

# Placement control by transabdominal ultrasound of duodenal feeding tubes: a feasible alternative for trials in a healthy volunteer study population

# UCTN

Research studies in healthy populations may require enteric applications to deliver test meals/pharmaceuticals or to obtain intestinal secretion products. Use of radiological methods for controlling tube position and for insertion is widely accepted for both patients and healthy volunteers. However, radiological methods remain controversial [1]. They carry radiation burden, which depends on the experience of the investigator and on anatomic conditions. Their use in healthy volunteers should therefore follow careful ethical consideration, and alternative methods should be sought if necessary. In critically ill patients, sonographically guided enteric feeding tube placement at the bedside has already been successfully employed [2]. Hence, in this prospective study we investigated the use of ultrasonography to confirm correct intraduodenal tube placement on three occasions in 18 healthy volunteers (m/f 0.8; age (mean  $\pm$  SD)  $27.8 \pm 5.4$  years; BMI  $22.27 \pm 1.88$  kg/m<sup>2</sup>), leading to a total of 54 tube insertions. After an overnight fast and ingestion of 180 mL water, a polyurethane enteric feeding tube (diameter 2.6 mm, length 120 cm) was blindly inserted in right decubitus position. The manoeuvre was performed under continuous aspiration of gastrointestinal juice. The required location of the tube was verified by bedside measurement of aspirated fluid pH (pH  $6.9 \pm 0.9$ ). Transabdominal ultrasound (3.75-MHz Probe) visualized the enteral tube from the pylorus to the second part of the duodenum (medialateral of the gallbladder and upper transverse section in front of the inferior vena cava), both in upright and supine positions (Figure 1). Visual detection was enhanced by injection of 10 mL air followed by 10 mL saline (Figure 2). In 98% of all insertions the tube was localized in the second part of the duodenum by ultrasonography. We believe ultrasonography is a feasible alternative to radiological methods for monitoring postpyloric tube placement, and is preferable for studies in populations of healthy volunteers.

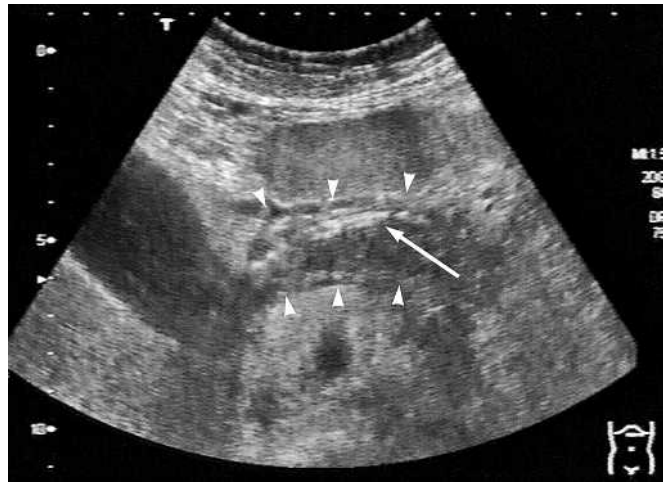


Figure 1 Pars III duodeni marked by arrowheads in the middle below the left liver lobe. Arrow indicates the feeding tube.

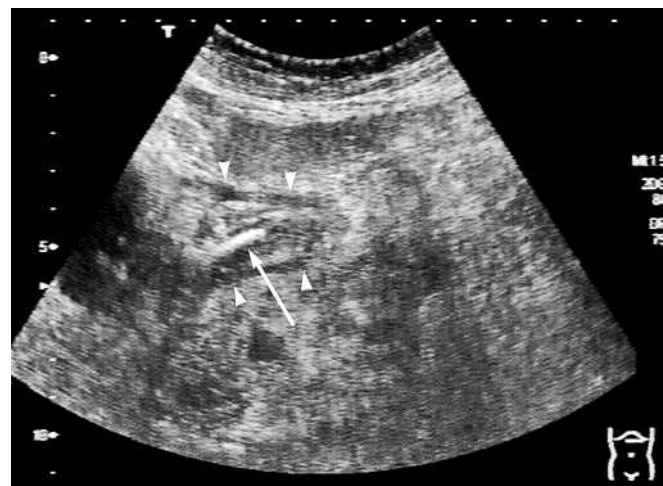


Figure 2 Injected hand-shaken air bubbles generate stronger scattering signals within the feeding tube (arrow).

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