Research Progress in Nursing for Postoperative Gastrointestinal Dysfunction in Elderly Patients with Hip Fractures

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Abstract

Hip fracture is a common and severe injury among the elderly population. Following surgical treatment, patients frequently develop gastrointestinal dysfunction, manifesting as abdominal distension, constipation, nausea, vomiting, and loss of appetite, which significantly impacts postoperative recovery, nutritional status, and overall prognosis. This article aims to review the recent progress in the mechanisms and nursing intervention measures for postoperative gastrointestinal dysfunction in hip fracture patients, with the goal of providing an evidence-based foundation for clinical nursing practice.

Full Text

Preamble

Research Progress on Nursing of Gastrointestinal Dysfunction after Hip Fracture Surgery in the Elderly

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Abstract: Hip fracture is a common and severe injury among the elderly population. Following surgical treatment, patients frequently develop postoperative gastrointestinal dysfunction (PGID), characterized by abdominal distension, constipation, nausea, vomiting, and anorexia. These symptoms significantly impede postoperative recovery, compromise nutritional status, and worsen the

overall prognosis. This paper reviews the recent progress in understanding the mechanisms of gastrointestinal dysfunction after hip fracture surgery and the associated nursing intervention measures, aiming to provide an evidence-based foundation for clinical nursing practice.

Keywords: Hip fracture; Postoperative period; Gastrointestinal dysfunction; Nursing; Research progress

Hip fracture is a prevalent clinical condition. With the acceleration of population aging in China, the number of elderly patients with hip fractures has increased significantly [**?**]. In this context, elderly hip fractures refer to those occurring in individuals aged 65 and older, primarily including femoral neck fractures and intertrochanteric fractures. Surgical intervention is typically the preferred treatment to facilitate early functional exercise and reduce bedridden time, thereby lowering the incidence of postoperative complications. However, elderly patients often have poor baseline health. Due to the combined effects of anesthesia, surgical trauma, pain, dietary changes, postoperative immobilization, and psychological stress, the incidence of gastrointestinal dysfunction within 1 to 5 days post-surgery reaches as high as 50% to 70% [**?**].

Postoperative gastrointestinal dysfunction (PGID) manifests clinically through digestive symptoms such as abdominal distension, nausea, vomiting, diarrhea, and constipation. While mild cases may resolve without treatment, severe cases can progress to multiple organ dysfunction syndrome (MODS) [**?**]. This not only severely impacts the patient' s quality of life and hinders rapid recovery but also increases the economic burden on the patient and the healthcare system [**?**]. Consequently, specialized nursing care for gastrointestinal dysfunction following hip fracture surgery in the elderly is of paramount importance.

1.1 Western Medical Mechanisms

Currently, there is no single comprehensive theory to explain the pathogenesis of gastrointestinal dysfunction following hip fracture surgery. Research suggests that PGID is primarily associated with inflammatory responses and the use of anesthetic or analgesic medications.

1.1.1 Inflammatory Response

The mechanism by which inflammatory factors contribute to PGID involves the body' s stress response to surgical trauma. This response triggers the release of a large number of cytokines and inflammatory mediators within the intestinal tract, leading to intestinal wall edema and slowed gastrointestinal motility. Furthermore, tissue trauma and changes in immune levels can activate leukocytes in the gastrointestinal muscularis, thereby inhibiting the neural pathways that regulate gastrointestinal movement [**?**].

1.1.2 Effects of Anesthetic Drugs

Anesthetic and analgesic drugs used during or after surgery can inhibit gastrointestinal function. Opioids, in particular, have a dose-dependent relationship with the recovery time of gastrointestinal function. These drugs exert a strong inhibitory effect on intestinal motility by blocking the activity of enteric neurons, inhibiting rhythmic contractions, and increasing water reabsorption in the intestines, which frequently leads to constipation or paralytic ileus [**?**].

1.1.3 Psychological Factors

Numerous studies have identified psychological factors as a critical component of this condition. The pain caused by the fracture itself and the subsequent surgical wound can cause significant psychological distress. Patients undergoing hip surgery often experience varying degrees of fear, anxiety, and stress. As the gastrointestinal tract is often referred to as the body' s "second brain," these negative emotions can disrupt the balance of endocrine and gastrointestinal hormone regulation, leading to functional dysfunction [**?**].

1.2 Traditional Chinese Medicine (TCM) Mechanisms

1.2.1 Invasion of External Pathogens

From a TCM perspective, several factors contribute to dysfunction: 1. **Surgical Factors:** Surgery involves the use of "metal blades" (surgical instruments) on the human body. While removing pathogens, surgery can directly damage the meridians, obstructing the flow of Qi and blood and depriving the Zang-fu organs of nourishment. This trauma can cause blood to escape the vessels, forming stasis that further blocks Qi movement and damages the Zang-fu organs' essence. 2. **Anesthetic Factors:** Anesthetic toxins act upon the "Palace of the Original Spirit" (the brain), leading to a loss of spiritual governance which adversely affects the functions of the Spleen and Stomach. 3. **Temperature Factors:** Intraoperative exposure can allow external pathogens, particularly wind-cold, to invade the body and impair the Spleen' s transport and transformation functions. 4. **Circulatory Management:** Anesthesia and blood loss may lead to intraoperative hypotension and gastrointestinal hypoperfusion, resulting in insufficient nourishment of the Zang-fu organs.

1.2.2 Spleen and Stomach Weakness

Patients with chronic diseases, particularly those with malignant tumors, often suffer from a pre-existing deficiency of the Spleen and Stomach. Prolonged dietary irregularities or postoperative immobilization can further damage these organs, impairing their ability to receive food and transform essence. This leads to a failure in the regulation of "ascending the clear and descending the turbid," resulting in intestinal obstruction or the upward reversal of Stomach Qi.

1.2.3 Emotional Dysregulation

Preoperative fear and anxiety lead to stagnation of Liver Qi. This emotional instability can either transform into fire—consuming Qi and Yin—or cause the Liver to overact on the Spleen (Liver-Spleen disharmony), ultimately resulting in the failure of the Spleen and Stomach to transport and transform post-surgery.

2.1 Emotional Stabilization and Environmental Comfort

Physical trauma serves as a severe psychological stressor, impacting both patients and their families. Therefore, timely psychological counseling and support are essential to stabilize the patient' s emotions and alleviate anxiety. In managing constipation, it is necessary to improve gastrointestinal function while providing a private environment for defecation to prevent excessive tension. A positive psychological state is conducive to bowel movements and overall recovery [**?**].

2.2 Preoperative Bowel Preparation

Preoperative cleansing enemas can shorten the time to the first postoperative bowel movement. This intervention significantly reduces the incidence of postoperative abdominal distension and constipation, alleviates discomfort, and improves clinical outcomes [**?**].

2.3 Dietary Management

Both overeating and prolonged fasting increase the risk of PGID. Research indicates that preoperative intake of carbohydrate drinks can reduce hunger and anxiety. By regulating hypothalamic serotonin levels, these drinks help inhibit anxiety and the response of the vomiting center [**?**, **?**]. During anesthesia, physiological functions—including the digestive system—enter a relatively quiescent state, with only vital signs like heart rate and respiration remaining active [**?**]. Early postoperative feeding helps "restart" the dormant digestive system and restore peristalsis. Adequate nutritional intake supports functional recovery and encourages early mobilization, which in turn improves gastrointestinal function and boosts the patient' s confidence in their recovery [**?**].

2.4 Multimodal Analgesia Management

Traditional single-agent analgesia, such as the exclusive use of opioids, often results in inadequate pain relief and numerous side effects. A multimodal analgesia strategy involves the combined use of different analgesic drugs or methods with varying mechanisms of action. By blocking pain transmission through multiple pathways, this approach reduces the required dose of any single drug, achieves synergistic effects, and minimizes adverse reactions such as nausea, vomiting, and respiratory depression [**?**, **?**].

2.5 External TCM Therapies

In TCM, PGID is viewed as a result of surgical trauma to the meridians and Qi-blood, leading to sluggish circulation and impaired Zang-fu function. External therapies such as acupuncture, moxibustion, and massage have demonstrated definitive efficacy in treating PGID. These methods are well-accepted by patients, and their mechanisms of action involve the regulation of hormones, immunity, nerves, and inflammatory mediators [**?**].

2.6 Other Interventions

Gum chewing acts as a "sham feeding" behavior that stimulates the secretion of gastrointestinal hormones like gastrin and neurotensin. It promotes gastrointestinal motility by stimulating the cephalic-vagal reflex, activating the release of acetylcholine, and reducing intestinal inflammation. Additionally, components in sugar-free gum, such as sorbitol and hexitol, may further promote motility [**?**].

Conclusion

The nursing management of gastrointestinal dysfunction after hip fracture surgery in the elderly is a systematic undertaking. Clinical nursing staff should integrate current research findings, understand the complex underlying mechanisms, and apply comprehensive, individualized intervention strategies. Continued high-quality clinical research is essential to optimize nursing practices, improve the prognosis of this vulnerable patient population, and promote rapid, holistic recovery.

Note: Figure translations are in progress. See original paper for figures.