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Low-Cost Sex Reassignment Synthetic Model

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1. Introduction

The decrease in stigmas surrounding the LGBTQI+ population has made this population increasingly active in the search for their own physical and psychological health. Many of them seek surgical procedures to achieve congruence between their physical appearance and their identity. Among them, sexual reassignment surgery has been increasingly sought after by those who need gender affirmation. These methods seek to align gender identity and expression for transgender patients in an effective and safe manner. Thus, synthetic models are needed to enable plastic surgeons to improve their surgical skills for a better approach to the patient.

According to the article "Exposure and education of the trainee for minimally invasive gender affirming procedures" currently, besides medical graduation being lacking in content related to transgender care, there is also a certain difficulty in training Transgender Surgery for residents in this area. From this point of view, the device of surgical simulation developed by the League of Plastic Surgery of the University of Fortaleza for the training of surgery for genital reassignment is extremely useful, since it corroborates for specific education about the procedures, aiming a variable exposure to the types of existing techniques and balance between surgical and clinical experiences, thus contributing to provide a quality care to the transgender population.

Considering the growing demand for sexual reassignment surgery, the scarcity of undergraduate education on the subject, and the importance of technical knowledge about this surgery for medical professionals, the use of low-cost synthetic models is essential for training surgical skills, considering the complexity of the flaps and the anatomical particularities of the region. The use of this resource will improve the understanding of the procedure steps and help in the development of a better visuospatial and anatomical perception. Moreover, in view of the low cost of the model, the medical professional will be able to practice the technique several times, and thus improve their skills.

2. Methodology

- To make the model, transparent acetic silicone, fabric mesh in several colors, hot glue, sewing needle and thread, scissors, and laminated foam 2cm and 5cm thick were used.
- The study did not involve human beings or animals, so no approval by the Ethics Committee was required for the construction of the model, which was made only with synthetic materials.

3. Results

The model was idealized for the simulation of primary vaginoplasty surgery, and proved to be very efficient in training all steps of the procedure, being possible to differentiate the structures and muscles through the colors of the materials.

Initially, the model allows the insertion of the urinary catheter, serving not only for probing and manipulation of the urethra during the simulation, but also for training the bladder probing procedure. The steps of penile disassembly and inversion with the pedicled penile flap proved to be very reliable, since the tissue simulating the skin is very flexible and is detached from the structures simulating the corpora cavernosa and spongiosum.

The incision in the ventral portion of the penis along the median raphe allows access to the testicles, which must be removed immediately afterwards. The orchiectomy, including the resection of the spermatic cords, can be done at the level of the inguinal ring, since the model has the tissue strip with 2 holes that simulates the aponeurosis of the external oblique muscle and the superficial inguinal rings.

The dissection step between the prostate and the rectum to acquire the vaginal depth was shown to be amenable to improvement, since the neovagina space is already open in the model, and this step is represented only by the section of tissue simulating the superficial perineal muscles.

However, the separation of the dorsal neurovascular bundle and the corpora cavernosa and spongiosum was very similar to reality, since these structures were built internally with sponge and coated with a layer of silicone, which has the function of joining them and allowing the simulation of their dissection.

The making of the neoclitoris, the insertion of the penile flap in the neovagina, the creation of the urethral meatus with the formation of the labia minora and the foreskin for the neoclitoris, and the closure of the scrotal skin were also possible to perform.

Furthermore, despite being made of synthetic materials that are not very similar to human structures, the model presented good elasticity and resistance, which allowed for sufficient mobility for flaps, as well as a better understanding of the anatomy of the perineal region.

To make the model, low-cost synthetic materials were used, totaling a value of R$ 45.00 for the initial complete simulator, with a renovation cost of R$ 6.00, since all

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structures that are cut must be replaced by new ones at each simulation.

4. Discussion

According to a survey conducted in the United States, there was a considerable increase in the diagnosis of gender dysphoria in a period of 14 years, being it 3.67 times. Furthermore, there has also been a greater demand for sexual reassignment surgery, however, due to prejudice, especially in the medical field, there is still a certain limitation regarding the practice in the resident student grid and the performance of the procedure itself, leading these patients, many times, to seek alternative forms, such as professionals abroad and even unregulated clinics.

Moreover, it is important to emphasize that most plastic surgery students only come into contact with the practice in the operating room, i. e., without basic surgical skills. For this reason, the use of synthetic surgical models is necessary in order to empower the students with the training of basic surgical techniques, offering greater safety and knowledge in the performance of the procedure.

In fact, there is a consensus that transgender-specific health education, both in didactic and clinical settings, is lacking. At the undergraduate level, there is often no didactic or clinical exposure to either LGBTQ health in general or transgender health specifically. The health needs of transgender and gender-diverse people have often been pushed to the margins or ignored in health care agendas.

In this regard, we highlight the importance of practicing surgical procedures on synthetic models, especially in the field of plastic surgery, providing greater development of surgical skills and lower chances of errors due to ignorance of techniques. Furthermore, it is important to remember that the performance of gender reassignment procedures has a relevant influence on patients' self-esteem, and should be performed as aesthetically as possible, to meet the expectations of these people and achieve satisfactory psychological results, being one more indication of the relevance of the production of synthetic models for the previous training of surgical techniques for sexual reassignment.

Finally, this model brings the opportunity to provide comprehensive education in transgender-specific health care for plastic surgery residents and medical students.

5. Conclusion

It is undeniable that there has been a significant increase in the demand for sexual reassignment surgeries due to the progress experienced by the LGBTQIA+ movement in recent years. The national market requires preparation and professional qualification to meet this new demand, which should be exposed, at first, in the medical-academic environment.

Having in mind the acquisition of procedural knowledge, the proposed synthetic model aims to simulate steps of a real surgical procedure, while providing gains in accessibility, portability, and in the low cost of manufacturing the product.

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