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Transvaginal Gynecological Procedures in Hymen Intact Cases: Defloration and Revision Outcomes

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ABSTRACT

Purpose: This study aimed to examine transvaginal gynecological procedures performed in virgin women and to evaluate hymen revision, if necessary.

Methods: This retrospective study analyzed transvaginal procedures performed on 154 patients with intact hymens who presented to a private clinic for fertility treatments between 2012 and 2024.

Results: Among the 154 virgin patients, transvaginal procedures were successfully completed with the hymen remaining intact in 126 patients. Hymenal rupture occurred in 28 patients: 21 during oocyte retrieval, 3 during cyst drainage, and 4 during hysteroscopy.

Conclusion: Limited literature exists regarding transvaginal procedures in virgins. Virginity is a religious and socio-cultural value that holds significant importance in certain societies. This study evaluated the preservation of hymenal integrity in virgin women undergoing transvaginal gynecological procedures, as well as defloration and revision outcomes in cases where the hymenal rupture occurred.

Keywords: Hymen, vagina, vaginal mucosa, genital system

INTRODUCTION

The hymen is a mucosal fold at the entrance of the vagina that partially closes the vaginal opening. It is named after Hymenaios, the god of marriage and weddings in ancient Greek mythology.[1] The hymen contains few nerve fibers and is lined with non-keratinized squamous epithelium. It is an avascular membrane lacking glands and muscle fibers. The hymen varies morphologically and can be crescent-shaped, annular, cribriform, septate, fimbriated, navicular, or imperforate. It is traditionally thought to tear during a woman's first sexual intercourse, with its intact state often considered an indicator of virginity.[2]

The importance of virginity varies across cultures and societies, but in many religions, it symbolizes self-control and is regarded as a superior moral value. For this reason, virginity is considered essential by many women, who seek to preserve it by ethical and socio-cultural norms.[3] Due to these societal sensitivities, there is often a desire to preserve virginity during medical procedures that must be performed vaginally in virgin women. When virginity cannot be preserved during such procedures, hymen reconstruction may be performed. Hymen revision aims to reconstruct the torn hymenal remnants to their original virginal position so that bleeding can occur during sexual penetration.

Cervical or endometrial polyps, hyperplasia, and neoplasms may present as abnormal uterine bleeding or increased endometrial thickness. Consequently, endoscopic procedures such as hysteroscopy and vaginoscopy are essential for diagnosis and treatment. Additionally, transvaginal methods may be required for oocyte retrieval and cyst drainage in fertility preservation cases. However, due to the societal importance attached to virginity, patients often avoid these procedures, fearing the loss of virginity. Surgery through the vagina in women with intact hymen is technically challenging and requires a highly skilled surgeon.[4]

This study had two objectives. First, we aimed to evaluate transvaginal gynecological procedures in virgin women and assess the feasibility of preserving the hymen during these procedures. Second, we aimed to evaluate hymenal

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revision and healing in women whose hymen ruptured during transvaginal gynecological procedures. Our findings demonstrated that transvaginal procedures can be safely performed in patients with intact hymens while preserving virginity. This ensures that medically necessary gynecological procedures are neither denied nor delayed for these patients.

METHODS

This retrospective study was approved by the local ethics committee of Bolu İzzet Baysal State Hospital (approval number: 2024/317, date: 05.11.2024). It involved a retrospective analysis of transvaginal procedures performed on 154 patients with intact hymens who presented to a private clinic for fertility procedures between 2012 and 2024.

The study included all virgin women with annular and crescentic hymens undergoing transvaginal procedures. For the transvaginal endoscopic procedures, a 2.9 mm rigid telescope with a 30° angle and a 3.5 mm working sheath diameter was used (Karl Storz, Germany). The procedure was conducted using a vaginoscopic technique through the suburethral area of the hymenal ring. An assistant ensured that the hysteroscope was correctly positioned and the hymen remained intact.

All virgin patients who underwent transvaginal procedures were included in the study. Cases with septate hymens (n=2), vaginal septa (n=3), and cribriform hymens (n=1) were excluded from the analysis, as hymen tears were unavoidable in these cases.

The patients' ages, complaints, indications for the gynecological procedures, duration and outcomes of the procedures, and types of anesthesia administered during the procedures and hymenoplasties were recorded. Outcome variables included the incidence of hymen rupture by procedure and the results of hymenoplasties performed. For patients who underwent hymen revision, hymenal edges were trimmed using the Goodman technique and sutured end-to-end with 3.0 Vicryl sutures.[5]

Statistical Analysis

Data management and analysis were performed using the Statistical Package for the Social Sciences version 23.0 (SPSS Inc., USA). The obtained data were analyzed using percentages and the chi-squared test. Results were evaluated at a 95% confidence interval, and $p<0.05$ was considered statistically significant.

RESULTS

This study included 154 virgin patients who underwent transvaginal gynecological procedures, with their files retrospectively reviewed. The transvaginal procedures were categorized as endoscopic treatments and diagnostic procedures, including vaginoscopy, office hysteroscopy, transvaginal ultrasound-guided oocyte retrieval, and ovarian cyst drainage.

The patients were divided into three groups based on age: adolescent (n=17), reproductive age (n=124), and postmenopausal (n=13). The adolescent group was defined as ages 13-18 years. The mean age of the patients was 32±7.3 years (range: 13-61). The transvaginal procedures performed included oocyte pick-up (OPU), ovarian cyst drainage, endometrial polyp/biopsy, cervical polyp/biopsy, and removal of suspicious foreign substances. The most common procedure in the adolescent and postmenopausal groups was endometrial biopsy or polyp removal. In the reproductive age group, OPU was the most common procedure (Table 1).

Among the 154 virgin patients, transvaginal procedures were performed with the hymen remaining intact in 126 patients. Hymen rupture occurred in 28 patients: 21 during OPU, 3 during cyst drainage, and 4 during hysteroscopy. All 21 patients who underwent vaginoscopy had intact hymens following the procedure. The p value between transvaginal gynecological procedures and hymen rupture was 0.05.

Hymen rupture was also analyzed by age group. Two of the 17 adolescent patients, 21 of the 124 reproductive-age patients, and 5 of the 13 postmenopausal patients experienced hymen rupture during the procedures. The statistical difference in hymen rupture across age groups was p=0.05 (Table 2).

A total of 107 patients underwent OPU and cyst drainage procedures. These patients were grouped under transvaginal ultrasonography-guided procedures. Among these 107 patients, 62 had annular hymens, and 45 had crescentic hymens. Hymen rupture occurred in 19 of 62 patients with annular hymens and 5 of 45 patients with crescentic hymens. During transvaginal ultrasonography-guided procedures, patients with annular hymens were significantly more likely to experience hymenal rupture than those with crescentic hymens ($p<0.05$).

A total of 47 patients underwent vaginoscopy and hysteroscopy, categorized as endoscopic procedures. Among these 47 patients, hymen rupture occurred in 4 patients, all of whom had annular hymens. In patients with crescentic hymens who underwent endoscopic procedures, the hymens remained

Table 1. The indications of gynecological procedures in virgin women according to age group

Indication/goal of the procedure	Adolescents, (n=17) (%)	Reproductive age, (n=124) (%)	Postmenopausal, (n=13) (%)
Oocyte pick-up	1 (5.8)	93 (75)	0
Ovarian cyst drainage	1 (5.8)	9 (7.2)	3 (23)
Endometrial polyp/biopsy	6 (35.2)	13 (10.4)	7 (53.8)
Cervical polyp/biopsy	5 (29.4)	8 (6.4)	3 (23)
Suspected foreign material	4 (23.5)	1 (0.8)	0

intact. There was no significant difference in hymen rupture by hymen type in the endoscopic procedure group (p>0.05) (Table 3).

Among the 28 women with ruptured hymens, 2 were in the adolescent group and requested hymenoplasty. In the reproductive-age group, 21 women experienced hymen rupture, and 8 requested hymenoplasty. None of the 5 patients in the postmenopausal group who experienced hymen rupture requested hymenoplasty. Thirteen women of reproductive age who did not request hymen revision were provided with a medical report stating that the transvaginal procedure was performed due to medical necessity.

A total of 10 patients underwent hymen revision. A second revision was required in 3 of these patients. Revisions were performed again using end-to-end trimming and suturing techniques. Among the 7 cases that healed, 5 showed complete hymen healing, while 2 exhibited partial healing.

DISCUSSION

Virginity is essential in many religions and cultures worldwide. For this reason, the preservation of the hymen is seen as a socio-cultural and religious necessity for many people. The hymen typically ruptures during the first sexual intercourse, resulting in bleeding. For women who have not engaged in sexual intercourse, it is important that the hymen remains intact. Medical approaches should consider this cultural sensitivity, and necessary medical procedures should be performed accordingly.

The importance of virginity varies socio-culturally across societies. Consequently, there are fewer publications on this topic. This study primarily aimed to evaluate the preservation of the hymen according to age, the reason for the procedure, and the type of hymenal structure. Secondly, we sought to analyze the method and success of hymenoplasty in cases where hymen rupture occurred during transvaginal medical procedures. Hymen repair can be performed using primary repair, the lateral wall flap technique, the submucosal suture technique, and the cerclage technique.[5] In this study, hymen revision was achieved using primary repair.[1]

Endometrial polyps are benign tumors that cause symptoms such as abnormal uterine bleeding and infertility, which are common among women of reproductive age. Treatment options include conservative, medical, or surgical methods. Removal of cervical or endometrial polyps via hysteroscopy is a radical approach, but its application in virgin patients requires experience and skill.[5] There are few publications on hysteroscopic procedures in patients with intact hymens.

In 2019, a study conducted in Taiwan reported the hysteroscopic outcomes of 836 patients, with all procedures completed while preserving the hymen.[6] Another study involving 14 patients with intact hymens successfully diagnosed and treated endometrial changes.[7] A separate retrospective analysis of 32 patients found that endometrial and cervical polyps were excised while preserving the hymen in all cases.[5] In our study, hymen rupture was observed in four out of 47 patients who underwent hysteroscopy/vaginoscopy. No complications, such as cervical trauma, uterine perforation, or transurethral

Table 2. Hymenal tears according to procedure and age group

Variable	Hymen tear, (n=28)	No hymen tear, (n=126)	p
Procedure			
Oocyte pick-up, (n=94) n (%)	21 (22.4)	73 (77.6)	0.05
Cyst drainage, (n=13) n (%)	3 (23)	10 (76.9)	
Hysteroscopy, (n=26) n (%)	4 (15.3)	22 (84.6)	
Vaginoscopy, (n=21) n (%)	0	21 (100)	
Age group			
Adolescent, (n=27) n (%)	2 (7.4)	25 (92.5)	0.05
Reproductive age, (n=124) n (%)	21 (16.9)	103 (83)	
Postmenopausal, (n=13) n (%)	5 (38.4)	8 (61.5)	
*Chi-square test			

Table 3. Hymenal tears according to the procedure and hymen type

Variable			p
Transvaginal ultrasound, (n=107)	**Hymentear, (n=24)**	**No tear, (n=83)**	
Annular hymen, (n=62) n (%)	19 (30.6)	43 (69.4)	0.01
Crescentic hymen, (n=45) n (%)	5 (11.1)	40 (8.9)	
Endoscopic procedure (n=47)	**Hymentear, (n=4)**	**No tear, (n=43)**	
Annular hymen, (n=26) n (%)	4 (15.4)	22 (84.6)	0.1
Crescentic hymen, (n=21) n (%)	0	21 (100)	
*Chi-square test			

resection of the prostate syndrome, were reported in any of the patients.

Various methods are used for OPU in vitro fertilization (IVF), including laparoscopic, transvaginal ultrasound-guided, and transabdominal ultrasound-guided approaches. While oocyte collection was initially performed laparoscopically during the early years of IVF, the transvaginal method has since gained widespread preference. The advantages of the transvaginal approach include better visualization of the ovaries, shorter access distance, the use of sedation instead of general anesthesia, reduced risk of bowel injury, faster recovery, and lower costs.[8]

In 2024, Fakih et al.[9] conducted a study involving 105 patients in the United Arab Emirates, where the transrectal method was employed for oocyte collection in virgin patients. In Turkey, a 2020 study with 64 patients reported the use of a vaginal ultrasound probe for transabdominal oocyte collection.[10] Considering the benefits of the transvaginal approach, its application in virgin women becomes increasingly significant. In this study, we wanted to show that transvaginal techniques can be performed in virgin patients while preserving their hymen and respecting socio-cultural sensitivities.

Cyst drainage and oocyte collection procedures were performed under transvaginal ultrasound guidance. In 2007, it was reported that a cyst drainage procedure in a virgin patient with a vaginal Mullerian cyst was performed via hymenotomy.[11] To date, no hymen-preserving transvaginal ultrasound-guided studies have been published in the literature. In this respect, the results of our research are valuable for their contribution to the literature.

In transvaginally guided cyst drainage and OPU procedures, the hymen remained intact in 83 out of 107 patients. Compared to endoscopic procedures such as hysteroscopy and vaginoscopy, a statistically significant rate of hymen rupture was observed in these cases.

Ten out of the 28 women with ruptured hymens requested hymenoplasty. Although the hymen has no physiological function, hymenoplasty is performed to restore its ability to bleed during sexual intercourse. In our study, hymen repair following rupture during medical procedures was performed because patients wanted to demonstrate their virginity before marriage. These operations, aimed at restoring pre-marital virginity, are ethically and morally debated among physicians. Some gynecologists argue that performing non-essential surgeries for social reasons may be deceptive and misleading. Conversely, others view hymenoplasty as a woman's right to control her body, emphasizing its role in emotional well-being and social welfare.[12]

Study Limitations

The strength of this study lies in its focus on hymen-preserving surgical techniques, which are underrepresented in the literature. However, its limitation is the inability to monitor the long-term success of hymen reconstruction and to compare different surgical techniques and methods.

CONCLUSION

Hymen-preserving methods can be applied during transvaginal gynecological procedures, especially in societies where virginity holds significant cultural importance. However, preserving the hymen during such procedures requires considerable skill and experience. The limited studies available on hymen-preserving techniques highlight the significance of this research in providing guidance for future surgical practices.

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Ethics

Ethics Committee Approval: This retrospective study was approved by the local ethics committee of Bolu İzzet Baysal State Hospital (approval number: 2024/317, date: 05.11.2024).

Informed Consent: Retrospective study.

Authorship Contributions

Surgical and Medical Practices: N.E.A., F.D., N.M.E., Concept: N.E.A., F.D., Design: F.D., N.M.E., Data Collection or Processing: N.E.A., N.M.E., Analysis or Interpretation: F.D., Literature Search: N.E.A., N.M.E., Writing: N.E.A.

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