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Case Report

Surgical challenges: total laparoscopic hysterectomy of a bulky uterus weighing 4.4 kg

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ABSTRACT

With the advancements in minimally invasive surgeries, the main concern while operating huge fibroids is to avoid laparo-conversion. Performing safe and effective total laparoscopic hysterectomy for large uterus hinges largely on modifications in pre-operative preparation and modifications in surgical techniques. The procedure was done at Indigo women Centre, Chennai, Tamil Nadu, India. This procedure was performed on a 44-year-old woman with complaints of abdominal discomfort and a rapidly growing pelvic mass. Imaging suggested massive fibroid of 34 weeks size. Operative challenges included port placement, manipulation, positioning, vascularity, dissection in altered anatomy and specimen retrieval. The same was accordingly overcome by cephalad port entry, Trendelenburg and air-planning position, "two myoma screw" technique, vasopressin, appropriate energy sources use and manual morcellation. Laparoscopic approach to huge fibroids can be made feasible, provided there is sufficient preoperative preparation and surgical expertise, thereby rendering the entire benefits of minimally invasive surgery.

Keywords: Huge fibroid, Laparoscopic hysterectomy, Manual morcellation, Arge myoma

INTRODUCTION

The first ever case of laparoscopic hysterectomy has been routed to 1988 and ever since various modifications in instrumentation, techniques and electrosurgery have been invented to enhance a better surgical outcome.[1] Currently it is accepted as a safe and feasible technique to manage benign uterine pathology as it offers minimal postoperative discomfort, shorter hospital stay, rapid convalescence, and early return to the activities of daily living. Conventionally, total abdominal hysterectomy has been the preferred mode of surgery for very large fibroids beyond 20 weeks considering the difficulty in mobilisation of uterus and limitation in visualisation of anatomic structures like uterine artery and ureters. With the advent of minimally invasive surgeries, enucleation of huge mass occupying most of the abdominal cavity still remains a challenge for the surgeon as the attempt of the same includes the risk of urinary tract and bowel injury due to poor exposure, difficulty in retrieving the specimen and duration of the procedure. Furthermore, the risk of laparo-conversion is proportional to the surgeons' technical expertise.[2,3] These surgical challenges could be overcome by few pre-operative interventions and changes in surgical techniques.

CASE REPORT

A 44-year-old woman with massive fibroid of 36 weeks size, palpable upto xiphisternum, had complaints of urinary incontinence and abdominal discomfort (Figure 1). After initial radiological evaluation, a huge fibroid of size 30 cm was seen arising from the fundo-anterior wall of uterus. Considering her years of disability and failed medical management previously, she was planned for total laparoscopic hysterectomy with mini-laparotomy. Intraoperatively various operating difficulties were anticipated included restricted field of vision, the same

was managed with appropriate port placement where the ports were placed as cephalad. Initial port entry was made through palmers point and under vision supraumbilical primary port was created. Being a vascular tumor, bleeding could lead to haemodynamic instability and also could hinder the field of vision. This difficulty was overcome by intra-myoma diluted vasopressin instillation, use of appropriate energy source and adequate haemodynamic stability intra-operatively. Manipulation of the uterus with a uterine manipulator was very difficult in a large uterus.

Considering the huge bulk, "two-myoma screw technique" was opted for two screws were applied simultaneously through lateral ports, thereby enabling stable and adequate manipulation (Figure 2). Further, better manipulation and was achieved by "airplaning technique" where the operating table was tilted to the side contralateral to the pedicles to be cut (Figure 3). Once the preliminary steps were done, structures around uterus were dissected and anatomy was restored. Being a huge fibroid obscuring pelvic anatomy, myomectomy was proceeded with appropriate energy sources (Figure 4).

Once the specimen was separated from the underlying uterus, TLH was proceeded by coagulating and cutting bilateral uterine supports and vascular supply. Being a heavy fibroid, sudden decompression of major vessels following myomectomy was managed with appropriate fluid management. Considering the risk of sarcomatous conversion, specimen was delivered through mini-laparotomy. Delivering a 30 cm myoma through a 5 cm mini-laparotomy was meticulously managed by manual morcellation, where the fibroid was removed in piece meal, ensuring no spill into the abdominal cavity (Figure 5). Total duration of surgery was 8 hours and blood loss was around 100 ml. Uterus with fibroid weighed 4.435 grams. Post-operative period was uneventful.

Figure 1: Pre-operative examination.

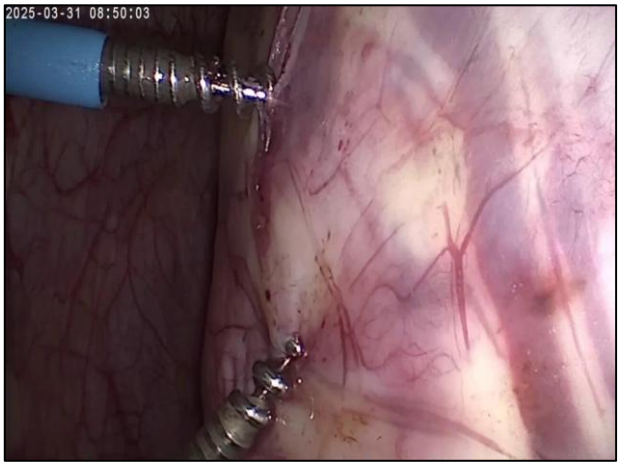

Figure 2: Two myoma screw technique.

Figure 3: Airplaning technique.

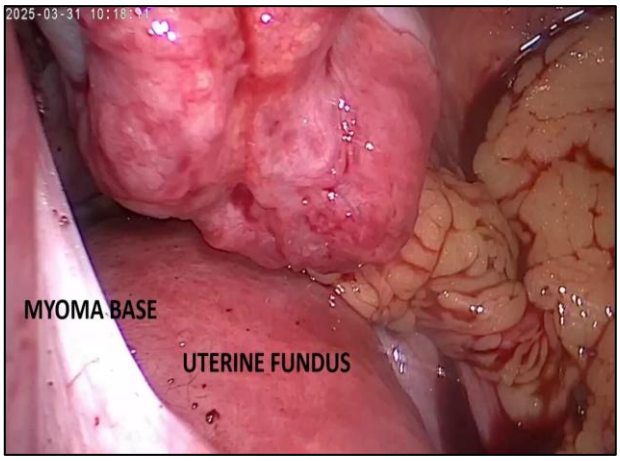

Figure 4: Myoma base.

Figure 5: Specimen.

DISCUSSION

Laparoscopy and laparotomy have been a topic of debate for large fibroid since decades. In cases involving significantly enlarged uteri, the normal anatomical layout particularly of the ureters and uterine vessels is often distorted. When myomas develop on the lateral uterine wall below the entry point of the uterine vessels, the ureter tends to be displaced outward and may lie elevated over the top of the myoma. Additionally, the uterine vessels are frequently lifted to a level close to that of the ovarian vessels. If the lateral wall myomas are located above the uterine vessels, the ureter is usually pushed outward and downward. Large fibroids in the anterior wall or cervix can cause the bladder to become flattened and elevated on the front of the uterus.

These anatomical changes, coupled with limited visibility during surgery, raise the risk of injury to the bladder, ureters, and bowel. The difficulty is further increased by the challenges involved in removing the uterus and accurately suturing the uterine vessels. As a result, some experts consider very large uteri to be a relative contraindication for total laparoscopic hysterectomy (TLH). According to existing literature, significantly enlarged uteri are generally managed through laparotomy.[4] Many studies recommend an upper size limit, typically corresponding to a uterus of 15 to 16 weeks gestational size.[5] A notable multicentre randomized controlled trial conducted in 1998 compared laparoscopic hysterectomy (LH) with total abdominal hysterectomy (TAH), with most participants undergoing surgery due to uterine fibroids. In the LH group, the largest uterus removed weighed 1550 grams. Interestingly, the highest recorded blood loss 3000 ml occurred in the TAH group. On average, blood loss was markedly lower in patients who underwent LH compared to those who had TAH.[6] As suggested by Wang et al, before proceeding with TLH in such complex cases, certain adaptations to standard surgical technique are recommended in order to achieve minimal injuries to the patient, like those followed in this case.[7]

CONCLUSION

Given adequate training in laparoscopic surgery and with proper technique, TLH can be performed successfully in most women with very enlarged uteri, with no increase in complication rates and short-term recovery.

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