Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Case Report

Customized, resilient stent for vaginal insufficiency: A case report

Divya Puli[1*], Kavitha Chavadapu[1], Chalapathi Rao Duggineni[1], Ravi Kumar Chitturi[1]

[1]Dept. of Prosthodontics and Crown & Bridge, Mamata Dental College and Hospital, Khammam, Telangana, India

Abstract

Discipline of prosthodontics plays a dominant role in oral rehabilitation by using advanced techniques to recreate and integrate artificial replacements of the mouth. Its scope extends beyond dental replacements to encompass a range of extra-oral applications such as ocular, auricular and nasal prostheses, including stents to position grafts in place for surgical reconstruction.

Vaginal stents are crucial for reconstructing and maintaining neovaginas in patients with vaginal agenesis. This case report presents an approach of fabricating a customized resilient aid using heat-cured silicone-based soft liner (Molloplast B). This approach is minimally invasive and an effective alternative for treating such situations.

Keywords: Mayer-Rokitansky-Kuster-Hauser syndrome, Vaginal agenesis, Vaginal stent, Silicone prosthesis.

Received: 19-08-2024; **Accepted:** 26-09-2024; **Available Online**: 28-05-2025

1. Introduction

Any additional device used in conjunction with surgery to maintain a skin graft in place or to support anastomosed structures with the use of appropriate material is referred to as a stent.

Stents, both intra- and extra-oral, are essential to the therapeutic and restorative phases of maxillofacial rehabilitation due to their capacity to improve surgical outcomes, i.e., to ensure ideal functional and aesthetic results and also improves patient comfort.[1]

Custom-made intraoral stents are intended to fit inside the oral cavity, supporting, stabilizing, and protecting the surgical sites in order to promote healing and guarantee precise placement of prosthetic appliances, implants, and grafts.

Conversely, extra-oral stents are applied externally to hold graft in position, support and shield soft tissues (both before and after surgery).[2]

2. Case History

A 22-year-old young female patient with a diagnosis of MRKH syndrome was referred to the Department of Prosthodontics from the Department of Obstetrics and Gynaecology for the fabrication of vaginal stent.

The chief complaint of the patient was not attaining Menarche. On examination, the patient manifested an underdeveloped vagina and uterus along with a shortened vaginal orifice. The patient and her mother were extremely distressed and consented to all possible treatments.

Initially, the Abbe McIndoe technique for surgical therapy was utilized to create a neovagina using a skin graft.[3,4] With the use of compressed sponge (rubber bands) inserted into a condom of the desired dimensions, was used to stabilize the graft and maintain patency for 3 days following surgical correction. (**Figure 1**)

*Corresponding author: Divya Puli
Email: divya17.puli@gmail.com

https://doi.org/10.18231/j.ijogr.2025.060

Figure 1: Compressed sponge mold placed in a condom

2.1. Procedure

The duplicate compressed sponge mold placed in a condom of the same dimensions was provided to fabricate the stent and the procedure is as follows:

Duplicate impression was made with alginate of sponge mold. (**Figure 2**)

Figure 2: Impression of sponge mold with alginate

Using an alginate impression, a stone mold was created. (**Figure 3**)

Figure 3: Stone mold

After creating a wax design from the stone mold, a hollow, heat-cured acrylic resin stent was made for insertion. (**Figure 4**)

Figure 4: (**A**) Wax design, (**B**) Hollow, heat-cured acrylic resin stent

Acrylic resin stent was modified as per dimensions (following 1 week post-operatively), finished, polished and provided to the patient for use.

Upon insertion and follow up of an acrylic resin stent, the patient expresses discomfort to use as it is hard, slightly painful and also traumatizing the tissues. Hence, a customized resilient soft stent (heat-cured silicone soft liner) was planned and fabricated. (**Figure 5**)

Figure 5: Customized resilient soft stent (**A**) Stone Mold, (**B**) Wax design, (**C**) Heat-cured silicone soft liner stent

2.2. Prosthesis insertion

A fabricated resilient stent was tried to evaluate and modified to suit the dimensions of the created neovagina. The resilient stent was inserted, and the patient was educated regarding the insertion and removal of the prosthesis. (**Figure 6**)

Figure 6: Prosthesis insertion

2.3. Post-insertion instructions

Following insertion, the patient was instructed to wear the silicone-based soft-liner stent for the entire day, with the assistance of tight pants or underwear to help keep it in place.

It was suggested to the patient to clean the soft-liner stent using a soft brush and a very light detergent or non-abrasive toothpaste.

2.4. Follow up

1. The patient was evaluated on weekly basis with regard to the fit and the maintenance of the stent. The patient could insert the prosthesis herself, and hygiene maintenance was acceptable.
2. The patient felt comfortable and satisfied with their present prosthesis. The patient experienced no discomfort, and the neovaginal tissues constricted minimally as the tissues healed. Patency was sufficiently maintained, and the stent's size didn't need to be changed. The patient was advised to use the stent frequently.

3. Discussion

1. Vaginal agenesis is a characteristic of MRKH syndrome, which was initially reported by Hause and Scheiner in 1961. In addition to typical female genetics, phenotype, and endocrine status - missing menstrual cycles and it is commonly linked to anomalies of the skeletal and renal systems. Treatment approaches involve surgical methods - creating neovagina by McIndoe vaginoplasty and maintaining the patency through stents.[5]
2. Vaginal stents are utilized to achieve tissue expansion and to maintain the depth and width of the vagina in order to stop the surgically formed neovagina from contracting and shrinking. One of the main causes of the treatment's failure is failing to wear the stent. A customized stent offers many advantages; simple to fabricate and an economical alternative with adequate strength and durability. It also allows the benefit of intraoperative adjustments.[6]
3. The present case was provided with stents made of different materials (Acrylic resins- hard, silicone- soft) at various post insertion stages to maintain the patency of surgically created neovagina. Initially, the dimensions of neovagina were determined by compressing sponge (rubber bands) placed within a condom, as making an impression was challenging due to the possibility of disturbing the graft.[5]
4. A vaginal stent was fabricated using heat-cured acrylic resin, adjusted, and given to the patient with the aid of compressed sponge (rubber bands) inserted within a condom. The patient complained that the stent hurt the raw wound and was harder and heavier, making it difficult to wear.[2] Therefore, to have better patient compliance, it was chosen to fabricate a stent with a resilient material. The same mold was utilized to fabricate a stent made of a biocompatible silicone soft lining material that can be adjusted/customized according to clinical requirements.[7,8]
5. Among the 2 materials, i.e, acrylic resins-hard and silicone-soft are used to fabricate stent, silicone material enhanced comfort owing to its inherent characteristics such as flexibility, softness and light weight, except that it is slightly more expensive than acrylic resin.[2,8-10]
6. Overall, customized, resilient silicone prosthesis provided to the patient was found to be very comfortable, ease of placement and removal along with maintaining the patency of surgically created neovagina.[2]

4. Conclusion

Creating neovagina and maintaining the patency is a treatment of choice for the congenital vaginal agenesis cases. Satisfactory functional results can be achieved in such patients with a customized resilient silicone prosthesis.

5. Declaration of Patient Consent

The authors confirm that patient consent forms have been obtained, allowing the publication of their images and clinical information. While names and initials will not be published and efforts will be made to ensure anonymity, it cannot be guaranteed.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Singh N, Dhiman RK, Kumar D. Prosthodontic rehabilitation of extraoral and intraoral maxillofacial defects. *Med J Armed Forces India.* 2014;71(Suppl 2):S556–S9.
2. Kamalakannan J, Murthy V, Kularashmi BS, Jajoo K. Customized Silicone Vaginal Stent. *J Obstet Gynaecol India.* 2015;65(4):281–3.
3. Rathee M, Chauhan M, Jain P, Shetye A. Customized hollow surgical stent for congenital vaginal agenesis in early adolescent female with MRKH syndrome: a case report. *Nigerian J Plast Surg* 2020;16:39–43.
4. Belkhode VM, Nimonkar SV. Hollow vaginal stent for a case of Mayer-Rokitansky-Kuster-Hauser syndrome: a case report. *Pan Afr Med J*. 20219;38:343.
5. Boomiraj R, Jain RN, Roshini RV, Devi GSK, Krishna R, Alva BS. Novel Custom-made Heat Cure Acrylic Stent for Vaginal Agenesis: A Case Report. *Int J Sci Res Dent Med Sci.* 2023;5(2):107–10.
6. Rathee M, Singhal SR, Malik S, Gupta G. Resilient Customized Hollow Vaginal Stent for the Treatment of Vaginal Agenesis in Mayer-Rokitansky-Kuster-Hauser Syndrome. *Niger J Surg*. 2020;26(1):88–91.
7. Sukumaran P, Fenlon MR. Two-piece obturator using "lock-and-key" mechanism. *J Indian Prosthodont Soc.* 2017;17(2):207–11.
8. Coskun A, Coban YK, Vardar MA, Dalay AC. The use of a silicone-coated acrylic vaginal stent in McIndoe vaginoplasty and review of the literature concerning silicone-based vaginal stents: a case report. *BMC Surg*. 2007;7:13.
9. Rathee M, Boora P, Kundu R. Custom fabricated acrylic vaginal stent as an adjunct to surgical creation of neovagina for a young

female with isolated vaginal agenesis. *J Hum Reprod Sci*. 2014;7(4):272–5.
10. Beri A, Pisulkar S, Bansod A, Shrivastava A, Jain R. Case Report: Digitally fabricated acrylic vaginal stent for a female with isolated vaginal agenesis. *F1000Res*. 2023;12:1508.

Cite this article: Puli D, Chavadapu K, Duggineni CR, Chitturi RK. Customized, resilient stent for vaginal insufficiency: A case report. *Indian J Obstet Gynecol Res*. 2025;12(2):343–346.