



Robotic-assisted peritoneal flap vaginoplasty in transgender surgery: first case report in Mexico

Vaginoplastia con colgajo peritoneal robot asistida en cirugía transgénero: primer reporte de caso en México

Salomón Pineda-Benítez,¹ Luis Eduardo Jáuregui-Ilabaca,^{2*} Porfirio Damián López-Alvarado,³
 Erick Alejandro Ramírez-Pérez,⁴ José Antonio Zapata-González.²

Abstract

Case description: we present the case of a 20-year-old transgender female patient who after completion of multidisciplinary protocol for gender-affirming surgery went through robotic-assisted peritoneal flap vaginoplasty using the Davydov technique.

Relevance: gender-affirming surgery has increased its prevalence and a wide variety of procedures have been described with their own advantages and specific complications. The Davydov vaginoplasty provides a minor degree of possible complications because it lacks the use of bowel segments or grafts, with the advantages of reconstruct the neovaginal cavity with a peritoneal flap.

Clinical implications: this is the first report of robotic-assisted peritoneal flap vaginoplasty using this technique in Mexico; with a detailed description of the surgical steps and outcomes of our patient. Showing the benefits and feasibility of the procedure adding the proper advantages of the robotic platform.

Conclusions: this technique involves a minimally invasive approach for gender-affirming surgery that offers the advantage of not using grafts or bowel segments with excellent functional and aesthetic outcomes. Prospective studies are needed to validate the role of this technique compared to other techniques for vaginoplasty.

Keywords: robotic surgery, gender-affirming surgery, vaginoplasty, reconstructive surgery

Citation: Pineda-Benítez S., Jáuregui-Ilabaca L. E., López-Alvarado P. D., Ramírez-Pérez E. A., Zapata-González J. A. Robotic-assisted peritoneal flap vaginoplasty in transgender surgery: first case report in Mexico. *Rev Mex Urol.* 2026;86(3):1-9.

Corresponding author:

Luis Eduardo Jáuregui Ilabaca. Address: Blvd. Díaz Ordaz 26, Miravalle, CP 64660, Monterrey, Nuevo León, México.
Email: edu.jauregui90@gmail.com

¹ Instituto Mexicano del Seguro Social, Hospital Regional de Alta Especialidad del Bajío León, Guanajuato, México

² Universidad Autónoma de Nuevo León, Hospital Universitario "Dr. José Eleuterio González", Monterrey, México

³ Hospital Ángeles Universidad, Ciudad de México, México

⁴ Hospital Ángeles Mocol, Ciudad de México, México

Received: January 24, 2026

Accepted: May 25, 2026



Resumen

Descripción del caso: presentamos el caso de una paciente transgénero femenino de 20 años, quien tras completar el protocolo multidisciplinario para cirugía de reasignación de género se sometió a una vaginoplastia con flap peritoneal robot asistido con la técnica Davydov.

Relevancia: la cirugía de reasignación de género ha incrementado su prevalencia y se han descrito una variedad de procedimientos con sus ventajas y complicaciones específicas. La vaginoplastia Davydov provee una menor tasa de complicaciones por la ausencia de uso de injertos o segmentos intestinales, con las ventajas de reconstruir la neovagina con un flap peritoneal.

Implicaciones clínicas: Este es el primer reporte de vaginoplastia robot asistida con flap peritoneal utilizando esta técnica en México; con una descripción detallada de los pasos quirúrgicos y desenlaces en nuestra paciente. Demostrándose los beneficios y factibilidad del procedimiento sumando las propias ventajas de la plataforma robótica.

Conclusiones: Esta técnica involucra un abordaje de mínima invasión para la cirugía de reasignación de género, ofreciendo las ventajas de no utilizar injertos o segmentos intestinales con excelentes resultados funcionales y estéticos. Se necesitan estudios prospectivos para validar el rol que tiene este abordaje comparado con otras técnicas de vaginoplastia.

Palabras clave:

cirugía robótica, cirugía de reasignación de género, vaginoplastia, cirugía reconstructiva

Introduction

As the incidence and diagnosis of gender dysphoria increases nationwide, so the reach of its treatment, which involves among other aspects physical modifications.⁽¹⁾ Different techniques for vaginoplasty include non-genital skin grafts, penile skin grafts, penile scrotal skin flaps and pedicled intestinal flaps;⁽²⁾ among them penile inversion vaginoplasty is considered the “gold standard” because it’s the most preferred and researched procedure, albeit the lack of high-grade evidence and proper comparison between techniques and their outcomes.^(3–5)

The goals of vaginoplasty include the creation of a natural-appearing vulva with a

correctly positioned urethra, a sensate clitoris constructed from the glans penis, and a vaginal canal with a length suitable for receptive intercourse,⁽³⁾ but in cases of deficient penoscrotal skin or early puberty blockade and resultant genital underdevelopment, the use of peritoneal flap to increase vaginal depth grows as an ideal and versatile option.^(6,7)

First described as procedures in gynecologic surgery for the management of vaginal agenesis, and subsequently modified to improve anatomical and functional outcomes.⁽⁸⁾ The Davydov technique, described by S. N. Davydov in 1969, as a form of colpoptosis using peritoneum

from the recto-uterine pouch, established the foundation for neo-vaginal creation using autologous peritoneal tissue.⁽³⁾

With the advent of minimally invasive surgery, robotic vaginoplasty was first reported with sigmoid segment in 2008,⁽⁹⁾ and afterwards the peritoneal pull-through vaginoplasty was adapted to laparoscopic and ultimately robotic surgery, allowing a significant reduction in surgical morbidity and faster postoperative recovery.⁽¹⁰⁾ Since then, robotic surgery has enabled more precise dissection in deep pelvic spaces and safer intracorporeal suturing, particularly in complex reconstructive procedures.^(11,12)

The aim of this report is to describe the first reported case in Mexico of robotic-assisted peritoneal flap vaginoplasty in a transgender female patient and present a surgical approach that may serve as a reproducible technical reference.

Case Presentation

A 20-year-old transgender female patient, previously managed with hormonal, medical, and psychological therapy in accordance with the Standards of Care version 8 of the World Professional Association for Transgender Health (WPATH), was scheduled for robotic-assisted peritoneal flap vaginoplasty using the Davydov technique.

Surgical Technique

- Positioning

Under combined general and regional anesthesia, the patient was placed in the litho-

tomy position using Allen stirrups, with both arms secured alongside the body and a 30° Trendelenburg tilt. A 16-Fr transurethral Foley catheter was inserted.

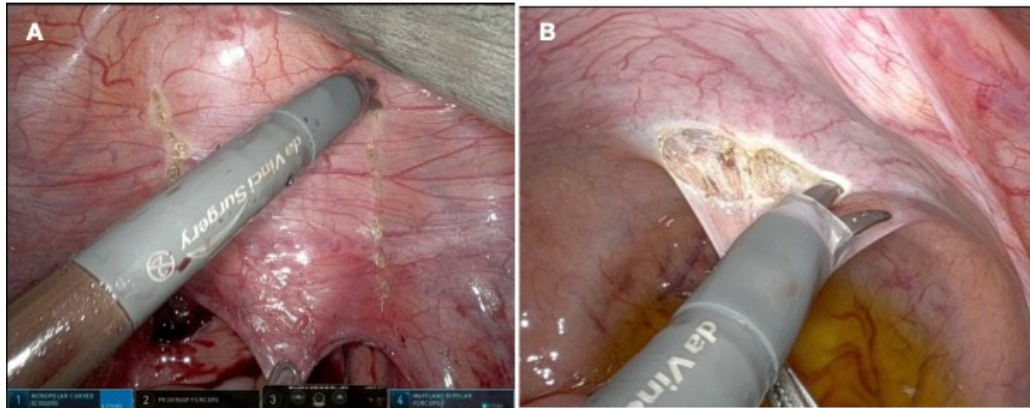
- Robotic approach

The robotic portion of the procedure was performed using the da Vinci Xi robotic system (Intuitive Surgical Inc., Sunnyvale, CA), equipped with a bipolar Maryland forceps, monopolar scissors, ProGrasp forceps, and a needle driver. A lateral docking configuration was used to allow simultaneous perineal access by the genitourinary reconstructive surgery team, optimizing operative time.

- Dissection and creation of peritoneal flap

Pneumoperitoneum was established using a Veress needle, followed by placement of an 8-mm supraumbilical trocar, three additional lateral 8-mm robotic trocars, and a 5-mm laparoscopic assistant port. Horizontal dissection of the recto-vesical pouch was performed, extending laterally toward the vas deferens and posteriorly toward the seminal vesicles. The Denonvilliers' fascia was then incised to create the plane between the prostate and rectum, which was connected to the perineal dissection through the urogenital diaphragm until communication with the perineal incision was achieved. Two pedicled peritoneal flaps from anterior rectum and posterior aspect of the bladder measuring approximately 8-10 cm in length were mobilized, preserving vascularization along their lateral and inferior borders (Figure 1).

Figure 1. Marking and creation of (A) anterior and posterior peritoneal flap and (B) recto-vesical pouch dissection



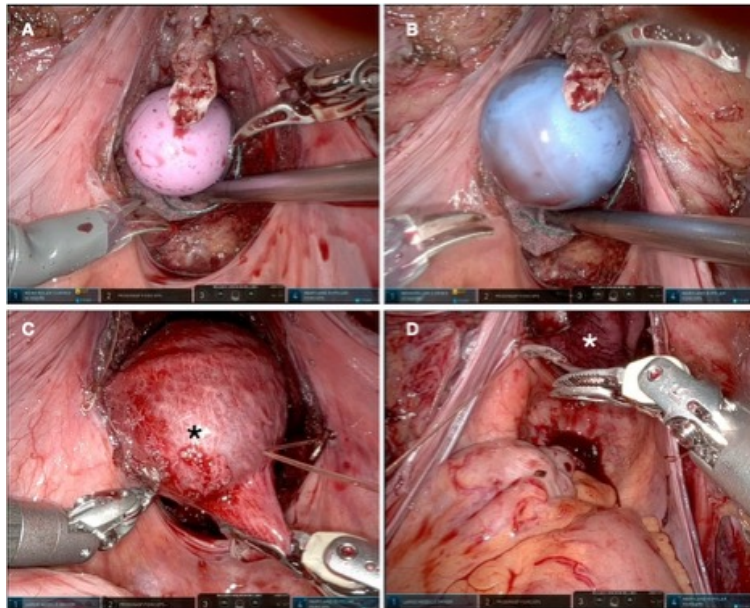
- **Creation of neo-vagina**

After communicating the pelvic cavity with the perineal incision, progressive perineal dilation was performed up to 37 mm using Soul Source dilators (North Hollywood, CA). A tubularized pedicled scrotal skin graft was introduced through the perineal opening and sutured to the peritoneal flaps using 3-0 Stratafix barbed sutures, forming the neovaginal apex. An omental patch was placed over the apex of the neo-vagina to promote healing of the reconstruction (Figure 2-4).

Figure 2. Tubularized scrotum skin graft before its introduction in the abdominal cavity

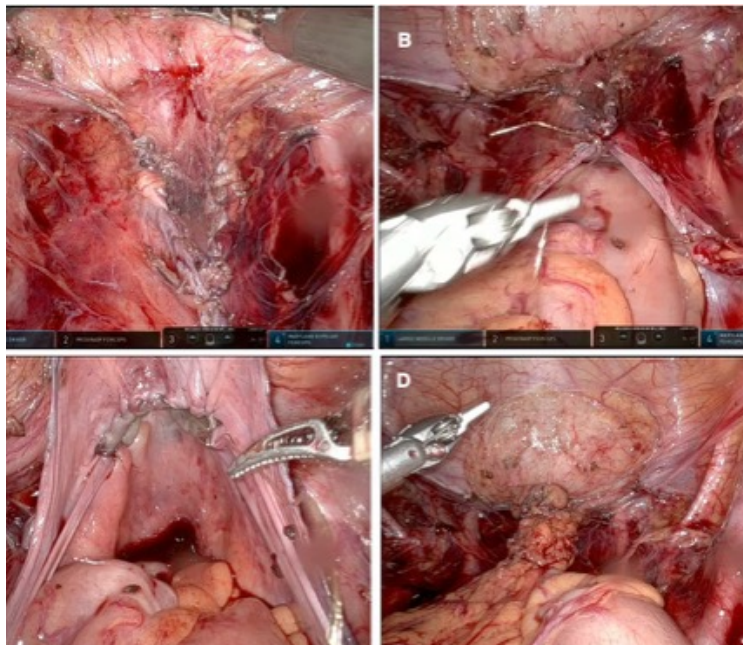


Figure 3. Progressive dilation of the perineal incision



Progressive dilation of the perineal incision using Soul Source dilators (North Hollywood, CA) and delivery of scrotum skin graft (*) through incision in urogenital diaphragm

Figure 4. Neovaginal reconstruction after peritoneal flap anastomosis with scrotal skin graft portion



B) Omental patch covering apex of neo-vagina for supplemental vascularity.

The distal portion of the scrotal graft was anastomosed to the pedicled penile skin flaps, resulting in a vaginal canal approximately 14 cm in length and 3 - 5 cm in diameter. After procedure completion, the neo-vagina was fully packed with an antibiotic-impregnated gauze.

- Perineal approach

Simultaneously, in the genital area the reconstructive surgery team performed the penectomy, bilateral orchiectomy, preservation and ultimately confection of the glans for clitoroplasty, urethroplasty, formation of the labia majora using scrotal flaps, and labia minora using penile skin.

- Postoperative Follow-up

Total operative time was 5 hours, with an estimated blood loss of 50 mL. Vaginal packing and the Foley catheter were removed on 5th POD. Progressive vaginal dilation using Soul Source dilators (32–37 mm) was initiated thereafter. At 8 months of follow-up, the patient demonstrated a neovaginal depth of 12.7 cm and a diameter of 3.2 cm, confirmed using a Soul Source dilator. The robotic approach allowed precise dissection, increased operative workspace, and secure fixation of the peritoneal flaps, reducing the risk of vaginal stenosis and optimizing neovaginal depth. No perio-perative complications presented (Figure 5).

Figure 5. Final appearance at 8 months of follow-up with neo-vaginal cavity fully dilated



Discussion

In contrast with use of bowel segments or grafts, the peritoneal flap offers a variety of advantages: minimal scarring, metaplasia to normal stratified squamous epithelium, prompt recovery, a smooth, soft and moist surface for improved intercourse and adequate vaginal length without the risks of graft harvesting or bowel resection and anastomosis.^(4,12)

A systematic review of case series showed minor complication rates, and satisfactory functional results, particularly in high-volume centers with robotic expertise.⁽¹³⁾ Nevertheless, the current evidence remains limited to relatively small cohorts with mid-term follow-up. Jacoby *et al.* reported optimal results in vaginal depth (14.2 cm) and width (3.6 cm) without complications.⁽¹⁴⁾ Willemsen *et al.* long-term outcomes showed a 12 % rate of vaginal stenosis but in setting of an open abdomen approach. Prospective and comparative studies are needed to assess long-term functional durability, late complications such as vaginal stenosis, and direct comparisons with other vaginoplasty techniques, including penile inversion and intestinal vaginoplasty or use of skin grafts.^(10,15)

The robotic platform enhances visualization and dexterity during deep pelvic dissection, facilitating safe mobilization of well vascularized peritoneal flaps, and secure fixation of the neo-vaginal apex preventing vaginal prolapse.^(5,14) These technical advantages may contribute to improved anatomical outcomes and reduced rates of neo-vaginal stenosis, considering that some of the factors are tissue retraction and de-epithelialization due to a poor blood supply.^(4,5,16)

Although limited by its single-case design and relatively short follow-up, this report

contributes to the growing body of evidence supporting the feasibility and safety of robotic-assisted peritoneal flap vaginoplasty in gender-affirming surgery. The dissemination of national experiences with this technique is valuable for expanding the available evidence and establishing reproducible technical standards in specialized centers.

Conclusions

Robotic-assisted peritoneal flap vaginoplasty seems a feasible, safe, and functional technique in gender-affirming surgery. The robotic platform enables precise pelvic dissection and secure peritoneal flap fixation, which may optimize neo-vaginal depth and reduce the risk of stenosis with the minimally invasive surgery benefits. This case represents the first reported experience in Mexico. However, further studies and long-term data are required before we can draw strong conclusions and determine its safety and efficacy, involving long-term complications and results, vaginal stabilization and QoL.

CRedit Taxonomy

- Salomón Pineda-Benítez: Conceptualization, Methodology, Formal Analysis, Research, Drafting (original draft), Validation, Visualization.
- Luis Eduardo Jáuregui-Ilabaca: Conceptualization, Methodology, Formal Analysis, Research, Drafting (original draft), Drafting (revision and editing), Validation, Visualization.

- Porfirio Damián López-Alvarado: Validation, Supervision, Resources, Data Curation, Drafting (revision and editing).
- Erick Alejandro Ramírez-Pérez: Validation, Supervision, Resources, Data Curation, Drafting (revision and editing).
- José Antonio Zapata-González: Validation, Methodology, Visualization, Supervision, Resources, Drafting (revision and editing), Project Management.

Ethics guidelines

Written informed consent was obtained from the patient for both the surgical procedure and the publication of the case report and accompanying images. Review by the hospital committee was not required for the clinical case report, in accordance with institutional policies.

Conflicts of interest

The authors declare no conflicts of interest.

Funding

This work did not receive or request funding.

References

1. Instituto Nacional de Estadística y Geografía. *Encuesta Nacional sobre Diversidad Sexual y de Género (ENDISEG) 2021*. 2021.
2. Zilavy AJ, Santucci RA, Gallegos MA. The History of Gender-Affirming Vaginoplasty Technique. *Urology*. 2022;165: 366–372. <https://doi.org/10.1016/j.urology.2022.03.032>.
3. Fedele L, Frontino G, Restelli E, Ciappina N, Motta F, Bianchi S. Creation of a neovagina by Davydov's laparoscopic modified technique in patients with Rokitansky syndrome. *American Journal of Obstetrics and Gynecology*. 2010;202(1): 33.e1-6. <https://doi.org/10.1016/j.ajog.2009.08.035>.
4. Robinson IS, Zhao LC, Bluebond-Langner R. Robotics in Gender Affirming Surgery: Current Applications and Future Directions. *Seminars in Plastic Surgery*. 2023;37(3): 193–198. <https://doi.org/10.1055/s-0043-1771302>.
5. Horbach SER, Bouman MB, Smit JM, Özer M, Buncamper ME, Mullender MG. Outcome of Vaginoplasty in Male-to-Female Transgenders: A Systematic Review of Surgical Techniques. *The Journal of Sexual Medicine*. 2015;12(6): 1499–1512. <https://doi.org/10.1111/jsm.12868>.
6. Kim C, Campbell B, Ferrer F. Robotic sigmoid vaginoplasty: a novel technique. *Urology*. 2008;72(4): 847–849. <https://doi.org/10.1016/j.urology.2008.04.004>.
7. Jacoby A, Maliha S, Granieri MA, Cohen O, Dy GW, Bluebond-Langner R, et al. Robotic Davydov Peritoneal Flap Vaginoplasty for Augmentation of Vaginal Depth in Feminizing Vaginoplasty. *The Journal of Urology*. 2019;201(6): 1171–1176. <https://doi.org/10.1097/JU.000000000000107>.
8. Davydov SN. [Colpopoiesis from the peritoneum of the uterorectal space]. *Akusherstvo I Ginekologiya*. 1969;45(12): 55–57.
9. Johnston AW, Soyster ME, Koch MO, Roth JD. Gender-affirming Robotic Tubularized Peritoneal Vaginoplasty: Feasibility and Outcomes. *Urology*. 2025;195: 191–198. <https://doi.org/10.1016/j.urology.2024.09.002>.
10. Weinstein B, Govekar H, Cherullo E, Jacobs KM, Schechter L. Robotics in genital gender-

- affirming surgery. *Plastic and Aesthetic Research*. 2023;10(0): N/A-N/A. <https://doi.org/10.20517/2347-9264.2023.41>.
11. **Acar O, Sofer L, Dobbs RW, Greenwald DT, Halgrimson WR, Crivellaro S, et al.** Single Port and Multiport Approaches for Robotic Vaginoplasty With the Davydov Technique. *Urology*. 2020;138: 166–173. <https://doi.org/10.1016/j.urology.2019.11.043>.
12. **Jiang DD, Gallagher S, Burchill L, Berli J, Dugi D.** Implementation of a Pelvic Floor Physical Therapy Program for Transgender Women Undergoing Gender-Affirming Vaginoplasty. *Obstetrics and Gynecology*. 2019;133(5): 1003–1011. <https://doi.org/10.1097/AOG.00000000000003236>.
13. **Willemsen WNP, Kluivers KB.** Long-term results of vaginal construction with the use of Frank dilation and a peritoneal graft (Davydov procedure) in patients with Mayer-Rokitansky-Küster syndrome. *Fertility and Sterility*. 2015;103(1): 220-227.e1. <https://doi.org/10.1016/j.fertnstert.2014.10.014>.
14. **Bene NC, Ferrin PC, Xu J, Dy GW, Dugi D, Peters BR.** Tissue Options for Construction of the Neovaginal Canal in Gender-Affirming Vaginoplasty. *Journal of Clinical Medicine*. 2024;13(10): 2760. <https://doi.org/10.3390/jcm13102760>.
15. **Tay YT, Lo CH.** Use of peritoneum in neovagina construction in gender-affirming surgery: A systematic review. *ANZ journal of surgery*. 2022;92(3): 373–378. <https://doi.org/10.1111/ans.17147>.
16. **Tondu M, Allepot K, Youkharibache A, Cristofari S.** The use of peritoneum in female genital gender-affirming surgery: A systematic review. *Annales De Chirurgie Plastique Et Esthetique*. 2025;70(1): 26–33. <https://doi.org/10.1016/j.anplas.2024.08.002>.