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Effectiveness Of Treatment of Dysbiosis of the Artificial Vagina After Sigmoidal Colpopoesis in Dynamics

Ahmedov Zarif Shamsiddinovich[1], Negmadjanov Bahodur Boltaevich[2]

[1]Basic Doctoral Student, Department of Obstetrics and Gynecology No. 2, SamSMU.

[2]Professor, Department of Obstetrics and Gynecology No. 2, Samarkand State Medical University.

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ABSTRACT

Dysbiosis of the artificial vagina after sigmoidal colpopoesis is a complex and understudied issue in gynecological practice. This study evaluates the effectiveness of various treatments for dysbiosis in patients who have undergone sigmoidal colpopoesis. The study aims to identify the most effective therapeutic strategies, focusing on bacterial composition, prevention of infection, and recovery of the vaginal microflora in the post-operative period. The results suggest that a combined approach, including antibiotic therapy and probiotics, shows the highest effectiveness in restoring the natural balance of microflora and improving the patients' quality of life. The study emphasizes the importance of personalized treatment plans based on individual patient conditions and microbial profiles.

Keyword: *Dysbiosis, artificial vagina, sigmoidal colpopoesis, treatment effectiveness, bacterial microflora, gynecology, postoperative recovery*

1. INTRODUCTION

Sigmoidal colpopoesis, a surgical procedure that involves the construction of an artificial vagina using part of the sigmoid colon, is often employed in patients who suffer from congenital or acquired vaginal agenesis. However, one of the significant complications following this procedure is dysbiosis of the newly created vaginal canal. Dysbiosis refers to an imbalance in the microbial flora, leading to infections, discomfort, and long-term health problems for the patient. Despite advances in surgical techniques, the management of post-operative dysbiosis remains a challenge.

The aim of this study is to evaluate the effectiveness of various treatment options for dysbiosis in patients post-sigmoidal colpopoesis and identify strategies that can ensure successful rehabilitation. By examining the role of antibiotics, probiotics, and other therapeutic approaches, this study seeks to provide a comprehensive understanding of the issue.

2. MATERIALS AND METHODS

This study was conducted at the Department of Obstetrics and Gynecology No. 2, Samarkand State Medical University, from 2020 to 2023. A total of 100 patients who underwent sigmoidal colpopoesis were included in the study. Patients were divided into two groups: the experimental group (treatment group) and the control group.

Inclusion Criteria:

Patients who underwent sigmoidal colpopoesis.

A diagnosis of dysbiosis confirmed through vaginal cultures and microbiological analysis.

Age between 18 and 50 years.

Exclusion Criteria:

Patients with chronic systemic diseases.

Patients with active cancer or immunodeficiencies.

The experimental group received a combined treatment regimen consisting of:

Antibiotic therapy (e.g., metronidazole, doxycycline) to control bacterial overgrowth.

Probiotics (e.g., Lactobacillus, Bifidobacterium) to restore vaginal flora.

Topical antiseptics for local infection prevention.

The control group received only antibiotic therapy without probiotics or any other adjunct treatment

Table 1: Demographics of Study Participants

Parameter	Experimental Group (n = 50)	Control Group (n = 50)
Age (Mean ± SD)	32.5 ± 7.2	33.0 ± 6.9
Duration of Follow-up	12 months	12 months
Preoperative Dysbiosis Rate (%)	100% (50 patients)	100% (50 patients)
Age Range	18-50 years	18-50 years
Postoperative Complications (%)	15% (7 patients)	30% (15 patients)

Table 2: Microbiological Analysis Results (Vaginal Flora Composition)

Microbial Species	Preoperative (n = 50)	3 Months Post-Op (Experimental Group)	3 Months Post-Op (Control Group)	12 Months Post-Op (Experimental Group)	12 Months Post-Op (Control Group)
Lactobacillus spp.	10%	60%	35%	75%	40%
Gardnerella vaginalis	45%	15%	35%	10%	25%
Escherichia coli	25%	5%	10%	2%	8%
Bifidobacterium spp.	5%	25%	10%	30%	12%
Streptococcus spp.	10%	10%	15%	12%	18%
Candida spp.	5%	2%	5%	1%	6%

Methods of Evaluation

Microbiological analysis of vaginal swabs was performed preoperatively and at three, six, and twelve months postoperatively.

Clinical evaluations, including patient-reported symptoms (pain, discharge, discomfort), were recorded.

Quality of life was assessed using a validated questionnaire.

3. RESULTS AND DISCUSSIONS

The study demonstrated a significant improvement in the experimental group compared to the control group. Microbiological analysis revealed a restoration of normal vaginal flora in 70% of patients in the experimental group, while only 40% in the control group showed similar improvements ($p < 0.05$). Additionally, patients in the experimental group experienced fewer complications such as infections, discomfort, and vaginal atrophy.

Table 3: Symptom Relief (Percentage of Patients Reporting Improvement)

Symptom	Experimental Group (n = 50)	Control Group (n = 50)
Pain (post-coital or during activity)	80% (40 patients)	50% (25 patients)
Abnormal vaginal discharge	70% (35 patients)	45% (22 patients)
Vaginal discomfort	75% (37 patients)	55% (27 patients)
Dryness/atrophy	85% (43 patients)	60% (30 patients)
Overall Satisfaction	90% (45 patients)	55% (28 patients)

Symptom Relief:

The majority of patients in the experimental group reported a significant reduction in pain (80%), abnormal discharge (70%), and discomfort during sexual activity (75%). In contrast, the control group had a slower recovery, with only 50% of patients experiencing relief from these symptoms after 12 months.

Microbiological Results

The experimental group exhibited a higher proportion of patients with a balanced microbial profile, with an increase in Lactobacillus species and a decrease in pathogenic bacteria such as Gardnerella vaginalis and Escherichia coli. In contrast, the control group showed persistent dysbiosis, with a higher prevalence of pathogenic microorganisms.

Patient Quality of Life:

The quality of life assessment showed that patients in the experimental group had a better overall experience, with improvements in both physical and emotional well-being. These patients reported feeling more comfortable and confident after their treatment regimen.

The results of this study suggest that a combined therapeutic approach is more effective in treating dysbiosis and promoting recovery compared to antibiotic therapy alone. Probiotics play a crucial role in restoring the natural balance of the vaginal microflora, which is essential for long-term health.

The results of this study underscore the importance of effectively managing dysbiosis in patients who have undergone sigmoidal colpopoesis, a surgical procedure aimed at constructing an artificial vagina for patients suffering from congenital or acquired vaginal agenesis. While sigmoidal colpopoesis has provided a promising solution for many patients, the development of dysbiosis in the artificial vagina remains one of the most significant post-operative complications. This condition not only compromises the structural integrity of the surgically created vagina but also leads to discomfort, infections, and a diminished quality of life. The findings of this research indicate that the treatment of dysbiosis requires a multifaceted approach, incorporating antibiotics, probiotics, and, in some cases, additional therapies to restore the normal microbial balance and reduce the risk of recurrent infections and related complications.

1. Importance of Dysbiosis Management After Sigmoidal Colpopoesis

Dysbiosis, which refers to an imbalance or disruption in the normal microbial community, can occur in the vaginal flora following sigmoidal colpopoesis. This imbalance can result from various factors, including the use of surgical materials, exposure to external pathogens, changes in the immune environment, and alterations in vaginal anatomy and microflora composition post-surgery. The artificial vagina, created using the sigmoid colon, does not have the same protective mechanisms as the natural vaginal canal, making it particularly vulnerable to infections and microbial imbalances.

Our study specifically examined the impact of dysbiosis and sought to identify effective treatments that could restore a healthy balance of bacteria in the artificial vagina. It was observed that a combination of antibiotic therapy and probiotics produced the best outcomes in reducing infection rates and restoring microbial stability. This finding highlights the necessity

of personalized treatment plans that take into account the unique microbial environment of each patient.

2. Key Findings of the Study

This study involved 100 patients, 50 in the experimental group and 50 in the control group. The experimental group received a combined treatment regimen, including antibiotics and probiotics, while the control group received only antibiotics. The findings demonstrated clear differences between the two groups, supporting the hypothesis that the combined therapy approach is superior in addressing dysbiosis and promoting long-term recovery.

Microbiological Results: In the experimental group, the proportion of patients showing restoration of normal vaginal flora (defined by the prevalence of Lactobacillus spp. and the reduction of pathogenic bacteria) was significantly higher than in the control group. Specifically, 75% of patients in the experimental group showed a balanced microbial profile at the 12-month follow-up, compared to only 40% in the control group. Furthermore, pathogenic organisms such as Gardnerella vaginalis and Escherichia coli were present in much lower proportions in the experimental group, indicating the efficacy of combined therapy.

Symptom Relief: The experimental group also experienced significant improvements in clinical symptoms, with 80% of patients reporting a reduction in post-coital pain, 70% reporting a decrease in abnormal discharge, and 75% experiencing less vaginal discomfort. These results were notably better than those in the control group, where only 50% of patients reported improvement in pain and 45% reported a reduction in abnormal discharge.

Postoperative Complications: The experimental group experienced fewer postoperative complications, including infections and recurrent dysbiosis. Only 5% of patients in the experimental group experienced vaginal infections, compared to 15% in the control group. Similarly, only 5% of patients in the experimental group experienced recurrent dysbiosis, compared to 10% in the control group.

Quality of Life: One of the most significant outcomes of this study was the improvement in patients' quality of life. Patients in the experimental group reported higher levels of satisfaction with both physical and emotional aspects of their recovery. A majority of patients in the experimental group felt that their sexual health and overall functioning were significantly improved compared to those in the control group, where satisfaction levels were lower.

4. IMPLICATIONS FOR CLINICAL PRACTICE

The results of this study provide valuable insights into the management of dysbiosis in patients who have undergone sigmoidal colpopoesis. The combination of antibiotic therapy and probiotics should be considered as a first-line approach for managing this condition. Given the critical role of the vaginal microflora in preventing infections and maintaining overall vaginal health, restoring a balanced microbial ecosystem is essential for ensuring the long-term success of the surgical procedure.

In clinical practice, it is important to recognize that no single treatment is universally effective for all patients. Treatment plans should be individualized based on the patient's specific microbial profile, the severity of dysbiosis, and other factors such as comorbidities and immune function. Microbiological analysis should be routinely performed to monitor the patient's progress and guide further treatment decisions. Additionally, healthcare providers should educate patients about the importance of maintaining proper hygiene and avoiding practices that may disrupt the microbial balance, such as the use of harsh chemicals or unregulated antibiotics.

Furthermore, the study's findings suggest that personalized probiotics could be used to further enhance treatment outcomes. Specific strains of probiotics, such as Lactobacillus and Bifidobacterium, have shown positive effects on restoring vaginal flora. However, future studies should focus on identifying the most effective probiotic strains and their optimal dosages for patients undergoing sigmoidal colpopoesis.

5. LIMITATIONS OF THE STUDY AND AREAS FOR FUTURE RESEARCH

While this study provides compelling evidence regarding the effectiveness of combined antibiotic and probiotic therapy in managing dysbiosis, there are some limitations that should be addressed in future research. First, the study sample size was relatively small (100 patients), and the findings should be validated in larger, multicenter studies to confirm their generalizability. Second, the follow-up period in this study was limited to 12 months. Longer-term studies are needed to assess the sustainability of the treatment outcomes and any potential delayed complications or recurrences of dysbiosis.

Additionally, while the study focused primarily on the effectiveness of antibiotics and probiotics, it would be beneficial to explore other therapeutic options, such as the use of prebiotics, immunomodulators, or local antiseptics, in managing post-operative dysbiosis. A comprehensive approach that incorporates various modalities may offer better outcomes for patients.

Another area for future research is the identification of genetic and environmental factors that may influence the development of dysbiosis in patients following sigmoidal colpopoesis. Understanding these factors could help tailor treatment protocols

and prevent dysbiosis before it becomes a significant issue.

Lastly, further investigation into the psychological and emotional impacts of dysbiosis on patients is needed. While the study showed improvements in the overall quality of life, more research is required to explore how dysbiosis and the resulting discomfort affect patients' mental health and their perception of their body image. Addressing these psychological aspects could enhance overall patient care and recovery.

6. CONCLUSION AND RECOMMENDATIONS

In conclusion, this study highlights the significant role of dysbiosis in the post-operative management of patients who have undergone sigmoidal colpopoesis and emphasizes the effectiveness of a combined therapeutic approach involving antibiotics and probiotics. The results suggest that early and aggressive management of dysbiosis can significantly improve patient outcomes, reduce complications, and enhance the quality of life for patients undergoing this procedure. Healthcare providers should consider personalized treatment plans based on microbiological analysis, and continue to monitor patients closely for signs of recurrent dysbiosis.

Moreover, further research is essential to refine treatment protocols, investigate additional therapeutic options, and address the broader implications of dysbiosis on patient health. By advancing our understanding of dysbiosis and its treatment, we can improve the outcomes for patients who require sigmoidal colpopoesis and ensure their long-term health and well-being.

The findings of this study provide a valuable contribution to the ongoing efforts to optimize post-surgical care for patients with congenital or acquired vaginal agenesis and promote a more personalized and effective approach to patient management.

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