

## Case Report

# Fabrication of a Prosthesis for a Patient with Vaginal Agenesis

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**OPEN ACCESS****Abstract**

Vaginal agenesis is a condition in which the reproductive system of a female fails to develop in the mother's uterus. The child may be born without a vagina or have other reproductive organs absent. Apart from prevailing physical abnormality it can cause severe psychological stress in young women. In this case report a young woman with vaginal agenesis who reported to the Dept. of Prosthodontics for the fabrication of a dilation prosthesis which was to be used after the surgery to maintain a patent passage and is useful to lead a normal life thereafter.

**Keywords**

- Prosthesis
- Vagina
- Syndrome
- Surgery

**INTRODUCTION**

Vaginal agenesis is a condition that develops before birth, in which the muscular canal to the uterus fails to develop fully. It is often accompanied by a small uterus or more commonly no uterus at all. This condition is known by various names like congenital absence of uterus and vagina (CAUV), mullerian aplasia (MA), genital renal ear syndrome (GRES), and Mayer-Rokitansky-Kuster-Hausers Syndrome (MRKH) [1]. It affects 1 out of 4000 to 5000 female infants. It features an absent uterus and cervix, kidney, hearing loss and a possible spinal abnormality such as curvature of the spine [2,3]. All females will either have an absent or incomplete vaginal canal. Young women with vaginal agenesis have normal ovaries and normal external genitalia and thus go through puberty and develop breasts, underarm and pubic hair, except they will not have periods [4].

This particular condition can be managed in various surgical and non-surgical ways [5,6]. One of the most common procedures for neovagina reconstruction Abbe-McIndoe vaginoplasty which was described in as early as 1938 [7]. This technique involves surgical creation of a vaginal cavity which has to be lined by thick split-thickness skin grafts (SSGs). Local moulds made with different materials have been tried to retain the grafts in place. However, incidence of graft shearing is high while removing moulds in these cases and it also needs a draining tube which is passed along with the mould which is difficult to retain. Non-surgical management includes dilators which were fixed on bicycle seats. The patients had to sit on them for specified periods of time [5,8].

In this case, a custom made vaginal prosthesis was fabricated in the Dept. of Prosthodontics on the dimensions given by the

Dept. of Obstetrics and Gynaecology for a patient suffering from Mayer -von Rokitansky -Kuster- Hausers Syndrome. The prosthesis was to be kept in place by the patient after the surgery so as to maintain a patent passage for 3-4 months depending upon the number of hours she wore it.

**CASE REPORT**

A 20 year old female was referred to the Dept. of Prosthodontics from the Dept. of Gynaecology, Gian Sagar Medical College and Hospital for the fabrication of a dilation prosthesis for a patient suffering from vaginal agenesis. The patient was to be operated upon for vaginal agenesis using modified McIndoe technique. An acrylic mould was required to be fabricated before the surgery which would be eventually inserted into the neo-vaginal cavity. The purpose of the mould is to maintain the passage which is created after the surgery and it is a critical cornerstone of the treatment.

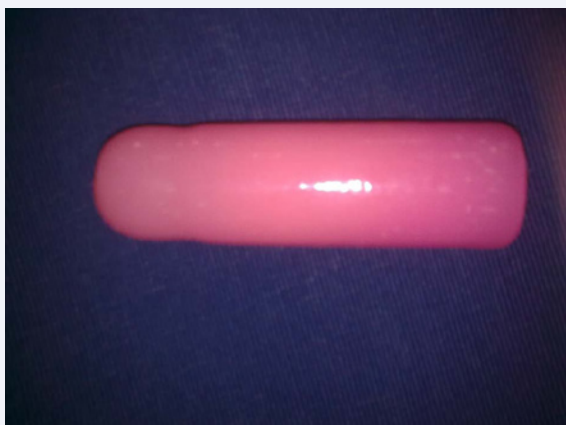
On the discussions with the surgeons who were to perform surgery, the dimensions of the required mould were taken. A borosil glass measuring cylinder of 100ml capacity with a diameter of 1 inch was taken. Since the required length of the prosthesis was 10cms, the lower base of the cylinder was filled with tissue paper and compacted till 80ml length (Figure 1). The open end of the cylinder was coated with copious amount of Vaseline till the blocked out mark. A plastic disc conforming to the diameter of the cylinder was cut and a 30 gauge wire was attached to the centre of the disc using self-cure acrylic (Figure 2). The disc was inserted into the cylinder till the blocked out area and modeling wax was melted into the cylinder. Upon cooling, the whole block of cylinder of wax was removed by pulling the wire from the other end. The disc was pried and eventually the whole



**Figure 1** Measuring cylinder made of Borosil Glass with paper inserted.



**Figure 2** 30 Gauge wire attached to the centre of the disc using self-cure acrylic.



**Figure 3** Final polished prosthesis.

assembly was also removed along with the wire. Flasking, de-waxing and curing was done according to the standard protocol. The acrylicized mould was finished to a high gloss and was handed over to the surgeon for the required surgery (Figure 3). The same was to be used by the patient after the operation for 3-4 months.

## DISCUSSION

The treatment of vaginal agenesis is the skill, knowledge and expertise of the surgeon. Nevertheless a successfully created vaginal mould for neo-vagina plays an important role in the success of the treatment. Vaginal moulds which are used to prevent retenosis of the created neo-vagina may be associated with poor drainage, graft maceration, sloughing and graft detachment if not properly constructed. The use of proper vaginal mould is the key to achieving a successful result in McIndoe neovaginal reconstruction [9,10]. The vaginal mould can also be customized by varying the diameter of the whole prosthesis and also by creating a hole for passage of the foley catheter as required by the surgeon [11,12]. Sigmoidal coloplasty is also a method of creation of vagina by grafting 12-18 cm long segment of sigmoid giving satisfactory results [13]. Non-surgical techniques of vaginal dilation are also reported where the customized dilator was made by the prosthodontist which is to be worn by the patient using a perineal T- bandage. The diameter of the prosthesis can be gradually increased over a period of 4 months till satisfactory length of the vagina was reached [14]. Non-surgical vaginal dilation has the advantage of low morbidity, the creation of more physiologic vaginal milieu, and no surgical scarring [15].

Apart from this dilators of gradually increasing size mounted on a bicycle seat is a proposed method of non-surgical method for treatment of this anomaly [8]. Mee-Hwa Lee has suggested the use of dilators of gradually increasing size mounted on an ordinary chair instead of a bicycle seat stool [15]. Psychosocial counselling of the patient is also an important adjunct to the main course treatment.

## CONCLUSION

The vaginal tissue is an elastic tissue that has the tendency to expand during the insertion of a dilator. However, it takes several months to achieve this goal. The fabrication of a prosthetic mould for a surgical reconstruction of a neo-vagina for a patient with vaginal agenesis is the most effective and ideal passive method. Although an adjunct to the successful surgery, it plays an equally important part in the post-operative success of the treatment. A 20 year old female patient suffering from vaginal agenesis was referred to the dept. of prosthodontics for the fabrication of vaginal prosthesis. After the surgery, the patient started using the prosthesis as instructed by her gynaecologist. The patient reported back for check-up one month after the surgery. The required length and patency of the vaginal canal was achieved by using the prosthesis. Further, as soon as such kind of abnormality is detected, it has been documented that professional counselling of the patient and the parents is vital in achieving desired results [16]. The physician along with the counsellor can best prepare the young patient and her parents by addressing the developmental issues related to her age diagnosis and while she is being prepared for medical intervention.

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