

v-NOTES Hysterectomy-Bilateral Salpingo-Oophorectomy: Initial Experiences in the Tertiary Center

v-NOTES Histerektomi-Bilateral Salpingo-Ooferektomi: Klinik İlk Tecrübelerimiz

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ABSTRACT

Objective: The aim of this study is to summarize the results of the first v-NOTES hysterectomy-bilateral salpingo-oophorectomy (BSO) patients performed in our hospital. **Material and Methods:** Eight patients who underwent v-NOTES hysterectomy-BSO operation for various indications in our hospital between April and May 2021 were included in this study. All operations were performed with benign indications and patients were selected from patients who had not had previous abdominal surgery and had no more than grade 1 pelvic organ prolapse. All operations were performed by the same surgical method and team. Demographic information of the patients, surgical complications, operation time, hospitalization time and postoperative hemoglobin differences were recorded. **Results:** None of the patients were converted to laparotomy. The mean age of the patients was 55.37±6.34. The mean BMI was found to be 29.2±2.30 kg/m². The mean operation time was calculated as 66.12±12.07. The postoperative hemoglobin difference was found to be 0.85±0.16 g/dl. No intraoperative and postoperative complications were observed in any of the patients. **Conclusion:** According to our initial results, v-NOTES hysterectomy-BSO appears to be a safe surgical technique and may be an alternative to total laparoscopic hysterectomy in selected cases.

Keywords: v-NOTES hysterectomy; bilateral salpingo-oophorectomy; endoscopy

ÖZET

Amaç: Bu çalışma ile hastanemizde yapılan ilk v-NOTES histerektomi-bilateral salpingo-ooferektomi (BSO) hastalarının sonuçlarının özetlenmesi amaçlanmaktadır. **Gereç ve Yöntemler:** Bu çalışmaya Nisan-Mayıs 2021 tarihlerinde hastanemizde çeşitli endikasyonlarla v-NOTES histerektomi-BSO operasyonu olan sekiz hasta dahil edilmiştir. Tüm operasyonlar benign endikasyonlarla yapılmıştır ve hastalar daha öncesinde abdominal cerrahi geçirmiş olmayan ve grade 1 den fazla pelvik organ prolapsus olmayan hastalardan seçilmiştir. Tüm operasyonlar aynı cerrahi yöntem ve ekip tarafından yapılmıştır. Hastaların demografik bilgileri, cerrahi komplikasyonlar, operasyon süresi, hospitalizasyon süresi ve cerrahi sonrası hemoglobin farkları kayıt altına alınmıştır. **Bulgular:** Hiçbir hastada laparotomiye dönülmedi. Hastaların ortalama yaşı 55.37±6.34 idi. Ortalama BMI 29.2±2.30 kg/m² olarak saptandı. Ortalama operasyon süresi 66.12±12.07 olarak hesaplandı. Postoperatif hemoglobin farkı 0.85±0.16 gr/dl olarak bulundu. Hiç bir hastada intraoperatif ve postoperatif komplikasyon izlenmedi. **Sonuç:** İlk sonuçlarımıza göre v-NOTES histerektomi-BSO güvenilir bir operasyon tekniği olarak gözükmektedir ve seçilmiş vakalarda total laparoskopik histerektomiye alternatif olabilir.

Anahtar Kelimeler: v-NOTES histerektomi; bilateral salpingo-ooferektomi; endoskopi

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Hysterectomy is one of the most performed gynecological procedure and can be undergone by vaginally, abdominally, laparoscopic or robotic way. Vaginal approach should be preferred cause of the better outcomes and the lesser complications.¹ Limited vaginal access, uterine size and prior abdominal operations are the main limited factors for vaginal hysterectomy and in these situations laparoscopic hysterectomy should be considered.

Natural orifice transluminal endoscopic surgery (NOTES) is described in 2004 firstly and uses the natural orifices of the body as mouth, anus, umblicus and vagina.² Transvaginal NOTES(v-NOTES) is the widely used approach of this new technic and a very strong alternative against to the laparoscopic hysterectomy.^{3,4} In the previous papers, this technic is seem to be safely and useful and can be used to the patients who can not be undergone vaginal hysterectomy because of the visual or manipulation limitations.⁴⁻⁸ Also, this technic presents some other benefits superior to the vaginal hysterectomy including easily access to the adnexas and direct visualization of the surgical field. Improved cosmetics outcomes, lesser port site complications and lesser hospital stay are the other advantages of this technic against the laparoscopic hysterectomy.^{9,10}

In this paper, we aim to summarize our inital experiences of the v-NOTES hysterectomy and bilateral salpingo-oopherectomy operations.

MATERIAL AND METHODS

In this retrospective trial, eight patients who were underwent v-NOTES hysterectomy and salpingo-oopherectomy cause of various indications between April 2021 and May 2021 in the tertiary referrenced hospital were included. Data analyses of all patients who gave informed consent were included and this trial was approved by Ankara City Hospital The Second Ethical Commitee (Approval no: E2-21-744 date: 14.7.2021).

All operations were performed by same surgical team. This approach was chosen for the patients who were not suitable for vaginal hysterectomy and salpingo-oopherectomy. Inclusion criterias were no previous abdominal surgery, no more than grade 1 desensus uteri, no history of endometriosis and pelvic inflamtory dis-

ease, no contraindication for general anesthesia and Trendelenburg position. Indications of the patients were myoma uteri, postmenauposal adnexial mass, anormal uterine bleeding and endometrial hyperplasia. Age, body mass index (BMI), parity, surgical indications, duration of hospital stay, final pathology, duration of colpotomy, total operating time, preoperative-postoperative (after 24 hours) hemoglobin (Hb) level and surgical complications were analyzed retrospectively. Descriptive statistics were calculated using SPSS for Windows (release 17.0.0/2008; IBM-SPSS, Inc., Chicago, IL, USA).

All of the operations were started firstly with anterior and posterior colpotomy after the insertion of urethral catheter. Than, bilateral sacrouterine ligaments were cut and ligated. After, the Alexis® wound protector (Applied Medical, Rancho Santa Margarita, CA, USA) were placed and pneumoperitoneum was achieved with 15 mmHg of carbon dioxide (Figure 1). Three ports were inserted for this procedure; a 10-mm rigid zero-degree telescope (Karl Storz visualization system; Karl Storz Tuttlingen, Germany), a 5 mm grasping forceps and a 5-mm LigaSure vessel sealer device (BluntTip; Covidien, Dublin, Ireland) were used. First, bilateral uterine artery were ligated than if it was possible bilateral infindibulopelvic ligaments were selaed if it wasn't bilateral ovarii proprium ligamenets were ligated than infindibulopelvic ligaments were (Figure 2, Figure 3 and Figure 4).

RESULTS

Datas of eight patients were recorded. All of the patients were underwent v-NOTES hysterectomy+bi-



FIGURE 1: Insertion of the wound protector and three ports for the surgery.

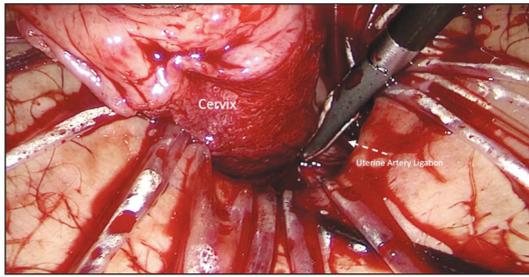


FIGURE 2: Uterine artery ligation.

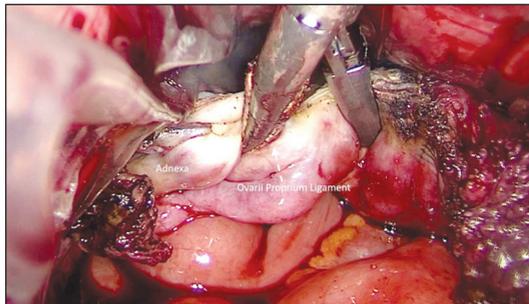


FIGURE 3: Ovarii proprium ligament ligation.

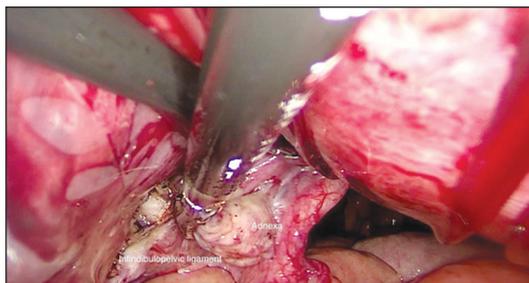


FIGURE 4: Infundibulopelvic ligament ligation.

lateral salpingo-oophorectomy and there was no need to conversion to the laparotomy. None of the patient had a previous abdominal surgery. Table 1 shows the detailed patient information. Mean age of this population was 55.37±6.34 years. Mean BMI of the pa-

tients was 29.2±2.30 kg/m² and the median of parity was 2. Mean colpotomy time was measured as 14.2±3.4 minutes and mean operation time was 66.12±12.07 minutes. None of the patients had need to blood transfusion and mean hemoglobin drop was 0.85±0.16 gr/dl. All of the patients were discharged after one day hospitalization and there was no any complication. After the surgery, all of the patients were examined after the first and fourth week and there wasn't any pathologic findings. All of the patients had a good healing vaginal cuff.

DISCUSSION

In this paper, we aim to summarize our initial experiences about v-NOTES surgery. We performed the same operation to all patients with same experienced surgical team and we didn't encounter any intraoperative or postoperative complications.

All of the patients were discharged after one day hospitalization in our clinic. Previous studies reported mean hospitalization time as 3, 2.1, 1.8, 1.5 and 2.8 days, respectively.^{4,6,7,9,11} The possible cause of the lesser hospitalization days of our data is that the feasibility and the safety of this approach were showed in these previous studies so we could predict the status of the patients according them.

When considering the operation time, our mean operation time was seen lesser than previous studies except one. It can be related to our population with no previous abdominal surgery and to the operational technic. Lee et al. stated whose operation time was 88.2±4.1 and Su et al. reported that their operation time was 122.7±17.6.^{9,12} Baekelandt et al. stated that their operation time was 97 minutes and Kale et al. presented whose operation time was 73.14±14.4 but

TABLE 1: Detailed information of patients.

Case	Age	BMI (kg/m ²)	Parity	Indication	Size of uterus (week)	Operation duration (min)	Hemoglobin drop (gr/dl)	Final pathology
1	55	25.7	2	Adnexal mass	6	88	1.1	Tecoma
2	53	31.8	3	Myoma uteri	8	76	0.9	Myoma
3	49	29.2	2	Abnormal uterine bleeding	7	63	0.8	Adenomyosis
4	50	28.4	2	Abnormal uterine bleeding	8	71	0.9	Adenomyosis
5	67	30.1	3	Adnexal mass	10	65	1.0	Serous cystadenoma
6	63	32.8	2	Abnormal uterine bleeding	6	55	0.8	Endometrial hyperplasia
7	52	27.4	2	Adnexal mass	10	61	0.6	Benign serous cyst
8	54	28.5	3	Myoma uteri	8	55	0.7	Proliferative hyperplasia

their operation technic was different than us.^{4,7} They made colpotomy by endoscopic surgery from the beginning of the surgical procedure; because of this situation operation time can be longer. Kaya et al. had a similar operation time with us.⁶

Mean hemoglobin drop in our study was 0.85±0.16 g/dL and it was also a little bit lesser than other studies. The change of the hemoglobin level of patients varied between 1.2 and 1.8 g/dL in the previous studies.^{4,6,7,9,12} This difference could be cause of our selected patient population with no previous abdominal surgery and no pelvic organ prolapsus more than grade 1.

There is a concern about the non sterile medium of vagina during the surgery. We did not observe any complication related to this situation in consistent with previous articles. Prophylactic antibiotics same with abdominal and laparoscopic hysterectomy (2 g of intravenous cefazolin) were administered to all of the patients for 30 min before the surgery and it seems that there is no need any other precaution for preventing surgical infection according to the our initial experiences.

In conclusion, this new approach is seem to secure and feasible according to our initial results and previous studies.^{4,6-12} With the help of this technic, there is no any abdominal incision. So cosmetic outcomes are much better and the possible worst situations related to port sites are not seen. Better

endoscopic view provides good surgical exposure and surgical comfort in v-NOTES approach. It facilitates hysterectomy and adnexectomy compared to vaginal surgery in patients without any pelvic organ prolapsus and it can be a strong alternative to the total laparoscopic hysterectomy.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Batuhan Turgay, Mahmut Kuntay Kokanalı, Özlem Moraloğlu Tekin; **Design:** Batuhan Turgay, Mahmut Kuntay Kokanalı, Özlem Moraloğlu Tekin; **Control/Supervision:** Özlem Moraloğlu Tekin; **Data Collection and/or Processing:** Batuhan Turgay, Mahmut Kuntay Kokanalı; **Analysis and/or Interpretation:** Batuhan Turgay, Mahmut Kuntay Kokanalı, Özlem Moraloğlu Tekin; **Literature Review:** Batuhan Turgay, Mahmut Kuntay Kokanalı; **Writing the Article:** Batuhan Turgay; **Critical Review:** Mahmut Kuntay Kokanalı, Özlem Moraloğlu Tekin.

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