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Case Report

Laparoscopic Davydon's vaginoplasty for a case of Mayer-Rokitansky–Küster-Hauser syndrome: a case report

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ABSTRACT

Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is a congenital Mullerian anomaly characterized by agenesis of uterus and upper vagina in women with normal secondary sexual characteristics and normal ovarian function. Creation of a functional neovagina is essential for sexual function and psychological wellbeing. Laparoscopic Davydov vaginoplasty utilizes autologous peritoneum and offers excellent anatomical and functional outcomes. We reported a case of a 21-year-old female presenting with primary amenorrhea diagnosed with MRKH syndrome and successfully managed with laparoscopic Davydov vaginoplasty. The procedure was completed without complications. A neovaginal length of 8 cm was achieved with satisfactory anatomical outcome. Laparoscopic Davydov vaginoplasty is a safe, minimally invasive, and effective technique for vaginal reconstruction in MRKH syndrome.

Keywords: MRKH syndrome, Davydov vaginoplasty, Laparoscopy, Vaginal agenesis, Neovagina

INTRODUCTION

Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is a female congenital disorder characterized by an underdeveloped or absent vagina and uterus. The prevalence of MRKH syndrome is generally considered to be around 1 in 5000 live female births. MRKH patients are divided into two types: type I patients only exhibit agenesis of the vagina and uterus, while type II patients also have congenital malformations of other organ systems (most often renal structural abnormalities or the absence of a kidney).[1] Genes associated with WNT signalling, homeobox genes, and other gene families crucial for female genital tract embryogenesis are believed to play pivotal roles in ensuring proper anatomical formation of the reproductive, renal, and skeletal systems. Additionally, certain environmental factors, such as endocrine-disrupting chemicals, may exert significant effects, potentially mediated through epigenetic modifications.[2]

The first-line treatment for vaginal agenesis is noninvasive patient-performed vaginal dilatation.[3,4] Several surgical techniques have been described for the development of a functional vagina. Davydov's vaginoplasty is one of the methods of vaginoplasty using the patient's own peritoneum as a graft to line the neovagina. We present here a case of MRKH syndrome where a laparoscopic Davydov procedure was chosen for vaginal reconstruction.

CASE REPORT

A 21-year-old unmarried female presented with complaint of patient never had menstruation. No history of cyclic abdominal pain, urinary symptoms, hoarseness of voice. On physical examination- Patient is conscious, cooperative and oriented to time, place and person. BMI-22.9 kg/m^2. No acne, hirsutism or stria. Spine and gait normal. Vitals are stable. Secondary sexual characters appropriate for age. No palpable mass per abdomen and no inguinal swellings. Gynaecological examination- normal vulva, normal external urethral meatus and blind ending vagina of 3 cm in length. Per rectal examination- no palpable uterus and cervix, good anal sphincter tone. Lab evaluation-2D ultrasound revealed-an absent uterus with

right and left normal sized ovary. Bilateral kidneys normal. MRI pelvis confirmed the diagnosis suggesting complete uterine agensis with no endometrial cavity. Diagnosis of MRKH syndrome. Patient and her family were offered psychosocial counseling and treatment options and fertility issues were discussed. After written consent, Laproscopic Davydon's vaginoplasty was planned.

Operative procedure

Patient taken in lithotomy position under General anaesthesia. 14F foleys catheterization done. Under laproscopic view, bilateral normal sized ovaries, fallopian tubes and remnant uterine band noted. Rectovesicular space dissected and posterior peritoneum separated from the uterine remnant. From the vaginal end, transeverse incision was made at the blind vaginal summit and hegars dilator inserted. The mobilized posterior peritonum pulled down and sutured with edge of incised posterior vaginal mucosa with help of vicryl no 1-0. Anterior vaginal wall was allowed to heal by itself. Both uterosacrals were approximated with vicryl no-1-0 in continous manner which acts as roof. Hemostasis achieved and confirmed. Vaginal mold made with polyurethane condom and placed within the neovagina to maintain patency.

A urinary catheter was kept for 72 hours and vaginal mold was changed after 72 hours. Higher antibiotics were given. Serial dilatation done with vaginal mold 3 times a day (20-30 mins). Patient was trained for self-dilatation, 3 times a day for using 15-20 min using lubricated vaginal mold. Post operative period was uneventful. Patient was discharged on post operative day 12th with achieved neovaginal length of 7-8 cm and 2 finger breadth. Patient was advised follow-up after 6 weeks and 3 months.

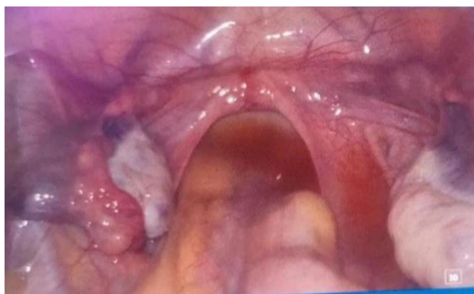

Figure 1: Internal view showing uterine analgen.

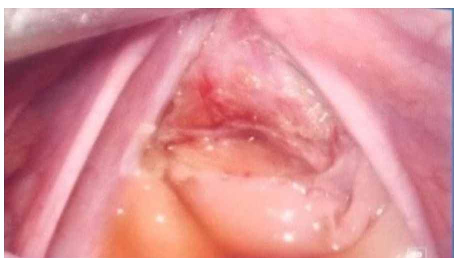

Figure 2: Rectovesicular space dissection with Bilateral normal ovaries.

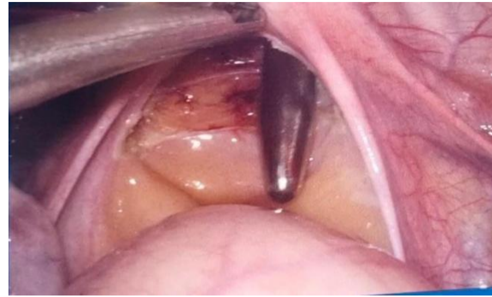

Figure 3: Incision of bridging tissue.

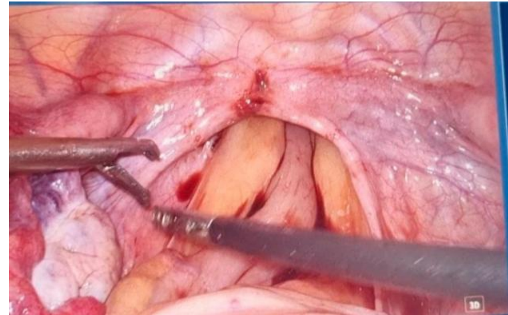

Figure 4: Pulling of posterior peritoneum.

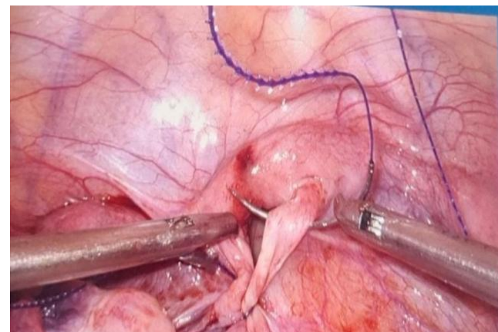

Figure 5: Formation of neovaginal apex.

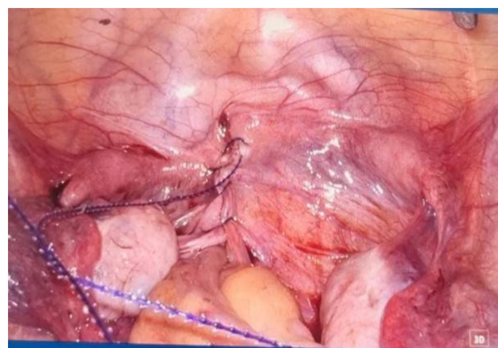

Figure 6: Final internal view of closure of neovaginal apex.

DISCUSSION

MRKH syndrome is a rare entity with absent middle and upper two-thirds of the vagina. Despite the absence of the uterus, fallopian tubes and ovaries are usually normal.[5]

The majority of the patients with MRKH syndrome have complete aplasia of all Mullerian structures (Class U5/C4/V4 of ESHRE/ESGE Classification) and about 47%-84% have uterine remnants, either bi- or unilateral rudimentary horns with a cavity (class U5a), or uterine remnants without cavity (Class U5b).[4,6] Patients typically present in adolescence with primary amenorrhea, well-developed secondary sexual characters, and an introital dimple. Cytogenetic analysis reveals 46XX karyotype. Differential diagnoses include imperforate hymen, androgen insensitivity syndrome, congenital adrenal hyperplasia, or Turner syndrome.[7] Noninvasive diagnostic aids include 2D/3D transabdominal ultrasonography and magnetic resonance imaging (MRI), which can precisely delineate the anatomy and assess the presence of endometrium in the uterine remnants and concomitant defects.[4]

Surgical techniques for the development of a functional vagina are the Abbè- McIndoe technique, Williams vaginoplasty, Vecchietti vaginoplasty, Davydov vaginoplasty, and sigmoid vaginoplasty. Each technique has potential advantages and disadvantages. The outcomes are assessed in the form of anatomic and functional success. Anatomic success is defined in terms of achieved neovaginal length of at least 6 cm, whereas functional success is the ability to have a complete satisfactory sexual intercourse which can be assessed by the Female sexual function index (FSFI) questionnaire which takes into account parameters like desire, arousal, lubrication, orgasm, satisfaction and pain during intercourse.[4]

Davydov procedure was chosen for our patient because of its minimally invasive, with a short postoperative recovery period, and does not leave visible scars. It does not require tissue grafts or *in vitro* grown cell lines, so no graft rejection or other immune reactions. The procedure was performed with no intraoperative injury, minimal blood loss. An anatomical length of 8 cm was observed at end of the procedure. The post-operative period remained uneventful. She was instructed for self vaginal dilation daily with vaginal dilator of different sizes and followed up for 3 months after surgery. A good anatomical length of 7-8 cm was achieved. Further, follow-up was scheduled at 12 and 24 months to know the long-term outcome. MRKH syndrome is a major cause of absolute uterine factor infertility.

CONCLUSION

Laparoscopic Davydov vaginoplasty is safe, effective, and provides excellent anatomical results in MRKH syndrome. Proper postoperative dilatation is essential for long-term success.

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