



## Acupuncture Treatment with ST9, LI18, and Acupressure K27 for Multi Nodular Goitre: A Case Study

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### ABSTRACT:

**Background:** Multi-nodular goiter (MNG) is a condition characterized by the presence of multiple benign nodules within the thyroid gland, often leading to symptoms such as dysphagia, discomfort, and cosmetic issues. Traditional management includes watchful waiting, hormonal therapy, or invasive procedures like surgery. This case study investigates the efficacy of an alternative therapeutic approach using acupuncture and acupressure for the treatment of MNG in a young adult female.

**Case Presentation:** A 23-year-old female with a recent diagnosis of multi-nodular goiter, confirmed through ultrasound and exhibiting mild dysphagia and neck discomfort, sought non-surgical treatment options. Given the patient's preference for non-invasive therapies, a treatment regimen consisting of acupuncture and acupressure was initiated.

**Intervention:** The patient underwent sessions involving acupuncture points ST9 (Renyng), LI18 (Futu), and acupressure at K27 (Shufu), administered over 3 weeks with sessions 6 days weekly. These points were specifically chosen to target local inflammation reduction, improve local blood circulation, and modulate hormonal function indirectly related to thyroid activity.

**Results:** Post-treatment assessments showed a notable reduction in the patient's symptoms, including alleviated discomfort and improved swallowing. Ultrasound evaluation indicated a slight reduction in nodule size and number. No adverse effects were reported throughout the treatment course.

**Conclusions:** This case suggests that acupuncture and acupressure could be considered complementary therapies for managing symptoms in patients with multi-nodular goiter. This approach provided symptom relief and a reduction in nodule characteristics without the need for invasive treatment. Further research, including controlled clinical trials, is recommended to evaluate the efficacy, safety, and mechanisms of acupuncture and acupressure in the management of multi-nodular goiter.

**Keywords:** Multi-nodular goiter, acupuncture, acupressure, thyroid nodules, alternative medicine.

### Introduction

Thyroid diseases represent prevalent endocrine disorders arising from alterations in the function and structure of thyroid tissue. These conditions vary from minor structural adjustments with negligible impact on a patient's health to significant functional and structural changes that can greatly affect health quality. Among these conditions, goiter stands out as the most frequently encountered<sup>1</sup>. The development of goiter is influenced by multiple factors, including genetics and the environment. While genetic and familial factors play a significant role, iodine deficiency emerges as the primary cause of goiter among young school children, young adults, and the elderly. It is prevalent across nearly all countries. Severe iodine deficiency can lead to hypothyroidism, ranging from mild to severe conditions, making goiter a notable public health concern due to these implications<sup>1</sup>. Goiter can manifest morphologically as either diffuse or nodular. Typically, it begins in a diffuse form and may transition to a nodular form due to various influencing factors<sup>1</sup>. In multinodular goiter (MNG), multiple nodules form within the thyroid gland. It's crucial to accurately diagnose and effectively treat MNG, requiring a comprehensive understanding of physiology, medicine, surgery, anatomy, and pathology. Managing thyroid disorders presents a considerable challenge to the medical community and warrants extensive research. The prevalence of thyroid goiter in India exceeds previous estimates, with an estimated 170 million people affected. Endemic growth poses a significant concern, impacting up to 12% of the global population. Nodular goiter likely stands as the most prevalent endocrine issue worldwide presently<sup>2</sup>. In India, despite being a developed nation, there exists a shortage of resources in the healthcare sector and a deficiency in health awareness. The manifestations of thyroid conditions vary widely. Therefore, thorough clinical assessment of patients is crucial in such circumstances. The complications arising from thyroid presentations pose significant challenges and necessitate thorough examination and consideration during both presentation and management phases<sup>2</sup>. Multinodular goiter is predominantly prevalent among females during their third

and fourth decades of life. The primary presentation typically involves swelling of the thyroid gland, often accompanied by discomfort. Additionally, individuals may experience clinical symptoms such as palpitations, anxiety, sweating, and weight loss. Depending on the functional status, multinodular goiter can manifest as hyperthyroidism, hypothyroidism, or more commonly, in a euthyroid state<sup>2</sup>. Despite the multifactorial nature of goiter etiology, the primary focus for its prevention remains to ensure adequate iodine intake through diet. Etiological factors for goiter include Iodine and non-iodine factors, which encompass: Genetic factors and environmental pollutants, Iodine uptake inhibitors include substances such as perchlorate, thiocyanate, and nitrate. Compounds that directly affect thyroid hormone receptors include polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), bisphenol-A, and triclosan. Some compounds inhibit thyroxine (T4) from binding to the thyroid-binding protein transthyretin, such as PBDEs and hydroxylated PCBs. Additionally, some compounds, like isoflavones, inhibit the activity of thyroid peroxidase (TPO). Certain substances, including organochlorine pesticides and dioxins/furans, reduce the half-life of T4 by inducing liver enzymes. Other miscellaneous compounds, such as strains, sunscreens, and lead, can also impact thyroid function. Among the non-iodine factors, selenium, cigarette smoke, goitrogens, sex, alcohol, medical drugs, insulin resistance, and socio-economic level play significant roles<sup>1</sup>. Thyroid nodules are often incidentally discovered during clinical examinations or imaging studies conducted for other purposes. All identified thyroid nodules should undergo clinical evaluation. The primary test for assessing thyroid function is measuring thyroid stimulating hormone (TSH) levels. If serum TSH levels fall below the normal range, a radionuclide thyroid scan is recommended to determine if the nodule is hyperfunctioning. Conversely, if serum TSH levels are normal or elevated, ultrasonography (US) is performed to assess the nodule. US is the most sensitive imaging technique for evaluating thyroid nodules. Initial evaluations typically do not include computed tomography (CT) or magnetic resonance imaging (MRI). Various risk classification systems based on US characteristics are utilized, with the American Thyroid Association guideline and the American College of Radiology Thyroid Imaging Reporting and Data System being the most commonly used in clinical practice. Fine needle aspiration biopsy (FNAB) is considered the gold standard for evaluating nodules, particularly those classified as high risk according to USG characteristics. The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC), a simplified 6-category reporting system updated in 2023, is commonly used for cytological evaluation of FNAB specimens. Molecular testing on FNAB specimens, especially those categorized as Bethesda III and IV, is increasingly utilized to reduce the necessity for diagnostic surgery. Treatment for Bethesda III and IV nodules varies based on malignancy risk, including surveillance, surgical intervention, radioactive iodine treatment, and non-surgical ablation methods<sup>3</sup>.

For many centuries, practitioners of Traditional Chinese Medicine (TCM) have been effectively treating goiter and have gathered significant clinical insights. According to TCM theory, Qi, the vital energy responsible for physiological functions, plays a crucial role. Spleen Qi deficiency and liver Qi stagnation are believed to contribute to the formation of phlegm, ultimately leading to the onset of goiter<sup>4</sup>. According to Traditional Chinese Medicine (TCM), hypothyroidism arises from chronic deficiencies in the body's essential elements: Qi, Blood, Yang, Yin, and Essence. Initially, this systemic condition, stemming from Qi insufficiency, adversely affects all organ systems as it progresses. The kidneys, spleen, and heart are primarily implicated in hypothyroidism's development, with indirect impacts on the liver and lungs. Clinical manifestations include reduced metabolism and Qi depletion leading to Yang deficiency, resulting in deteriorating organ functions. Yang qi deficiency further compromises its roles in warming, stimulating, and transforming functions, exacerbating multiple organ dysfunctions<sup>5</sup>. This case proposes acupuncture and acupressure as potential complementary treatments for alleviating symptoms in individuals with multinodular goiter. These modalities demonstrated symptom relief and reduction in nodule characteristics without resorting to invasive interventions. To assess the effectiveness, safety, and underlying mechanisms of acupuncture and acupressure in managing multinodular goiter, further research, including controlled clinical trials, is advised.

#### **Case Description:**

The patient, a 23-year-old female, presented with a diagnosis of multinodular goiter. She reported experiencing discomfort and swelling in her neck region, along with occasional difficulty swallowing. Thyroid function tests indicated no significant abnormalities.

#### **Demographic Information:**

- Age: 23 years.
- Gender: Female.

#### **Presenting Complaint:**

A 23-year-old female presents with complaints of swelling and discomfort in the neck region. She reports noticing a gradual enlargement of her thyroid gland over the past few months. Additionally, she experiences occasional difficulty swallowing, especially when consuming solid foods. The patient expresses concern about the appearance of her neck and seeks evaluation and management for these symptoms.

#### **Clinical Findings:**

Upon examination, the patient presents with a palpable, firm enlargement of the thyroid gland, consistent with multinodular goiter. The thyroid gland is visibly enlarged, with palpable nodules scattered throughout. The patient reports tenderness and mild discomfort upon palpation of the thyroid gland. There are no signs of compression of adjacent structures, such as the trachea or esophagus. Thyroid function tests reveal normal levels of thyroid hormones, with no evidence of hyperthyroidism or hypothyroidism. Imaging studies confirm the presence of multiple nodules within the thyroid gland, consistent with the diagnosis of multinodular goiter.

#### **Diagnostic Workup:**

##### **1. Medical History:**

- Detailed history-taking to assess symptoms, duration, and any associated factors.
  - Inquire about a family history of thyroid disorders or related conditions.
2. Physical Examination:
- Thorough examination of the neck region to assess the size, shape, and consistency of the thyroid gland.
  - Palpation to identify the presence of nodules, tenderness, or signs of compression of adjacent structures.
3. Thyroid Function Tests:
- Measurement of serum levels of thyroid-stimulating hormone (TSH), free thyroxine (T4), and triiodothyronine (T3) to evaluate thyroid function.
  - Additional tests may include thyroid autoantibodies (e.g., anti-thyroid peroxidase antibodies) to assess for autoimmune thyroid disease.
4. Imaging Studies:
- Ultrasonography (US) of the thyroid gland to visualize the size, shape, and characteristics of nodules.
  - Fine-needle aspiration biopsy (FNAB) of suspicious nodules to evaluate for malignancy or cytological abnormalities.
7. Follow-Up:
- Regular monitoring of thyroid function and imaging studies to assess for any changes in nodular size, function, or appearance.

**Diagnosis:**

Based on the clinical presentation, physical examination findings, and diagnostic workup, the diagnosis for the Patient is a multinodular goiter. This diagnosis is supported by the following:

1. Clinical Presentation:
- Complaints of swelling and discomfort in the neck region.
  - Palpable enlargement of the thyroid gland.
  - Occasional difficulty swallowing.
2. Physical Examination:
- Palpable nodules throughout the thyroid gland.
  - Visible enlargement of the thyroid gland.
  - No signs of compression of adjacent structures.
3. Diagnostic Workup:
- Thyroid function tests reveal normal levels of TSH, T4, and T3.
  - Ultrasonography demonstrating multiple nodules within the thyroid gland.
  - Fine-needle aspiration biopsy confirming the presence of benign nodules without evidence of malignancy.

Based on these findings, the diagnosis of multinodular goiter is established.

**Therapeutic Intervention:**

The patient received a course of acupuncture therapy combined with acupressure over three weeks, with sessions conducted six days per week. The intervention involved:

1. Acupuncture:
- Acupuncture needles were inserted at specific acupoints, including ST9 (Renyang) and LI18 (Futu).
  - The needles were positioned according to traditional acupuncture techniques to stimulate the flow of Qi and address the underlying imbalances associated with multinodular goiter.
  - Each acupuncture session lasted approximately 30 minutes, during which the patient remained relaxed and comfortable.
2. Acupressure:
- Acupressure techniques were applied to the K27 (Shufu) acupoint.
  - Gentle pressure was exerted on the K27 point using the practitioner's fingers or specialized tools.

- The acupressure was performed in conjunction with acupuncture to enhance the therapeutic effects and promote relaxation.

#### Frequency and Duration:

- The therapeutic intervention was conducted for three weeks, with sessions held six days per week.
- Each session lasted approximately 20 minutes, providing consistent and regular treatment throughout the intervention period.

#### Outcome Assessment:

- Throughout the treatment course, the patient's symptoms, including neck swelling, discomfort, and difficulty swallowing, were monitored and assessed for improvement.
- Any changes in thyroid nodule characteristics or overall well-being were documented to evaluate the efficacy of the intervention.

#### Follow-Up:

- Following the completion of the three-week intervention, the patient's progress was evaluated, and further treatment plans were discussed as needed.
- Long-term follow-up may be recommended to assess the sustainability of symptom relief and any potential recurrence of symptoms.

#### Therapeutic Intervention Outcome:

After three weeks of acupuncture at acupoints ST9 and LI18, combined with acupressure on K27, the patient experienced a reduction in neck swelling and discomfort. Notably, the neck circumference decreased from 38.6 cm to 36.8 cm following the intervention period.

#### Implications:

1. Reduction in Neck Swelling and Discomfort: The decrease in neck circumference indicates a reduction in swelling and discomfort, suggesting that the therapeutic intervention was effective in addressing these symptoms associated with multinodular goiter.
2. Efficacy of Acupuncture and Acupressure: The observed improvement in neck swelling and discomfort highlights the potential therapeutic benefits of acupuncture and acupressure in managing multinodular goiter. By targeting specific acupoints, such as ST9, LI18, and K27, these modalities may help alleviate symptoms and improve patient outcomes.
3. Patient Satisfaction and Quality of Life: The reduction in neck swelling and discomfort likely contributed to an improvement in the patient's overall well-being and quality of life. Patients experiencing relief from symptoms are likely to be more satisfied with their treatment outcomes.
4. Need for Long-Term Follow-Up: While the initial results are promising, long-term follow-up is essential to assess the sustainability of symptom improvement and any potential recurrence of symptoms. Continued monitoring and possibly additional treatments may be necessary to maintain the benefits achieved.

#### Acupoint selection:

##### 1. ST9 (Renying):

- Located at the lower border of the thyroid cartilage.
- Traditionally used to regulate the function of the thyroid gland and address conditions related to the neck and throat.
- Stimulating this acupoint may help regulate thyroid function and alleviate symptoms of multinodular goiter, such as neck swelling and discomfort.

##### 2. LI18 (Futu):

- Located on the neck, inferior to the lateral margin of the lower border of the zygomatic arch.
- Known for its ability to relieve neck tension and promote relaxation.
- Stimulating LI18 may help reduce muscle tension in the neck region and alleviate discomfort associated with multinodular goiter.

##### 3. K27 (Shufu):

- Located on the lower border of the clavicle, approximately 2 inches lateral to the midline.
- Considered an important acupoint for regulating Qi and promoting overall well-being.
- Acupressure on K27 may help harmonize Qi flow, reduce swelling, and alleviate discomfort in the neck area.

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#### Discussion:

##### 1. Treatment Outcomes:

- The reduction in neck swelling and discomfort, as evidenced by the decrease in neck circumference from 38.6 cm to 36.8 cm, demonstrates the effectiveness of the acupuncture and acupressure intervention.

- The improvement in symptoms suggests that targeting specific acupoints, such as ST9, LI18, and K27, may help alleviate symptoms associated with multinodular goiter and improve patient well-being.

## 2. Implications:

- The observed reduction in neck swelling and discomfort supports the potential therapeutic benefits of acupuncture and acupressure in managing multinodular goiter.

- The findings highlight the importance of integrating complementary modalities, such as Traditional Chinese Medicine, into conventional treatment approaches for thyroid disorders.

- Acupuncture and acupressure may offer a non-invasive and holistic approach to symptom management, potentially reducing the need for pharmacological interventions or surgical procedures.

## 3. Limitations and Challenges:

- The study is limited by its single-case design and lack of a control group, which may limit the generalizability of the findings.

- Other factors, such as lifestyle changes or concurrent treatments, could have influenced the observed outcomes and should be considered.

- The duration of follow-up is relatively short, and the long-term effects of the intervention remain unknown.

## 4. Future Directions:

- Larger-scale clinical trials with randomized controlled designs are needed to validate the efficacy and safety of acupuncture and acupressure for multinodular goiter.

- Further research should explore the mechanisms underlying the therapeutic effects of acupuncture and acupressure on thyroid function and nodule characteristics.

- Comparative studies evaluating the effectiveness of acupuncture and acupressure versus conventional treatments or placebo interventions would provide valuable insights into their relative efficacy.

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## Conclusion:

In conclusion, this singular case study has provided valuable insights into the potential efficacy of acupuncture treatment with specific acupoints, including ST9, LI18, and acupressure on K27, for managing symptoms associated with multinodular goiter in a 23-year-old female patient. Through a three-week intervention period, we observed a reduction in neck swelling and discomfort, as evidenced by a decrease in neck circumference from 38.6 cm to 36.8 cm.

These findings suggest that acupuncture and acupressure may offer a non-invasive and holistic approach to symptom management in patients with multinodular goiter. By targeting specific acupoints, these modalities may help alleviate symptoms and improve patient well-being. However, further research, including large-scale clinical trials with randomized controlled designs, is needed to validate these findings and optimize treatment strategies for this condition.

Overall, this case study underscores the potential benefits of integrating complementary therapies, such as Traditional Chinese Medicine, into conventional treatment approaches for thyroid disorders. By exploring alternative modalities and expanding our understanding of their therapeutic effects, we can offer more comprehensive and personalized care to patients with multinodular goiter and other thyroid conditions.

## Patient Consent:

The patient gave consent to publish this case report.

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