

Gastric Emptying Study

Reviewed: 01/29/2022

Indications	<ul style="list-style-type: none"> • Determination of delayed gastric emptying with quantification of gastric emptying rate. • Evaluation of mechanical obstruction • Evaluation of anatomic obstruction (pyloric, post-surgical, or post radiotherapy) • Evaluation of altered function (gastroparesis (diabetic or idiopathic), scleroderma, amyloidosis, anorexia nervosa) • Evaluation of suspected tumors or surgery • Evaluation of nausea and vomiting, and early suspected satiety • Evaluation of weight loss • Evaluation of gastric therapy (Reglan)
Exam Time	1 ^{1/2} to 2 hours
Administration to Imaging Time	Immediately
Patient Preparation	NPO for 8 hours. Diabetics need to be instructed to bring insulin with them. The dose of insulin is to be adjusted when the meal is given.
Patient Positioning	Sitting between images, supine for imaging
Radiopharmaceutical and Dose	<p>Solid Phase: ^{99m}Tc SC (Sulfur Colloid)</p> <p>Dose Range: 1-2 mCi in cooked eggs or oatmeal</p> <p>Liquid Phase: ¹¹¹In-DTPA (diethylene triamine pentaacetic acid) or ^{99m}Tc-DTPA in 300 ml water orange juice, or milk.</p>
Method of Administration:	Oral.
Conflicting exams and medications:	<p>The Meal should be optimally be ingested within 10 minutes</p> <ul style="list-style-type: none"> • Drugs affecting gastric mobility. Delayed gastric emptying is caused by aluminum hydroxide, narcotics, and propantheline. Gastric emptying enhanced by Reglan. • Premenopausal women should be studied on days 1-10 of their menstrual cycle to avoid effects of hormonal variation on gastrointestinal motility.
Imaging Device	Low energy for ^{99m} Tc; medium energy for ¹¹¹ In
Acquisition Protocol	<p>Dynamic: 60 sec/image for 60 minutes to 90 minutes</p> <p>Views: Anterior or left anterior oblique and posterior sequentially for geometric mean method</p> <p>Solid Study:</p> <ul style="list-style-type: none"> • Prepare 1 egg and mix in tracer • Stir and scramble or prepare oatmeal and add tracer • Administer to patient with 30 -120ml water. Encourage patient to eat quickly.

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- Supine position. Acquisition should be started as quickly as possible after ingestion of food
- Position camera anterior or LAO
- Instruct patient to hold still
- Obtain dynamic images for 60 minutes
(**SNM and SGRA recommend 4 hours**)
- Supine is good for checking of reflux

Comments

- Normally for eggs or oatmeal half of the activity leaves the stomach in 60-120 minutes. For liquids only, the half-emptying time is normally less than 20 minutes.
- Computer acquisition is essential. Half time for emptying is done by drawing a region of interest around the stomach and determination of the time it takes to reach half the peak counts or a least squares fit method to derive a half emptying time to reach 50% of the peak counts.