

Comparative Analysis of PRP and TVT-O in Urinary Incontinence Surgery

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Annotation: Urinary incontinence (UI) is a prevalent condition affecting women, significantly impacting their quality of life. This study aims to evaluate the effectiveness of three surgical approaches: Group 1 - front and rear vaginal wall repair, Group 2 - urosling TVT-O combined with plastic, and Group 3 - PRP therapy combined with TVT-O. While the TVT-O procedure is widely recognized as a standard treatment for stress urinary incontinence (SUI), the potential benefits of adjunct therapies like PRP remain underexplored, creating a gap in current knowledge.

This study employed a comparative analysis of outcomes across these three groups, assessing factors such as the reduction in incontinence, complication rates, patient satisfaction, and recovery time. Preliminary findings suggest that PRP therapy combined with TVT-O (Group 3) may offer enhanced healing and improved long-term outcomes compared to the other methods. However, the results also indicate variability in patient responses, highlighting the need for individualized treatment plans.

The study's results imply that integrating regenerative therapies like PRP into standard surgical procedures could potentially revolutionize treatment protocols for UI. Future research should focus on larger-scale studies to validate these findings and further explore the mechanisms through which PRP contributes to tissue regeneration in the context of urinary incontinence surgery. The insights gained from this study could inform clinical practices, leading to improved patient outcomes and advancing the field of gynaecological surgery.

Keywords: Urinary incontinence, Stress urinary incontinence (SUI), PRP therapy, Transobturator tape (TVT-O), Vaginal wall repair, Surgical treatment.

Introduction. Urinary incontinence (UI) is a significant health issue affecting millions of women worldwide, particularly those who have undergone childbirth or are experiencing menopausal changes. This condition impacts both physical and psychological well-being, leading to a diminished quality of life. Surgical interventions often become the primary treatment option when conservative methods fail, with various techniques employed to address different aspects of UI. In Samarkand, Uzbekistan, the treatment of stress urinary incontinence (SUI) has traditionally relied on methods such as anterior and posterior vaginal wall repair (colporrhaphy). However, newer techniques like the transobturator tape (TVT-O) procedure, which provides mid-urethral support, are gaining traction. Recently, there has been growing interest in combining these established surgical methods with regenerative therapies, such as Platelet-Rich Plasma (PRP), to enhance outcomes and reduce complications.

This study is grounded in the theory of tissue regeneration and repair, where PRP, rich in growth factors, is known to promote healing and tissue regeneration across various medical fields. Theoretically, combining PRP with the structural support provided by the TVT-O procedure could enhance the healing process, reduce recovery times, and improve overall effectiveness in treating SUI. While the efficacy of the TVT-O procedure has been extensively documented, studies on the use of PRP in conjunction with UI surgeries are limited, focusing primarily on its regenerative properties in other medical contexts like orthopedics and dermatology. This gap in the literature underscores the need for research exploring whether the addition of PRP can significantly enhance surgical outcomes, reduce complications, and lead to better long-term results for patients.

This study aims to assess the effectiveness of PRP therapy in combination with the TVT-O procedure compared to traditional surgical methods, such as anterior and posterior vaginal wall repair, and TVT-O combined with plastic. By evaluating the reduction in incontinence, patient satisfaction, complication rates, and recovery times across the three groups, this research seeks to determine the potential advantages of PRP in enhancing surgical success. The novelty of this study lies in its exploration of the synergistic effects of PRP therapy and TVT-O surgery in the treatment of SUI, a combination that has not been extensively studied before. The expected result is that PRP, when used with TVT-O, will provide superior outcomes compared to traditional methods, offering a promising new approach for improving surgical success in urinary incontinence treatment.

Methodology. This study used a prospective, comparative cohort design to evaluate the effectiveness of three surgical treatments for stress urinary incontinence (SUI) in 150 women. Participants were randomly assigned to one of three groups: Group 1 underwent traditional anterior and posterior vaginal wall repair, Group 2 received the TVT-O procedure combined with plastic surgery, and Group 3 received TVT-O combined with PRP therapy. Outcomes measured included reduction in incontinence, patient satisfaction, complication rates, and recovery time, with data collected at baseline and at multiple follow-up intervals over 12 months. Statistical analysis was conducted using ANOVA and Chi-square tests to compare the groups. The study was ethically approved, and informed consent was obtained from all participants.

Results. The comparative analysis of the three treatment groups revealed significant differences in the effectiveness of the surgical interventions for stress urinary incontinence (SUI). Group 3, which received the TVT-O procedure combined with PRP therapy, demonstrated the most substantial improvement in urinary continence, with an average reduction in incontinence episodes of 85% as measured by the 24-hour pad test. Group 2, which underwent the TVT-O procedure combined with plastic surgery, showed a 75% reduction, while Group 1, which underwent traditional anterior and posterior vaginal wall repair, showed a 60% reduction.

Patient satisfaction was highest in Group 3, with 90% of participants reporting 'very satisfied' or 'satisfied' with their outcomes, compared to 80% in Group 2 and 65% in Group 1. Complication rates were lowest in Group 3, with only 5% of participants experiencing minor adverse events, such as temporary urinary retention, compared to 10% in Group 2 and 15% in Group 1. Recovery time was also shortest in Group 3, with an average return to normal activities within 4 weeks, compared to 6 weeks in Group 2 and 8 weeks in Group 1.

Discussion. The findings of this study suggest that combining PRP therapy with the TVT-O procedure offers significant advantages over traditional methods and the TVT-O combined with plastic surgery in the treatment of SUI. The superior outcomes in Group 3 can be attributed to the regenerative properties of PRP, which likely enhanced tissue healing and provided better structural support around the urethra. This supports the theoretical basis that PRP, rich in growth factors, promotes tissue repair and could be a valuable adjunct in surgical interventions for SUI.

The lower complication rates and faster recovery times in Group 3 further underscore the potential benefits of integrating PRP into SUI treatment protocols. These results suggest that PRP not only improves surgical outcomes but also reduces the burden on patients in terms of postoperative recovery and the risk of complications.

Despite the positive results, there remains a significant knowledge gap regarding the precise mechanisms through which PRP enhances tissue regeneration in the context of SUI surgery. Understanding these mechanisms could lead to more targeted applications of PRP and the development of new therapeutic strategies. Additionally, there is limited information on patient-specific factors, such as age, hormonal status, and baseline tissue quality, that may influence the effectiveness of PRP therapy.

Conclusion: In conclusion, the combination of PRP therapy with the TVT-O procedure shows great potential as an advanced treatment for SUI, offering improved outcomes, reduced complications, and

faster recovery times compared to traditional methods. Further research is essential to validate these findings and to fully understand the mechanisms at play, paving the way for the broader adoption of PRP in gynaecological surgery.

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