

# The Clinical Study of Acupuncture's Influence on Gastrointestinal Function after Surgery for Benign Gynecological Tumors

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**Abstract: Objective:** To analyze the influence of acupuncture on gastrointestinal function after surgery for benign gynecological tumors. **Methods:** A total of 74 patients who underwent surgery for benign tumors from February 2023 to February 2024 in our hospital were selected for the study. They were divided into a control group ( $n = 37$ ) and an observation group ( $n = 37$ ) using a random number table method. The control group received conventional intervention, while the observation group received combined acupuncture intervention. The clinical efficacy between the two groups was compared. **Results:** The MTL (mean transit time) in the observation group was significantly higher than that in the control group, while the levels of VIP (vasoactive intestinal peptide), first flatus, disappearance of abdominal distension, first defecation, and length of hospital stay were significantly lower than those in the control group ( $P < 0.05$ ). **Conclusion:** Acupuncture intervention for patients undergoing surgery for benign tumors can effectively improve gastrointestinal function, regulate hormone levels, and prevent adverse reactions, thus having significant value for promotion.

**Keywords:** Acupuncture; Benign gynecological tumors; Surgery; Gastrointestinal function

Benign tumors are generally treated with surgery to prevent malignancy and recurrence. In most cases, benign tumors have low risks and do not result in serious consequences, but they may invade nearby organs and tissues, causing compression. However, surgical treatment can stimulate the abdominal cavity and intestines, and factors such as incision trauma, gastrointestinal cleanliness, and changes in position can lead to abdominal pain, bloating, and exacerbation of gastrointestinal dysfunction. In severe cases, intestinal paralysis and urinary retention may occur, affecting postoperative recovery. Conventional

interventions are commonly used in clinical practice to maintain gastrointestinal function, such as fasting and providing lifestyle guidance, but the effectiveness is limited. Multiple studies have shown that combined acupuncture can promote the improvement of gastrointestinal function and enhance comfort. This study focuses on patients undergoing surgery for benign tumors to analyze the application effects of acupuncture intervention.

## 1. Data and Methods

### 1.1 General Information

A total of 74 patients with benign tumor undergoing



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surgery from February 2023 to February 2024 at our hospital were selected for this study. They were randomly divided into two groups using a random number table method: the control group consisted of 37 patients, aged 32 to 72 years with a mean age of (52.45±4.16) years, and the observation group consisted of 37 patients, aged 33 to 73 years with a mean age of (52.47±4.29) years. There were no significant differences in general characteristics between the two groups ( $P > 0.05$ ), indicating comparability.

**Inclusion criteria:** Patients diagnosed with benign tumors confirmed by imaging, laboratory tests, and clinical observation; undergoing surgical treatment; and providing informed consent for this study.

**Exclusion criteria:** Patients with severe mental, intellectual, or psychological disorders; psychiatric diseases; contraindications for surgery; blood/immune system disorders, etc.

## 1.2 Methods

### 1.2.1 Control Group

The control group received conventional interventions: Various measures were implemented according to medical orders. Before anesthesia induction, routine fasting and abstention from drinking were performed. If patients had indwelling catheters, catheter intervention was strengthened. Intravenous access was established, and oxygen support was provided. If patients showed obvious negative emotions such as anxiety or restlessness, timely psychological counseling was provided. Common complications/adverse reactions were actively prevented and treated during the treatment process. Patients' condition was carefully observed, and feedback was provided to the physician based on their progress, continuously improving the intervention plan. Lifestyle guidance was provided. Before defecation, liquid or semi-liquid diets were chosen, and after defecation, regular diets were provided, ensuring small, frequent meals, with food intake of 200-300 ml every 3 hours to reduce digestive burden.

### 1.2.2 Observation Group

The observation group received combined acupuncture intervention: Strict adherence to relevant procedures was followed for acupuncture, adhering to the principles of examination and verification, and aseptic concepts, implemented 12 hours after surgery.

Acupoints were selected, including Hegu (LI4), Shangjuxu (ST37), Hegu (LI4), and Zusanli (ST36). Appropriate techniques, including rotation, twisting, and lifting, were used during needling. After patients obtained the sensation of Deqi, a pulse electrotherapy apparatus was selected, connected to the needle handle, and various parameters were set to provide continuous stimulation for 20 minutes. During acupuncture, attention was paid to patients' reactions, and they were asked about their sensations. If discomfort occurred or patients could not tolerate it, adjustments to the electrical parameters were made to prevent adverse events.

### 1.3 Observation Items and Indicators

**Evaluation of gastrointestinal dynamics indicators**<sup>[3]</sup>: Fasting venous blood samples of 3 ml were collected and placed in dry tubes with an appropriate amount of EDTA. After mixing, the samples were allowed to stand for 10-20 minutes at a temperature of 4°C. Centrifugation was performed at a speed of 3000 rpm for 20 minutes to separate the supernatant, which was then transferred to EP tubes and stored at -80°C for timely analysis. Enzyme-linked immunosorbent assay (ELISA) was used to test motilin (MTL) and vasoactive intestinal peptide (VIP). **Evaluation of gastrointestinal function recovery**<sup>[4]</sup>: Observation of fever, disappearance of abdominal distention, first defecation, and length of hospital stay in both groups.

### 1.4 Statistical Methods

Data were analyzed using SPSS version 27.0. For quantitative data (expressed as  $\bar{x} \pm s$ ), t-tests were performed, while for categorical data (expressed as %), chi-square tests were conducted. A P-value < 0.05 indicated statistical significance.<sup>[5]</sup>

## 2 Results

### 2.1 Comparison of Gastrointestinal Dynamics Indicators between Two Groups

After intervention, the levels of motilin (MTL) in both groups were significantly higher compared to before intervention, while the levels of vasoactive intestinal peptide (VIP) were significantly lower compared to before intervention. The changes were more significant in the observation group ( $P < 0.05$ ). See **Table 1**.

**Table 1** Comparison of Gastrointestinal Dynamics Indicators between Two Groups [ $n(\bar{x} \pm s)$ ]

Group	Number	MTL(pg/mL)		VIP(pg/mL)	
		Before Intervention	After Intervention	Before Intervention	After Intervention
Observation Group	37	40.84±6.68	53.76±7.22 <sup>a</sup>	235.52±11.03	120.42±11.81 <sup>a</sup>
Control Group	37	40.92±6.59	49.24±7.16 <sup>a</sup>	237.41±10.64	278.48±12.75 <sup>a</sup>
<i>t</i>	/	0.052	2.704	0.750	55.321
<i>P</i>	/	0.959	0.009	0.456	0.000

Note: Compared with before intervention in the group, <sup>a</sup> $P < 0.05$ .

## 2.2 Comparison of gastrointestinal function recovery between two groups

The time of first flatus, disappearance of abdominal distension, first defecation, and length of hospital

stay in the observation group were all significantly lower than those in the control group, with statistical significance ( $P < 0.05$ ). See **Table 2** for details.

**Table 2** Comparison of gastrointestinal function recovery between two groups [ $n(\bar{x} \pm s)$ ].

Group	Number of Cases	First Flatus Time (h)	Disappearance of Abdominal Distension Time (h)	First Defecation Time (h)	Length of Hospital Stay (d)
Observation Group	37	17.44±2.15	12.12±1.25	27.41±4.62	5.41±0.41
Control Group	37	23.72±2.13	26.25±2.50	33.38±4.74	6.31±0.52
<i>t</i>	/	12.622	30.750	5.486	8.267
<i>P</i>	/	0.000	0.000	0.000	0.000

## 3. Discussion

Benign tumors are usually treated with surgical resection, which yields significant results but often affects gastrointestinal function. Modern medicine has confirmed that traditional Chinese medicine (TCM) can treat various diseases with well-established principles of treatment<sup>[7]</sup>. Moreover, TCM treatment concepts such as "nourishing the root to strengthen the foundation" and "treating diseases according to pattern differentiation" align well with people's lifestyles and health needs. Especially for internal medicine diseases, TCM treatment holds remarkable advantages. TCM categorizes benign tumors under the domain of accumulation of pathogenic factors and stagnation of vital energy, considering the main pathogenesis to be stagnation of Qi and blood stasis. According to TCM theory, women are governed by blood, primarily due to factors like lactation, pregnancy, and menstruation, all closely related to blood. Postoperative gastrointestinal dysfunction is classified into categories such as intestinal obstruction and intestinal adhesion by TCM. The main influencing factors include postoperative weakness of the digestive system and deficiency of Qi and blood. Additionally, surgery causes damage to blood vessels, leading to blood stasis internally and

blood extravasation externally, resulting in abdominal distension and pain<sup>[8]</sup>.

Acupuncture, a therapeutic method of TCM, achieves external treatment of internal diseases and is one of its unique medical techniques. Initially targeting specific areas with external stimulation can alleviate symptoms and achieve expected therapeutic effects. Through long-term development, acupuncture has evolved into a comprehensive treatment system by summarizing and collecting effective acupoints, leading to the development of complete theories on meridians and acupoints. Acupuncture has a wide range of applications, effective for dermatological, internal, and surgical conditions, which has been acknowledged by the World Health Organization (WHO)<sup>[9]</sup>. When treating gastrointestinal diseases, acupuncture has shown significant efficacy for conditions such as hiccup, constipation, and acute and chronic gastritis. With advancements in modern technology, traditional acupuncture has evolved alongside the times and continues to improve. This study adopts electroacupuncture, combining electrical stimulation with needle insertion, which generates microcurrents similar to the body's bioelectricity. This enables fine and targeted treatment tailored to

individual patients, thereby enhancing therapeutic effects. Selecting Hegu (LI4), Shangjuxu (ST37), and Shousanli (LI10), commonly used acupoints for improving gastrointestinal function, for acupuncture treatment can yield beneficial effects. For example, regarding Shousanli, imaging techniques can be used to observe the condition of the digestive system during acupuncture, demonstrating its effectiveness in regulating peristalsis in both the small intestine, stomach, and colon, correcting gastrointestinal disorders. As for Zusanli, it connects with the stomach meridian of the Foot Yangming, promoting dredging of meridians, resolving accumulation, regulating Qi to relieve pain, harmonizing the spleen and stomach. Numerous animal studies have shown that acupuncture at Zusanli can stimulate the gastric antrum and body, as well as the vagus nerve and major visceral nerves. Modern medicine suggests that acupuncture at Zusanli can improve gastrointestinal motility, prevent excessive stimulation, regulate the circulation of Qi and blood in meridians and collaterals, thereby relieving spasm, alleviating pain, and regulating Qi and blood. The TCM system suggests that Shangjuxu can harmonize the intestines and stomach, promote meridian circulation, and effectively improve various diseases such as indigestion and constipation. When combined with other acupoints, it can synergize to enhance efficacy. After the surgery for benign tumors, how to accelerate the recovery of gastrointestinal function is a major concern for surgeons. Adhering to the principle of prevention before disease onset and employing external treatment methods of TCM can achieve definite therapeutic effects, with convenient operation, minimal side effects, high cost-effectiveness, and remarkable outcomes.<sup>[10]</sup> Acupuncture has multiple functions, including immune modulation, neuroregulation, and fluid regulation. Through multilayered antagonism, it can exert bidirectional beneficial regulatory effects, accelerating blood circulation, regulating Qi, and the spleen-stomach, thereby preventing adverse reactions. The results of this study show that compared to the control group, the observation group had higher MTL and lower VIP ( $P < 0.05$ ), indicating that acupuncture can improve gastrointestinal indicators and regulate dynamic parameters. The observation group had lower first flatus, disappearance of abdominal distension, first defecation times, and length of hospital stay ( $P < 0.05$ ),

indicating that acupuncture can promote symptom improvement and shorten hospitalization duration. Regarding the first defecation/first flatus time, it reflects the peristaltic performance of the gastrointestinal tract, indicating gradual improvement in gastrointestinal function, facilitating normal diet intake, and providing nutrition and energy supply after surgery. This suggests that combined acupuncture can enhance the effectiveness of benign tumor surgery, improve gastrointestinal function, and prevent complications.

In summary, acupuncture intervention for patients undergoing benign tumor surgery can effectively improve gastrointestinal function, regulate hormone levels, prevent adverse reactions, and has considerable potential for promotion.

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