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Case Report

Dentistry Section

An Innovative Approach in the Fabrication of a Hollow Vaginal Stent using Ice in a Gender Dysphoria Patient: A Case Report

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ABSTRACT

Gender dysphoria is the term used for individuals who are unhappy with their assigned gender at birth. They experience a strong desire to have the body of the opposite gender or to be socially recognised as a person of the opposite gender. Gender dysphoria can occur in both genders, but it is more prevalent in males, ranging from 0.005% to 0.014%. In females, the prevalence rate is lower, ranging from 0.002% to 0.003%. This case report highlights the prosthetic management of a 31 years old male patient with gender dysphoria after undergoing surgical intervention to remove male genitalia and create a neovagina. The patient underwent multiple surgeries to fulfill their gender transition desires. The patient initially visited the Department of Prosthodontics before vaginoplasty, where a custom-made hollow vaginal stent was planned and fabricated using a novel technique. In addition to prosthetic treatment, the patient also required hormonal therapies and psychological counseling, both of which were provided.

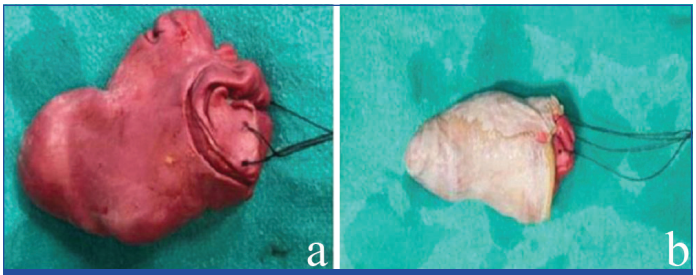
Keywords: Interdisciplinary, Maxillofacial prosthesis, Prosthetic, Rehabilitation, Stents

CASE REPORT

A 31-year-old male patient (sex assigned at birth) presented to the Department of Prosthodontics. The patient was referred from the Department of General Surgery. He had a known case of gender dysphoria and had been experiencing dissatisfaction with his primary male sexual characteristics for the past 20 years, desiring to transition to the opposite gender (female).

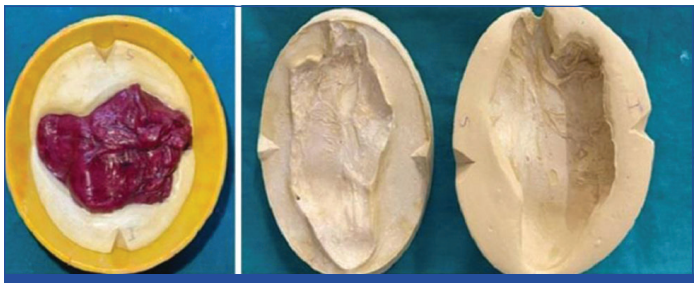
Treatment plan: The patient had previously undergone male genitalia removal surgery three years ago at another hospital. Subsequently, the patient sought out the Department of General Surgery for the creation of female genital parts. The treatment plan involved vaginoplasty to create a neovagina, along with hormonal therapy and psychological counseling. Before the surgery, the patient was referred for the fabrication of a surgical vaginal stent.

Prior to the surgery, investigations such as complete blood profiling, ultrasounds, and Magnetic Resonance Imaging (MRI) were conducted. Pre-anesthetic assessment was performed. The vaginoplasty procedure was carried out by a team of general surgeons. After tissue resection, an impression was immediately made using impression compound to verify the depth, with the concerned surgeon present. Two impressions were made - one for the fabrication of the stent and the other for the subcutaneous graft (obtained from the thigh region) that was sutured and placed into the prepared surgical site immediately after surgery, serving as a surgical stent for two weeks [Table/Fig-1]. Further surgical steps were then undertaken.



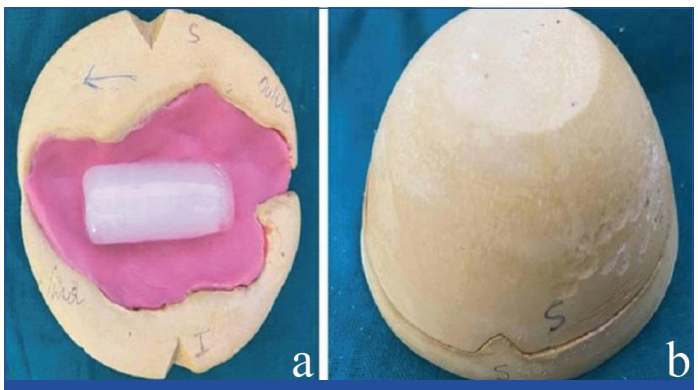
[Table/Fig-1]: a) Impression making using impression compound; b) Subcutaneous graft over the impression.

The impression was used to prepare a mould using dental stone. The impression was invested in dental stone to create a two-piece mould [Table/Fig-2]. Orientation grooves were made on the base pour to ensure proper alignment with the counter mould.



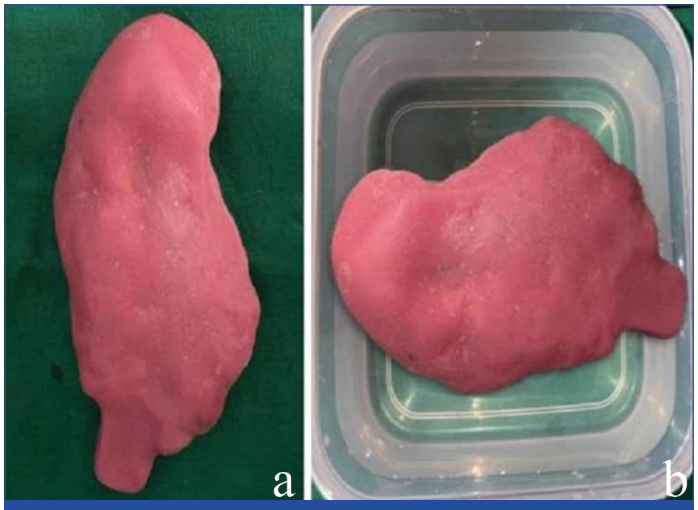
[Table/Fig-2]: Fabrication of two-piece stone mould.

A wax pattern was created using modeling wax on the obtained model made of dental stone and modified to achieve a smooth outer surface. The wax pattern was then duplicated in an ice mould. The ice mould served as a template to create a hollow stent with the exact shape as the wax pattern. The stent was fabricated using acrylic resin, with the duplicated ice mould placed between two layers of acrylic [Table/Fig-3]. Separating media was applied to both parts of the mould. Cold-cure acrylic resin was mixed and placed in the two halves of the mould, with the cylindrical ice block interposed between them. The two-piece mould was aligned based on the orientation grooves [Table/Fig-3]. After polymerisation, the stent was retrieved, and a perforation was made to remove the water. Finishing and polishing were performed. The initial acrylic stent was



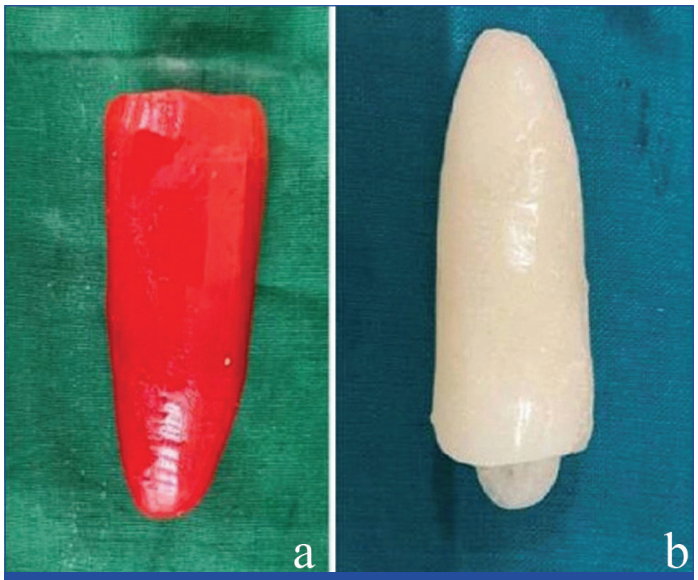
[Table/Fig-3]: a) Cold cure acrylic resin with ice block; b) ice used to make hollow stent.

fabricated, and the subcutaneous graft was sutured over it and placed for two weeks. As the wound was not completely healed, the decision to use the graft again was made intraoperatively. The stent was immersed in water after fabrication to remove excess monomer content before insertion [Table/Fig-4]. The stent was inserted in the patient using lignocaine gel to reduce pain.



[Table/Fig-4]: a) Initial acrylic stent fabricated; b) stent dipped in water.

Another wax pattern was created using modeling wax, followed by creating an index using polyvinyl siloxane material. The delayed stent was fabricated using clear acrylic and provided to the patient after four weeks. The dimensions of the delayed stent were 9.2 by 4.8 cm [Table/Fig-5]. This stent served the purpose of maintaining the patency of the neovagina.



[Table/Fig-5]: a) Wax pattern; b) Delayed acrylic stent.

So far, three stents have been provided to the patient:

1. Surgical stent: Given at the time of surgery, where the impression along with the graft acted as the first stent.
2. Early stent: Given after an initial healing period of two weeks.
3. Delayed stent: Given after a period of four weeks.

The patient was advised to have follow-up visits every 6-8 weeks to check the patency of the neovagina. Psychological counseling was also provided during each follow-up visit.

DISCUSSION

Gender Dysphoria was recognised as a diagnosis in the year 2013 for the first time in the Diagnostic and Statistical Manual of Mental Disorders [1]. It refers to individuals who experience a marked incongruence between their perceived or expressed gender and the one assigned to them at birth. These patients may undergo surgical procedures such as vaginoplasty, breast implantation, and various plastic surgeries. Non-surgical approaches like hormonal therapies and psychological counseling are also considered for their treatment [2]. Additionally, they require primary care, gynaecological and urological care, reproductive options, voice and communication therapy, and mental health services [3].

Surgical intervention, specifically vaginoplasty, is performed. After the surgical procedure, prosthetic vaginal dilators or long-term vaginal stents are used to prevent potential contraction of the reconstructed neovagina. Vaginal stents help maintain the width, depth, and prevent stenosis regardless of the procedure performed [4].

Vaginal stents are utilised postoperatively to maintain vaginal patency, depth, length, width, and prevent contraction or shrinkage of the created neovaginal structure [4]. They also serve as a hemostatic measure. A systematic review concluded that dilators or stents are beneficial and promote the well-being of women with a history of stenosis [5].

Several prefabricated or customised stents [6,7] have been described for postoperative maintenance of neovaginal dimensions. These include the ORFIT vaginal stent [8], tissue expander, simple syringe, vacuum expandable mould, solid or hollow acrylic stents [9], and silicone stents [10]. A novel silicone-coated acrylic stent has also been described in the literature, combining the benefits of both materials [11]. Acrylic stents can be made using either cold cure or heat cure acrylic resin [12].

In this case, acrylic resin was chosen as the material of choice for the prosthetic vaginal stents due to its rigidity. The goal was to maintain patency since a natural vaginal tract was artificially created in a male patient, where the risk of collapse of the neovaginal walls is higher compared to cases of vaginal agenesis.

Silicone stents are also used by clinicians in many cases. However, if not properly maintained, silicone vaginal stents can be prone to fungal infections and deterioration over time. Additionally, they have a tendency to tear with long-term use and may require re-fabrication. Therefore, an attempt was made to fabricate a hollow acrylic stent to reduce the weight of the prosthesis and improve patient compliance.

Various materials such as wax, salt, sugar, caramel, and thermocol have been used to create hollow prostheses. However, the uniqueness of our technique lies in using ice to create the hollow space. Wax residues can interfere with acrylic and silicone processing. Salt, sugar, caramel, and thermocol can create a rough inner surface of the prosthesis. Inadequate cleaning of the hollow space can lead to infections. Ice, on the other hand, is easily removed and less likely to cause such issues. It does not require any additional cost or material. Compared to other materials, ice is easy to handle, readily available, and does not react with the prosthesis material.

CONCLUSION(S)

A prosthetic vaginal stent for patients with gender dysphoria is a beneficial option for maintaining neovaginal patency during the complete healing period. This case report describes an innovative method that is simple, quick, cost-effective, and comfortable for the patient.

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