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Research Article

Varied Clinical Presentation and Surgical Challenges in Fibroid: A Case Series and Recent Advances

Dr. Pragya Shree[1], Dr. Roshani Gupta[2], Dr. Monica Sahu[3], Dr. Zaheen Fatima[4]

[1] Professor, A.S.J.S.A.T.D.S. Medical College, Fatehpur
[2] Assistant Professor, A.S.J.S.A.T.D.S. Medical College, Fatehpur
[3] Assistant Professor, A.S.J.S.A.T.D.S. Medical College, Fatehpur
[4] Senior Resident, A.S.J.S.A.T.D.S. Medical College, Fatehpur

Corresponding Author:

Dr. Zaheen Fatima
A.S.J.S.A.T.D.S. Medical College, Fatehpur.

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ABSTRACT

Uterine leiomyomas, also known as fibroids, are benign monoclonal tumors originating from smooth muscle tissue Managing long-standing, large fibroids presents several operative challenges. We present a case series of five fibroid cases with varied presentations, highlighting the surgical challenges encountered and the strategies employed to overcome them successfully. The article also highlights recent technique employed for their management.

Keywords*: Cervical fibroid, Myomectomy, Fibroid polyp, Ureter injury, Enhanced Recovery After Surgery (ERAS) Protocol.*

INTRODUCTION

Uterine leiomyomas, also known as fibroids, are benign monoclonal tumors originating from smooth muscle tissue and are commonly found in women of reproductive age. While many fibroids remain asymptomatic, long-standing fibroids can cause significant clinical morbidity. The etiology of fibroids is multifactorial and not yet fully understood. The rare occurrence of fibroids before menarche and their regression after menopause suggest that their growth depends on estrogen and progesterone. Although most fibroids are asymptomatic, they can present with a variety of symptoms, including abnormal uterine bleeding, pressure effects, pain, fertility problems, and obstetric complications (1).

There are various factors that govern the diagnosis and management of fibroids, including the size, location, number of fibroids, and the symptoms they cause. Fibroids are classified into different types based on their location. Managing long-standing, large fibroids presents several operative challenges. Due to their close proximity to vital structures such as the ureters and urinary bladder, intraoperative injury is more likely, which can increase the morbidity associated with surgery.

We present a case series of five fibroid cases presented at teaching hospital at Aspirational District Fatehpur, Uttar Pradesh catering rural areas, with varied presentations, highlighting the surgical challenges encountered and the strategies employed to overcome them successfully. Different types of fibroids require different surgical approaches.

CASE 1

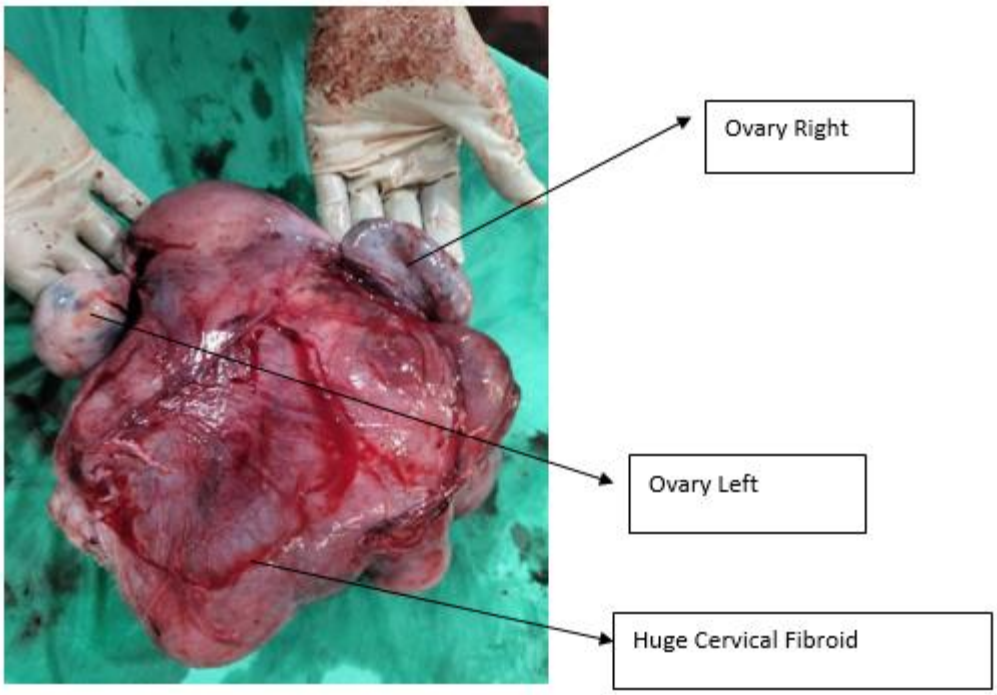

Image 1: An image showing anterior aspect of fibroid (FIGO 8-Cervical)

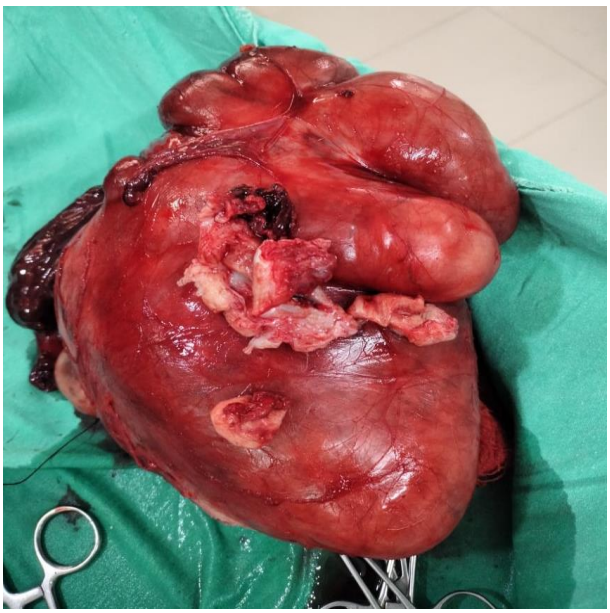

Image 2: An image showing posterior surface of the fibroid seen in figure 1

A 45-year-old multiparous woman presented in OPD with complaints of heaviness in the lower abdomen along with difficulty in defecation and rectal tenesmus for 1 month. On examination, the uterus was 28-30 weeks in size, and a 15cm by 12 cm mass was felt in the posterior fornix. The cervix was not visualised. On ultrasound and contrast-enhanced computed tomography (CECT) abdomen-pelvis- 18cm*12cm*8cm size fibroid was noted in and lower uterine segment. Preoperatively, DJ stenting was done to avoid intraoperative injury to the ureter. Intraoperatively, the uterus was seen sitting on a mass approximately 18 cm by 12 cm by 11 cm, predominantly on the posterior aspect (Image 1 and Image 2). After applying clamps to the infundibulopelvic ligament. The Uterovesical fold was dissected down. The course of the ureter was identified. Uterine arteries were ligated. The lateral attachment of the uterus was cut, clamped, and ligated in serial steps. The uterus with adnexa, along with the fibroid, was removed. The rest of the steps of the hysterectomy were followed.

CASE 2

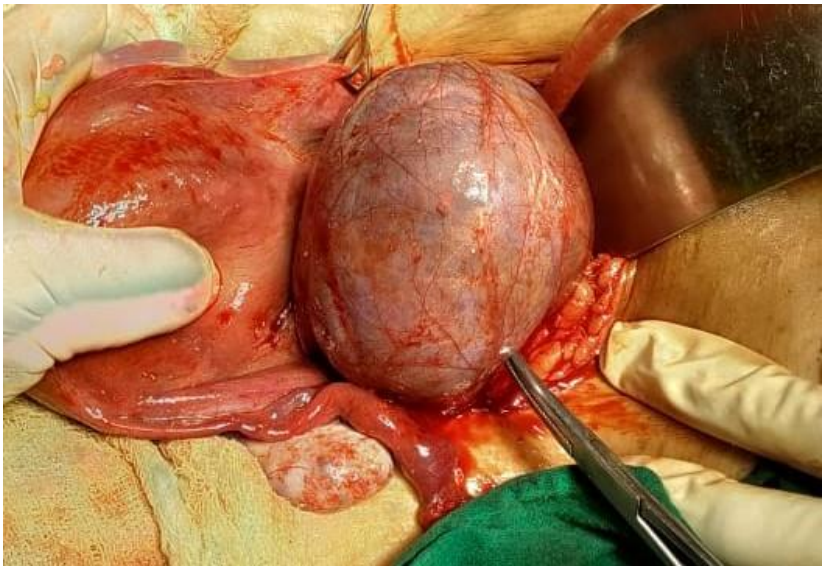

Image 3: An image of anterior cervical fibroid prior proceeding to hysterectomy (FIGO 8-Cervical)

A 48-year-old nulliparous female presented to the emergency room with acute urinary retention. She had been diagnosed with uterine fibroids five years earlier and had received treatment from unqualified practitioners. On examination, an abdominopelvic mass approximately the size of a 14-week pregnancy was palpated, separate from the uterus. On per vaginal examination, the uterus was displaced posteriorly, and a firm mass measuring 13 cm by 10 cm was felt in the anterior fornix. Ultrasound and MRI scans revealed a 14 cm x 10 cm x 8 cm mass arising from the anterior wall of the cervix, consistent with a cervical fibroid. After being deemed fit for anesthesia, the patient consented to a hysterectomy. Intraoperatively, a 12-14 week-sized cervical fibroid was found anteriorly, measuring 14 cm x 10 cm x 8 cm with degenerative changes (Image 3). Another fibroid measuring 4 cm x 3 cm was present in the anterior cervix. A total abdominal hysterectomy was performed with enucleation of the cervical fibroid and careful dissection of the urinary bladder. Both ovaries were preserved.

CASE 3

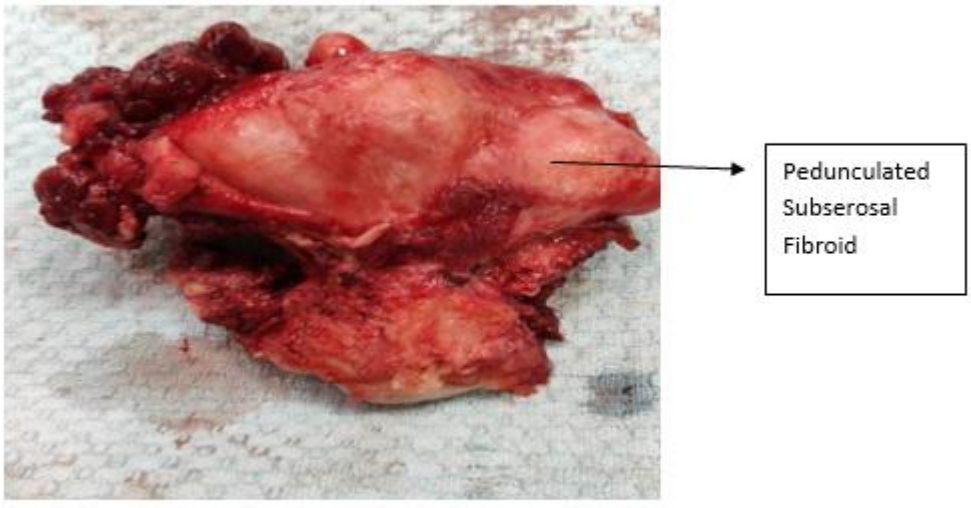

Image 4: An image of left lateral wall fibroid FIGO-7 (false broad ligament fibroid)

A 47-year-old multipara P3L3 presented in OPD with fever and burning micturition for a week. She gave the history of recurrent UTI. Patient also complained of dull aching pain and heaviness in her lower abdomen. The patient had normal menstrual cycles with mild dysmenorrhea.

On abdominal examination, a firm, nontender mass was palpable in the left lower abdomen. On per speculum examination, the cervix and vagina were healthy. On per vaginum examination uterus was 8-10 weeks in size, displaced to the right due to a left adnexal mass that was not separate from the uterus. A mass of size approx. An 8 cm by 7cm mass was palpable in the left fornix. The uterus seemed to be pushed to the right side. The right fornix was free. The mass was non-tender, firm with smooth margins, and moving with the uterus on bimanual examination.

A transvaginal ultrasound was done, which was suggestive of a uterine size of 12.2 × 9.25 × 5.42cm. Endometrial thickness was 3.5 mm. A left adnexal mass of heterogeneous echogenicity with size 10.5 × 8 cm was present seen abutting the left uterine wall. Right and left ovaries appeared to be normal. The transvaginal sonography (TVS) report was suggestive of subserosal fibroid or left broad ligament fibroid and grade 3 left renal hydronephrosis. Patient opted for a hysterectomy.

The patient was taken for an elective laparotomy. Perioperatively, a large size 10 x 8 cm, was present in the broad ligament pushing the uterus toward the right side. As shown in Image 4, the left ovary was normal in size, but a fibroid was seen replacing the utero-ovarian ligament in anatomy.
A broad ligament was opened along with the uterovesical fold and posterior peritoneum. The bladder was pushed caudally to avoid ureteric injury. Total abdominal hysterectomy was done. Patient recovered well.

CASE 4

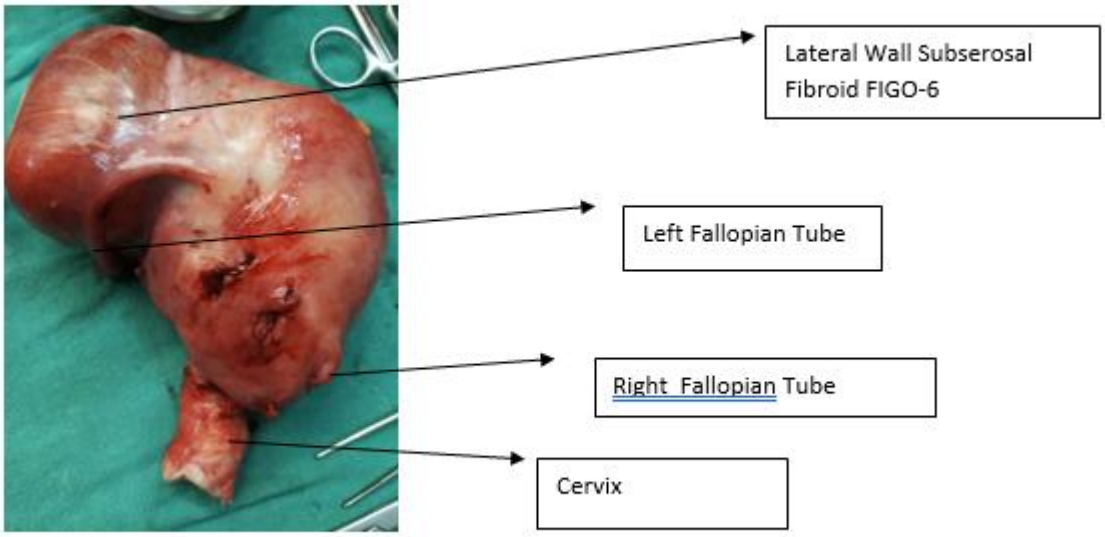

Image 5: An image of uterus with lateral wall subserosal fibroid

42-year-old perimenopausal multipara P1L1 presented in OPD with episodes of acute abdominal pain for two months, for which she needed hospitalization. The patient also complained of heaviness in her lower abdomen for the past six months. The patient also complains of irregular and heavy menstrual bleeding with dysmenorrhea on and off for the last 1 year.

On abdominal examination, a firm, tender mass was palpable in the right lower abdomen. On the perspeculum examination, the cervix and vagina were apparently healthy. On per vaginum examination uterus was 14-16 weeks in size with a right adnexal mass palpated just adjacent to the uterus. A mass of size approx. 10X8 cm was palpable in the right fornix. The uterus was slightly pushed to the left side with transmission of motion from the mass to the cervix. The mass was tender, partially solid cystic with smooth margins.

A transabdominal ultrasound was done, which was suggestive of a uterine size of 16.2 × 12.5 × 8.4cm. Endometrial thickness was displaced anteriorly by 4 mm. A subserosal fibroid of size 14x12x8cm was visualized in the posterior wall of the uterus (FIGO-6). A right adnexal mass of heterogeneous echogenicity with solid and cystic consistency of size 10 × 7.6 × 4.8 cm was seen abutting the right upper uterine wall. The right ovary could not be seen separately from the while the left ovary appears to be normal. The ultrasound report was suggestive of a subserosal fibroid with a right ovarian mass. All the tumour markers came within normal limits with CA-125 of value 43 IU/ml.

The patient was taken for an elective exploratory laparotomy. Perioperatively, a large subserosal fibroid of size 14 × 10 x 8 cm was present in the posterior wall of the uterus. A subserosal fibroid of size 8x5x4cm of size seen arising from the

right lateral wall of the uterus. The consistency was solid cystic suggestive of degeneration, as shown in Image 5. The bilateral ovary appears to be normal. Total abdominal hysterectomy was done with bilateral salpingectomy. Histopatholgy shows cystic and hemorrhagic degeneration of right subserosal fibroid.

CASE 5

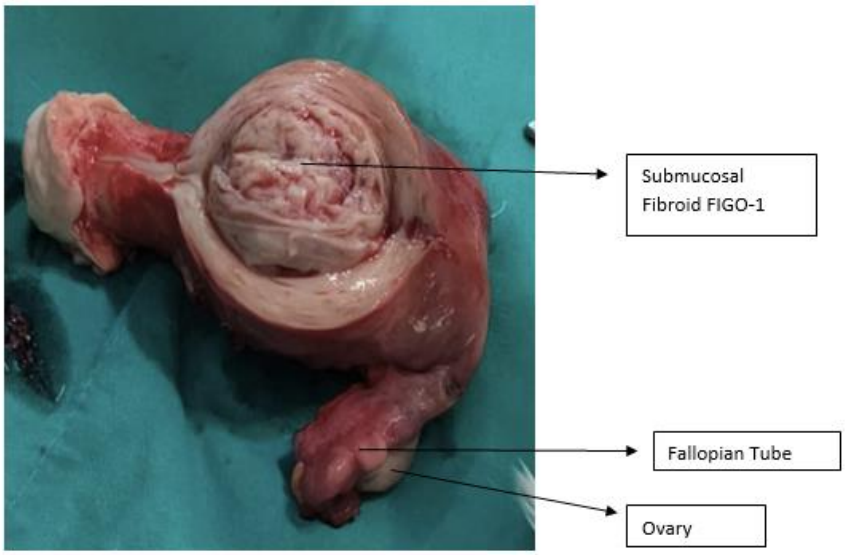

Image 6: An image showing submucosal fibroid. Cut edges of uterine myometrium seen.

46- year- old postmenpausal women reported in Emergency Room with heavy bleeding 2 years after menopause. Further investigation ultrasonography and sonohysterography demonstrated intracavitary fibroid of 8cm by 10cm. Imaging tools MRI and Power Doppler were used to rule out leiomyosarcoma. Endometrial sampling using pipelle biopsy revealed benign cells. All tumor markers were within normal limits. After assuring fitness for surgery, the patient underwent Total Abdominal hysterectomy. Cystic ovaries were removed. Histopathology investigation confirmed the diagnosed of submucosal fibroid (Image 6).

DISCUSSION

Uterine leiomyomas, also known as fibroids, are benign, well-defined monoclonal tumors originating from smooth muscle tissue and showing significant variability in clinical symptoms and genetic features. Recently, increased expression of HMGA2 has been linked to the formation of fibroids (2).

The uncommon appearance of fibroids before the onset of menstruation and their shrinkage after menopause indicate that their growth depends on estrogen and progesterone. The reduced levels of estradiol and progesterone caused by DMPA use decrease the risk of developing leiomyomas. Higher body mass index (BMI) and waist-to-hip ratio (WHR) have been associated with a greater occurrence of multiple and larger fibroids (3). Laboratory studies show that vitamin D inhibits the growth of myometrial and leiomyoma cells by antagonizing sex steroid hormone receptors, reducing cell proliferation and extracellular matrix production, and promoting apoptosis. Therefore, low serum vitamin D levels may significantly contribute to the development of fibroids (4).

Fibroids are asymptomatic in 60% of cases; however, long-standing fibroids can cause heavy menstrual bleeding, painful intercourse, abdominal pain, infertility, pregnancy complications, and pressure-related symptoms. Several factors influence the diagnosis and treatment of fibroids, including variations in their size, location, number, and associated symptoms. Fibroids are classified based on their location as submucosal, intramural, or subserosal. The International Federation of Gynecology and Obstetrics (FIGO) has developed a classification system for fibroids based on their position, ranging from FIGO 0, where the fibroid is entirely within the endometrial cavity, to FIGO 8, where the fibroid has no connection to the myometrium (5).

Ultrasound (US) imaging, especially with 3D technology, is valuable for assessing the characteristics of myomas, including their size, location, and blood supply. Hysteroscopy and sonohysterography are effective for evaluating submucosal fibroids. Magnetic resonance imaging (MRI) is more effective for cases involving more than four fibroids or a uterus larger than 375 cm^3, which corresponds to a uterus at 14–15 weeks of gestation (6). MRI is also useful for suspected malignant degeneration, indicated by abnormal fibroid morphology, necrosis, hypervascularization, and rapid growth observed on ultrasound. Compared to ultrasound, MRI demonstrates greater sensitivity and specificity in detecting sarcomas.

Other imaging techniques, such as PET-CT and CT scans, are primarily useful for staging. The role of tumor markers, including lactate dehydrogenase, in preoperative evaluation remains unconfirmed. Elastography and contrast-enhanced ultrasound may aid in differentiating fibroids from malignant uterine tumors (7,8). Preoperative imaging to map fibroids and delineate the ureter's course using intravenous pyelography, when necessary, can help prevent injuries during surgery (9).

In addition to medical treatment for symptoms caused by large uterine fibroids, hysterectomy is primarily recommended when fertility preservation is not a concern, whereas myomectomy is preferred when fertility preservation is desired. Screening for vitamin D deficiency and supplementing accordingly can aid in secondary prevention in these cases. If there is a definite suspicion of sarcoma, an endoscopic approach should be avoided.

During surgery for large fibroids, several key considerations are essential to ensure a successful outcome. Preoperative planning is critical, and imaging studies should be utilized to assess the size and location of the fibroid, as well as its potential impact on surrounding structures. The risk of significant blood loss during surgery must be anticipated, with preparations made for possible blood transfusion. The use of a cell saver to collect and reinfuse the patient's own blood can reduce the need for allogeneic blood transfusion (10). Additionally, preoperative ureteric stenting may be considered to help identify the ureters during surgery and prevent injury.

Intraoperative ultrasound can be used to locate the fibroid and assess its relationship to surrounding structures (11). Careful dissection is essential to avoid injury to adjacent organs such as the bladder, bowel, and ureters. Ligation of the uterine arteries can help reduce blood loss during surgery and facilitate fibroid removal. Morcellation may be necessary to extract large fibroids through a smaller incision. Alternatively, a larger abdominal incision may be required to accommodate the fibroid's size, and the fibroid may need to be removed in pieces to facilitate extraction.

Meticulous hemostasis is crucial to prevent postoperative bleeding and hematoma formation. Effective bleeding control is essential during surgery for large fibroids, and the surgeon should be prepared to utilize a variety of hemostatic agents and techniques. The ureters must be carefully identified and protected throughout the procedure to avoid injury. Postoperative care should include close monitoring for bleeding, infection, and other potential complications. By adhering to these principles and adopting a careful, systematic approach, surgeons can successfully manage large fibroids and improve patient outcomes. Recovery after surgery for large fibroids may be prolonged and more complex, requiring careful management to minimize complications and ensure a successful outcome. Implementing the Enhanced Recovery After Surgery (ERAS) protocol significantly reduces surgical stress, minimizes complications, and promotes faster recovery (12).

CONCLUSION

Uterine fibroids pose significant surgical challenges due to their proximity to vital structures such as the ureters and urinary bladder. A thorough preoperative evaluation, including imaging studies like MRI and intravenous pyelography, is crucial for mapping the fibroids and delineating the course of the ureters to prevent intraoperative injuries. In cases of large and symptomatic fibroids, hysterectomy may be the preferred treatment option, especially when fertility preservation is not a concern. However, myomectomy can be considered for patients desiring to maintain fertility. By adhering to sound surgical principles—such as clearly identifying anatomical landmarks and taking precautions to prevent ureteric injury—surgeons can successfully manage cervical fibroids and improve patient outcomes. This case series highlights the importance of a multidisciplinary approach and careful planning in the management of cervical fibroids, ultimately leading to enhanced patient care and outcomes.

Conflict of interest

All authors have no conflict of interest.

Informed Consent and Consent for Publication

Written Informed consent and consent for Publication was obtained from all individual participants included in the study.

Human or Animal Rights

This study does not contain any procedures on animals.

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Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of institution which complies with the 1964 Helsinki declaration and its later amendments.

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