PAUSE AND PULSE - UGI Examinations in Children
Tips for Dose Optimization

PAUSE and Prepare For the Examination

Prior to examination
- Clinical indication, appropriateness of study, questions to be answered, unusual anatomy or prior surgery, and type of study to be performed should be clarified as much as possible.
- Ensure that the technologist/trainee understands the planned procedure, requirements for appropriate immobilization (manual, wrapping or device), equipment and contrast needed (barium, water soluble agent or air).
- Close mentoring of technologist and physician trainees is essential throughout the study.

Patient preparation
- Explain procedure, risks and required immobilization to patient &/or parents,
  - a cooperative and helpful patient &/or parent can greatly shorten study and exposure.
- Overhead exposure scout views may not be necessary in all cases. Pause and think of indications before obtaining such an additional view, and collimate off the body parts that do not need to be included.
- Use lead shield beneath the lower abdomen and pelvis

Procedure
- Ensure that the child is drinking before initiating fluoroscopy:
  - Breast-fed infants may be hesitant to drink from a bottle. It may take some time before the infant begins to drink
  - Do not fluoroscope unless the child has begun drinking. Your assistant can let you know when that happens
  - Young children may not find the contrast agent palatable. Flavored barium mixtures, and flavoring of water-soluble agents, is often helpful in older infants and young children.
- Fluoro-grab images are helpful in delineating the distensibility of the esophagus and by extension the presence of external impressions; such images can also provide information regarding peristalsis.
- Fluoro-grab images are also helpful in delineating the course of the duodenum, rendering documentation of the position of the ligament of Treitz more reliable.
- Exposure recordings are helpful when mucosal or other high level of detail is necessary, such as identification of H-type fistula. PAUSE and think before obtaining such images.
PAUSE and PULSE During the Examination

Fluoroscopy

- PAUSE fluoroscopy whenever feasible and use screen images for exam planning and problem solving during the study.
- PULSE the x-ray beam at the lowest frame rate possible.
- Intermittent visualization only as needed.
- Useful in children to follow the course of the duodenum, saving images along the way (fluoro-grab); this may avoid needing to repeat the study at a later date.
- Keep fluoroscopy away from the pelvis and gonads as much as possible.
- Keep the II tower as close to the patient as possible.

Images

- Most images obtained during the study can be saves of the monitor image (fluoro-grab) which carry no additional radiation.
  - As discussed above, this allows temporal information with no need for cine filming.
- If more detail is needed, those images can be camera spots.
- If a small-bowel follow-through is requested, PAUSE and think about the indications, and the timing and collimation of follow-up radiographs.

SUMMARY:

- PAUSE to properly plan and prepare for study.
- Activate dose-saving features of equipment.
- No exposures unless necessary.
- Depress last image hold and last image grab instead.
- PULSE at lowest possible rate.

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