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Case Series

Surgical challenges in unusual fibroids - a case series

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ABSTRACT

Uterine leiomyoma are benign monoclonal tumours arising from smooth muscle tissue. There are different types of fibroids depending on the location of fibroid. There are various operative challenges in long standing huge fibroids on abnormal location. Surgical difficulties associated with these cases are due to poor access to the operative field, distorted anatomy, difficulty in suturing the repairs, increased blood loss. It is an art and skill to surgically remove these difficult fibroids and do difficult hysterectomies. Here we present case series of 7 cases, we have described variety of fibroid at different ages, presentations, precautions and also surgical challenges and the steps to overcome them successfully. Case 1- cervical fibroid, case 2- submucosal fibroid polyp, case 3- Bulky uterus with fundal fibroid during vaginal hysterectomy, case 4- broad ligament fibroid, case 5- multiple fibroids, case 6- multiple subserosal fibroids during caesarean section, and case 7- giant fibroid. Different types of fibroids are tackled in different ways. So, fibroid mapping by imaging studies and also ureteric stenting preoperatively whenever needed, helps to prevent untoward injuries. Following principles of surgery in any difficult fibroids leads to successful management and also helps to prevent injuries to the urinary tract and avoiding intra operative blood loss.

Keywords: Cervical fibroid, Broad lig fibroid, Huge fibroid, Fibroid polyp, Ureter injury

INTRODUCTION

Uterine fibroids (myomas or leiomyomas) are the most common benign tumours in women of reproductive age and may be asymptomatic, but they are also a major source of clinical morbidity.^{1,2} The aetiology of fibroids is multifactorial and not yet clearly understood. The rare occurrence of fibroids before menarche and their regression after menopause suggests that their growth is dependent on estrogenic and progesterone.³ Most fibroids are asymptomatic, with an incidental diagnosis at the time of routine investigation or tests for unrelated conditions.⁴ Symptomatic fibroids may present with abnormal uterine bleeding, pressure symptoms, pain, fertility issues, and obstetric complications. There are various factors which obfuscate the diagnosis of fibroids and these include: diversity in the size, location, number of fibroids, and symptoms, symptoms of fibroids that may be associated with other conditions or diseases, such as ovulatory

dysfunction, endometriosis or endometrial polyps, asymptomatic fibroids that may go undetected till an incidental diagnosis by examination or investigation.^{2,5} The treatment should be individualized and based on the symptoms, size, and location of fibroids. The patients' age, preservation of fertility or the uterus, availability of therapy, and experience of the therapist should be taken into account while deciding the therapy. Symptomatic uterine fibroids may be treated medically, surgically, or with a combination of both.⁶ There are various operative challenges in long standing huge fibroids on abnormal location. Surgical difficulties associated with these cases are due to poor access to the operative field, difficulty in suturing the repairs, increased blood loss and distortion of the anatomy. It is an art and skill to surgically remove these difficult fibroids and do difficult hysterectomies. In this case series, we describe 7 different difficult fibroids- their presentation, imaging findings and different surgical challenges faced and steps taken to overcome the same.

CASE SERIES

This case series includes 7 cases, who were admitted at our tertiary care centre over a period of 1 year. These cases represent different surgical challenges faced during surgery in cases of unusual fibroids. All the intraoperative pictures and of the specimens were taken at our tertiary care centre.

Case 1- central cervical fibroid

49-year-old nulli gravida came with complaints of pressure symptoms and dysmenorrhea for 6 months. On examination uterus was 16-week size and about 12×10 cm mass felt in the posterior fornix with the cervix being pushed anteriorly and cervix was lying just below the pubic symphysis. On ultrasound and contrast enhanced computed tomography (CECT) abdomen-pelvis-12.7×9.5×9.9 cm size fibroid seen in cervix and lower uterine segment. Preoperatively DJ stenting was done to avoid injury to ureters. Intraoperatively, a fibroid of size 12×10 cm was seen in the lower uterine segment and cervix with distorted anatomy. Because of fibroid, there was lower uterine segment elongation mimicking foetal head in the lower uterine segment. Uterovesical fold dissected and bladder shifted downwards. Bilateral ureters were identified. Both uterine arteries were ligated. A transverse incision was taken and enucleation of cervical fibroid done slowly with the help of myoma screw by counter traction on the surrounding structure and finally huge cervical fibroid of 12×9×8 cm size removed (Figure 1a and b). Rest of the steps of total abdominal hysterectomy steps were followed and procedure was uneventful.

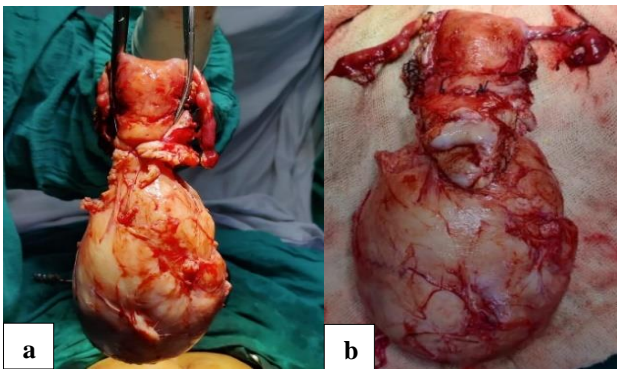


Figure 1: (a) and (b) Specimen of uterus with cervical fibroid of 12×10 cm (yellow arrows show the sutures between the uterus and the cervical fibroid which were taken to show the orientation of the specimen).

Similarly, there were 2 other cases of cervical fibroids which were operated at our centre. A 47-year-old, P4L4 came with complaints of urinary retention for 3 days. On examination, the cervix was dilated and completely effaced (taken up) around a mass of size 15×10 cm. On USG, 15×12×7 cm size cervical fibroid with stump attached to posterior wall of uterus. Intraoperatively, there

was a huge fibroid of 15×10 cm on which the uterus was sitting, predominantly on the anterior aspect. However, myomectomy was not done. This is second approach for cervical fibroids. Uterovesical fold was dissected way down. Course of ureter was identified. Uterine arteries were ligated at lower level than the isthmus. Incision was taken anteriorly at the junction of cervix and vagina, right below the fibroid. The incision was extended posteriorly and simultaneous clamping of bilateral uterosacral was done which opened the vault and made a way to deliver the uterus with cervix with intact fibroid (Figure 2). Then bilateral uterosacral were transected and rest of the steps of hysterectomy were followed.



Figure 2: Specimen of uterus with intact giant cervical fibroid.

A 46-year-old P3L3 came with complaints of pain in abdomen and incomplete voiding of urine for 3 months, menorrhagia for 2 years. On examination, 14 weeks size uterus with a firm mass of 4×5 cm palpated which was coming out of the cervix. However, the peduncle could not be appreciated. On This case was managed just like the above and specimen was removed with intact fibroid (Figure 3).



Figure 3: Specimen of uterus with cervical fibroid 4×5 cm.

Case 2- submucosal fibroid polyp

36-year-old P3L3 came with complaints of menorrhagia for 6 months. On examination, 4×4 cm reddish mass with firm in consistency seen occupying the cervical canal and

protruding out of the cervix, evidence of effacement and dilatation of cervix. Stalk could not be felt. No evidence of infection. Patient was taken for surgical management. Bilateral round ligaments and ovarian ligaments were clamped cut and transfixed. However, uterine artery clamping was a little difficult step because of fibroid inside the cavity which had ballooned out the uterus. So, after proper dissection of uterus hemi section of uterus was done, pedicle of fibroid polyp was cut and polyp was pushed into the vagina and delivered vaginally. Figure 4 shows the hemisected uterus and the dissected fibroid polyp.

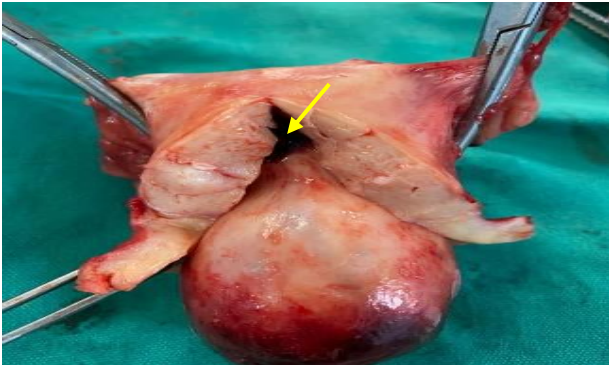


Figure 4: Hemisected uterus with pedunculated fibroid polyp protruding through the cervix.

Case 3- bulky uterus with fundal fibroid during vaginal hysterectomy

55-year-old P4L4 with complaints of something coming out of vagina. On examination, there was evidence of second-degree utero vaginal descent with cystocele and rectocele. On ultrasound, uterus was bulky with fundal fibroid of 3×3 cm on posterior side. However, the fibroid could not be appreciated on examination. Patient was planned for non-descent vaginal hysterectomy with cystocele repair with colpoperineorrhaphy. During the procedure, there was difficulty in reaching the cornual clamp as it was non-descent, bulky uterus, presence of fibroid. There was difficulty in delivering the specimen. Uterus coring was done by using blade which facilitated the delivery vaginally as a single length specimen (Figure 5).

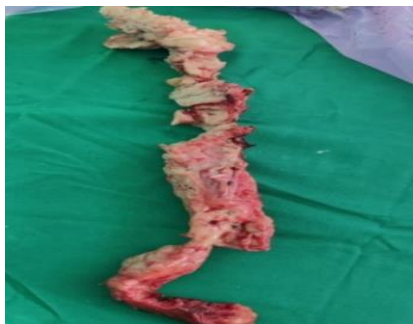


Figure 5: Coring of uterus facilitating vaginal hysterectomy.

Case 4- broad ligament fibroid

A 59-year-old P1L1 came with complaints of lower abdominal pain in pelvic region for 2 years. On examination, uterus was with 20 weeks size, on ultrasound and CECT -large broad ligament fibroid of 14×12×18 cm, with hydronephrosis. Preoperatively DJ stenting done. Intraoperatively, it was not a true broad ligament fibroid. It was the lateral wall fibroid which was extending into the broad ligament. The round ligament stretched over the mass was incised, round ligament is clamped, and ligated. Course of ureter identified and peristalsis noted. Injection vasopressin 20 units diluted in 100 ml normal saline injected into the pseudo capsule and on lateral wall of uterus. Incision was extended to the capsule of the mass (Figure 6). The mass was enucleated gently following the capsule taking care at the bed of the myoma avoiding injury to the ureter by making sure that whole of the dissection steps were intracapsular. Rest of the steps of total abdominal hysterectomy were followed. Figure 7 shows specimen of uterus with the specimen of myoma beside which was removed by myomectomy.



Figure 6: Intraoperative picture showing broad ligament (false) fibroid of 14×12 cm.



Figure 7: Specimen of uterus with the specimen of myoma beside (which was removed by myomectomy).

Case 5- multiple fibroids

A 35-year-old P2L2 came with complaints of menorrhagia for 1 year and primary infertility of 12 years. On examination, uterus was 20 weeks size.

Ultrasound and MRI showed multiple small intramural fibroids and a large 12×10 cm subserosal fibroid at the fundus of uterus. Initially patient was not willing for surgery and a 3-month medical treatment with gonadotrophin releasing hormone (GnRH) analogues was tried in an attempt to reduce the size of the uterus. Intraoperatively, a large fibroid of 12×10 cm with the peduncle along with the intramural part was removed. Then cavity was obliterated by taking stitches. 5 more small fibroids were removed by myomectomy. No other palpable fibroid or visible fibroids seen. Patient conceived after 8 months follow up.

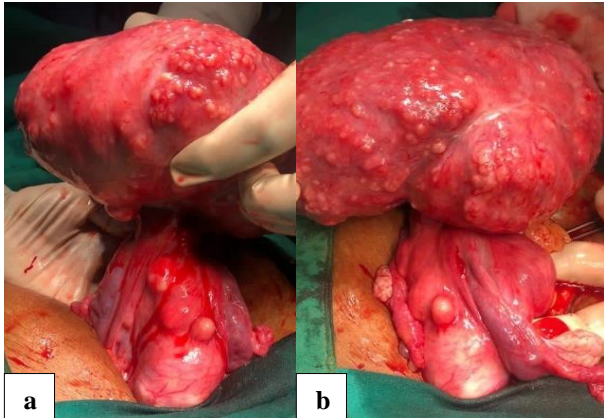


Figure 8: (a) and (b) Intraoperative pictures showing multiple fibroids.

Case 6- subserosal fibroids during caesarean section

A 32-year-old primigravida with breech presentation at term in labour with ultrasound diagnosed multiple subserosal fibroids underwent caesarean section for indication- Primigravida breech in labour. Intraoperatively, after delivery of baby and placenta, cavity was examined and looked for number and location of fibroids. PPH prophylaxis was given. There were multiple subserosal fibroids. 10 subserosal fibroids were removed by myomectomy. Caesarean section was uneventful.

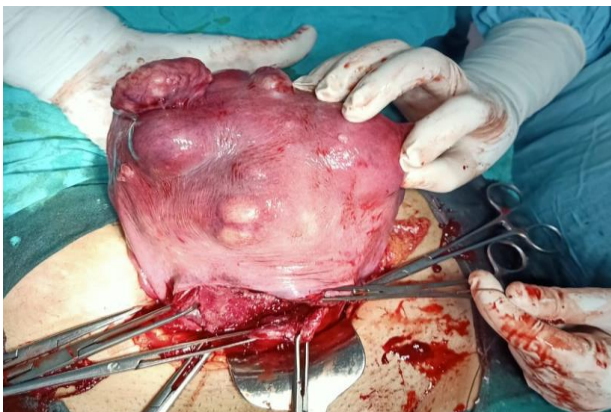


Figure 9: Intracaesarean picture showing multiple fibroids.

Case 7- giant fibroid

A 46-year-old P3L3 came with complaints of difficulty in micturition and defecation for 6 months, and also complaints of menorrhagia, pain in abdomen, distension of abdomen. On examination, uterus was 24 weeks size, non-tender. On ultrasound and MRI, 16×14×12 cm fibroid in the anterior uterine wall and also a 12×10 cm fibroid in the posterior uterine wall. There was also right sided moderate to severe hydronephrosis and hydroureter. Preoperatively, DJ stenting was done to avoid injury to ureters. Intraoperatively, vertical skin incision was taken as fibroid was huge. Fibroid was highly vascular and hence myomectomy was not done priorly (Figures 10). Each sequential clamp was applied medially. Extra precautions were taken during uterine artery clamps after tracing the course of ureter. Rest of the steps of hysterectomy were followed. Figure 11 shows the specimen of uterus with huge anterior and posterior wall fibroids.

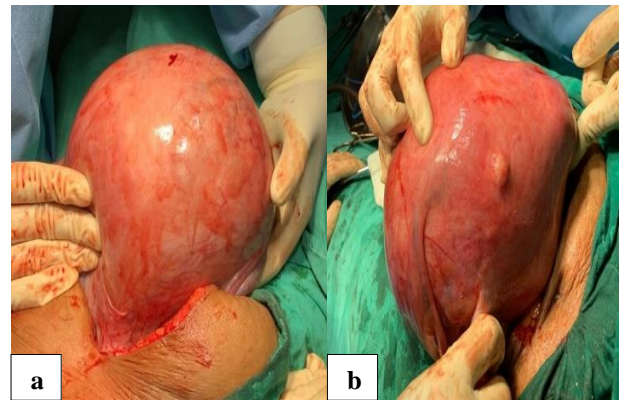


Figure 10: (a) and (b) Anterior and posterior view of huge fibroid.



Figure 11: Specimen of uterus with huge anterior and posterior wall fibroid.

DISCUSSION

Fibroids are the most common indication for hysterectomy globally. Hysterectomy may be offered as a permanent treatment for symptomatic leiomyomas in

women who do not want to preserve fertility and their uterus and have been counselled regarding other options and the consequences of hysterectomy. Every hysterectomy is not simple. The chance of injury to adjacent organs especially ureters and bladder are especially increased in surgically challenging unusual difficult fibroids.

Cervical fibroid

The incidence of leiomyoma is 20% in the reproductive age group, and only 1-2% are found in the cervix mostly they are situated in the supravaginal portion of the cervix.⁷ Cervical fibroids may be classified as: anterior, posterior, lateral, central and lastly multiple. The symptoms of cervical fibroid depend upon the type of cervical fibroid.⁸ Anterior fibroid exerts pressure on the bladder, whereas, the posterior fibroid pushes the pouch of Douglas posteriorly, thereby compressing rectum against sacrum. This is how pressure symptoms occur. Laterally, cervical fibroid tends extend into the broad ligament. The most important thing is the relation with the ureter. Uterine artery and ureter lie in very close relationship with fibroid and with each other in cases of cervical fibroid. However, they will always be extracapsular.⁹ So, when we plan to do myomectomy of cervical fibroid, lying inside the plane of pseudo capsule is the crux. Following the principles of surgery makes any difficult surgery easier and safer. The intraoperative appearance of cervical fibroid is referred as “lantern on the top of St. Paul’s cathedral”, it is by the way the uterus appears sitting on the cervical fibroid.⁹ The anatomical distortion which makes the surgery difficult are-displaced uterine arteries, displaced ureters, advanced and pulled up bladder, increased vascularity and the more chance of bladder and ureter injuries during surgery. Some of the precautions which can be taken to avoid injury are- preoperative DJ stenting of ureters, to trace the course of ureters under direct visualization by dissection intraoperatively, optimum dissection of uterovesical fold and pushing down the bladder as much as possible, intra-capsular myomectomy are essential precautions which should be taken to prevent injury to bladder and ureters.¹⁰ In the 3 cases of cervical fibroid, the above listed measures were taken to injury to ureters and bladder. For enucleation in case of central cervical fibroid, the Rutherford Morrison’s hemi section of the uterus technique can be done after ligating the round ligament and ovarian vessels. In this way the fibroid can be enucleated from the central part without injuring the ureter, bladder and uterine vessels.¹¹

Fibroid polyp

Case 2 was a case of pedunculated submucosal fibroid which had attachment at the posterior fundal region but had protruded into the vagina through cervical canal. Possible complications of these untreated submucosal pedunculated uterine fibroid prolapsed into the vagina are torsion, necrosis and uterine inversion (chronic or

acute). With torsion of the pedunculated uterine fibroid there is a reduction of blood supply to the fibroid, so the necrotic process will begin, which can increase pain and the risk of infection.¹² The surgical challenges in these kinds of fibroids are due to ballooning out of uterine cavity because of the polyp, uterine artery clamp and the uterosacral clamps will be difficult to apply. So, after bilateral uterine artery ligation, hemi section of uterus is done, followed by identifying the pedicle of the fibroid polyp. The pedicle is cut and the polyp is pushed down into and delivered through vagina. This reduced the bulging of the uterus and helps in restoration of anatomy. It is especially helpful in cases of infected or inflamed polyp, where the polyp can be pushed down so that it does not enter the operative field. The same step was followed in our case 2.

Fibroid during vaginal hysterectomy

In cases of fibroid with concurrent Uterovaginal descent and cystocele, rectocele, non-descent vaginal hysterectomy is preferred with cystocele repair. However, preoperative evaluation of uterine size to decide the type of surgery is very crucial. The challenges to vaginal surgeon in cases of large uteri are, access to anterior and posterior pouches, securing the pedicles and decreasing the size of the uterus by various debulking techniques. These challenges are further enhanced by presence of adenomyosis, cervical or isthmic fibroid, pseudo broad ligament fibroid, adnexal pathology and previous caesarean section. Like in our case, patient had small fibroid and adenomyosis which needed debulking procedure. Even in large uterus vaginal hysterectomy with debulking procedures is safe and feasible with less postoperative hospital stay and short catheter retention time.¹³ Vaginal hysterectomy in larger sized uterus is facilitated by bisection, myomectomy, bisection debulking, coring and clamp less approach. The basic principles to be followed during debulking techniques are to protect the bladder anteriorly and rectum posteriorly by using retractors, keep the orientation of the uterus correct, remain in the centre and avoid undue lateral extensions and to cut only as much as you can see. These principles are very important in avoiding injuries to bladder, bowel and ureter.¹⁴ After debulking the uterus, the cornual structures should be clamped, cut and transfixed. When technically feasible, vaginal hysterectomy should be performed in preference to abdominal hysterectomy because of more rapid recovery and fewer febrile episodes postoperatively.¹⁵

Broad ligament fibroid

Uterine fibroids are commonly intramural, submucosal or subserosal. Less frequently subserous or pedunculated fibroids may extend into the peritoneal folds of the broad ligaments to form an intra ligamentous fibroid. Broad ligament fibroid is a benign smooth muscle tumour which originates from the broad ligament hormone-sensitive smooth muscle or secondarily from the uterine

smooth muscle.¹⁶ These broad ligament fibroids are of clinical and surgical importance. Their anatomical location may cause local pressure effects including ureteric obstruction. Excision, however, is associated with risk of surgical complications particularly ureteric and uterine vessel injuries and concealed haematoma formation.¹⁷ True and false broad ligament leiomyomas are the two types, the main difference between the two being that a false one has a pedicle connecting it to the uterus, while a true type has no connection with the uterus.¹⁸ Intraoperative measures should be taken to reduce complications. The ureter should be observed closely throughout the procedure. Vasopressin can be routinely injected into the broad ligament fibroid to reduce intraoperative bleeding.¹⁷ Depending on the location of the fibroid in relation to the uterine vessels and the ureter, an incision should be made on the anterior or posterior leaf of the broad ligament. Blunt dissection can be done. If cautery is being used for dissection, care should be taken to minimise the risk of thermal injury to surrounding structures, particularly the uterine vessels and ureter. Following fibroid enucleation, haemostatic sutures should be taken at the base of myoma followed by reconstruction of broad ligaments and round ligaments forms the final step of the procedure. Minimal access surgeries can also be performed and uterine artery embolization (UAE) is an excellent non-surgical option for women who do not desire future fertility and have medical disorders that increase surgery risk.¹⁸

Multiple and giant fibroids

The surgical management of large tumours, as in our case, can be a challenge even when the open surgical approach is chosen, and again in these cases a laparoscopic method is not recommended.¹⁹ Pre-operative assessment should be meticulous, in order to avoid intra-operative and post-operative complications. In pre-operative period, mapping of fibroids is very crucial. Size, anatomical position, distortion of adjacent organs and features suggestive of malignancy can be assessed using various imaging techniques. Ultrasound examination is good enough in majority of the cases of fibroid, however, in cases of huge fibroids, computed tomography (CT) or magnetic resonance imaging (MRI) can provide a better estimation of the pelvic topography as well as accurate measurements of the leiomyoma itself.¹⁹ Other pre-operative measures include correction of anaemia, optimising body mass index in obese patients and anaesthetic assessment in patients with high anaesthetic risk.¹⁹ The use of GnRH analogues for 3 or 4 months prior to fibroid surgery has been shown to reduce both uterine volume and fibroid size, correct iron deficiency anaemia, reduce intra-operative blood loss, diminish the need to perform a midline incision and increase the possibility of vaginal hysterectomy in selected cases.^{20,21} The abdominal incision chosen must provide optimal exposure for manipulating and dissecting such large masses originating in the pelvis like in our case, we had to take vertical skin incision. Pelvic

anatomical distortion due to the presence of an abnormal uterus increases the risk of injury to adjacent structures including the bowel and the urinary tract. Therefore, careful dissection of the area below the broad ligament and visualisation of the ureters prior to application of surgical clamps is advised.¹⁹

Caesarean myomectomy

Myomectomy during caesarean section is still a topic of debate. It was considered a dreadful surgery except for pedunculated sub-serosal fibroids.²² Recent studies have suggested that there is no increased risk of haemorrhage during caesarean myomectomy.²³⁻²⁵ However, not all myomas need to be removed, but only those causing difficulty in delivery of the foetus or wound closure and sub-serosal fibroids.²² Our case had multiple sub serosal fibroids which are safer and easier to remove. After explaining risks to the relatives, myomectomy was performed. In conditions where the fibroids are situated in the lower uterine segment, myomectomy becomes inevitable. All possible measures should be taken to prevent haemorrhage. The decision of myomectomy depends on the size, location, number, surgical skill and confidence.

Following are the precautionary steps to be taken during surgery. Preoperative GnRH analogue administration for 3 months reduces intraoperative blood loss and facilitates surgery by reducing size and vascularity of fibroid. However, the disadvantage of them is that they destroy the fine plane of cleavage making myomectomy difficult. Preoperative imaging and mapping of fibroid to see for size, number, location and its effect on surrounding structures makes one to prepare for difficult steps of surgery. Preoperative DJ stenting helps to prevent ureters injury intraoperatively. Vasopressin infiltration helps in reducing the haemorrhage and to have proper plane for dissection. While dissecting the fibroid, should always remain intracapsular and in the proper plane to avoid injury and haemorrhage. Consent for hysterectomy should always be explained to relative's prior myomectomy. Urinary bladder should be dissected as much as possible and push it downwards to ensure safety. It is always safe to identify the course of ureters and to visualize the course to prevent as well as to identify injuries to ureters.

CONCLUSION

Knowledge of distorted anatomical structures due to fibroids are important for performing surgery for any fibroid. Pre operative preparation is the important aspect before tackling these unusual fibroids. Size of fibroids can be reduced by medications and make them accessible and amenable for surgery. Different types of fibroids are tackled in different ways. So, fibroid mapping by imaging studies and also ureteric stenting preoperatively whenever needed, helps to prevent untoward injuries. Following principles of surgery in any difficult fibroids leads to

successful management and also helps to prevent injuries to the Urinary tract and avoiding Intra operative blood loss.

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