

ORIGINAL BRIEF

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Cite as: Eduardo Alfredo Sánchez Caveno. Minimally invasive transumbilical myomectomy for giant fibroids with uterine preservation: description of the Sancavedú technique. *Rev peru ginecol obstet.* 2026;72(1). DOI: <https://doi.org/10.31403/rpgo.v72i2857>

Minimally invasive transumbilical myomectomy for giant fibroids with uterine preservation: description of the Sancavedú technique

Miomectomía transumbilical de mínima incisión para miomas gigantes con conservación uterina: descripción de técnica Sancavedú

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DOI: <https://doi.org/10.31403/rpgo.v72i2857>

ABSTRACT

Objective: To describe the Sancavedú technique for the excision of giant fibroids via a transumbilical approach and to evaluate its effectiveness in preserving the uterus. **Design:** An observational, retrospective, longitudinal study of 20 cases with large-volume fibroids (1,100–8,900 g) treated using a single umbilical incision and conventional instruments. **Results:** Complete excision was achieved in all cases without conversion to laparotomy. Uterine preservation was 100%, with a mean hospital stay of < 36 hours and low morbidity. No major complications were reported. **Conclusions:** The Sancavedú technique is a minimally invasive, safe, and low-cost alternative for the management of giant fibroids, allowing for fertility preservation even in resource-limited settings.

Keywords: Leiomyoma; Myomectomy; Fertility preservation; Minimally invasive surgical Procedures; Uterus.

RESUMEN

Objetivo: Describir la técnica Sancavedú para la exéresis de miomas gigantes mediante abordaje transumbilical y evaluar su eficacia en la conservación uterina. **Diseño:** Estudio observacional, retrospectivo y longitudinal de 20 casos con miomas de gran volumen (1 100 – 8 900 g) intervenidas con técnica de incisión umbilical única e instrumental convencional. **Resultados:** Se logró la extirpación completa en todos los casos sin conversiones a laparotomía. La preservación uterina fue del 100%, con estancia hospitalaria media < 36 horas y baja morbilidad. No se registraron complicaciones mayores. **Conclusiones:** La técnica Sancavedú es una alternativa mínimamente invasiva, segura y de bajo costo para el manejo de miomas gigantes, permitiendo la preservación de la fertilidad incluso en entornos con recursos limitados.

Palabras clave: Leiomioma; Miomectomía; Preservación de la fertilidad; Procedimientos quirúrgicos mínimamente invasivos; Útero

INTRODUCTION

In women of reproductive age, uterine myomatosis is one of the most prevalent gynecological conditions; historically, the standard surgical treatment has been laparotomy⁽¹⁾. Although the development of minimally invasive techniques has improved perioperative outcomes,⁽²⁾ their application in cases of giant fibroids (weight >1,000 g) remains limited, often requiring invasive procedures that result in hysterectomy, with higher morbidity, a need for blood products, and prolonged hospital stays^(3, 5).

Although laparoscopic myomectomy, single-port techniques^(7, 8), minilaparotomy^(9,11), and hybrid approaches⁽¹²⁾ have evolved since the 1990s, the largest reported series—such as those by Jung YW et al. (260 patients) and Wang J (80 patients)—are generally limited to moderate-sized fibroids (≤8 cm) and rely on advanced instrumentation^(13, 14).



Giant myomatosis poses a surgical challenge that traditionally leads to hysterectomy, limiting the patient's reproductive options. Rationale. This study is justified by the need to disseminate less invasive surgical techniques that allow for uterine reconstruction with minimal tissue damage—techniques that are safe and reproducible—to avoid hysterectomy without relying on advanced laparoscopic technology.

Objective. To describe the Sancavedú technique and analyze its clinical outcomes to determine its feasibility for replication.

METHODS

Study Design. We conducted an observational, retrospective, longitudinal clinical study that included 20 patients who underwent surgery between 2019 and 2025. **Selection Criteria.** Women aged 23 to 50 years who met the following criteria were included: desire for uterine preservation; uterine size compatible with a gestational age of ≥ 27 weeks; presence of giant fibroids (weight $\geq 1,000$ g or multiple large fibroids); corpus or extracorporeal location; and absence of anesthetic contraindications for major surgery. Cases with suspected uterine sarcoma, pedunculated subserosal fibroids (FIGO 7) accessible via conventional laparoscopy, and uncorrectable coagulopathies were excluded.

The study was approved by the Ethics Committee of the Uterine Fibroid Center (minutes approved by the institution). The anonymity of the participants was guaranteed, as was compliance with the ethical principles of the Declaration of Helsinki.

Preoperative evaluation. The protocol included a detailed medical history, physical examination, and complete biochemical profile. Tumor mapping was performed using transvaginal pelvic color Doppler ultrasound and abdominal-pelvic magnetic resonance imaging (MRI). In selected cases, GnRH analogs or progesterone modulators were administered for preoperative volume reduction, as well as iron therapy (oral or intravenous) to correct iron-deficiency anemia.

Procedure and Safety. Written informed consent was obtained from the patient and a witness. Perioperative management followed the guidelines of the Enhanced Recovery After Surgery (ERAS) protocol and the WHO surgical safety checklist. Antibiotic prophylaxis (ceftriaxone 2 g IV), antifibrinolytic therapy (tranexamic acid 1 g IV), and oxytocin (20 IU in 1 L of saline) were administered prior to anesthetic induction.

SURGICAL DESCRIPTION (SANCAVEDÚ TECHNIQUE)

All procedures were performed by the same lead surgeon following standardized surgical protocols:

1. **Approach and Exposure.** A 3- to 6-cm transumbilical longitudinal incision, with layered dissection into the peritoneal cavity and placement of a medium-sized elastic retractor (Alexis type). Following pelvic exploration, adhesions were released and intestinal loops were protected by holding the omentum and intestines in place with a sterile surgical glove filled with saline solution (a maneuver known as the "Sancavedú fifth hand"), optimizing exposure without the need for additional metal retractors.
2. **Vascular control (hemostatic cerclage).** Fenestration of both broad ligaments to insert a No. 14 Foley catheter, encircling the uterine isthmus above the uterine vessels. The balloon was inflated and traction was applied to establish a temporary anterior cervical isthmic tourniquet (Figure 1). In cases of complex anatomical variations, a peritumoral ligature was performed using 1-caliber poliglactin 910 suture.
3. **Myomectomy and morcellation.** Hysterotomy was performed over the tumor area with the least vascularization. The manual wedge morcellation technique was applied using successive triangular incisions to reduce the volume of large tumor elements (Figure 2). Through the same incision, blunt enucleation or divulsion of intramural and subserosal fibroids (FIGO 3–6) was performed, using delivery maneuvers and manual retrieval to remove the tissue.



4. Uterine hemostasis. Reinforced by intermittent myometrial infiltration with a modified Klein's solution (saline, 0.05% lidocaine, epinephrine 1:1,000,000, and 8.4% sodium bicarbonate) combined with oxytocin (10 IU) and selective electrocoagulation.
5. Endometrial examination. Exploration of the cavity to lysis synechiae or resect submucosal lesions (FIGO 0-2), preserving endometrial integrity. The mucosa was closed with 2-0 polyglactin 910.
6. Hysteroplasty. Layered myometrial reconstruction using 0-gauge polyglactin 910. The

procedure was completed with a continuous "baseball" serosal closure to minimize the risk of postoperative adhesions. (Figure 3).

7. Abdominal exploration. Excision of endometriosis lesions, ovarian cystectomy, removal of the cervical tourniquet, verification of hemostasis, and assessment of tubal patency using methylene blue.

8. Abdominal closure and umbilical plasty. Layered wall suturing. The procedure was completed with an umbilical plasty using an invaginating suture of the umbilical groove margins (3-0 polyglactin 910) to restore aesthetic umbilical morphology (Figure 3).

Statistical analysis. A descriptive analysis was performed using measures of central tendency and dispersion (mean and range) for quantitative variables, and frequencies for qualitative variables. The data were processed in Microsoft Excel version 16.0 for Mac.

RESULTS

Perioperative results. The average surgical time was 250 minutes (range: 120 to 405 min), with 75% of the procedures completed in 300 minutes or less. Estimated intraoperative blood loss ranged from 50 to 2,000 mL, remaining below 1,000 mL in most cases. The blood transfusion rate was 20% (4 out of 20 patients), with blood products required exclusively in cases with bleeding $\geq 1,500$ mL associated with a massive tumor burden (weight $\geq 3,300$ g). No major intraoperative complications were recorded, nor was conversion to conventional laparotomy necessary in any case. Demographic and clinical data are detailed in Table 1.

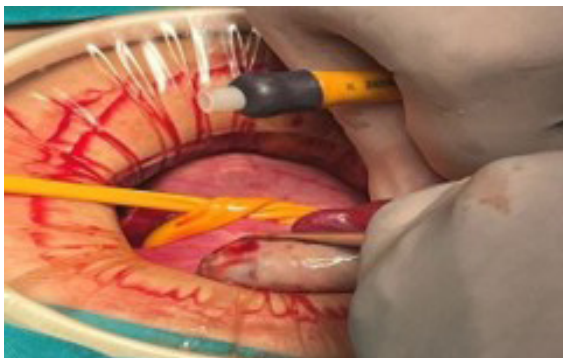


FIGURE 1. CERVICAL LIGATION WITH A FOLEY CATHETER.

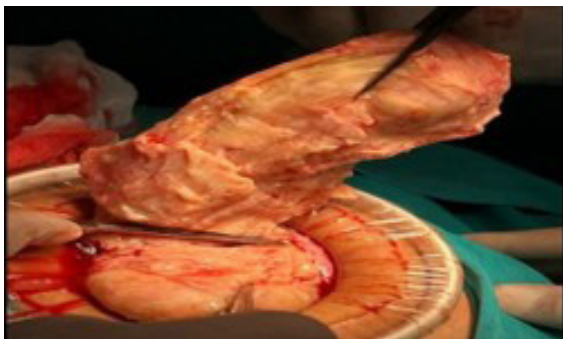


FIGURE 2. FRAGMENTATION AND REMOVAL.

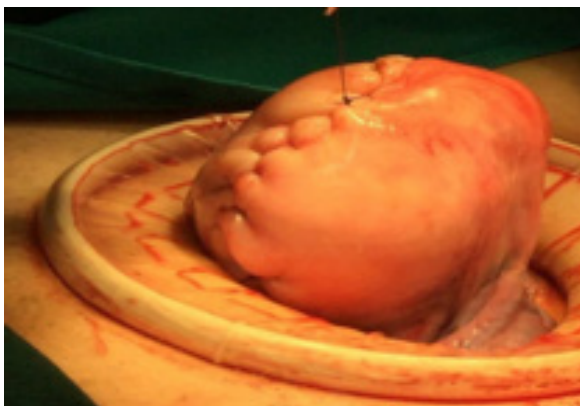


FIGURE 3. UTERUS RECONSTRUCTED USING A MINIMAL INCISION.



Population. The series included a total of 20 patients with a mean age of 39 years (range: 23 to 50 years). Fifteen percent of the patients were younger than 35 years; 55% were between 35 and 45 years old; and 30% were older than 45 years.

Anthropometry. The average BMI was 27.6 kg/m² (range: 21.6 to 33.7 kg/m²); 35% were of normal weight, 55% were overweight, and 10% were classified as having Class I obesity. Forty percent of the patients reported a history of previous abdominal or pelvic surgery.

Tumor weight. The weight of the excised fibroids ranged from 1,100 g to 8,900 g, with an overall average weight of 2,776 g. A trend toward greater tumor volume was observed in women aged ≥ 35 years; 80% had fibroids weighing more than 2,500 g.

Anesthetic management. This included regional anesthesia with sedation in 45% of cases, general anesthesia in 30%, and a combined technique in 25%. Stable patients.

Postoperative recovery. Favorable, with an average hospital stay of 32.4 hours; 70% of the patients were discharged within the first 24 hours.

Histopathological examination. Confirmed the diagnosis of benign leiomyoma in 100% of cases, ruling out any findings of malignancy.

DISCUSSION

The main findings of this study demonstrate that the Sancavedú technique allows for the successful removal of fibroids weighing up to 8.9 kg through a single umbilical incision, achieving uterine preservation in 100% of the cases analyzed.

These results suggest that the transumbilical approach using conventional instruments is a viable alternative to traditional open surgery.

This procedure represents a significant advance in conservative surgery, as it allows for uterine preservation in fibroids weighing up to 8.9 kg through direct manual access, eliminating the risks associated with pneumoperitoneum or complex laparoscopic instrumentation. The standardization of this technique offers a viable and reproducible alternative that challenges the current limits of minimally invasive surgery, prioritizing accelerated recovery and the patient's anatomical integrity.

TABLE 1. CLINICAL CHARACTERISTICS AND PERIOPERATIVE OUTCOMES

Case	Age	BMI	Previous Surgery	Anesthesia	Leiomyomas Weight (g)	Duration (min)	Blood Loss (mL)	Transfusion	Length of stay (h)
1	37	23.3	None	Combined	8900	360	1200	Yes	72
2	40	25.2	Cesarean section	General	2500	310	600	Yes	48
3	38	26.4	None	General	2000	330	750	No	24
4	32	25.6	None	Regional + sedation	1800	165	300	No	24
5	39	21.6	None	Regional + sedation	1400	235	300	No	24
6	23	27.7	None	Regional + sedation	1100	230	100	No	24
7	44	28.7	None	Regional + sedation	2000	195	200	No	24
8	45	33.3	None	General	3300	210	1500	No	24
9	43	28.5	None	General	2300	300	250	No	24
10	47	23.8	Laparoscopy	Regional + sedation	1300	220	400	No	24
11	46	33.7	Cesarean section	Combined	4000	210	1500	Yes	48
12	39	28.4	None	General	3100	260	400	No	24
13	49	29.4	Laparoscopy	Regional + sedation	1300	255	250	No	48
14	36	27.1	Cesarean section	Regional + sedation	2500	175	200	No	24
15	35	21.7	Laparotomy	Combined	2500	355	2000	Yes	48
16	35	24.2	None	General	2000	275	350	No	24
17	45	27.4	None	Combined	6000	405	2000	Yes	48
18	30	25.0	Laparoscopy	Regional + sedation	1885	245	600	No	24
19	50	22.6	Cesarean section (+2)	Combined	4500	350	2000	Yes	24
20	42	26.2	None	Regional + sedation	1250	210	400	No	24



In the current literature, it is observed that, although laparoscopic or hybrid techniques have gained ground, their application remains largely restricted to moderate-sized fibroids^(15,16). Meanwhile, authors such as Conrad DH et al.⁽¹⁷⁾ and Jeong HG⁽¹⁸⁾ report the removal of specimens weighing 4.2 kg and 3.2 kg via minilaparotomy or robotic-assisted surgery. Our series demonstrates the feasibility of managing significantly larger volumes through the same umbilical approach. Furthermore, utilizing the umbilical scar ensures a superior aesthetic outcome and safe access even in overweight patients or those with a history of previous abdominal surgery—conditions that typically complicate conventional laparoscopy.

In terms of hemostatic safety and surgical technique, the use of manual transumbilical delivery and retrieval maneuvers allows for optimization of operative time and the handling of complex tissues⁽¹⁹⁾. Vascular control via isthmic cerclage allowed us to maintain a transfusion rate of 20%, a figure that is competitive with and even lower than that reported by Abrahams et al.⁽²⁰⁾ (20% to 30%) in series of giant fibroids.

Aligning the procedure with ERAS protocol standards and WHO safety guidelines ensures a predictable postoperative course and a shorter hospital stay, validating the technique as an efficient option for centers with varying levels of technological complexity.

Limitations of the study include its retrospective nature and the sample size of 20 cases, which limit the generalizability of the results and statistical comparison with other surgical approaches. Furthermore, the absence of long-term follow-up does not allow for a precise determination of the recurrence rate of leiomyomas or the definitive impact on the future fertility of the patients who underwent surgery.

It is concluded that the Sancavedú technique is an effective surgical alternative that allows for uterine preservation in cases of giant fibroids through a single minimal incision with less tissue trauma, eliminating the need for additional punctures and ports, pneumoperi-

toneum, suction morcellators, and reducing the use of electrocautery. The procedure optimizes postoperative recovery and aesthetic outcomes, proving to be a valuable and reproducible option in various surgical settings, especially when seeking to preserve fertility in patients with extremely large tumor masses.

ACKNOWLEDGMENTS

To the surgical team: Drs. Christian Aranda Ruiz, Américo Castro Reyna (Obstetrics and Gynecology), Ángel Rosales Figueroa, Hugo Izarra, and Héctor Shibao (General Surgery); and the anesthesiologists: Drs. Eva Inga Contreras, Juan Agurto Fu, and Javier Aliaga Barreira. We would also like to extend our thanks to Dr. Armando Gu and, in particular, to Mr. Gabriel Sánchez Tovar and Mr. Eduardo Sánchez Tovar for their assistance in drafting, reviewing, and translating the manuscript.

ARTICLE INFORMATION

Received: 9 February 2026

Accepted: 30 April 2026

Published online: 2 September 2026

Declarations

Author's contribution: The author participated in the design, data collection, and drafting of the manuscript.

Data confidentiality: Data protection protocols were followed, ensuring the anonymity of the patients.

Privacy and consent: Written informed consent was obtained for the procedure and publication.

Ethical responsibilities: This study complies with the Declaration of Helsinki.

Funding: Self-funded. The study did not receive external funding.

Conflict of interest: The author declares no conflict of interest.

Use of artificial intelligence: Artificial intelligence was not used in the collection of the case series, the drafting, or the analysis of this manuscript.



Original contribution and significance: We present a previously unreported surgical technique as a conservative and reconstructive option for the uterus for fertility purposes—a reproducible procedure with high clinical, symbolic, and academic value.

REFERENCIAS BIBLIOGRÁFICAS

- Jeong HG, Lee MJ, Lee SR. The largest uterine leiomyoma removed by robotic-assisted laparoscopy in the late reproductive age: a case report. *J Menopausal Med.* 2021;27(1):37-41. DOI: 10.6118/jmm.20028
- Zeng X, Li L, Ye H, Xi M. Transumbilical single-site laparoscopic parallel mattress suturing prevents bleeding and chronic pelvic pain in myomectomy: a retrospective cohort study. *BMC Surg.* 2022;22(1):175. DOI: 10.1186/s12893-022-01626-8
- Chen J, Li X. Suture Methods and Ancillary Techniques for Uterine Incision in Transumbilical Single-Port Laparoscopic Myomectomy. *Clin Exp Obstet Gynecol.* 2024;51(6):133. DOI: 10.31083/j.ceog5106133
- Kong W, Xiong G, Guo P, Li X, Shen L, Yang L, et al. Application of transumbilical paring and retrieving techniques in laparoscopic myomectomy. *Eur J Gynaecol Oncol.* 2024;45(4):139-144. DOI: 10.22514/ejgo.2024.079
- Aşıcıoğlu O, Berhan B, Ateş S. Comparison of transvaginal or transumbilical tissue extraction at laparoscopic gynecologic surgery: A 12-year experience. *Int J Gynaecol Obstet.* 2025;170(3):835-842. DOI: 10.1002/ijgo.70050
- Abrahami Y, Najid S, Petit A, Sauvanet E, Novelli L. Reducing the risk of bleeding after myomectomy: is preemptive embolization a valuable tool?. *CVIR Endovasc.* 2021;4(1):42. DOI: 10.1186/s42155-021-00231-9
- Coulibaly MB, Traoré Y, Konaté I, Bocoum A, Fané S, Dolo A, et al. Clinical and Therapeutic Aspects of Giant Fibroids at the Hôpital du Mali about 30 Cases. *Open J Obstet Gynecol.* 2020;10(6):713-722. DOI: 10.4236/ojog.2020.1060072
- Nam EJ, Kim DY, Kim YT, Kim JH, Kim YM, Kim SM, et al. Transumbilical single-port access laparoscopic-assisted myomectomy: feasibility and operative outcomes. *Eur J Obstet Gynecol Reprod Biol.* 2011;158(2):233-6. DOI: 10.1016/j.ejogrb.2011.05.006
- Nezhat C, Nezhat F, Silfen SL. Laparoscopic-assisted myomectomy. *Fertil Steril.* 1994;61(4):708-13. DOI: 10.1016/s0015-0282(16)56653-6
- Thubert T, Demerle M, Deffieux X, et al. Hybrid myomectomy using laparoscopic dissection and transumbilical extraction: technical innovation. *J Minim Invasive Gynecol.* 2015;22(2):182-3. DOI: 10.1016/j.jmig.2014.08.006
- Ismail MA, Maher MA. Laparoscopic-assisted myomectomy with umbilical extraction: a simplified hybrid technique. *Eur J Gynaecol Oncol.* 2024;45(1):17-21. DOI: 10.22514/ejgo.2023.111
- Liu, Zhang Q, et al. Dual port laparoscopic myomectomy: a balanced yet potentially more optimal surgical approach. *Front Med (Lausanne).* 2025; 12:1617194. Doi:10.3389/fmed.2025.1617194
- Jung YW, Kim SW, Kim YT, et al. Single-port laparoscopic-assisted myomectomy compared with conventional laparoscopic myomectomy: a multicenter retrospective study. *J Minim Invasive Gynecol.* 2023;30(4):698-704. DOI: 10.1016/j.jmig.2023.04.004
- Wang J, Liu Y, Zhang H. Transumbilical single-incision laparoscopic myomectomy vs conventional laparoscopic myomectomy: comparative outcomes in 80 cases. *Chin Med J (Engl).* 2020;133(13):1555-60. DOI: 10.1097/CM9.0000000000000862
- Zeng X, Li L, Ye H, et al. Transumbilical single-site laparoscopic parallel mattress suturing prevents bleeding and chronic pelvic pain in myomectomy: a retrospective cohort study. *BMC Surg.* 2022; 22:175. DOI: 10.1186/s12893-022-01626-8
- Chen J, Li X. Suture Methods and Ancillary Techniques for Uterine Incision in Transumbilical Single-Port Laparoscopic Myomectomy. *Clin Exp Obstet Gynecol.* 2024;51(6):133. DOI: 10.31083/j.ceog5106133
- Conrad DH, Ramirez J, Moore M, et al. Laparoscopic myomectomy of a 4.2 Kg fibroid with assistance of a minilaparotomy. *Gynecol Minim Invasive Ther.* 2018;7(3):135-137. DOI: 10.4103/GMIT.GMIT_37_18
- Jeong HG, Lee MJ, Lee SR. The largest uterine leiomyoma removed by robotic-assisted laparoscopy in the late reproductive age: a case report. *J Menopausal Med.* 2021;27(3):138-141. DOI: 10.6118/jmm.20028
- Kong W, Xiong G, Guo P, et al. Application of transumbilical paring and retrieving techniques in laparoscopic myomectomy. *Eur J Gynaecol Oncol.* 2024;45(4):139-144. DOI: 10.22514/ejgo.2024.079
- Abrahami Y, Bensoussan M, Gauthier T, et al. Reducing the risk of bleeding after myomectomy: a narrative review. *CVIR Endovasc.* 2021;4(1):54. DOI: 10.1186/s42155-021-00231-9