

Postoperative Outcomes of V-notes (Transvaginal Natural Orifice Transluminal Endoscopic Surgery) Sacrocolpopexy in Patients with Pelvic Organ Prolapse

Pelvik Organ Prolapsusu Olan Hastalarda V-notes (Transvaginal Natural Orifice Transluminal Endoscopic Surgery) Sakrokolpopeksinin Postoperatif Sonuçları

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ABSTRACT

Background: This study introduces and evaluates a novel surgical approach for treating pelvic organ prolapse (POP) by combining vaginal natural orifice transluminal endoscopic surgery (V-NOTES) with sacrocolpopexy. The aim was to provide maximal benefit to patients through this approach, eliminating the need for additional incisions and utilizing the anterior longitudinal ligament for suspension.

Materials and Methods: The study enrolled 11 patients who underwent V-NOTES sacrocolpopexy after vaginal hysterectomy. The patients' quality of life improved significantly after the procedure, as indicated by the pelvic floor impact questionnaire and pelvic floor distress inventory scores. The technique involved using helical titanium tacks to secure the mesh to the anterior longitudinal ligament, streamlining the procedure and standardizing mesh fixation.

Results: The median age of patients was 64 years. The median operative time for V-NOTES sacrocolpopexy was 150 minutes. There were no perioperative complications, and postoperative pain scores were minimal. Patients expressed high satisfaction with cosmetic outcomes, and physical examination findings demonstrated significant improvement in POP.

Conclusion: V-NOTES sacrocolpopexy is an effective and promising approach for managing POP prolapse after vaginal hysterectomy. The procedure demonstrated positive outcomes in terms of operative time, complications, pain scores, cosmetic results, and hospital stay. Moreover, it significantly improved patients' quality of life, positively impacting daily activities and emotional well-being. As the incidence of POP is expected to rise with an aging population, V-NOTES sacrocolpopexy may offer a minimally invasive alternative for treating apical compartment prolapse.

Keywords: Pelvic organ prolapse, V-NOTES sacrocolpopexy, minimally invasive surgery, quality of life, anterior longitudinal ligament

ÖZ

Amaç: Bu çalışma, vajinal histerektomi sonrası pelvik organ sarkmasının (POP) tedavisi için vajinal doğal açıklık translüminal endoskopik cerrahi (V-NOTES) yönteminin sakrokolpopeksi ile birleştirilerek yeni bir cerrahi yaklaşımın tanıtılmasını ve değerlendirilmesini içermektedir. Amaç, bu yaklaşım aracılığıyla hastalara yapılacak ek insizyon ihtiyacını ortadan kaldırarak ve anterior longitudinal ligaman kullanarak maksimum fayda sağlamaktır.

Gereç ve Yöntemler: Çalışmaya vajinal histerektomi sonrası V-NOTES sakrokolpopeksi yapılan 11 hasta dahil edildi. Hastaların yaşam kalitesi, pelvik taban etki anketi ve pelvik taban rahatsızlık envanteri puanlarıyla değerlendirildi ve işlem sonrası önemli ölçüde iyileşme gösterdi. Teknikte, helikal titanyum çiviler kullanılarak meş anterior longitudinal ligamana sabitlendi. Bu teknik operasyonun kolaylaşmasının yanı sıra meş sabitlemesinin de standart hale gelmesini sağladı.

Bulgular: Hastaların ortalama yaşı 64'tü. V-NOTES sakrokolpopeksi için ortalama ameliyat süresi 150 dakikaydı. Perioperatif komplikasyonlar görülmedi ve ameliyat sonrası ağrı puanları minimaldi. Hastalar kozmetik sonuçlardan memnuniyetlerini yüksek düzeyde ifade ettiler ve fiziksel muayene bulguları POP'de önemli bir iyileşmeyi gösterdi.



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Sonuç: V-NOTES sakrokolpopeksi, vajinal histerektomi sonrası POP'yi yönetmek için etkili ve umut verici bir yaklaşımdır. İşlem, operasyon süresi, komplikasyonlar, ağrı skorları, kozmetik sonuçlar ve hastanede kalış süresi açısından olumlu sonuçlar göstermiştir. Ayrıca, hastaların yaşam kalitesini önemli ölçüde artırmıştır ve günlük aktivitelere ve duygusal iyilik haline olumlu etki etmiştir. POP insidansının yaşlanan nüfusla birlikte artması beklenirken, V-NOTES sakrokolpopeksi tedavide potansiyel faydalar sunan minimal invaziv bir alternatif olabilir.

Anahtar Kelimeler: Pelvik organ prolapsusu, V-NOTES sakrokolpopeksi, minimal invazif cerrahi, yaşam kalitesi, anterior longitudinal ligament

Introduction

The prevalence of pelvic organ prolapse (POP) varies between studies. It can occur at any age, yet studies have shown that POP symptoms peak between the ages of 70 and 79 (1). POP is expected to become more common as populations age (2). Therefore, gynecologists will be more likely to encounter patients with POP during routine examinations. However, even if it has been medically diagnosed, POP does not necessarily need to be treated unless the patient has complaints that affect quality of life. When patients present with POP symptoms, treatment options can be considered based on the type of prolapsed organ(s) and the severity of the condition.

Various vaginal or abdominal approaches have so far been described for the surgical treatment of POP (3). Suspension of the prolapsed vagina after hysterectomy is one of the surgical options in patients with total prolapse if no desire for fertility. Vaginal hysterectomy, which is considered the gold standard, can be performed in patients with POP without the need for abdominal incision. After hysterectomy, ligaments such as the sacrospinous ligament, iliopectineal ligament or anterior longitudinal ligament may be preferred to suspend a prolapsed vagina (4). The anterior longitudinal ligament was determined as the ligament with the highest tensile strength among the pelvic ligaments (5). Many consider sacrocolpopexy, where the vagina is suspended to the anterior longitudinal ligament, to be top choice for treating apical compartment prolapse. In order to perform sacrocolpopexy surgery, the anterior longitudinal ligament must be exposed by dissecting the peritoneum over the sacrum. However, there is a problem of inadequate exploration to safely perform sacrocolpopexy through vaginal route. Therefore, hysterectomy with abdominal or laparoscopic approach is generally preferred in patients who will undergo sacrocolpopexy surgery. With the widely recognized benefits of minimally invasive procedures, like quicker recovery, reduced hospitalization time, and diminished pain, it's quite understandable that surgeons would lean towards laparoscopic sacrocolpopexy over abdominal sacrocolpopexy whenever feasible. However, an

abdominal incision is required to perform sacrocolpopexy in conventional and single-port abdominal laparoscopic surgery.

Transvaginal natural orifice transluminal endoscopic surgery (V-NOTES), which can be defined as single port laparoscopic surgery through the vaginal route, has started to gain popularity in recent years. Apart from the vaginal incision, which has to be made regardless of the surgical approach, the absence of the need for an additional incision in V-NOTES hysterectomy and subsequent surgical procedures that can be performed vaginally is one of the important aspects that distinguishes V-NOTES from other laparoscopic surgeries. Moreover, V-NOTES allows exploration of the entire abdominal cavity via using the vaginal route only. Thus, the exploration required to safely perform sacrocolpopexy, which is the gold standard method, can be achieved with V-NOTES.

In this study, we combined the main elements of two gold standard methods by completing the operation without making an additional incision and using the strongest pelvic ligament in suspension. We aimed to provide maximum benefit to patients by performing V-NOTES sacrocolpopexy after vaginal hysterectomy. We reported the perioperative and early postoperative results of V-NOTES sacrocolpopexy in patients with POP and its effect on patients' quality of life.

Material and Methods

The study enrolled individuals who visited the obstetrics and gynecology outpatient clinic due to POP concerns and underwent V-NOTES sacrocolpopexy. The University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital's Ethics Committee granted ethical approval for the study (reference number: 2022/514/222/30). Specifically, those aged 45 to 79, exhibiting stage III or IV prolapse according to POP-Q classification, free from contraindications for pneumoperitoneum and the Trendelenburg position, and suitable for transvaginal NOTES were included. Preoperatively, two surgeons conducted evaluations for all patients. All patients were operated by the same surgeons. In the assessment of patients for contraindications to

the Trendelenburg position and pneumoperitoneum, the anesthesiologist conducted a comprehensive evaluation. This evaluation involved a thorough review of the patient's medical history, including any preexisting cardiovascular, respiratory, or neurological conditions. Additionally, the anesthesiologist performed a physical examination to assess factors such as hemodynamic stability, lung function, and neurological status. Special attention was given to identifying any potential contraindications, such as severe cardiac disease, intracranial hypertension, or compromised respiratory function. The goal of this meticulous evaluation was to ensure patient safety and make informed decisions regarding the feasibility of utilizing the Trendelenburg position and pneumoperitoneum during surgical procedures.

Information regarding demographics, age, medical and surgical background body mass index (BMI), surgical duration, pre- and post-operative hemoglobin levels, perioperative complications, and hospitalization duration were gathered. The surgical duration was measured from the initial incision to the final suture. Intraoperative complications encompassed ureteral, bladder, bowel, and vascular injuries. Hematoma, infection, pain, mesh erosion, ileus and new onset urinary incontinence were considered as postoperative complications. The patients were evaluated with visual analogue scale (VAS) at the postoperative 24th hour, with a pain score of 0 (no pain) to 10 (worst pain). In the 1st month after the operation, cosmetic scoring was performed using the VAS scale, as 1 (not at all satisfied) 10 (very satisfied).

Both before and one month after surgery, the POP quantification (POP-Q) scores were assessed. The Turkish-validated pelvic floor impact questionnaire (PFIQ-7) and pelvic floor distress inventory (PFDI-20) were used to assess quality of life before and one month after the surgery. The PFIQ-7 is an assessment form that questions the impact of pelvic floor function on daily activities, quality of life, and emotional health. Comprising a total of 21 questions categorized into three subgroups- the urinary impact questionnaire (UIQ), the colorectal-anal impact questionnaire (CRAIQ) and the pelvic organ prolapse impact questionnaire (POPIQ)- the PFIQ-7 was employed. The higher the score on the PFIQ-7, the greater the impact of pelvic floor dysfunction on the patient's life. PFDI-20 is an assessment form that aims to evaluate the level of discomfort associated with symptoms. The PFDI-20 consist of 3 scales: Pelvic organ prolapse distress inventory (POPDI), urinary distress inventory (UDI) and colorectal-anal distress inventory (CRADI). According to the degree of their complaints, patients answer a total of 20 questions as 0 (absent), unimportant (1), little (2), moderate (3), a lot (4). A maximum of 300 points can be

scored. The higher the score, the greater the pelvic floor dysfunction.

Surgical Technique

A single dose of 2 g of cefazolin IV was administered. The procedure was carried out with the use of general anesthesia. After holding the cervix with a tenaculum, a circular incision was made around the cervix. In the posterior part of the circular incision, the vaginal wall was held with Allis clamps. After the peritoneum was identified, it was cut with scissors. Then, the anterior vaginal wall was held with Allis clamps. Vesicouterine pouch was entered by sharp dissection while protecting the bladder. Retractors were utilized to protect bladder and rectum. The uterosacral and cardinal ligament complex, uterine vessels, broad ligament, utero-ovarian ligament, round ligament and cornual end of the Fallopian tube were sealed and cut, with a vessel sealing system (LigaSure™, Medtronic, Mansfield, MA). Thus, the uterus was freed from all attachments and the hysterectomy was completed. The polypropylene mesh (POLYMESH Polypropylene, Betatech Medical Devices ABD drugs, Türkiye) was then placed on the posterior part of the vaginal cuff with 2-0 non-absorbable monofilament polypropylene suture. The GelPOINT advanced access platform (Applied Medical Resources Corp., Rancho Santa Margarita) was used for V-NOTES. First, a wound retractor (Alexis O wound protector-retractor; Applied Medical Resources Corp., Rancho Santa Margarita) was inserted through vagina into the abdominal cavity. The GelSeal cap with 4 low-profile sleeves (Applied Medical Resources Corp., Rancho Santa Margarita) was placed over the wound retractor. CO₂ was insufflated through this port to a pressure of 12 mmHg at a flow rate of 0.4 L/min. The adnexa were grasped with a laparoscopic grasper. The infundibulopelvic ligament was sealed and cut with a vessel sealing system. Bilateral adnexectomy was performed. The operating table was tilted to 30° of Trendelenburg position so that the sacral promontorium could be seen. Then, the intestines were retracted with a fan-shaped retractor (Karl Storz GmbH and Company, Tuttlingen, Germany). The peritoneum covering the sacral promontory was ligated, incised, and divided using a vessel sealing system (LigaSure™, Medtronic, Mansfield, MA). The anterior longitudinal ligament was revealed. Ureteral course identified. The mesh was fastened to the anterior longitudinal ligament using helical titanium tacks (ProTack™, Medtronic, Mansfield, MA, USA). The GelPOINT advanced access platform was removed. The Vaginal cuff was sutured shut using a continuous and locking technique with delayed absorbable polyglactin 910 suture (Vicryl®, Ethicon Inc., Somerville, NJ, USA).



Statistical Analysis

The statistical analysis was conducted using SPSS version 25 (IBM; Chicago, IL, USA). The analysis includes frequency and percentage figures for qualitative variables, along with median, minimum and maximum values for quantitative variables. The Wilcoxon test was used for comparison of repeated measurements before and after surgery. Type I error rate was taken as $\alpha=0.05$ in the study.

Results

Thirteen patients who fulfilled the eligibility criteria and provided written informed consent underwent V-NOTES sacrocolpopexy. Despite two patients expressing satisfaction with the surgery during a telephone interview, they did not attend the clinic for a physical examination within the initial month following the operation. The study comprised the remaining eleven patients. The median age of the patients was 64 (range, 55-77) years. Among the patients six had hypertension four had diabetes mellitus, and three had coronary artery disease. Median BMI of the patients was 29 kg/m² (range, 20 - 34 kg/m²). The median operation time was found to be 150 (range, 80-210) minutes. There were no perioperative complications. None of the cases were converted to laparoscopy or laparotomy. The median VAS score at the postoperative 24th hour was 0. The median preoperative hemoglobin level was 13 mg/dL (range, 11 to 14). The median postoperative hemoglobin level was 12.3 mg/dL (range, 10.4 to 13.6). The median hospital stay of the patients after the operation was 2 days. All patients had a cosmetic score of 10 in the first month postoperatively.

Before the surgery, all patients were classified as stage 3 or 4 according to the POP-Q staging system. In the physical examination of the patients at the 1st month postoperatively, it was found that all patients had POP-Q stage 0 or 1. In the preoperative phase, the median total score on the PFIQ-7 was 166. The median PFIQ-7 total score was 0 at the first postoperative month. When comparing the preoperative and postoperative median total scores on the PFIQ-7, a statistically significant difference was observed ($p=0.003$). This notable contrast underscores the surgery's favorable impact on patients' daily activities, quality of life, and emotional well-being. Subgroups of PFIQ-7 were also evaluated. A statistically significant difference was found between the pre- and postoperative periods in UIQ and POPIQ scores ($p=0.008$, $p=0.003$, respectively). There was no statistically significant difference in CRAIQ scores. The median PFDI-20 scores of the patients in the preoperative period was 37. The median PFDI-20 scores of the patients in the postoperative period were 0. There was a statistically

significant difference between the preoperative and postoperative PFDI scores of the patients ($p=0.003$). When the subgroups of PFDI, namely POPDI, CRADI, and UDI, were examined separately, a statistically significant difference was found in each subgroup. The median, minimum and maximum values, p-values and Z scores of the patients' preoperative and postoperative PFDI-20 and PFIQ-7 evaluations are shown in Table 1.

Discussion

In this study, we introduced and evaluated a novel surgical approach for treating POP by combining V-NOTES with sacrocolpopexy. This approach involved performing V-NOTES sacrocolpopexy after vaginal hysterectomy, which not only eliminated the need for additional incisions but also harnessed the strength of the anterior longitudinal ligament for suspension. Our findings demonstrated favorable outcomes in terms of surgical success, reduced postoperative pain, and excellent cosmetic results. Patients reported improvements in quality of life. Moreover, the technique of using helical titanium tacks for mesh fixation expedited the procedure and enhanced standardization. This innovative approach holds promise for selected patients and provides a compelling alternative in the field of minimally invasive surgical treatments for POP. The combination of reduced surgical invasiveness, favorable clinical outcomes, and improved patient experience emphasizes the clinical implications of adopting this approach in suitable candidates for POP treatment.

Minimally invasive surgery aims for less surgical damage, less inflammation, and less neuroendocrine

Table 1. Pre- and postoperative pelvic floor distress inventory short form 20 and pelvic floor impact questionnaire short form 7 scores of the patients

	Preoperative	Postoperative	p-value
Total PFDI-20 score	37 (10-52)	0 (0-16)	0.003*
POPDI score	14 (4-24)	0 (0-2)	0.003*
CRADI score	5 (0-13)	0 (0-3)	0.007
UDI score	13 (5-23)	0 (0-16)	0.005
Total PFIQ-7 score	166 (75-246)	0 (0-100)	0.003*
CRAIQ score	0 (0-100)	0 (0-0)	0.068
UIQ score	28 (0-100)	0 (0-100)	0.008
POPIQ score	90 (66-100)	0 (0-0)	0.003*

PFDI-20: Pelvic floor distress inventory short form 20, POPDI: Pelvic organ prolapse distress inventory, CRADI: Colorectal-anal distress inventory, UDI: Urinary distress inventory, PFIQ-7: Pelvic Floor impact questionnaire short form 7, CRAIQ: Colorectal-anal impact questionnaire, UIQ: Urinary impact questionnaire, POPIQ: Pelvic organ prolapse impact questionnaire. Data are presented as median (min-max)

response, and thus less postoperative pain, rapid recovery, and good cosmetic results. In operations that can be performed vaginally after hysterectomy, completing the procedure through the vaginal incision without making any additional incision may contribute to these benefits. Therefore, it seems reasonable to perform sacrocolpopexy vaginally after vaginal hysterectomy. To date, only a few studies have reported laparoscopic or robotic V-NOTES sacrocolpopexy (6,7,8). When V-NOTES sacrocolpopexy is performed, laparoscopic suturing appears to prolong the operative time. On the other hand, robotic surgery is not available in many hospitals and increases the cost of surgery. These can be overcome by securing the mesh to the anterior longitudinal ligament using tacks in V-NOTES sacrocolpopexy. To the best of our knowledge, this is the first study to report the results of V-NOTES sacrocolpopexy with helical titanium tacks after vaginal hysterectomy.

The first reports of V-NOTES sacrocolpopexy were published in the literature about 4 years ago. Early publications consisted of case reports and technical details (6,8,9). This was followed by the publication of the early results of a series of 26 patients who underwent V-NOTES sacrocolpopexy by Liu et al. (7). In these studies, laparoscopic suturing was used to secure the mesh to the anterior longitudinal ligament. Based on the technically challenging nature of suturing/knotting in V-NOTES sacrocolpopexy, Guan et al. (8) published the first report on robot-assisted V-NOTES sacrocolpopexy. The literature shows that tacks or suturing can be used in the fixation of the mesh in sacrocolpopexy (9,10). Laparoscopic suturing requires training and knot security may vary depending on the technique and skill of the surgeon. On the other hand, tacks are easy to use and can standardize the mesh fixation step regardless of the surgeon's skill. In this study, we fixed the mesh to the anterior longitudinal ligament with helical titanium tacks. Thus, we both standardized the fixation of the mesh to the ligament and shortened the time of the laparoscopic part of the operation. In addition, in abdominal laparoscopic surgery, where the laparoscope is inserted through the abdomen, the sacrum can be viewed from above. Therefore, there may be difficulties in fixing the mesh to the anterior longitudinal ligament. However, in V-NOTES sacrocolpopexy, if the rectum is retracted laterally with an atraumatic grasper, the ventral side of the sacrum can be easily seen. Better visualization of the operative field can help fix the mesh in the correct anatomical position and shortens the operation time. Moreover, additional prolapse and/or urinary incontinence surgeries can be performed vaginally, if needed, without the need to change position

after V-NOTES sacrocolpopexy. In our study, the median operation time was 150 minutes.

In our previous studies, we stated that especially obese patients could benefit from V-NOTES (11,12). Similarly, we believe the group that will benefit most from V-NOTES sacrocolpopexy will be obese patients. Obese patients may particularly benefit from V-NOTES sacrocolpopexy due to a combination of factors related to their anatomy and the advantages of the surgical technique. Obesity is associated with increased surgical risks, such as higher rates of surgical site infections and compromised respiratory function during laparoscopic procedures (13). V-NOTES sacrocolpopexy presents several attributes that can mitigate these risks in obese patients. Firstly, the absence of additional incisions in V-NOTES sacrocolpopexy after vaginal hysterectomy eliminates the potential complications associated with incisions, such as infection and incisional hernias, which are more prevalent in obese individuals. As adipose tissue is more susceptible to infections and wound healing complications, avoiding additional incisions is especially beneficial for obese patients (13).

Secondly, the shorter laparoscopic portion of the surgery in V-NOTES sacrocolpopexy compared to traditional laparoscopic approaches reduces the potential negative impact of pneumoperitoneum and the Trendelenburg position on respiratory function. Obesity is linked to decreased lung function, and these physiological challenges can be exacerbated by factors like intra-abdominal pressure changes and altered diaphragmatic mechanics during laparoscopy. V-NOTES sacrocolpopexy, with its shorter laparoscopic component, may reduce the overall impact on respiratory function and help prevent complications in obese patients.

Moreover, the standardized fixation of the mesh to the anterior longitudinal ligament using helical titanium tacks simplifies the surgical procedure, irrespective of the surgeon's experience. This reduces operative time, which is beneficial for obese patients who are at higher risk of complications with longer surgeries. Additionally, the improved visualization of the operative field in V-NOTES sacrocolpopexy facilitates accurate mesh placement, enhancing surgical outcomes for obese patients. Considering these factors, V-NOTES sacrocolpopexy's combination of certain advantages, including decreased incision-related complications, potentially limited impact on respiratory function, and standardized surgical steps, might be worth exploring for obese patients with pelvic organ prolapse. This approach not only addresses the specific challenges posed by obesity but also aligns with the overall goals of minimizing surgical invasiveness, optimizing patient outcomes, and improving quality of life. In the present study,



almost half of the patients (5 out of 11) had a BMI of 30.0 kg/m² or higher. The median laparoscopic surgery time for V-NOTES sacrocolpopexy was 20 minutes (range, 10 to 30). Adverse respiratory system events were not observed in any patient.

Li et al. (14) conducted a retrospective cohort study comparing V-NOTES sacrocolpopexy with multi-port laparoscopic sacrocolpopexy, revealing comparable perioperative outcomes in both methodologies. The main difference between the two groups in that study was that patients who underwent V-NOTES sacrocolpopexy had lower pain scores and higher cosmetic scores. As mentioned before, when V-NOTES sacrocolpopexy is performed after vaginal hysterectomy, there is no need for an additional incision other than the vaginal incision. Thus, there is no pain that may arise from an additional incision. The cosmetic results of the patients are excellent as there are no visible incisions in V-NOTES. In the current study, the median VAS score of the patients at the 24th hour was 0. The cosmetic score of all patients was 10 at postoperative 1st month.

Pelvic floor dysfunction can affect daily activities, emotional health and quality of life. There are various assessment forms to understand the impact of pelvic floor dysfunction. To understand the effect of treatment on pelvic floor dysfunction, these forms can be performed before and after treatment and the results can be compared. We performed pre- and postoperative PFDI-20 and PFIQ-7 evaluations on the patients. When the preoperative and postoperative median PFDI-20 and PFIQ-7 scores of the patients were compared, statistically significant difference was found ($p=0.003$ and $p=0.003$), respectively. A statistically significant difference was also found in all subgroup scores of the evaluations, except for the CRAIQ score. All patients had a CRAIQ score of 0 in the postoperative period. When the CRAIQ scores of the patients in the preoperative period were examined, it was seen that only 4 patients had scores other than 0. Therefore, the low preoperative scores were considered as a possible reason for not detecting a statistically significant difference in CRAIQ scores. Considering the physical examination findings, POP-Q evaluation of all patients was stage 4 in the preoperative period and 0 at postoperative 1st month.

Conclusion

V-NOTES sacrocolpopexy after vaginal hysterectomy is a remarkable method that can be preferred in well-selected patients, characterized by good results in both physical examination and self-reported pelvic floor function assessment. The surgery stands out with its high cosmetic scores and low pain scores. Utilizing tacks to

secure the mesh to the anterior longitudinal ligament not only shortens the operative time but also standardizes the procedure, mitigating variations in surgical experience.

Ethics

Ethics Committee Approval: The University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital's Ethics Committee granted ethical approval for the study (reference number: 2022/514/222/30).

Informed Consent: Informed consent was obtained.

Peer-review: Internally and externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.C.G., E.B.Ö., Concept: E.C.G., E.B.Ö., Design: E.C.G., E.B.Ö., Data Collection or Processing: E.C.G., E.B.Ö., Analysis or Interpretation: E.C.G., E.B.Ö., Literature Search: E.C.G., E.B.Ö., Writing: E.C.G., E.B.Ö.

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