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Laparoscopic creation of neovagina by peritoneal tube pull through technique: A novel idea

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Abstract
Objective: To introduce a new technique for creation of neo vagina in cases of MRKH Syndrome that offers good anatomic and functional results.
Materials and Methods: 3 patients with complaints of primary amenorrhea and with MRKH syndrome were treated by using a novel technique of vaginoplasty i.e. *peritoneal tube pull through technique*.
Results: In our study, all patients were followed for preferably 6 months (1, 4, 8, 12 weeks and if possible 6 months) after surgery for following observations-vaginal calibre, presence of any stricture, vaginal infection, failure of graft uptake or any urogenital complaints. All had excellent results.
Conclusion: Peritoneal tube pull through technique for creation of neovagina is a safe and effective method for patients of MRKH Syndrome.

Keywords: Primary amenorrhea, MRKH syndrome, vaginoplasty

Introduction
MRKH syndrome; characterized by congenital absence of uterus; fallopian tubes and upper 1/3rd of vagina is the leading cause of primary Amenorrhea [1]. It affects around 1 in 4500 women who otherwise show normal secondary sexual characteristics and normal 46XX karyotype. Affected females have normal female external genitalia and normal breast and pubic hair development; but do not have menstrual periods due to the absent uterus [2]. Treatment of the MRKH syndrome consists of creating a neovagina, which can be offered to patients when they are emotionally mature and ready to commence sexual activity [3]. We report our experience in the management of 3 patients with congenital absence of the vagina due to the MRKH syndrome by a new peritoneal tube pull through technique.

AIMS and Objectives: The main aim of our study is to create an artificial vagina in cases with congenital absence of vagina for providing the patient with an unscarred vagina that allows sexual functioning. We mention the use of a *novel peritoneal tube pull through technique* in such cases with the goal of increasing its use as a safe surgical option for vaginoplasty.

Materials and Methods: We report our experience in 3 patients under the age group 17-20 years who presented to our centre with complaints of primary amenorrhea with well development of secondary sexual characteristics. Height, weight, and external genitalia were normal. On examination, the vagina was absent with a presence of small dimple. Ultrasound and contrast enhanced CT scan of lower abdomen showed normal ovaries and hypoplastic uterus. Karyotype studies showed the normal females chromosomes 46XX. Hormonal analysis including follicle stimulating hormone, luteinizing hormone and prolactin were within normal limits. After taking informed consent from the patient and explaining the attendants about the procedure; surgery was planned individually near the time of their marriage.

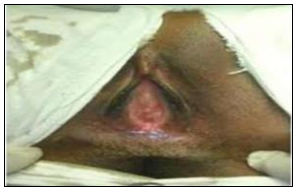

Fig 1: *Pre-Op Blind Vagina*

Keeping patient in the lithotomy position, the surgical painting, draping and catheterization were done. An inverted V incision was made midway on the blind vaginal pouch. Blunt and sharp dissections between urinary bladder & rectum, were done till apex of the vaginal pouch to create an adequate vaginal space (8-9 cm), taking care of not to injure rectum and urethra.

Fig 2: Creation of vaginal space between rectum and urethra.

Procedure shifted laparascopically. After entering the peritoneal cavity, suprapubic extraperitoneal insufflation by veress needle at a pressure of 20 mm of Hg was done to facilitate dissection of peritoneum followed by dissection of posterior peritoneum between uterosacral ligaments displacing the rectum downwards; showing the opening of proposed vagina.
Peritoneal rectangle flap was raised from anterior abdominal wall; keeping its attachment inferiorly intact for vascular supply. This peritoneal Flap was released from bladder releasing the upper border and a peritoneal tube was created by interrupted sutures inside abdomen using vicryl 1/0.

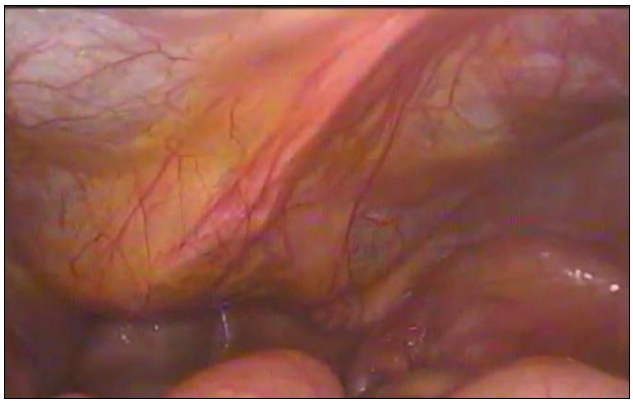

Fig 3: Extra peritoneal insufflation by veress needle

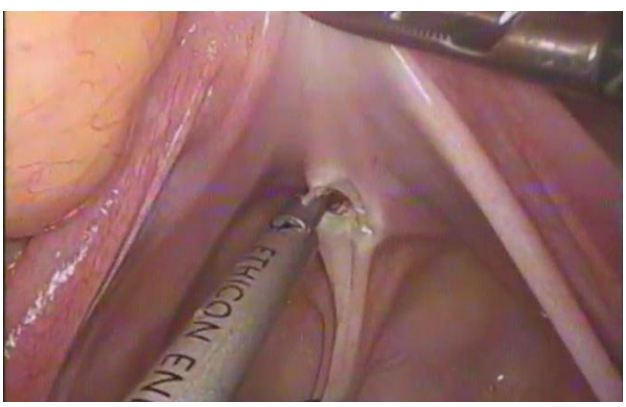

Fig 4: Dissection of posterior peritoneum

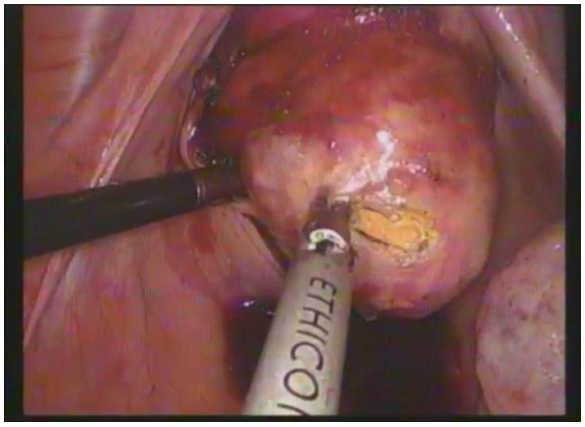

Fig 5: Opening of proposed vagina

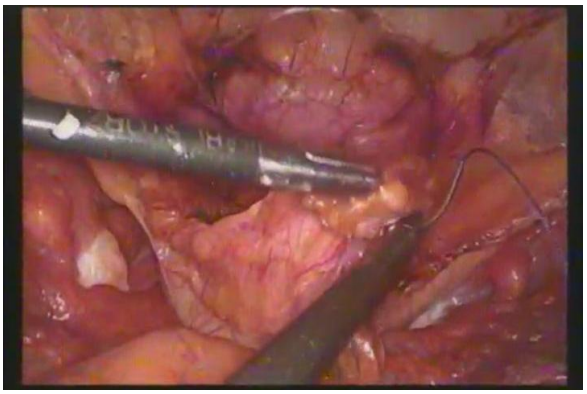

Fig 6: Formation of peritoneal tube

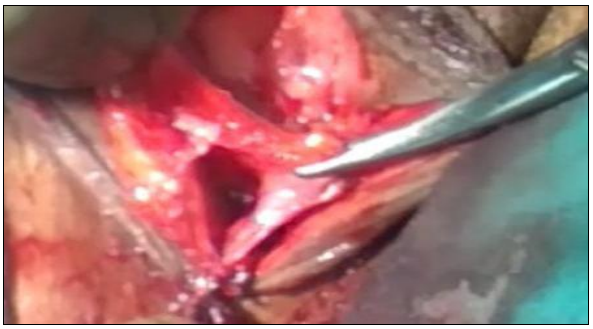

Fig 7: Formation of neovagina by opening of peritoneal tube at perineum

After creation of the peritoneal tube it was taken out through the perineal opening to be stitched with vaginal mucosa circumferentially without any tension. We then put a sponge mould around a k-90 tube covered with condom in vagina to be changed after 72 hours.

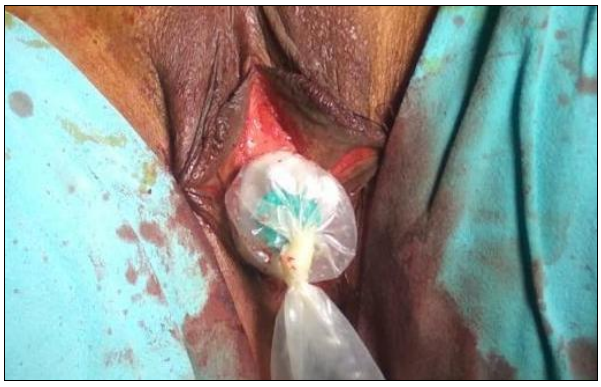

Fig 8: Sponge mould around a k-90 tube covered with condom.

To minimize dislodgement of the mould and wound contamination, parenteral antibiotics, a low residue diet (To limit defecation) and daily. Mould removal was done after 7 days in operating room in dorsal lithotomy position. Stitches in the labia are cut, and the mould is removed. To lessen the risk of graft avulsion, irrigation is used to reduce adherence between graft and mould. The new cavity ormed is carefully washed with warm saline and inspected for graft uptake any raw area or formation of granulation tissue.

Results

Reconstructing the vagina using peritoneal tube creates an aesthetically pleasing vagina. All our patients were treated surgically by the above mentioned peritoneal tube technique laprascopically. All of them had an uneventful postoperative recovery and were satisfied with the immediate outcome.

Discussion

The reproductive system in the female consists of external genitalia, gonads and an internal duct system. Embryologically, these components originate from different primordia and in close association with the urinary system and hindgut (Figure 1). The Mullerian duct system is stimulated to develop preferably over the Wolffian duct system, which regresses in early female fetal life. The Mullerian ducts persist and attain complete development to form the Fallopian tubes, the uterine corpus and cervix and a portion of the vagina. Vagina is formed partly from Mullerian ducts and partly from urogenital sinus (Figure 9). between their origins from coelomic epithelium to fusion with urogenital sinus is the underlying basis of different forms of vaginal agenesis [4].

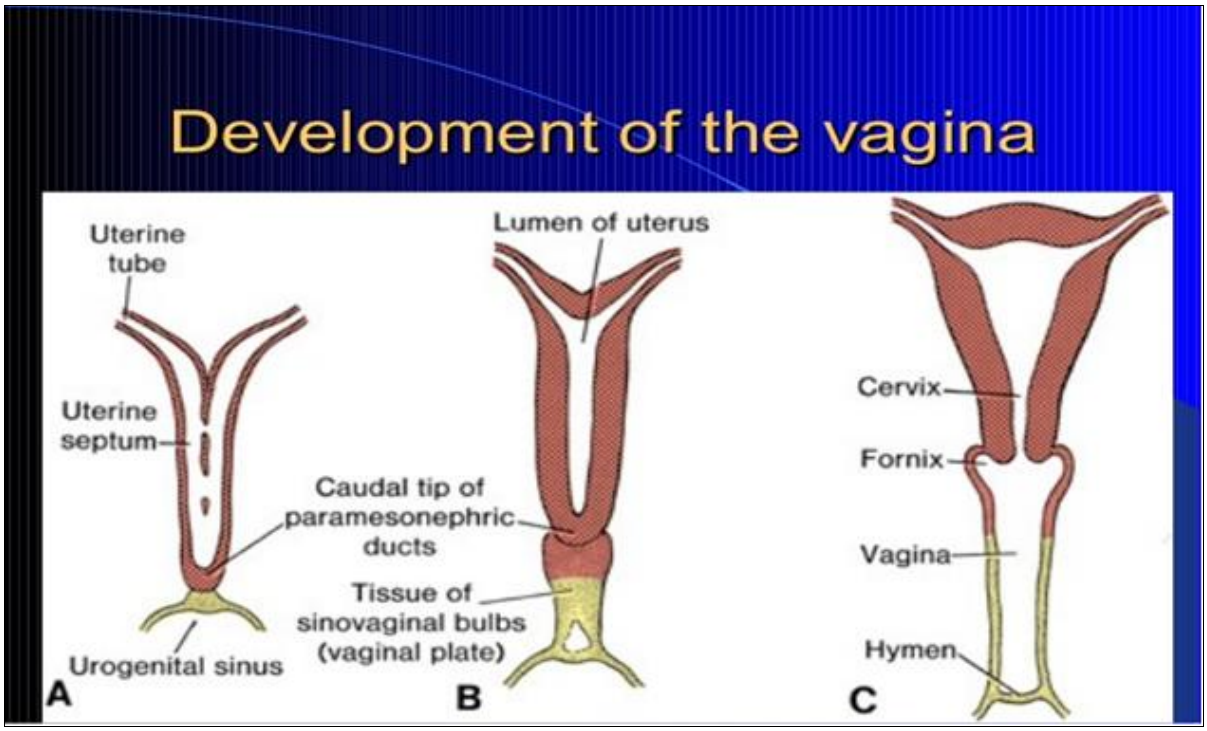

Fig 9: Development of vagina

Creation of neovagina is the mode of treatment for MRKH syndrome. It can be offered to patients when they are emotionally mature and ready to commence sexual activity. Treatment; either surgical or non-surgical needs to be tailored to individual needs; motivation of patients and the options vailable Alternatively, vaginoplasty may be planned a few months prior to marriage in order to initiate regular sexual activity for maintenance of vagina patency [5].

Conclusion

MRKH syndrome is a rare anomaly. Lack of mullerian development (MRKH syndrome) is a common cause of primary amenorrhea, resumption of menstruation and fertility potential is not possible. A variety of procedures have been described for creating a neovagina, but the best treatment remains debated. Vaginoplasty using *peritoneal tube pull through technique* is a safe, effective treatment in patients of MRKH Syndrome as it ensures tension free suture line and minimal chances of infection. Being a vascular graft, it offers no chance of rejection and less chances of post-operative stricture formation.

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