ORIGINAL RESEARCH

The Impact of Cohort Management on Disease Perception, Fear of Disease Progression, Nutritional Status, and Quality of Life in Patients with Lymphoma

Yang He, MM; Huiling Qiu, MM; Weiyi Zhu, MD

ABSTRACT

Objective • This study aims to investigate the impact of cohort management on illness perception, fear of disease progression, nutritional status, and quality of life among patients with lymphoma.

Methods • A total of 128 cases of lymphoma patients admitted to Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, between April 2020 and November 2021 were included as research participants. The patients were randomly assigned to two groups: a 64-member control group and a 64-member observation group. The observation group received group management, while the control group received standard nursing care. Before and after the intervention, assessments were conducted to evaluate disease perception, fear of disease progression, nutritional status, and quality of life, with comparisons made between the two groups.

Results • No clinically significant differences ($P > .05$) were observed between the two groups regarding gender, age, chemotherapy cycles, clinical stage, disease type, or other general characteristics. Disease awareness showed no significant disparity between groups pre-intervention ($P > .05$), but post-intervention, the observation group exhibited marked improvement ($P < .05$). Initially, fear of disease progression did not differ significantly between groups ($P > .05$), but post-intervention, the observation group demonstrated lower scores in total fear of disease progression, social, family, and physical health domains compared to the control group ($P < .05$). While nutritional status comparisons initially resulted in no significant differences ($P > .05$), levels of serum albumin, prealbumin, hemoglobin, lymphocytes, and ferritin were notably higher in the observation group post-intervention ($P < .05$). Quality of life assessments showed no significant disparity pre-intervention ($P > .05$); however, post-intervention, the observation group experienced significantly reduced dyspnea, insomnia, and appetite loss ($P < .05$).

Conclusion • Participation in cohort management interventions benefits lymphoma patients by enhancing emotional coping and improving nutritional health and quality of life. (*Altern Ther Health Med.* [E-pub ahead of print.])

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INTRODUCTION

Lymphoma represents a diverse malignancy originating from the lymphatic hematopoietic system, characterized by histological variability, clinical treatment diversity, and prognosis heterogeneity, typically presenting with lymphadenopathy and hepatosplenomegaly.[1] Prolonged treatment cycles exacerbate adverse reactions, subjecting patients to physical and psychological distress. It diminishes treatment confidence, jeopardizes prognosis, and compromises patient safety.[2]

The quest for the optimal care model for lymphoma patients remains ongoing, with no universally applicable solution identified to date. Therefore, tailoring management approaches based on patients' geographical environment, dietary patterns, and lifestyle is a pragmatic strategy. Cohort management intervention emerges as a comprehensive disease management approach, uniting patients with similar conditions to receive centralized health education, skill guidance, and personalized treatment delivered by specially trained medical personnel.[3]

Research indicates that cohort intervention contributes to improved control of various indicators among patients, thereby significantly mitigating disease-related damage to target organ function.[4] Additionally, past studies highlight the corrective role of cohort management in patients' misperceptions and its effectiveness in regulating adaptive behaviors, ultimately facilitating the maintenance of healthy behaviors.[5]

Therefore, this study aimed to implement a cohort management model among lymphoma patients undergoing chemotherapy, analyzing its nursing impact. The objective of the findings was to provide lymphoma patients with a solid framework for achieving optimal prognoses.

METHODS

Study Design

An observational study design was adopted. We selected 128 lymphoma patients admitted to Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, between April 2020 and November 2021. The average age of the patients was 45.76 years. We divided the patients into two groups (n=64) using the random number table method: the control group and the observation group, both actively participating in the study. The control group received standard nursing care, while the observation group received cohort management techniques. Ethical approval for this research was obtained from the hospital's ethics committee. Patients, their families, and legal representatives provided informed consent, signifying their complete understanding of the study's objectives.

Criteria for Inclusion and Exclusion

Inclusion criteria were as follows: (1) Confirmation of lymphoma diagnosis through pathology, immunophenotyping, bone marrow puncture, or biopsy; (2) Receipt of lymphoma chemotherapy at our hospital with at least one cycle; (3) Expected life expectancy exceeding one year; (4) Karnofsky functional status score of 70 or higher; (5) Willingness to participate voluntarily in the study and consent to explicit terms.

Exclusion criteria were as follows: (1) Concurrent participation in another treatment or nursing intervention; (2) Cognitive dysfunction or abnormal mental behavior hindering autonomous cooperation with nursing interventions; (3) Presence of malignant tumors in other sites or distant metastases; (4) Complications related to autoimmune diseases; (5) Severe dysfunction or insufficiency of vital organs such as the heart, pancreas, liver, and kidneys.

Routine Nursing Care for the Control Group

The control group underwent routine nursing care, which encompassed various measures to ensure comprehensive patient support. This care regimen adhered closely to physicians' directives, ensuring that each patient received appropriate medical attention. Assigned nurses took on the responsibility of guiding patients in the proper administration of oral medications, ensuring optimal therapeutic outcomes.

Furthermore, vigilant monitoring of patients' temperature fluctuations, adverse reactions, and other symptoms was conducted to address any emerging issues promptly. Vital signs were carefully recorded to track patients' physiological parameters accurately. Additionally, patients were provided with guidance on dietary considerations, skincare practices, and medication management to promote overall well-being throughout their treatment journey.

Cohort Management Measures for the Observation Group. In the observation group, we implemented a cohort management approach, incorporating specific measures as outlined below:

Establishment of a Nursing Intervention Team. This team comprised one head nurse and six nurses who underwent unified training. Prior to assuming their roles, all team members underwent theory and practical assessments to ensure proficiency and facilitate the smooth execution of each task.

Development of Cohort Management Model. Incorporating a patient-centered approach, we established a cohort management mode and organized patients into groups based on their individual conditions and preferences. Each cohort comprised 16 individuals, totaling four groups. Clear delineation of responsibilities for the management team ensured effective coordination. Cohort management activities were conducted once a week, with each session lasting two hours.

Establishment of Health Management Archives. To facilitate cohort management, we established health management archives by inputting and organizing information on selected individuals. These archives included details such as patients' names, gender, age, diagnosis, and contact information, along with other pertinent general information.

First Group Activity. The opening group activity involves notifying patients, their families, and research group members to participate. Its primary aim is to gain insight into patients' interests, hobbies, professional characteristics, and cultural backgrounds. Through ice-breaking activities, the session aims to foster familiarity and establish group cohesion. Additionally, the activity facilitated an understanding of methods, defined objectives, and outlined tasks to be accomplished during the session.

Group Education. During the cohort management process, group education sessions were conducted with a focus on specific themes, such as the etiology of lymphoma, common adverse reactions to drug treatments, proper disposal methods, and precautionary measures. Various instructional techniques, including physical demonstrations and personal anecdotes, were employed to guide participants. Emphasis was placed on facilitating the sharing of patients' experiences with behavior change, providing peer encouragement and support, and ultimately altering their perceptions of the disease. These efforts aimed to foster improved treatment compliance and enhance patients' confidence in their treatment regimen.

Doctor-Patient Interaction in Cohort Management. In cohort management model, doctor-patient interactions were facilitated to encourage patients to actively inquire about their conditions and resolve any uncertainties regarding disease management. Engaging activities, such as quizzes with prizes, were organized to promote participation and enhance patient engagement. Furthermore, discussions were held to determine the theme for the next cohort session, ensuring relevance and addressing patients' specific concerns.

Psychological Guidance. During the cohort management initiative, patients had the option to participate in psychological interviews aimed at assessing and addressing their psychological needs. The goal was to effectively alleviate their psychological distress and encourage active management of emotions through self-awareness and other strategies. This approach aimed to help patients regain confidence and hope for the future. Additionally, patients could engage in activities such as painting, reading, or simple handmade projects during the guidance sessions to further support their psychological well-being.

Rest Period Activities. During the rest of the cohort management program, patients engage in various forms of communication and discussion with each other. Patients who had acquired successful experiences and skills in cancer prevention shared their insights, addressing health concerns relevant to all participants. Additionally, nurses provided dietary guidance and introduced self-management methods to support patients' overall well-being.

Conclusion of Activities. Following the cohort management activity, team members convened for a debriefing session. Key points from the activity were summarized, and all involved parties evaluated the completion of tasks. Subsequently, participating patients were briefed to their attending physicians regarding their involvement in the activity.

Observation Indicators

Assessment of Disease Cognition Degree. The degree of disease cognition among patients in both groups was assessed before and after the intervention. Evaluation of disease cognition involved the use of a self-made disease cognition questionnaire developed by our hospital. Patients were interviewed and evaluated by nursing staff members. The questionnaire comprised five dimensions, including disease diagnosis and prevention, medical compliance behavior, adherence to living rules, regularity of return visits, and engagement in health education. Each question offered a single-choice response. A Likert scale ranging from 0 to 10 was utilized for each question, with a total possible score of 100 points. Scores were categorized as follows: unknown (0-60 points), partially known (60-80 points), and fully known (80-100 points).

Assessment of Disease Progression Fear. The progression of fear regarding the disease was assessed using the short form of the Fear of Progression Questionnaire[6] before and after intervention implementation. This scale is specifically designed for cancer and chronic disease patients to measure their fear of recurrence or progression. It comprises 12 categories, including considerations related to physical health and family. Each item on the questionnaire was rated on a Likert scale ranging from 1 to 5, with a maximum possible score of 60. A higher score indicates an increased fear of disease progression, with a score below 34 suggesting potential mental dysfunction.

Nutritional Status Assessment. The nutritional status of patients in both groups was evaluated before and after the intervention through the detection of nutritional indicators. (1) Detection of serum indicators: venous blood samples were collected from all patients after fasting on the second day of admission and the morning after the intervention. These samples were left at room temperature for half an hour before undergoing centrifugation at 3000 revolutions per minute (r/min) for 10 minutes to obtain serum. The separated serum was then stored at -80°C. The serum levels of albumin (ALB), prealbumin (PA), hemoglobin (Hb), lymphocyte count (TLC), and transferrin (TRF) were measured. The normal range for ALB is 35-55 g/L; for PA, it is 280-360 mg/L; for Hb, it is 120-160 g/L; for TLC, it is $>2.5 \times 10^9$/L; and for TRF, it ranges from 2.20 g/L to 4.0 g/L.

(2) Evaluation of scale: the nutritional status of patients was assessed using the Subjective Global Nutritional Status Scale (PG-SGA).[7] This scale comprised seven items, including body weight, dietary intake, symptom presentation, activity and function, the relationship between disease and nutritional needs, metabolic requirements, and physical examination findings. The total score on the scale was categorized as follows: Grade A represented good nutrition, Grade B indicated suspected or moderate malnutrition and Grade C denoted severe malnutrition. The incidence of malnutrition was calculated using the formula: Malnutrition Incidence = (Number of Grade B + Number of Grade C cases) / Total number of cases × 100%.

Quality of Life Assessment. The quality of life assessment was performed for patients in both groups before and after the intervention. The evaluation of patients' quality of life was conducted using the EORTC QLQ-C30[8] before and after the intervention. This assessment utilized both functional scales and individual test items to measure various aspects of a person's functioning. Each item on the scale was assigned a total of 100 points, with higher scores indicating a greater impact on functioning. Conversely, higher individual test scores reflected a lower quality of life.

Statistical Analysis

The collected data underwent statistical analysis using the analytical software SPSS 23.0 (International Business Machines, Corp., Armonk, NY, USA). Descriptive statistics, including the mean and standard error, were calculated. Additionally, the t test was utilized to compare various groups assuming normal distributions. Percentages resulting from the chi-square test (χ^2) were employed to assess categorical data. Statistical significance was determined by $P < .05$.

RESULTS

Comparison of Group Characteristics

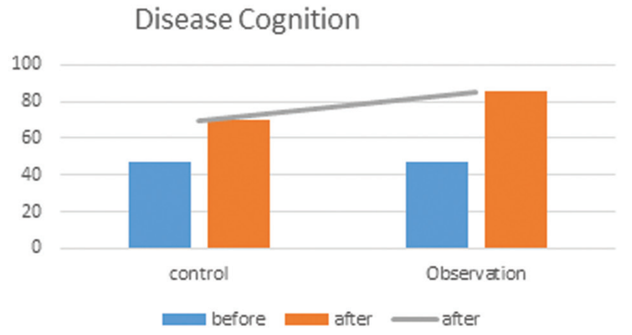
There were no clinically significant differences between the groups regarding gender, age, chemotherapy cycle,

Table 1. Comparison of Demographic and Clinical Characteristics Between Control and Observation Groups

Group		Control Group (n=64)	Observation Group (n=64)	Statistics	*P* value
Gender	Male	33	34	3.568	.054
	Female	31	30		
Age (years)		45.74±3.22	45.78±3.14	1.252	.062
Cycles of Chemotherapy		6.17±0.96	6.15±1.01	1.036	.092
Clinical Staging	I	18	19	0.874	.312
	II	17	16		
	III	21	20		
	IV	8	9		
Disease	Hodgkin's Lymphoma	29	28	0.472	.439
	Non-Hodgkin's Lymphoma	35	36		

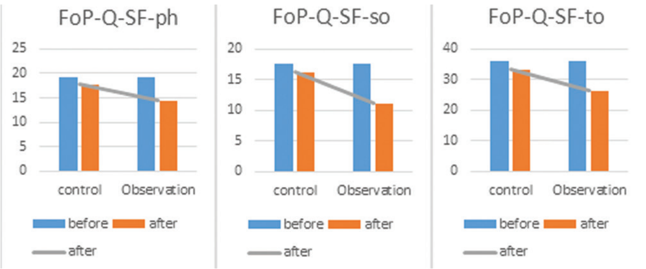
Note: Statistical analysis was performed using an independent *t* test for continuous variables and a chi-square test (χ^2) for categorical variables. $P < .05$ are considered statistically significant.

Figure 1. Changes in Disease Cognition Before and After Intervention



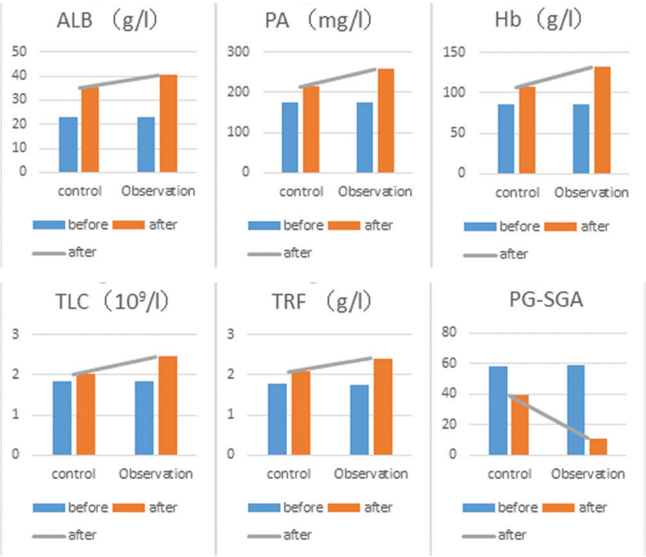
Note: The graph illustrates the difference in disease cognition scores between the control and observation groups before and after the intervention. Error bars represent the standard error of the mean (SEM).

Figure 2. Comparison of Physiological Health, Social and Family Well-Being, and Overall Fear of Disease Progression Between Control and Observation Groups



Note: The figure presents the comparison of physiological health (ph), social and family well-being (so), and overall fear disease progression (to) scores between the control and observation groups. Statistically significant differences were observed, indicating superior outcomes in the observation group following the intervention. Fear of Progression Questionnaire (FoP-Q-SF)

Figure 3. Changes in Nutritional Status Before and After Intervention



Note: The figure depicts the improvement in nutritional status parameters (serum albumin, prealbumin, hemoglobin, lymphocytes, transferrin levels, and PG-SGA scores) in the observation group compared to the control group post-intervention. Error bars represent standard deviation.

clinical stage, type of illness, and other demographic characteristics, as shown in Table 1.

Comparison of Disease Knowledge Before and After Intervention

Before medication, the *P*-value was greater than .05, indicating that the difference in disease knowledge between the two groups of patients was not statistically significant. After the intervention, patients in the observation group showed a greater improvement in memory compared to those in the control group, see Figure 1.

Comparison of Fear Disease Progression Before and After Intervention

Prior to intervention, there was no statistically significant difference ($P > .05$) between the two groups in terms of the progression of fear disease. However, as depicted in Figure 2, after the intervention, the observation group exhibited lower scores in physiological health, social and family well-being, and overall fear of disease progression compared to the control group ($P < .05$).

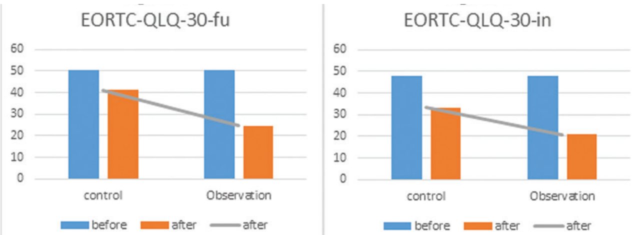
Comparison of Nutritional Status

Before treatment initiation, there was no statistically significant difference in the nutritional status between the two groups ($P > .05$). It remained consistent throughout the study period. However, as illustrated in Figure 3, following the intervention, the levels of serum ALB, PA, Hb, TLC, TRF, and the PG-SGA score showed significant improvement in the observation group compared to the control group, with statistically significant differences ($P < .05$) observed in all variables.

Comparison of Quality of Life

Before the intervention, the quality of life levels in both groups were similar ($P > .05$). However, significant differences ($P < .05$) were observed between the two groups in terms of physical function, role function, emotional function, social function, dyspnea, insomnia, and loss of appetite, as depicted in Figure 4. These differences favored the observation group over the control group.

Figure 4. Impact on Quality of Life Before and After Intervention



Note: The graph illustrates the impact of the intervention on various aspects of quality of life, including dyspnea, insomnia, loss of appetite, role function, mental function, and social function, showing significant improvements in the observation group compared to the control group. EORTC-QLQ-30-fu refers to the follow-up version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-30. EORTC-QLQ-30-in refers to the initial version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-30.

DISCUSSION

Lymphoma, a prevalent malignancy of the lymphatic hematopoietic system, commonly presents as a painless enlargement of lymph nodes, potentially affecting various tissues and organs throughout the body, leading to significant disruptions in daily activities.[9] Despite extensive research, the exact pathogenesis of lymphoma remains obscure. Clinical management primarily revolves around a combination of radiotherapy and chemotherapy.[7-9] However, while these treatments target cancerous cells, they also indiscriminately harm healthy cells, resulting in toxic side effects such as bone marrow suppression, increased susceptibility to infections, and damage to multiple organs.[10]

Patients undergoing lymphoma treatment commonly experience adverse reactions, including decreased immunity and digestive dysfunction, significantly impacting their quality of life.[10,11] Additionally, factors such as cognitive impairment, treatment duration, and uncertain prognosis contribute to the prevalence of negative emotions and suboptimal treatment adherence among patients.[11] Therefore, addressing these challenges remains a persistent concern for healthcare professionals striving to improve lymphoma outcomes.

The adoption of a cohort management model, integrating diagnosis, treatment, and patient management, alongside group health education and individualized treatment, has gained increasing attention.[12] This approach promotes positive attitudes by promoting collaboration among family members and enhances treatment adherence and confidence, thereby significantly contributing to the enhancement of the patient's quality of life.

Scholars argue that the implementation of a cohort management model enhances patients' initiative, advocating for a patient-centered, team-cooperative, and diversified communication education approach over traditional one-way education methods.[13] Our findings revealed no significant difference in disease cognition between the two groups before the intervention, as well as after the intervention.

Following the intervention, patients in the observation group exhibited a significantly higher level of disease cognition compared to those in the control group, with a notable difference observed. This finding aligns with previous research[14] conclusions indicating that cohort management interventions contribute to an improved understanding of illness among patients. The underlying reason could be attributed to the limitations of traditional nursing methods, which predominantly focus on self-management. These conventional approaches often lack variety in content, fail to engage patients effectively, and lack peer support, ultimately resulting in poorer disease insight.

Cohort management facilitates increased interaction between patients and healthcare providers, providing more extensive opportunities for disease education. Effective doctor-patient communication within these groups can ignite patients' enthusiasm and enable medical staff to address any misconceptions promptly. Following the activity, the key educational content is summarized and distributed among patients. It enables peer communication and review, fostering knowledge retention and clarification of doubts within the group dynamic, thereby promoting enhanced disease understanding.[15]

Cohort management prioritizes collaborative learning and experiential education over traditional nursing modes. Patients transition from passive recipients to active seekers of knowledge, thereby achieving deeper understanding.[16] Studies indicate that disease progression often correlates with decreased immunity and heightened negative emotions in patients.[17] Establishing harmonious relationships with medical staff, fostering familiarity with medical institutions, and building trust can significantly bolster patient morale and instill hope during their journeys.

The study's findings revealed no statistically significant difference between the two groups regarding the progression of fear sickness before intervention. However, post-intervention, patients in the observation group exhibited significantly worse scores in physical health, social family aspects, and the total score of fear disease progression compared to those in the control group. These marked differences suggest that cohort management interventions can substantially ameliorate patients' fear state, aligning with the evolving paradigm of the biopsychosocial medical model.

In the observation group, patients received careful nursing intervention, encompassing admission assessment, education, psychological support, and more. Through proactive communication between medical staff and patients, negative emotions were effectively managed, fostering patient empowerment in emotional self-regulation. Furthermore, guidance was extended to family members and friends to create a supportive environment conducive to patient recovery. This holistic approach aimed to enhance treatment compliance and confidence, thereby optimizing treatment outcomes.[18,19]

Prior to the intervention, both groups exhibited similar nutritional statuses, with no statistically significant difference between them. However, after the intervention, patients in the observation group demonstrated varying degrees of improvement in serum Alb, PA, Hb, TLC, and TRF levels compared to baseline. Moreover, the subjective global nutrition scale scores were significantly higher in the observation group compared to the control group, indicating a notable statistically significant improvement in nutritional status.

Cohort management proved advantageous in enhancing the nutritional status of patients. This benefit likely results from the observation group's participation in regular cohort management sessions, which boosted their knowledge and confidence in comprehensive disease management. Moreover, the emphasis on integrating disease-related health behaviors into tailored plans contributed to this improvement. It is imperative to establish clear nutritional standards to foster the adoption and continuity of these behaviors. Through the implementation of behavioral plans, feedback mechanisms, and regular nutritional assessments, patients can achieve an elevated nutritional status.[20]

The development of social policies and strategies involves various factors that can significantly influence the quality of life of individuals or communities.[19,20] In our study, no statistically significant difference in quality of life was observed between the two groups prior to the intervention. However, following the intervention, notable reductions in the effects of dyspnea, insomnia, loss of appetite, role function, mental function, and social function were observed in the observation group compared to the control group. These findings underscore the positive impact of the intervention on enhancing the overall quality of life.

Numerous studies[18-20] have consistently highlighted the motivating impact of social support on patients, offering opportunities for catharsis and alleviating negative emotions.[20] Effective social support has been shown to mitigate patient stress levels, fostering greater recognition and acceptance of their illnesses and external circumstances. Clinical evidence supports the notion that cohort management interventions can significantly enhance social support networks, thereby alleviating patients' perceived burdens and reducing overall stress levels. This, in turn, enhances patients' self-management capabilities and ultimately improves their quality of life.

Study Limitations

It is imperative to acknowledge several limitations inherent in this study that may impact the interpretation and generalization of our findings. Firstly, the sample size was relatively small, potentially limiting the statistical power and generalizability of our results. Additionally, the study design was observational, which precludes establishing causal relationships between variables. Moreover, the use of self-reported measures may introduce response biases and inaccuracies. Furthermore, the study was conducted at a single center, which may limit the external validity of our findings to other settings or populations. Lastly, the duration of follow-up may have been insufficient to capture the long-term effects of the intervention. These limitations underscore the need for caution when interpreting our results and highlight areas for future research to address.

CONCLUSION

In conclusion, the implementation of the cohort management model demonstrated significant benefits across multiple domains for lymphoma patients. Our findings indicated improvements in disease cognition, reduced fear of disease, enhanced nutritional status, and improved quality of life. While these results are promising, it is important to note the limitations of our study, including the small sample size and limited intervention duration. Future research efforts should focus on expanding the sample size, extending the intervention period, and exploring additional variables to further validate the efficacy and applicability of cohort management in enhancing outcomes for lymphoma patients.

COMPETING INTERESTS

The authors report no conflict of interest.

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All patients signed the informed consent form, and the Medical Ethics Committee approved the study.

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