radiology techniques, such as uterine artery embolization (UAE) and cervicovaginal artery embolization, have also been explored as treatment options.[11] Additionally, preoperative ureteral stenting can aid in visualizing the ureters during surgery.[12]

In a study by Ferrari et al, the average age of women with cervical fibroids was 39.4 years, similar to our study where 50% of patients were aged 31-40 years.[4] The most common symptoms in our study were abnormal uterine bleeding (80%), followed by mass symptoms (5%) and mass per vagina (15%). Of the 88% who underwent surgery, 67.5% had myomectomy, 28.7% had total hysterectomy, and 3.7% had trachelectomy. Myomectomy was performed through open surgery in 16.5% of cases, while 72.4% had traditional laparoscopy and 4.7% underwent robot-assisted surgery. Of the hysterectomy patients, 35% had laparotomic surgery, 24% had laparoscopic-assisted vaginal hysterectomy (LAVH), and 1.8% had vaginal hysterectomy. In 39% of cases, the surgical approach was not reported. The present study observed a similar age group (31-40 years) and abnormal uterine bleeding as the most common symptom (60% in the present study).

In a study by Chang et al, 28 patients with cervical fibroids who underwent laparoscopic myomectomy had a mean operative time of 121 minutes, a mean blood loss of 99 mL, and an average hospital stay of 2.2 days.[9] Both studies employed laparoscopic approaches for treating cervical fibroids, and similar outcomes in terms of hospital stay and mean operative time was observed, wherein 70% patients were discharged on day-2 and the operative time was between 1-2 hours in 50% cases.

Taniguchi reported that 21 cases with large cervical fibroid (>10 cm).[13] Total laparoscopic hysterectomy could be completed in all 21 patients with large cervical fibroids without blood transfusion. Conventional total laparoscopic hysterectomy was performed in four patients (19%), and 17 patients (81%) required debulking surgery at the time of total laparoscopic hysterectomy. The median diameter of the major axis of the cervical fibroid, uterine weight, intraoperative blood loss, and operative time were 12 cm, 750 g, 100 ml, and 191 min, respectively. Taniguchi focused on larger cervical fibroids with longer operative times as compared to the present study but both studies depict the efficacy of laparoscopic surgery in dealing with cervical fibroids.[13]

CONCLUSION

Laparoscopic management of cervical fibroids is a significant advancement in gynecological surgery. This minimally invasive technique provides high precision, quicker recovery, better cosmetic outcomes, and the potential for fertility preservation, all of which contribute to improved patient outcomes. Success in these procedures requires a comprehensive preoperative assessment, an understanding of anatomical variations, and precise dissection of the bladder and ureters, as anatomical distortions are common in these cases. To minimize the risk of injury to the ureters, preventive strategies such as preoperative cystoscopy-guided bilateral ureteric stenting, intraoperative identification of the ureters, and careful fibroid capsule dissection are essential.

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