CASE REPORT

Creation of Neovagina Using Dental Impression Compound Mold and Skin Graft in Mayer–Rokitansky–Küster–Hauser Syndrome

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Received on: 25 January 2021; *Accepted on:* 24 December 2023; *Published on:* 23 February 2024

Abstract

Background: In Mayer–Rokitansky–Küster–Hauser (MRKH) syndrome goal of treatment is to create a sexually functioning neovagina. There are various options available, but the search for the ideal one is still on. The use of dental impression compound for mold covered with skin graft is new. Its mention in literature is very uncommon.

Aim: Vaginoplasty using impression compound used by dentists covered by skin graft is being reported to assess anatomical and functional outcomes and to showcase the evolution of vaginoplasty.

Case description: A 22-year-old woman with primary amenorrhea due to MRKH syndrome, about to get married in 4 months, underwent vaginoplasty using a dental impression compound covered with a skin graft. The anatomical and functional outcome was satisfying in this woman. On day 8, of vaginoplasty, the length of the vagina formed was 9.4 cm. The vaginal width was three fingers breadth. The functional outcome in relation to sexual satisfaction was good after 1 year of follow-up.

Conclusion: Dental impression compound mold with skin graft is an alternative in vaginal genesis as it is cheap and easily available. Proper patient selection, counseling regarding self-replacement, and psychological support are key to the success of vaginoplasty.

Clinical significance: The surgical development of a neovagina in MRKH syndrome has been attempted for a long time, with varying degrees of success. So the search for an ideal method is still on.

Keywords: Dental impression mold, McIndoe's technique, Mayer–Rokitansky–Küster–Hauser syndrome, Vaginoplasty.

Journal of South Asian Federation of Obstetrics and Gynaecology (2024): 10.5005/jp-journals-10006-2071

Introduction

Vaginal agenesis, Mayer–Rokitansky–Küster–Hauser (MRKH) syndrome, congenital absence of the vagina, commonly manifests as primary amenorrhea. The most important goal of treatment is to create a sexually functioning neovagina. Thus, solving problems of sexual life. Vaginoplasty is a type of genitoplasty where a potential space is created in a rectovesical space of adequate length and width and is esthetically accepted for penetrative intercourse.

There is currently no consensus on the optimum method for achieving this goal. The American Congress of Obstetricians and Gynecologists advocates nonsurgical self-dilatation with progressive perineal dilatation as first-line therapy because it is minimally invasive.[1,2] Surgery to establish a neovagina is advised for patients who have failed to respond to nonsurgical treatment.

The vaginal approach is used in the McIndoe treatment to prepare a neovagina. Autologous skin grafts, amnion, Interceed (Ethicon Inc.), peritoneum (Davydov procedure), and autologous *in vitro* cultured vaginal tissue, etc., have all been used for the McIndoe procedure.

The formation of soft forms is important as hard forms are associated with urinary fistula formation, so dental impression compound mold is used for the formation of form which fits in neovagina covered with a skin graft.

Split-thickness skin grafts obtained from the buttocks or thigh area are the most widely used graft material for the McIndoe surgery.[3] Scarring and contracture of the graft material, pigmentation and presence of hair in the vaginal graft tissue, and poor physical appearance of the donor site are all risks associated with this operation. Hence, in order to reduce such complications, alternative graft materials are needed.

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How to cite this article: Bhalerao KV, Pajai S, Acharya N. Creation of Neovagina Using Dental Impression Compound Mold and Skin Graft in Mayer–Rokitansky–Küster–Hauser Syndrome. J South Asian Feder Obst Gynae 2024;16(2):179–180.

Source of support: Nil

Conflict of interest: None

Case Description

A 22-year-old girl with primary amenorrhea, about to get married in 4–6 months attended the gynecology outpatient department with MRKH syndrome for vaginoplasty.

She was subjected to a detailed history, menstrual history, and family history. Local examination, general examination, per abdomen, and systemic examination were done. Karyotyping and ultrasound examination for the uterus and kidneys were done followed by

magnetic resonance imaging before surgery. The diagnosis of MRKH syndrome-related vaginal agenesis was confirmed.

She was counseled for psychosocial adjustment to anomaly, menstruation, reproduction, cooperation for postoperative dilatation, and use of vaginal mold.

Steps of Vaginoplasty

Foley catheter was inserted, hydrodissection was done in rectovesical space, cruciate incision was given on vaginal dimple, and creation of rectovesical space of 10 cm was done till peritoneum. Hemostasis was ascertained.

A mold or form with dental impression compound was made of 10 cm length and 3 cm width covered with a skin graft taken from the thigh. This dental impression mold is cheap, easily available, and takes the form of neovagina easily. The mold was kept for 7 days.

On the 7th day under sedation, the soft mold was removed and betadine cleaning of neovagina was done. The length of neovagina was assessed. A plastic mold lubricated with soframycin cream was inserted. Anatomical and functional outcome, hospitalization period, operative time, bleeding, and complications were noted.

The patient was told to use dilatation for 6 months or until they had repeated sexual intercourse for a decreasing number of hours (from 20 hours per day at the start to 6–8 hours per night after 4 months), she was discharged on the 10th day, and she was followed up upto 1 year.

The length of the vagina on day 8 was 9.4 cm, and vaginal width was found to be three fingers breadth. The duration of surgery including skin graft was 90 minutes.

The complications were in terms of discharge and painful insertion of mold postoperatively. The functional outcome was good when followed telephonically.

Discussion

Mayer–Rokitansky–Küster–Hauser syndrome is the second most prevalent cause of primary amenorrhea after Turner's syndrome. It is one in 4000–5000 live female births. The MURCS association, which is an acronym for (MU)llerian, (R)enal, (C)ervicothoracic, and (S)omite abnormalities, is a developmental condition that mostly affects the urogenital system and is seen in 47% of patients. Wnt4 mutation is linked to MRKH syndrome.

Frank's graded hard glass dilators and Ingram's (1981) dilators attached to a bicycle seat mounted on a stool were recommended for nonsurgical management.

The surgical development of a neovagina has been attempted for a long time with varying degrees of success. In 1559, Columbus was the first to describe the congenital absence of the vagina. To maintain vaginal patency, Dupuytrens first described vaginoplasty with tampons. Abbas used split-thickness skin graft to cover the mold.

Abbe-Wharton-McIndoe was the first to create a gap between the rectum and the bladder in 1938. To maintain the space sealed, a balsa mold was utilized, although this resulted in recurrent granulation tissue and scarring. Then, in England, Sir Archibald McIndoe employed a split-thickness skin transplant in conjunction with continuous and sustained postoperative dilation.[2]

Hard molds were used before but led to fistulae, scarring, and granulation, so now soft molds are used as forms made of rubber foam covered with condoms, soft dental impression compound, and then grafts are used. These soft forms take the form of neovagina.

The patient's cooperation is critical in vaginoplasty because maintaining the vaginal space throughout the contraction period of wound healing is critical, and this may be accomplished efficiently with molds/stents. Congenital vaginal absence (MRKH syndrome) is one of the most common reasons for vaginal reconstruction.

Soft forms such as rubber foam and impression compounds are used immediately postoperatively for 7 days to maintain the rectovesical space and give time for acceptance of graft.

For similar reconstructions, recombinant basic fibroblast growth factors and artificial dermis have recently been used. The addition of collagen is a recent update.

Interceed cellulose is an absorbable adhesion barrier manufactured from oxidized regenerated cellulose which is meant to minimize the occurrence of post-surgical adhesions. It can prevent all issues such as scarring and contractures.

The use of split-thickness graft requires the help of a plastic surgeon. However, downsides include a thigh scar that requires dressing, dry dyspareunia, the possibility of hair development in the graft, and the requirement for a post-operative mold.

In a large Indian study by Mishra et al., where 10 women with MRKH underwent vaginoplasty with dental impression compound mold showed an operative time of 82 minutes and neovaginal length of an average of 9 cm, which is comparable with our case.[4]

It is not only the length of neovagina that is important, but the function also plays a major role in sexual satisfaction as the epithelization takes place within 3 months.[5]

Conclusion

The successful outcomes of vaginoplasty in MRKH syndrome (Vaginal genesis) depend on a thorough knowledge of the surgical anatomy and a meticulous dissection. The form made with dental impression compound is cheap, easily available, and gives optimum anatomical and functional outcomes. However, proper surgical technique, hemostasis, postoperative assistance, counseling and education, regarding self-replacement, and psychological support are key to success.

References

1. Liao L-M, Doyle J, Crouch NS, et al. Dilation as treatment for vaginal agenesis and hypoplasia: A pilot exploration of benefits and barriers as perceived by patients. J Obstet Gynaecol 2006;26(2):144–148. DOI: 10.1080/01443610500443527.
2. Committee opinion: no. 562: Müllerian agenesis: diagnosis, management, and treatment. Obstet Gynecol 2013;121(5):1134–1137. DOI: 10.1097/01.AOG.0000429659.93470.ed.
3. Garcia J, Jones HW. The split thickness graft technic for vaginal agenesis. Obstet Gynecol 1977;49(3):328–332. PMID: 320526.
4. Mishra B, Janavar G, Pradeep Y. Indigenous technique of fabricating vaginal mold for vaginal reconstruction and uterine drainage in McIndoe vaginoplasty using 10 ml syringe. Indian J Plast Surg 2016;49(1):76–80. DOI: 10.4103/0970-0358.182230.
5. Mishra V, Nanda S, Gandhi K, et al. Vaginoplasty with uterovaginal anastomosis for partial vaginal and complete cervical agenesis: A rare Müllerian anomaly. J South Asian Feder Obs Gynae 2017;9(3):274–276. DOI: 10.5005/jp-journals-10006-1511.