

A Comparison between Anteroposterior Colporrhaphy and Erbium YAG Laser Interventions in the Treatment of Postpartum Stress Urinary Incontinence: Promising Win for the Erbium YAG laser

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ABSTRACT

Background: Stress urinary incontinence (SUI) is a well-known health issue that affects the lifestyle quality of women after childbirth with a high prevalence rate. Pregnancy is considered the principal risk initiator of SUI.

Objectives: The present comparative clinical study was conducted to evaluate the effectiveness of both anteroposterior colporrhaphy (APCP) and Erbium YAG laser (EYL) interventions in the treatment of SUI after childbirths.

Patients and interventions: For the current investigation, 95 female patients who had visited the private obstetrics and gynecology clinic of the current researcher were randomly assigned as 45 moderate-case patients for the APCP that needed only a one-time procedure and 50 mild-to-moderate-case patients for the EYL, which required 3-7 sessions/two weeks apart. Follow-up visits of these patients were performed to monitor their health status and results for up to six months. **Results:** The EYL intervention showed overall favorite outcomes over these from APCP. EYL revealed significant ($p < 0.01$) of no complications such as post-procedure pain (PPP) and post-procedure vaginal bleeding (PPVB), but 45 (100%) and 6 (13.3%) patients from APCP had these symptoms, respectively. Besides, patients who had the EYL treatment significantly ($p < 0.01$) did not need bed rest and sexual withdrawal after the procedure at all; however, all cases from the APCP intervention needed bed rest and sexual withdrawal as part of the post-operative care. Significantly ($p < 0.01$), none of the EYL patients had dyspareunia symptoms while they appeared in 4 (8.9%) of the APCP patients. Relief of symptoms was seen in a comparable outcome with a significant ($p < 0.01$) slight difference in favor of the APCP over the EYL intervention, 43 (95.6%), and 41 (82%), respectively. Moreover, recurrence of the SUI over the six-month follow-up surveillance was noticed to be in close results with a significant ($p < 0.01$) small margin in favor of the APCP over the EYL procedure, 2 (4.4%) and 3 (6%), respectively.

Conclusion: The Erbium YAG laser could be the best choice for treating SUI to avoid the profound post-operative care and appearance of the complications when using the anteroposterior colporrhaphy.

Keywords: Colporrhaphy, Erbium YAG laser, Stress urinary incontinence.

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INTRODUCTION

The most frequent form of urinary incontinence (UI) in pregnant women is stress urinary incontinence (SUI), the allegation about unintentional leakage of urine in exercise, physical exercise, or sneezing or coughing. Currently, 54.3% of all pregnant women are considered to have adverse impacts on quality of life (QoL) in four areas: physical exercise, transport, social interactions, and emotional wellbeing. The statistically important lower QoL for pregnant women with IU than for women without IU is reached during pregnancy. Incontinent pregnant women's QoL rises with an improved gestational age to term. Incontinence in pregnant women with urgency (UUI) or mixed (MUI) was higher than in those with SUI alone. QoL values on the physical, social, and emotional fields were small, and mobility and discomfort levels were stronger, which indicates a limited lifestyle range. The discomfort with lower urinary tract symptoms (LUTS) that usually noticed at 36 weeks of gestation and remained a concern for one year after childbirth. Of significance, the SUI of older maternal classes, which was present at a period of twelve weeks of birth with the involvement of ambiguous LUTs. Both were at 1 year after childbirth the predictive element of ambiguous SUI. According to the literature, at the end of a year of childbirth, the cesarean section appeared to be shielding bothersome SUI (1-6). UI has been documented to harm social interactions. It has

been discovered that UI influences sexual life. While SUI incidence rises from the first to the third trimester and over 36 weeks of gestation with pregnancy growth, 16.9 percent of pregnant women experience moderate to extremely difficult UIs. That being said, UI was observed to have a slight impact on the QoL of pregnant women. This could be attributed to not serious IU symptoms. Pregnant women prefer to view this as a typical pregnancy discomfort and postpartum delivery effects. It was recognized that depressive symptoms and SUI were dramatically greater throughout pregnancy than after delivery. The elevated risk of lifelong incontinence before or after postpartum life is also a significant influence of pregnancy-related UIs. Many reports have identified the greater likelihood of postpartum UI in pregnant women than in non-IU women during pregnancy. The common risk factors for SUI progression throughout pregnancy are pregnancy and delivery-linked elements (7-11). Like appendectomy and tonsillectomy, Anteroposterior colporrhaphy (APCP) is known as a normal treatment and is practiced around the world. In the United States, over 200,000 pelvic organs prolapse procedures are conducted yearly, and APCP accounts for 81%. The APCP theory is built on the vesicovaginal fascia's plication in the midline to strengthen the existing wall between the vagina and the bladder. But does a "norm" really exist, and are we talking around a similar procedure when we talk about this

operation which often occurs in prolapses? APCP has been a practice for many years, but not a single step has ever really been standardized in our understanding. There is no detailed definition even in many of the surgery textbooks and there are no international guiding rules (12). The current comparative clinical study was conducted to evaluate the effectiveness of both anteroposterior colporrhaphy (APCP) and Erbium YAG laser (EYL) interventions in the treatment of SUI after childbirths.

PATIENTS AND PROCEDURE

Ethics and consents

The researcher has completely fulfilled the ethical requirement approvals for working on human individuals by obtaining the completed patient consent and institutional release forms.

Patients

For the current investigation, 95 female patients who had visited the private Obstetrics and Gynecology Clinic of the current researcher were randomly assigned as 45 moderate-case patients for the APCP that needed only a

one-time procedure and 50 mild-to-moderate-case patients for the EYL, which required 3-7 sessions/two weeks apart. Follow-up visits of these patients were performed to monitor their health status and results for up to six months. The study was done from March 2018 to September 2019. The APCP interventions needed general anesthesia or spinal block in 28 (62.2%) and 17 (37.8%), respectively.

Statistics

The mean±SD was presented in the graphs constructed by Prism GraphPad v7 (California, USA). The confidence rate used was 99%.

RESULTS

The EYL intervention showed overall favorite outcomes over these from APCP. EYL revealed significant ($p < 0.0001$) of no complications such as post-procedure pain (PPP), Fig.1, and post-procedure vaginal bleeding (PPVB), Fig. 2, but 45 (100%) and 6 (13.3%) patients from APCP had these symptoms, respectively.

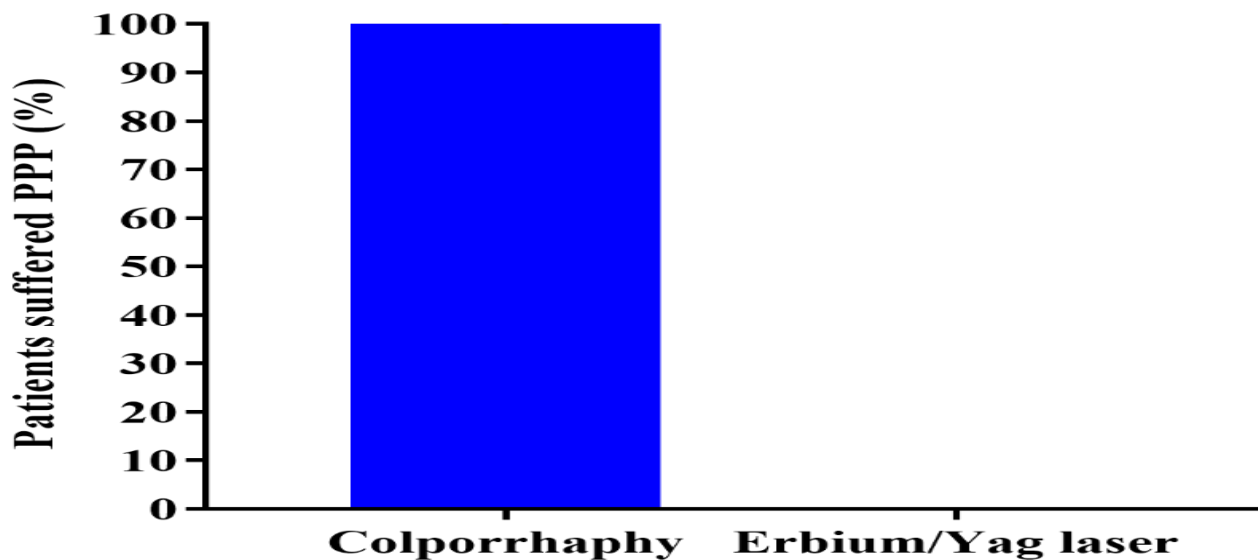


Figure 1: Post-procedure pain comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

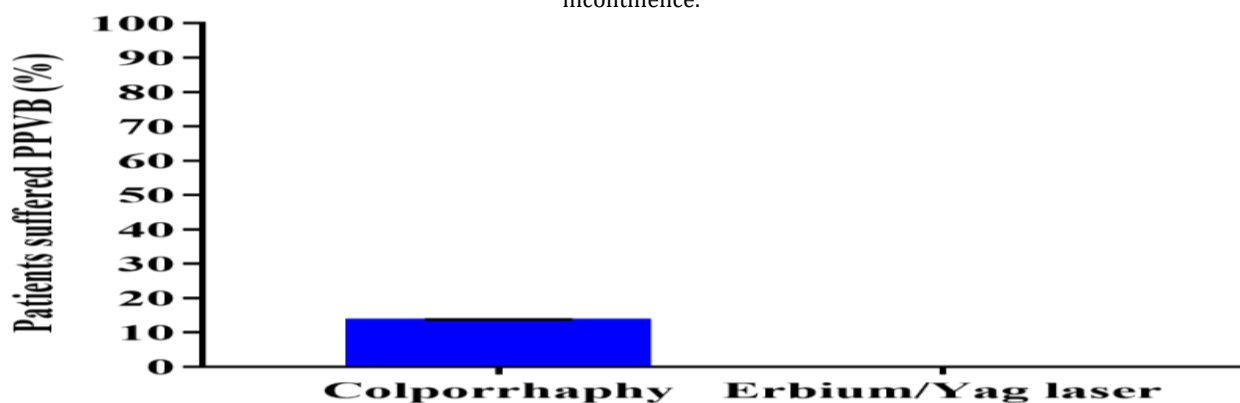


Figure 2: Post-procedure vaginal bleeding comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

Besides, patients who had the EYL treatment significantly ($p < 0.0001$) did not need bed rest, Fig. 3, and sexual withdrawal, Fig. 4, after the procedure at all; however, all cases from the APCP intervention needed bed rest and sexual withdrawal as part of the post-operative care.



Figure 3: Post-procedure bed rest comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

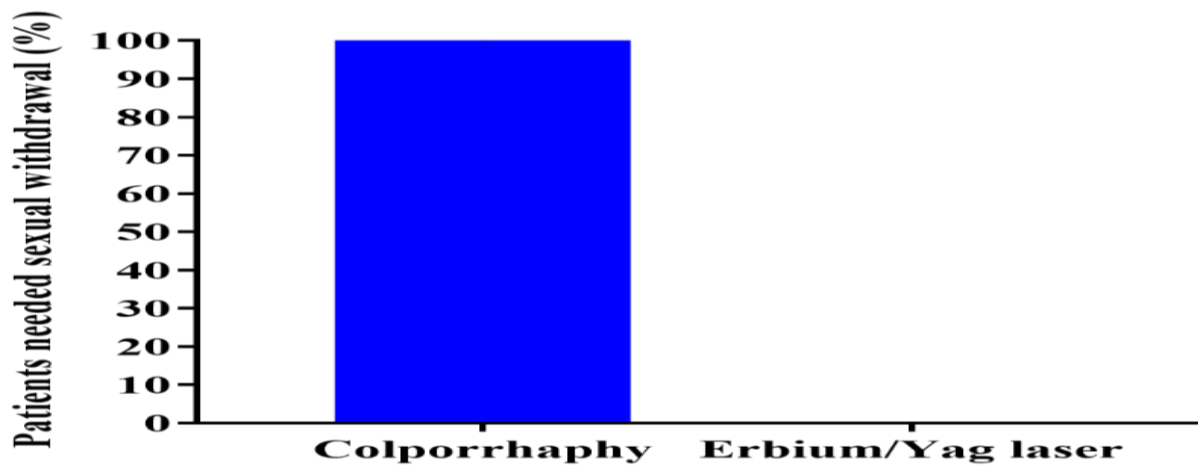


Figure 4: Post-procedure sexual withdrawal comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

Significantly ($p < 0.0001$), none of the EYL patients had dyspareunia symptoms while they appeared in 4 (8.9%) of the APCP patients, Fig. 5.



Figure 5: Post-procedure dyspareunia comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

Relief of symptoms was seen in a comparable outcome with a significant ($p < 0.0001$) slight difference in favor of the APCP over the EYL intervention, 43 (95.6%), and 41 (82%), respectively, Fig. 6.

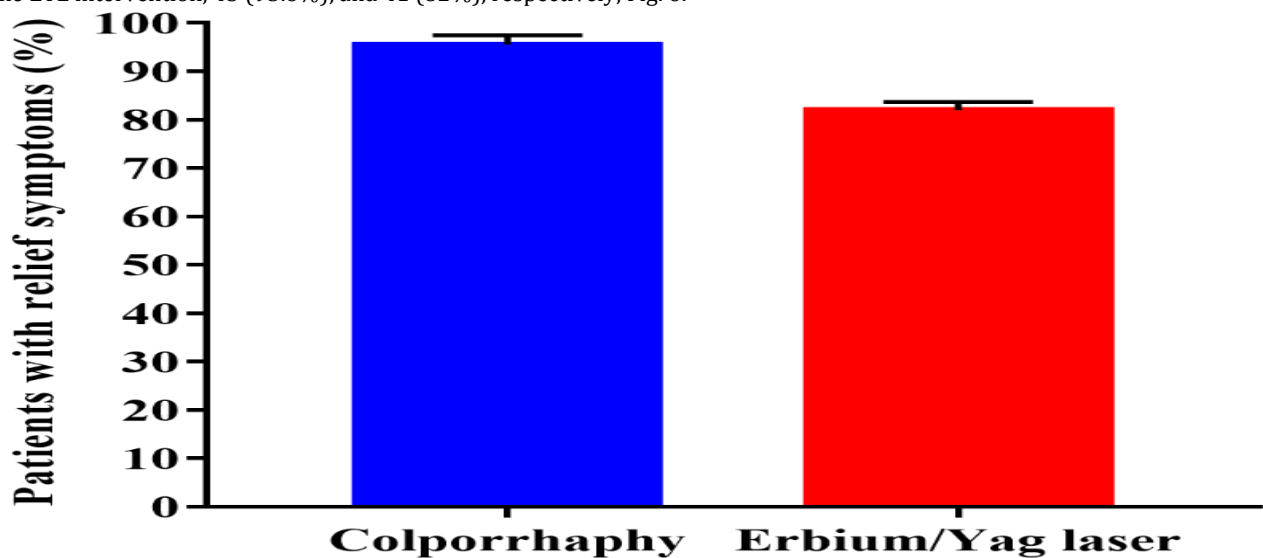


Figure 6: Post-procedure symptom relief comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

Moreover, recurrence of the SUI over the six-month follow-up surveillance was noticed to be in close results with a significant ($p < 0.0001$) small margin in favor of the APCP over the EYL procedure, 2 (4.4%) and 3 (6%), respectively, Fig. 7.



Figure 7: Recurrence of stress urinary incontinence (SUI) comparison between colporrhaphy and Erbium/Yag Laser in the treatment of stress urinary incontinence.

DISCUSSION

It is critically important to select the best medical intervention that involves no or limited amount of preparation and post-operative care and complications. In the current study, the EYL provided a preferable choice to perform an SUI medical treatment that carried no complications with no intensive care that usually follows the use of the APCP procedure. In a new, detailed historical analysis, the APCP has been around for about 150 years and recurrence rates seem close to those of the last century. The estimated failure rates represent a large variety in the literature, from 0 to 92 percent. In medical science, the very disappointing dispersion of findings for this long-time activity called a 'norm' did not go unnoticed.

Members of the Dutch Urogynecological Community have tested APCP techniques. Their results revealed that the cystocele repair technique displays considerable variation even within a limited, specialist community of urogynecologists in a single region. Pre-operative assessment, intraoperative phase differences, and post-operative follow-up plans are also varied (13,14). So, the need for a better choice to treat SUI urges to test completely different treatments such as the utilization of laser interventions.

In the present work, EYL showed promising results in perioperative preparation such as the use of general anesthesia and spinal block. EYL did not need any of these pain-relief techniques. This was the opposite in the case of

APCP. Preoperative/perioperative antibiotics were applied in 23 trials (57.5 percent). The residual studies did not have antibiotic management results. Seventeen of 23 experiments offered a time-limited antibiotic treatment: 14 studies performed single-shoot antibiotics in 2 days or 3 days in each. In 11 studies (27.5%), information was provided about the antibiotic type. The first generation (cefazolin) was used in two types of research, the second generation (cefuroxime) was used in one work, and the third generation was used in one trial. Cephalosporins were utilized in four experiments. Two experiments have been performed with ampicillin + clavulanic acid (15–24). Since the APCP procedure is a surgical technique that involves the induction of incisions and suturing, pain and bleeding could be a set of complications that follow up the use of this procedure. EYL revealed no PPP or PPVB in all cases. Kuszka *et al.*, (25) showed that APCP can successfully be used in treating mild and moderate cases of SUI, and this agrees with the current results when the used technique was able to treat mild to moderate levels of SUI in the studied women. After 6–24 months of follow-ups, Kuszka *et al.*, (25) showed that the recovery rates for the SUI I were 53%, 69%, 72%, and 66%. In the case of SUI II, the rates were 31%, 63%, 69%, and 50%. Only a single case of SUI III revealed improvement after using 2 to 4 EYL sessions. The authors concluded that EYL could be more successful after 4 to 5 sessions with follow-ups of six- and 24-month time-points. It is highly demanded that patients undergo APCP need post-operative bed rest and sexual withdrawal. This is the opposite of the EYL, in which all cases did not need any of these critical requirements (25). Dyspareunia was shown in the APCP patients but not in the EYL patients. This symptom can occur when using the posterior repair, which can elevate the pain feeling while or after doing sexual intercourse (26).

CONCLUSION

The Erbium YAG laser could be the best choice for treating SUI to avoid the profound post-operative care and appearance of the complications when using the anteroposterior colporrhaphy.

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