Offprint: Nursing Experience of a Patient with Gastric Submucosal Tumor Undergoing Miniprobe Endoscopic Ultrasonography

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Abstract

This article summarizes the nursing experience of a patient undergoing miniprobe endoscopic ultrasonography for submucosal gastric tumor, encompassing targeted nursing measures including preoperative psychological care, instrument preparation, patient preparation, intraoperative nursing, and postoperative nursing. Through a comprehensive nursing model featuring adequate preoperative preparation, close intraoperative cooperation, and meticulous postoperative care, the success of mini-probe endoscopic ultrasonography for submucosal gastric tumor was ensured, patient pain was alleviated, symptoms were improved, and recovery was promoted.

Full Text

Nursing Experience with Miniprobe Endoscopic Ultrasonography in a Patient with Submucosal Gastric Tumor

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Abstract

This article summarizes the nursing experience with miniprobe endoscopic ultrasonography (MPS) in a patient with submucosal gastric tumor, encompassing targeted nursing measures including preoperative psychological care, equipment preparation, patient preparation, intraoperative nursing, and postoperative care. Through a comprehensive nursing model characterized by thorough preoperative preparation, close intraoperative coordination, and meticulous postoperative care, the success of miniprobe endoscopic ultrasonography for submucosal

gastric tumors can be ensured, patient pain can be alleviated, symptoms can be improved, and recovery can be promoted.

Keywords: Submucosal gastric tumor; Miniprobe endoscopic ultrasonography; Nursing care

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Miniprobe sonography (MPS) involves inserting an ultrasonic probe with a diameter of less than mm into the patient' s body cavity, enabling clear visualization of gastrointestinal wall layers and lesions. This technique offers a wide observation range and facilitates determination of the primary origin of lesions, thereby improving the diagnostic accuracy of endoscopy and ultrasonography [ ]. Due to the special location of submucosal gastrointestinal lesions, they are often difficult to detect and diagnose through CT or conventional endoscopy [ ]. Compared with traditional endoscopic ultrasonography (EUS), miniprobe EUS offers simpler operation and direct visualization of lesions [ ]. Miniprobe endoscopic ultrasonography consists of a conventional endoscope equipped with a miniature intraluminal ultrasonic probe that can be inserted through the working channel of various gastrointestinal endoscopes.

Upper gastrointestinal protruding lesions are relatively common in clinical practice but can be difficult to differentiate using conventional gastroscopy. Currently, EUS can be categorized into dedicated EUS and MPS, both demonstrating good diagnostic value [ ]. The implementation of this technology compensates for the blind spots of conventional endoscopy and presents new requirements for nursing coordination and cooperation.

1 Clinical Case Presentation

The patient was a male admitted through the outpatient clinic on [date missing]. He presented with gastrointestinal symptoms including abdominal pain and distension. Conventional gastroscopy performed at the Endoscopy Center revealed a submucosal gastric protruding lesion of undetermined nature, measuring approximately cm in diameter with a smooth surface and light yellow color. Further evaluation with endoscopic ultrasonography was recommended. The patient had no history of upper gastrointestinal surgery, no coagulation dysfunction, no thrombocytopenia, and had not taken non-steroidal anti-inflammatory drugs or antiplatelet agents within the preceding weeks. No malignant lesions in other organ systems were identified.

The patient successfully underwent miniprobe endoscopic ultrasonography for the submucosal gastric lesion. The examination was performed using a Fujifilm P-M ultrasonic probe with ° rotational scanning and the water immersion technique.

2 Nursing Care and Examination Coordination

2.1 Preoperative Nursing Care

Psychological Care: Patients often lack understanding of this technique and may experience anxiety, fear, and apprehension. The responsible nurse established early contact with the patient, provided detailed explanation of the entire MPS procedure, and emphasized its significance for disease diagnosis and treatment. Relevant case examples from the hospital were shared when necessary to alleviate negative psychological emotions [ ]. The patient was guided to actively cooperate with the examination and provided informed consent.

Patient Preparation: Prior to the examination, the nurse reviewed the patient' s previous endoscopic and imaging studies, assessed for cardiopulmonary or cerebrovascular diseases and their severity, and carefully excluded contraindications. A detailed medical history was obtained, including medication allergies, smoking history, and recent cough. The patient was confirmed to have fasted for more than hours before the examination. Dimethicone was administered orally minutes prior to the procedure, followed by oral dyclonine mucilage with topical anesthetic effect for pharyngeal anesthesia [ ]. Patients with dentures had them removed. Elderly patients or those with suspected cardiovascular or cerebrovascular disease received oxygen therapy and continuous monitoring of electrocardiography and oxygen saturation.

Equipment and Environmental Preparation: Preparation included the ultrasonic miniprobe (Fujifilm), automatic water infusion device (UWS-), oxygen and suction apparatus, cardiac monitor, and standard emergency cart. All interfaces between the ultrasonic machine and endoscope were properly connected, and the light source, air insufflation, water injection, suction function, and endoscope control knobs were checked for proper function.

Miniprobe Connection and Calibration: The miniprobe requires a therapeutic endoscope with water infusion capability to enable simultaneous operation and irrigation. The ultrasonic drive unit was connected, and the probe' s terminal connector was inserted upward and horizontally into the drive unit, then secured by clockwise rotation. The miniprobe was placed in degassed water, the ultrasonic device was activated, and normal waveforms were confirmed. Examination room lighting was appropriately dimmed to ensure clear visualization of endoscopic and ultrasonic displays.

2.2 Intraoperative Nursing Care

Patient Care: For non-sedated patients, sedatives and antispasmodics could be administered preoperatively, with intramuscular injection of mg minutes before the procedure. Patients were informed that the intubation route was similar to conventional gastroscopy but with a longer duration. They were instructed to breathe calmly and maintain relaxed posture.

The patient was assisted into the left lateral decubitus position with knees flexed,

collar loosened, and a towel placed under the head to prevent soiling of clothing and examination bed from vomitus. The nurse positioned herself at the patient's head side to maintain stable head position. During intubation, when the patient experienced nausea, the nurse prevented the mouthpiece from dislodging while guiding slow, deep breathing. Patients were instructed to allow saliva to flow naturally from the corner of the mouth without swallowing to prevent choking, with vomitus promptly managed to prevent aspiration and asphyxia. Different patient positions were adjusted during the procedure to obtain optimal imaging of the lesion and shorten examination time, ensuring smooth completion of the procedure.

Endoscope Insertion Coordination: Successful passage of the therapeutic endoscope through the pharynx is critical for examination success. Due to the larger outer diameter compared with conventional gastroscopes, the patient' s mandible was gently lifted upward when the endoscope reached the pharynx to align the pharynx and esophagus in a straight line for easier insertion. When the endoscope contacted the tongue base and pharynx, patients were instructed to perform swallowing actions to facilitate smooth entry into the upper gastrointestinal tract [ ]. Since MPS examination takes longer than conventional gastroscopy, close monitoring of respiratory status and consciousness was essential throughout the procedure. Nausea and vomiting responses were observed, and airway patency was maintained to prevent accidents.

Miniprobe Coordination: Throughout the procedure, gentle handling was essential when inserting or removing the miniprobe to prevent displacement of the endoscope and ultrasonic probe [ ]. The probe should be grasped gently with gauze at the front portion while supporting the rear portion, then inserted slowly through the biopsy channel. Forceful insertion must be avoided as it may damage the probe. Excessive bending of the endoscope shaft and miniprobe should be avoided to prevent breakage.

Water Immersion Technique Coordination: After identifying the lesion, the endoscopist activated the water infusion pump pedal switch to inject ml of degassed water into the stomach, producing clear ultrasonic images of the gastrointestinal wall layers. If the ultrasonic image became blurred, indicating the probe had emerged from the water surface, additional degassed water was infused. With an infusion volume of mL, most tumor lesions demonstrated distinct hypoechoic patterns during water-immersion endoscopy [ ].

During water-immersion examination, patient positioning was adjusted to ensure complete submersion of the lesion for satisfactory imaging. Different lesions required various positions including head-down, head-up, supine, or prone positions. Position changes were performed with caution. Water infusion into the gastric lumen should not exceed ml per instance to prevent nausea, vomiting, and potential pulmonary aspiration and infection. Patients were closely monitored for coughing or choking during water infusion. After completing the examination, the endoscopist was reminded to aspirate residual water and air as completely as possible to prevent postoperative abdominal pain and distension.

2.3 Postoperative Nursing Care

Miniprobe Handling: Standard disinfection protocols were followed, with special attention to protecting the miniprobe from compression and kinking during cleaning and disinfection.

Patient Care and Health Education: After the examination, the patient' s mouth corners and face were cleaned, and assistance was provided for getting out of bed and resting. Proper health guidance was provided: if pharyngeal anesthesia effects had not worn off, patients were instructed not to swallow saliva to prevent choking. Food and drink were prohibited for hours, after which warm, cool liquid diet could be started, avoiding hard, rough, spicy foods, carbonated beverages, and alcohol [ ]. Patients with obvious pharyngeal abrasion pain were advised to consume cold, light semi-liquid diet for one day, with adjunctive pharmacological therapy such as saline mouth rinses or watermelon frost lozenges if necessary. Due to air and water insufflation during examination, some patients might experience abdominal distension and pain despite aspiration efforts.

Patients who received preoperative sedatives and antispasmodics often experienced dizziness and blurred vision postoperatively. For outpatients, family members were instructed to provide supervision or the patient was observed in the hospital for hours before discharge to prevent accidents. For general anesthesia patients, monitoring continued in the recovery room until full consciousness was regained before leaving the endoscopy suite with accompaniment. Any complications such as gastrointestinal bleeding, perforation, or hemodynamic instability were promptly reported to the physician for management. No complications occurred in this case. Patient information was properly documented, and endoscopic reports were promptly delivered. Based on the endoscopic findings, outpatients were guided for further specialized consultation.

Discussion and Conclusion

The patient successfully completed miniprobe endoscopic ultrasonography for the submucosal gastric lesion. The ultrasonic endoscopy findings suggested a probable lipoma with chronic atrophic gastritis, recommending regular follow-up observation. The patient experienced no discomfort and returned safely to the ward for further treatment.

Miniprobe endoscopic ultrasonography can clearly display the layered structure of the gastrointestinal wall and preliminarily determine and differentiate lesion characteristics based on echogenic features and origin layers, demonstrating important clinical value for diagnosing submucosal tumors and guiding treatment approaches [ ]. According to miniprobe EUS diagnostic results, the accuracy of determining whether a lesion is amenable to endoscopic resection reaches [ ]. Due to its small caliber, the miniprobe can pass through relatively narrow areas caused by lesions while avoiding compression of protruding lesions, thereby reducing misdiagnosis and missed diagnosis [ ].

With the continuous development of endoscopic ultrasonography, new requirements for nursing coordination have emerged. Specialized endoscopy nurses who apply correct nursing protocols and demonstrate proficient skills during the preoperative, intraoperative, and postoperative periods play a crucial role in ensuring safe and smooth procedures while reducing adverse patient reactions. Meticulous psychological nursing and thorough preparation before examination, skilled coordination and close observation during examination, and proper health guidance after examination are all essential for ensuring successful procedures and preventing complications.

Conflict of Interest Statement: The authors declare no conflict of interest.

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