

Role of Prosthodontist in Mullerian Agnesis: A Case Report

¹ Dr Tulsi Gajendra Lodhi, ²Dr Surendrakumar Bhagwatrao Patil, ³Dr Surendrakumar Kaluram Bahetwar, ⁴Dr Aparna Balkrishna Sharma, ⁵Dr Ashish Mahadeorao Warhekar,

¹BDS, MDS, Department Of Plastic, Reconstructive & Maxillofacial Surgery, Associate Professor, Government Medical College And Hospital, Nagpur, Maharashtra.

²M.S, Mch (Plastic Surgery), Department Of Plastic, Reconstructive & Maxillofacial Surgery, Professor And Head, Government Medical College And Hospital, Nagpur, Maharashtra, India.

³BDS, MDS, Department Of Pedodontics And Preventive Dentistry, Assistant Professor, Government Dental College And Hospital, Nagpur, Maharashtra, India.

⁴BDS, MDS, Department Of Plastic, Reconstructive & Maxillofacial Surgery, Assistant Professor, Government Medical College And Hospital, Nagpur, Maharashtra, India.

⁵BDS, MDS, Department Of Plastic, Reconstructive & Maxillofacial Surgery, Assistant Professor, Government Medical College And Hospital, Nagpur, Maharashtra, India.

Corresponding Author: Dr Tulsi Gajendra Lodhi, Department Of Plastic, Reconstructive & Maxillofacial Surgery, Associate Professor, Government Medical College and Hospital, Nagpur, Maharashtra.

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Abstract

Mullerian agnesis is one of the rare female reproductive disorder, which is characterised by the aplasia or agnesis of vagina, uterus or both. Sometimes It can also be associated with renal, vertebral and to a lesser extent auditory and cardiac defects. It can be treated by both surgical and non-surgical procedures. In this case report a 14 year old girl patient of mullerian agnesis was surgically treated by plastic surgeon by creating neovagina and the patency of the newly created vagina was maintained by the use of hollow acrylic vaginal stent, fabricated by prosthodontist. Thus in association with Plastic and reconstructive surgeon, a prosthodontist can play a significant role in postoperative success of treatment by fabricating customised vaginal stents with an accurate impression which maintains the patency of a

neovagina. It also reduces the discomfort of the patient as compared to prefabricated vaginal stent.

Keywords: Mayer–Rokitansky–Kuster–Hauser syndrome (MRKH), Rokitansky–Kuster–Hauser syndrome (RKH or RKHS)

Introduction

Mullerian agnesis also known as Mayer–Rokitansky–Kuster–Hauser syndrome (MRKH), Rokitansky–Kuster–Hauser syndrome (RKH or RKHS), mullerian aplasia or vaginal agnesis, is a disorder which affects the female reproductive system. It is a rare disorder found in 1 out of 4500 female infants.^{1,2} It is caused by embryologic underdevelopment of the mullerian duct, with resultant agnesis or atresia of the vagina, uterus, or both.³ It can be isolated (MRKH type I) or associated with renal, vertebral, and, to a lesser extent, auditory and cardiac

defects (MRKH type II). This disorder comes into light only when the patient reports to the doctor with a chief complaint of primary amenorrhea during her mid to late teen age.

Vaginal agenesis can be treated by both surgical and non-surgical procedure. Surgical procedure should always be followed by the use of vaginal stent to prevent the contraction or collapse of neovagina by maintaining the width and depth of vagina thus maintaining the patency. It also acts as haemostat.⁴

Several prefabricated vaginal stents are available in market with various sizes and with different materials. As the anatomy varies from patient to patient, the prefabricated stents are not suitable for all the clinical situations. Also, it may cause pain, discomfort and increases the frustration level of patient. So, it is advisable to use customised vaginal stent which can be fabricated by the prosthodontist by making an accurate vaginal impression, to provide the intimate adaptation of the stent to patient's vaginal anatomy without causing any discomfort which also reduces the burden of purchase of costly multiple devices.

Also, various customized stents like ORFIT "S" vaginal stent, tissue expander, simple syringe^{5,6}, vacuum expandable condom mould⁷, inflatable stents⁸ and acrylic^{9,10}, hollow acrylic¹¹ or acrylic stents lined with silicones¹² and customised silicon stents¹³ have also been advised in literature

This article presents the fabrication of a customized hollow acrylic vaginal stent for a young female patient, who was surgically operated for vaginal agenesis.

Case Report

A 14 year old young female patient was referred to the Department of Plastic Reconstructive and Maxillofacial surgery, GMC, Nagpur from Department of Obstetrics and Gynaecology, with a chief complaint of cyclic pain in

lower abdomen since 2 years. Patient was having a history of primary amenorrhoea. There was no significant family history. Absence of vagina was noted on Gynaecological examination. Ultrasonography revealed enlarged left ovary with ovarian cyst. MRI pelvic showed unicornuate uterus with hematometra and hematosalpinx. ECG showed presence of normal bilateral kidney. From all this findings patient was diagnosed with Mullerian agenesis (MRKH type I)

For vaginal agenesis surgical correction by McIndoe's vaginoplasty using split thickness skin graft was planned for the patient followed by use of hollow vaginal stent to prevent the collapse and shrinkage of neovagina to maintain vaginal width and depth. Hollow vaginal stent was planned as it is light in weight and allow the drainage of discharge.

The patient's parents were properly explained about the importance of surgery and about the use of vaginal stent postoperatively. After parent's consent surgery was performed. Surgically a neovagina was created and for maintenance of graft and patency, inflated condom mould stent was placed temporarily during the time of surgery and dressing was given for 2 weeks.

Steps in fabrication of hollow vaginal stent.

1. Examination of vaginal cavity

After 2 weeks the vaginal cavity was examined. It was observed that the graft was successfully adapted. The tentative dimensions of neovagina was obtained by examining the cavity for fabrication of custom acrylic tray.

2. Fabrication of Custom tray (Acrylic candle)

A hollow Custom tray (Acrylic candle) (Fig1) was fabricated in cylindrical shape with cold cure acrylic resin which was 3-4mm smaller in width to the tentative dimension of vaginal cavity. For this a thin modelling wax sheet of dimension of 2-3 mm smaller than the final

dimension of the custom tray (acrylic candle) was rolled in cylindrical shape. To this 2-3mm thickness of cold cured acrylic resin was adapted in the dough stage all over, except at the small central areas at both ends. These holes permitted the retention of impression compound at one end and allowed the operator's finger for holding the Custom tray (Acrylic candle) while making impression at the other end. After the acrylic resin was set, dewaxing was carried out and the obtained custom tray was properly finished.

3. Impression

Before making impression, vaseline was applied in the vaginal canal. Impression was made with impression compound using custom tray (Acrylic candle) under general anaesthesia. The obtained impression was 7.5cm x 4cm x 2.5 cm. (Fig.2) Impression compound was chosen, as it is rigid and has excellent tear resistance.

4. Lab technique for obtaining cast in two halves. (Mould Preparation)

The obtained impression was half invested with dental plaster and indexing was done on it. It was allowed to set and then separating media was applied on it and second half was poured. After obtaining the sufficient strength of the dental plaster the halves of the mould were separated and checked for any undercuts which was blocked out with modelling wax. (Fig. 3)

5. Fabrication of hollow vaginal stent.

Hollow vaginal stent (Fig.4) was fabricated by mixing cold cured acrylic monomer and polymer in dough stage in both the halves of the mould and by placing a rolled wax sheet in the center. It was closed properly by approximating the indentation and was clamped. After obtaining the vaginal stent dewaxing was carried out and the stent was properly finished and polished.

6. Delivery of vaginal stent

Vaginal stent was checked in patient (Fig.5) for any discomfort and then it was inserted in the vaginal cavity by applying antibiotic ointment and dressing was given. Hollow vaginal stent allows the drainage of discharge. It is light in weight and thus it is comfortable to patient.

Instruction was given to patient about the use of vaginal stent on it for 5-6 times in a day. The duration was atleast 10 to 15 minutes for each seating. Patient was also instructed for maintaining the hygiene of vagina as well as vaginal stent. The vaginal stent was advised to wash with soap water or Betadine during and after its used.

Patient was then recalled after a month and followed up every month for 6 months. Patient was advised to use the vaginal stent till her marriage.

Discussion

Prosthodontist deals with the rehabilitation of patient with acquired and congenital orofacial defects. But along with this Prosthodontist can also play an important role in case of Mullerian agenesis by fabrication of customised hollow vaginal stent with an accurate impression of neovagina. Customised vaginal stent can be fabricated by cold cured acrylic resin, heat cured acrylic resin as they are cost effective. But the only disadvantage is that they are hard. To overcome the discomfort cause by hardness of cold cured and heat cured acrylic resin, the stent should be coated by silicon sheet or even completely fabricated by silicon material.

Conclusion

Vaginal stents are generally fabricated by plastic surgeons, but prosthodontist can also play a vital role in making an accurate impression using ideal impression material and by fabricating a hollow vaginal stent. The same vaginal mould prepared initially for the vaginal stent can be reused in future for fabrication of a new vaginal stent for the same patient. Thus, it is simple, time saving and economical procedure.

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Legends Figure



Fig 1:Hollow custom tray

Fig 2: Vaginal Impression made with Impression compound



Fig. 3: Vaginal stent mould



Fig.4 : Customised vaginal stent



Fig.5: Vaginal Stent placed in Vaginal