

Article

Pre and Postoperative Management of Women in Obstetric and Gynecological Practice Using Mineral Water

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Abstract: The success of surgical intervention depends not only on thorough examination, proper prescription of medications, and adherence to recommendations of related specialists, but also on the preparation of the gastrointestinal tract for the upcoming surgery. The aim of this study is to examine the clinical effectiveness and tolerability of the therapeutic-table mineral water "Chortoq" in women for preoperative preparation and postoperative management in both obstetric and gynecological practice. The use of "Chortoq" mineral water in women before and after surgical interventions demonstrated a positive effect on gastrointestinal function and also led to changes in blood electrolyte parameters. Its use contributes to a faster recovery and has a beneficial impact on the postoperative period. Therefore, it is recommended to include "Chortoq" therapeutic-table mineral water in both preoperative preparation and postoperative care.

Keywords: pre- and postoperative management of women, mineral water, complications of surgical interventions in obstetrics and gynecology.

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1. Introduction

The success of surgical intervention largely depends on preoperative preparation, which includes patient examination, clinical, laboratory, and functional tests, correction of impaired body functions, improvement of the clinical course of comorbid diseases, assessment of surgical risk, and the selection of an appropriate method of anesthesia[1].

Before planned gynecological surgeries, as well as before operative delivery, thorough preoperative preparation is essential. This includes a complete clinical and laboratory examination — clinical and biochemical blood tests, general urinalysis, blood glucose determination, blood typing and Rh factor identification, coagulation profile (coagulogram), Wassermann reaction (syphilis test), and vaginal smear analysis to determine the vaginal flora and exclude sexually transmitted infections (STI)[2]. Instrumental diagnostic methods include electrocardiography (ECG) and pelvic ultrasound (US). Consultations with other specialists such as a therapist, cardiologist, and others are required depending on existing somatic pathologies[3].

Negative factors can adversely affect both the early and late postoperative periods. They often significantly reduce the effectiveness of surgical intervention, complicate a

woman's adaptation to work activities and daily life challenges. Therefore, surgery should not be considered the final stage in the treatment of obstetric and gynecological diseases[4].

The success of surgical intervention depends not only on thorough examination, proper prescription of medications, and adherence to the recommendations of related specialists, but also on the preparation of the gastrointestinal tract (GIT) for the upcoming surgery[5].

Gastrointestinal cleansing before surgery helps prevent endogenous infections. One of the most serious gastrointestinal complications in the early postoperative period is intestinal paresis or paralytic dynamic intestinal obstruction. The timely return of intestinal peristalsis indicates a favorable postoperative course and serves as a good prognostic sign[6].

Functional constipation is an important medical and social issue during pregnancy and in the postpartum/postoperative period. It is worth noting that constipation, both during pregnancy and after surgery, not only poses medical problems but also leads to a reduced quality of life and worsened perception of physical health[7]. However, frequent use of laxatives leads to reduced intestinal wall tone, weakened peristalsis, and the development of flatulence. Against the background of preoperative fasting, taking laxatives can worsen metabolic disturbances: substances accumulate in tissues that shift the pH balance toward acidity, causing severe intoxication symptoms such as vomiting, flatulence, oliguria, etc. Therefore, laxatives and fasting should be prescribed only for specific indications, such as surgeries on the large intestine. Thus, preoperative preparation should include a light meal no later than 12 hours before the intervention. This approach promotes easier surgical access and the successful performance of necessary manipulations in the pelvic cavity[8].

Postoperative complications often arise after surgical treatment, complicating the recovery process. Therefore, preparing a patient for surgery includes a set of preventive measures, both general and local, aimed at preventing complications during surgery and in the postoperative period.

One of the most common complications in the postoperative period is impaired intestinal peristalsis, which can lead to the development of postoperative peritonitis. With proper management, the restoration of intestinal motility is observed, and a reliable clinical sign of the beginning of motor-evacuation function recovery is the regular passage of gas[9].

For complete recovery, patients require special restorative therapy, which is nowadays considered an essential final component of any surgical intervention on pelvic organs. This therapy should focus on preventing pre- and postoperative complications, avoiding disease recurrence, and eliminating disorders caused by the underlying condition[10].

Surgical operations on pelvic organs in women make up a significant portion of surgical activity (68% of all surgeries). Naturally, major abdominal surgeries require high-quality rehabilitation in the postoperative period. An even greater need for restorative treatment arises after hysterectomies and other major surgeries on abdominal and pelvic organs, especially in women of reproductive age. To prevent many complications and increase the effectiveness of surgical treatment, the timely introduction of a rehabilitation program is crucial. One of the most important principles of modern rehabilitation is proper patient care, which can improve the outcomes of surgical treatment, reduce the frequency of complications and disability, and enhance patients' quality of life. The inclusion of mineral water consumption in postoperative rehabilitation programs has been proven effective. Timely mobilization of operated patients, especially elderly individuals, is essential[11]. Additionally, correction of water-electrolyte balance and stimulation of intestinal peristalsis with bicarbonate mineral waters in the postoperative period has been shown to be effective[12].

At present, the perioperative period is the subject of close scientific attention and ongoing discussions. Currently, concepts of one-day surgical treatment, FAST TRACK, and ERAS (Enhanced Recovery After Surgery) are being actively developed, along with continuous research on rational antibiotic prophylaxis, prevention of thromboembolic complications, postoperative pain management, and other related issues. Obstetric and gynecological surgical interventions are now performed both on an outpatient basis and in inpatient settings [3].

To date, cesarean section is the most common and routinely performed operation in obstetrics, while hysterectomy is among the most frequently performed surgeries in gynecological practice worldwide [13]. Annually, approximately 18.5 million cesarean sections are performed globally [13]. Accelerated rehabilitation in both preoperative and postoperative periods in obstetric-gynecological practice leads to reduced hospitalization durations and faster recovery. This is especially relevant in regions where the proportion of abdominal deliveries reaches up to 80% worldwide [14].

Until recently, the use of drinking mineral waters during the recovery period after obstetric and gynecological surgeries was rarely practiced. However, maintaining adequate hydration is crucial in the pre- and postoperative periods to prevent various complications. The daily fluid intake for an adult should range between 1.5 to 2.5 liters per day. In this regard, intensive therapy for any surgical pathology is impossible without fully compensating for the body's water needs [15].

In the studies conducted by V.I. Vladimirov and co-authors, it was found that the use of drinking mineral waters at early stages of rehabilitation after radical surgeries has a favorable impact on patient well-being. Moreover, besides improving psychosomatic conditions, the researchers emphasized that a course of drinking therapy at a health resort contributes to enhancing nonspecific immunity. This is evidenced by increased phagocytic immune function — with elevated phagocytic activity of leukocytes and phagocytic index (up to 91.2%; $P < 0.05$).

Experts who examined the mineral waters directly at the Chortoq source and in laboratory conditions of the institute, concluded that "Chortoq mineral waters possess unique and valuable properties".

To objectively confirm the beneficial properties of the water, the management of "Chortoq Mineral Water" sent samples from the source for analysis in foreign laboratories. The first result was received from the SGS INSTITUT FRESENIUS laboratory, located in the small town of Taunusstein, near Berlin.

Based on the above, the aim of this study is to assess the clinical efficacy and tolerability of the medicinal-table mineral water "Chortoq" produced by "Chortoq Mineral Water" LLC, Uzbekistan, Namangan, in women for preoperative preparation and postoperative management in both obstetrics and gynecology.

2. Materials and Methods

Study design

An open, controlled, randomized study with two parallel groups. The research was conducted at the Department of Obstetrics and Gynecology in Family Medicine of Tashkent Medical Academy (TMA). The study was carried out in accordance with QzDst 540-2010, TI 64-25635165-01:2017, and SanPin 0283-10, paragraph 1.8.2.

The investigated mineral water is a carbonated sulfate-chloride sodium medicinal-table water, obtained from well No. 32 of the sanatorium-resort zone of Chartak, Namangan region.

The main group included 30 women (pre- and post-operative) who received "Chortoq" medicinal-table mineral water. The comparison group consisted of 30 women

(pre- and post-operative) who received only standard therapy. Both groups were comparable in terms of age and severity of pathological processes.

Inclusion Criteria

Female patients aged 18 years and older; women in the pre- and postoperative periods; pregnant women in pre- and postoperative periods (after operative delivery).

Exclusion Criteria

Patients under 18 years of age; presence of contraindications to the use of "Chortoq" medicinal-table mineral water; acute gastrointestinal diseases and calculous cholecystitis; necessity for medications incompatible with "Chortoq" mineral water; participation in other clinical studies within the last 30 days; lack of informed written consent to participate in the study.

To allocate participants into groups, the simple randomization method was used. The initial patient allocation table was generated using random numbers via MS Excel's random number function and stored by the study sponsor.

Patients in the main group received "Chortoq" medicinal-table mineral water: 5 days preoperatively and 15 days postoperatively, at doses of 200–300 ml, 3–4 times daily, before meals (or after meals), for a total duration of 20 days, with a daily intake of 600–800 ml. The comparison group received only standard therapy. Efficacy evaluation was based on subjective and objective data, as well as electrolyte blood composition in both pre- and postoperative periods.

After the initial examination, detailed information about the "Chortoq" mineral water, including dosage, regimen, method of administration, and treatment duration, was provided to all participants. Following written informed consent, patients were prescribed combined therapy including "Chortoq" mineral water. The starting point for study participation was considered the first day of mineral water intake. The treatment course was fully documented for all patients involved in the study. Concomitant therapy for comorbid conditions was recorded in the outpatient chart and individual registration form. All patients were examined according to the study protocol.

In both pre- and postoperative periods, after general clinical examination, complaints were recorded, and general condition, blood pressure (BP), and pulse (Ps) were assessed. Clinical and laboratory analyses included: complete blood count, biochemical tests (ALT, bilirubin), analysis of blood electrolytes: potassium, sodium, magnesium, calcium.

The effectiveness was assessed based on the influence of the combined therapy with "Chortoq" medicinal-table mineral water, produced by "Chortoq Mineral Water" LLC, Uzbekistan, Namangan, on the mentioned parameters.

3. Results and discussion

The average age of the women examined in the pre- and postoperative periods was 31.1 ± 1.6 years. In both groups, women of middle reproductive age predominated (up to 56.7%). In the comparison group, the average age of women receiving standard therapy during the pre- and postoperative periods was 31.3 ± 1.5 years (Figure 1).

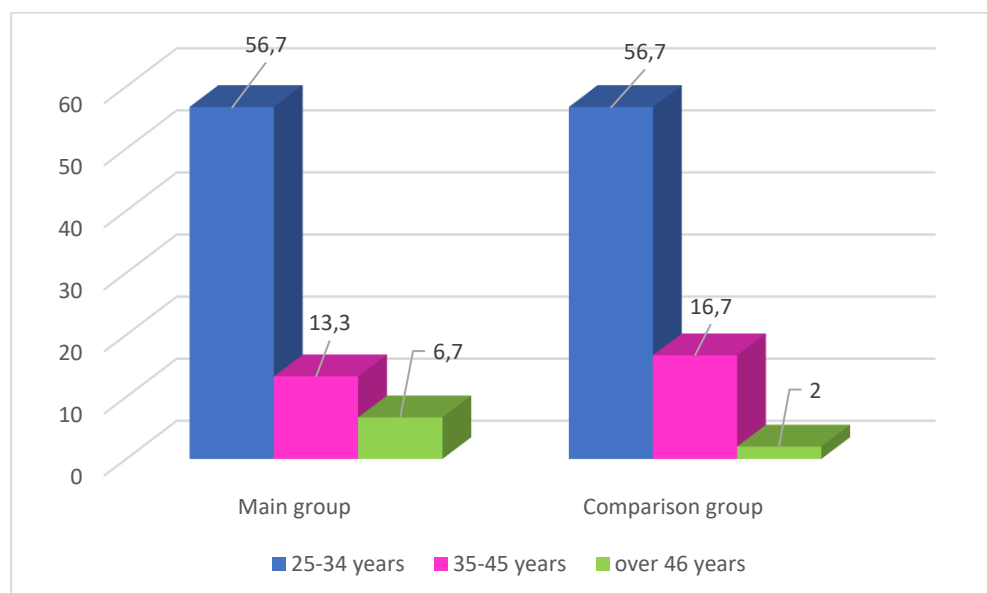


Fig. 1. Age distribution of examined women in the pre- and postoperative periods (%).

Among the women in the main group, 18 (56.7%) were pregnant before and after cesarean section, and 12 (43.3%) were women undergoing gynecological surgeries in the pre- and postoperative periods. Of them, 19 (63.4%) were pregnant women undergoing cesarean section, and 11 (36.7%) were women undergoing gynecological interventions. The control and comparison groups were comparable in terms of age and parity ($P > 0.05$) (Figure 2).

A dynamic monitoring of the general condition in the pre- and postoperative periods was conducted, focusing on gastrointestinal (GI) function, as the success of surgical intervention largely depends on adequate preoperative preparation.

In the main group, after the intake of Chortoq medicinal-table mineral water, women experienced normalization of bowel movements, a reduction in bloating, heartburn, and postprandial discomfort, compared to those who received standard therapy (Filtrum-STI, Bifolac, Duphalac). During surgery and abdominal revision, a clear surgical field and satisfactory intestinal condition were observed in women who had used Chortoq mineral water preoperatively.

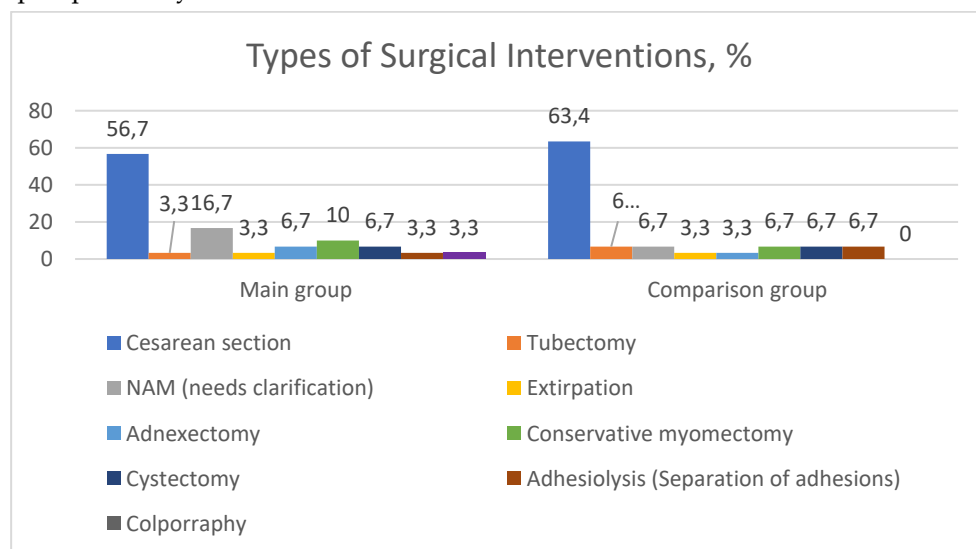


Fig.2. Types of surgeries performed in the examined women, %.

In the postoperative period, women in the main group, who consumed Chortoq medicinal-table mineral water, showed no signs of flatulence, abdominal bloating, and experienced restoration of peristalsis and bowel movements within 24 hours, with no constipation compared to the comparison group. Thus, according to subjective assessments by the women, the use of Chortoq medicinal-table mineral water demonstrated a significantly better effect aimed at improving gastrointestinal peristalsis in women both pre- and postoperatively.

Taking into account the composition and properties of Chortoq medicinal-table mineral water, we also analyzed the electrolyte composition of blood in full-term pregnant women and women with gynecological pathologies during the pre- and postoperative periods. The levels of sodium (Na), potassium (K), magnesium (Mg), and calcium (Ca) reflect changes in the blood electrolyte balance in both full-term pregnant women and women with gynecological conditions, for both the main group and the comparison group.

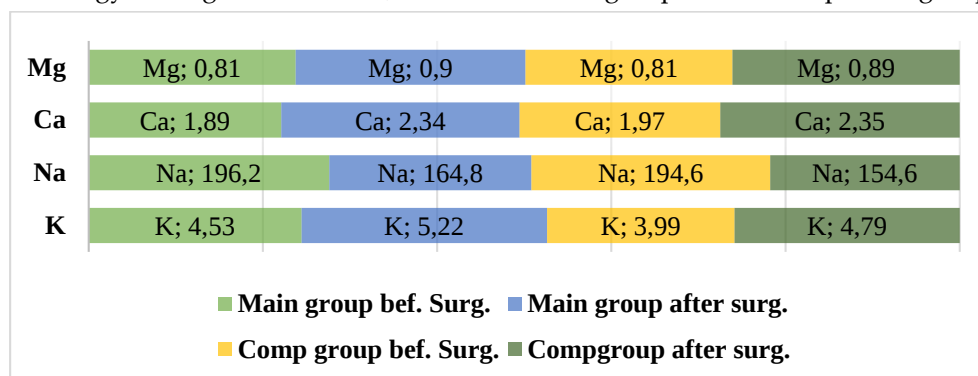


Fig.3. Electrolyte composition of blood in examined women.

In the main group of examined women, the following changes were identified: the potassium (K) level increased from 4.53 ± 0.11 to 5.22 ± 0.05 mmol/L, sodium (Na) decreased from 196.2 ± 1.46 to 164.8 ± 1.59 mmol/L, calcium (Ca) increased from 1.89 ± 0.05 to 2.34 ± 0.04 mmol/L, and magnesium (Mg) increased from 0.81 ± 0.03 to 0.9 ± 0.01 mmol/L. In the control group, the following changes were observed: potassium (K) increased from 3.99 ± 0.11 to 4.79 ± 0.05 mmol/L, sodium (Na) decreased from 194.6 ± 1.46 to 154.6 ± 1.59 mmol/L, calcium (Ca) increased from 1.97 ± 0.05 to 2.35 ± 0.04 mmol/L, and magnesium (Mg) increased from 0.81 ± 0.03 to 0.89 ± 0.01 mmol/L. These findings demonstrate significant changes in the electrolyte composition of blood among full-term pregnant women and women with gynecological pathology (Fig. 3).

Based on the obtained data, it can be concluded that there is a high efficiency of the applied therapy and a positive effect of "Chortoq" medicinal-table mineral water on the electrolyte balance of blood, as evidenced by improvements in both general clinical condition and electrolyte homeostasis, compared to women who received only standard therapy.

The beneficial effect is associated with the composition and properties of "Chortoq" medicinal-table mineral water, as well as with its correct regimen of administration, which in combination influences: secretory, motor, and absorptive functions of the digestive system, thus normalizing the overall digestion process; ionic composition of biological fluids, microflora balance, and biochemical processes in the digestive tract, as well as protein, carbohydrate, lipid, and water-salt metabolism; enhances the activity of specific enzymes; due to its low mineralization, it is well absorbed and promotes better absorption of nutrients and medicinal products.

All these properties confirm the positive effect of "Chortoq" mineral water during the postoperative period, especially for the prevention of complications related to disturbances in motor, secretory, and absorptive functions of the gastrointestinal tract.

The tolerability of the product was assessed based on: objective data obtained by the investigator during the study; laboratory test results before and after the course of treatment; subjective sensations reported by the patients.

The effectiveness of therapy was evaluated by the resolution of disease symptoms and normalization of laboratory and instrumental parameters.

As a result, it was established that therapy with "Chortoq" mineral water, produced by "Chortoq Mineral Water" MChJQK, Uzbekistan, Namangan, compared to the control group, has a significant positive impact on both clinical and laboratory parameters. The average efficacy score was 2.9 ± 0.05 points.

Regarding tolerability, in the early days, pregnant women noted an unusual taste (described as "taste of iron, iodine, salt, soda"), but this sensation disappeared by days 2-3, along with improvement in general well-being. Women with gynecological pathologies did not report such complaints.

Thus, the use of "Chortoq" medicinal-table mineral water combined with standard therapy effectively contributes to improving gastrointestinal function in both pre- and postoperative periods.

The tolerability of "Chortoq" mineral water was rated on average at 3.8 ± 0.1 points, which indicates good tolerability.

4. Conclusion

The use of therapeutic-table mineral water "Chortoq", produced by "Chortoq Mineral Water" MChJQK, Uzbekistan, Namangan, in pregnant women and women before and after operative delivery and gynecological interventions has shown a positive effect on the function of the gastrointestinal tract, as well as changes in blood electrolyte parameters. In terms of efficacy and tolerability, it is not inferior to standard therapy and contributes to faster improvement of the patient's condition, having a favorable impact on the postoperative course.

For preoperative preparation and in the postoperative period for the prevention of complications, it is recommended to include therapeutic-table mineral water "Chortoq" into the comprehensive treatment regimen, following the scheme: 50-100 ml 6-8 times a day at room temperature, directly before or after meals, with a gradually increasing dose.

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