



Austin Radiological Association

Nuclear Medicine Procedure

MECKEL'S DIVERTICULUM STUDY (Tc-99m-Perchnetate as Sodium Perchnetate)

Overview

- The Meckel's Diverticulum Study depicts the uptake of pertechnetate within the abdomen. Pertechnetate is secreted by the mucosa of the stomach as well as by any ectopic gastric mucosa. Because pertechnetate exhibits weak protein binding, it is also filtered by the kidneys.

Indications

- Detection and localization of a Meckel's diverticulum containing functioning gastric mucosa.
- Detection and localization of other pathologic structures containing gastric mucosa.

Examination Time

- 2 hours

Patient Preparation

- Patient NPO 4 – 6 hours prior to exam.
- Oral famotidine should be administered, 20 mg x 2 days in adults, 0.5 mg/kg/day x 2 days in children prior to exam. I.V. option is 0.5 mg/kg for children and 20mg or 0.25 mg/kg for adults given one hour prior to exam.
- Glucagon should be administered, 50 mcg/kg up to 1mg, diluted to 10ml with sterile water and infused over 2 minutes prior to radiopharmaceutical injection. Flush I.V. with sterile water prior and after glucagon injection.
*DO NOT give glucagon to a diabetic patient. Evaluate for hypersensitivity to Glucagon or lactose, and possibility of pheochromocytoma, or insulinoma.
- Administer 1 – 16.9oz bottle of Breeza -or- 1 - 450ml container of VoLumen 0.1% Ba -or- dilute oral barium mixed 2oz 2.2% Ba to 14oz water prior to scan.

Equipment & Energy Windows

- Gamma camera: Large field of view.
- Collimator: Low energy, high resolution, parallel hole.

- Energy window: 20% window centered at 140 keV.
- Computer with SPECT software.

Radiopharmaceutical, Dose, & Technique of Administration

- Radiopharmaceutical: Tc-99m-pertechnetate as sodium pertechnetate.
- Dose: 10 mCi (370 MBq). Weight adjust dose for children.
- Technique of administration: Standard intravenous injection.

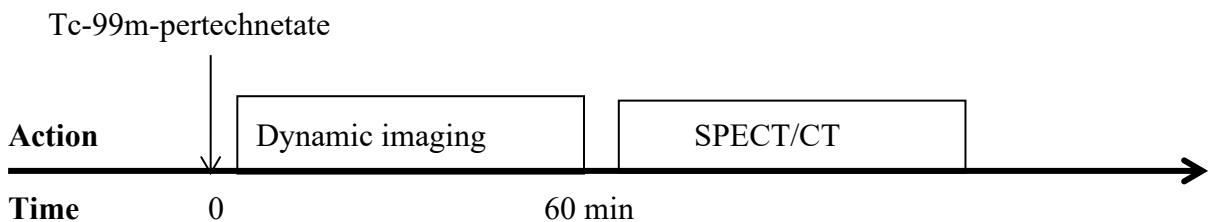
Patient Position & Imaging Field

- Patient position: Supine
- Imaging field: Abdomen and pelvis (must include right lower quadrant).

Acquisition Protocol

- Acquire dynamic anterior images.
Flow 2 sec / frame for 30 frames
Dynamic 60 sec / frame for 60 frames
- Follow by SPECT/CT of any abnormal finding on initial imaging.
Image acquisition parameters:
 - a) degrees of rotation: 360°.
 - b) number of images: 60.
 - c) time per image: 20 seconds.

Protocol Summary Diagram



Data Processing

- Iterative processing if SPECT/CT performed.
- Technologist to review study with radiologist before release of patient.

Optional Maneuvers

- Bladder may be catheterized and saline added to dilute concentrated bladder activity.
- Other projections: R LAT, L LAT, LAO, and RAO images may be obtained to help localize activity in 3 dimensions.
- Use of a nasogastric tube: A nasogastric tube may be inserted prior to the study and attached to suction to minimize the movement of radioactivity secreted by the stomach into small intestine.

Method for timely correction of Data Analysis and reporting errors and notification of referring parties

- Data Analysis and reporting errors are reported to the interpreting physician and appropriate clinic manager for timely correction and notification of the referring physician via report addendum or STAT call if error is significant.

Principle Radiation Emission Data - Tc-99m

- Physical half-life = 6.01 hours.

<u>Radiation</u>	<u>Mean % per disintegration</u>	<u>Mean energy (keV)</u>
Gamma-2	89.07	140.5

Dosimetry - Tc-99m-Pertechnetate as Sodium Pertechnetate

<u>Organ</u>	<u>rads/5 mCi</u>	<u>mGy/185 MBq</u>
Thyroid	0.65	6.5
Large intestine	0.60	6.0
Bladder wall	0.43	4.3
Stomach	0.26	2.6
Ovaries	0.15	1.5
Whole body	0.06	0.6
Testes	0.05	0.5
Red marrow	0.01	0.1