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Aqsa Shoaib

ID # 14967

Semester 4th

BS. Radiology

CRP-CP

Mam. Maheen

25-6-20

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Q/NO#1:

If there is non-visualization of ureteral segment on IVU and CTU which alternative Procedure will you Perform? what is the general Protocol for Performing that procedure?

Answers-

The alternative Procedure for IVU and CTU the "Retrograde Pyeloureterography" procedure will perform.

Retrograde Pyeloureterography:-

→ Retrograde Pyeloureterography is also referred to as retrograde pyeloureterography. In this study the collecting system is evaluated by directly injecting radiographic contrast through catheters, rather than utilizing the excretory phase of contrast excretion after intravenous injection, as with a CT urogram (CTU) or intravenous urogram (IVU).

→ Normally, urine is produced in the kidney and travel down the ureter in an antegrade fashion and is then stored in the bladder. The term retrograde (moving backwards) is used in reference to the direction the contrast is introduced.

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→ This test is performed in the hospital radiology department by a urologist and is typically carried out under general anesthesia.

Procedure

- A catheter is placed in the ureter of interest, with its tip positioned at the distal ureter. Water-soluble contrast appropriate for the urinary system is instilled slowly to gently distend the upper collecting system. Spot images are obtained of areas of interest.
- Distention of the upper collecting system is painful, so overdistention is avoided. Overdistention also results in pyelosinus and pyelovenous backflow, degrading the image.
- The patient may need to be rolled into decubitus positions to fill out the lower pole calyces.
- Post void images are obtained.

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Protocols :-

- Your doctor will explain the procedure to you and offer you the opportunity to ask any questions that you might have about the procedure.
- You will be asked to sign a consent form that gives permission to do the procedure. Read the form carefully and ask questions if something is not clear.
- You will need to fast for a certain period of time prior to the procedure. Your doctor will notify you how long to fast, whether for a few hours or overnight.
- If you are pregnant or suspect that you may be pregnant, you should notify your doctor.
- Notify your doctor if you have ever had a reaction to any contrast dye, or if you are allergic to iodine.
- Notify your doctor if you're sensitive to or are allergic to any medications, latex, tape, and anesthetic agents (local general).
- Notify your doctor if you have a history of bleeding disorders or if you are taking any anticoagulant (blood-thinning).

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QNO#2:

which radiological procedure is commonly performed for assessing congenital anomalies of renal system? Explain in detail the whole procedure.

Answer &

For the congenital anomalies of renal system an intravenous urography (IVU) or excretory urography (EU) procedure is used.

Intravenous Pyelography (IVP):-

→ An Intravenous Pyelography (IVP), also called an intravenous urography (IVU) or excretory urography (EU), is a radiological procedure used to visualize abnormalities of the urinary system, including the kidneys (renal parenchyma, pelvicalyceal system), ureters and bladder.

Procedure:-

Indications &-

- Check for normal function of kidneys.
- Check for anatomical variants or congenital anomalies (e.g, horse-shoe kidney).
- Check the course of the ureters.
- Detect and localize a ureteric obstruction (urolithiasis).

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→ assess for synchronous upper tract disease in those with bladder transitional cell carcinoma (TCC).

Contraindications &

- Contrast allergy
- Hepato-renal syndrome.
- Thyrotoxicosis
- Raised serum creatinine.

Contrast Media &

→ HOCM or LOCM 370 are acceptable but the following "high-risk" groups should receive LOCM:

- 1) Infants and small children & the elderly.
- 2) Those with renal and/or cardiac failure.
- 3) Poorly hydrated Patients.
- 4) Patient with diabetes, myelomatosis or sickle-cell anemia.

Contrast Media &

- Adult dose
50 ml.
- Paediatric dose
1 ml Kg⁻¹.

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Patient Preparation :-

- No food for 5 hr prior to the examination.
- Dehydration is not necessary and does not improve image quality.
- If the examination to be performed on a patient who has previously a severe contrast medium reaction, consideration should be given to administering methyl prednisolone 39 mg orally 12 and 2 h prior to injection of contrast medium in addition to ensuring that a LOCM is used.

Preliminary Films :-

- Supine, Full-length AP of the abdomen, in inspiration. The lower border of the cassette is at the level of the symphysis pubis and the X-ray beam is centred in the mid line at the level of the iliac crests.
- Supine AP of the renal areas, in expiration. The X-ray beam is centered in the mid line at the level of the lower costal margin.
- 35° Posterior oblique views, or
- Tomography of the kidneys at the level of a third of the AP diameter of the patient (approx 8-11 cm). The optimal angle of swing is 25-40°.

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Technique :-

- The median antecubital vein is the preferred injection site because flow is retarded in the cephalic vein as it pierces the clavipectoral fascia.
- A 19-G needle is advanced up the vein to reduce risk of a perivenous injection and the injection is given rapidly as a bolus to maximize the density of the nephrogram.
- Upper arm or shoulder pain may be due to stasis of contrast medium in the vein. This is relieved by abduction of the arm.

Films :-

- 1) Immediate films :- AP of the renal areas. This film is exposed 10-14 s after the injection (arm-to-kidney type). It aims to show the nephrogram, i.e., the renal parenchyma opacified by contrast medium in the renal tubules.
- 2) 5-min films :- AP of the renal areas. This film is taken to determine if excretion is symmetrical and is invaluable for assessing the need to modify technique e.g., a further injection of contrast medium if there has been poor initial opacification.

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15-min film :-

AP of the renal areas.

Release film :-

Supine AP abdomen.

After micturition film :-

Based on the clinical findings and the radiological findings on the earlier film, this will be a full-length abdominal film or a coned view of the bladder with tube angle 15° above the symphysis pubis.

Complications :-

→ Due to the contrast medium.

→ Due to the technique: Incorrectly applied abdominal compression may produce intolerable discomfort or hypotension.

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QNO#3:

Which procedure is performed for investigation of extrahepatic biliary obstruction? Discuss the general protocol followed for that procedure?

Answer :-

Endoscopic Retrograde Cholangiopancreatography (ERCP) Procedure is performed to treat biliary ductal system.

ERCP:-

→ Endoscopic retrograde cholangiopancreatography is a technique that combine the use of endoscopy and fluoroscopy to diagnose and treat certain problems of the biliary or pancreatic ductal systems.

→ ERCP has three advantages over PTC.

- 1) The ability to visualize and biopsy ampullary lesions.
- 2) The demonstration of biliary tree & pancreatic duct.
- 3) Greater therapeutic potential.

Procedure :-

Indications :-

→ Investigation of extrahepatic biliary obstruction.

→ Post-cholecystectomy syndrome.

→ Investigation of diffuse biliary disease, e.g., Sclerosing cholangitis.

→ Pancreatic disease.

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Contraindications :-

- Australia antigen - Positive ; HIV - Positive .
- Oesophageal obstruction ; varices ; Pyloric stenosis .
- Previous gastric surgery .
- Acute pancreatitis .
- when glucagon or Buscopan are contraindicated
- severe cardiorespiratory disease .

Contrast Medium :-

- ⇒ Pancreas
LOCM 240 .
- ⇒ Bile ducts
LOCM 150, dilute contrast medium ensures that calculi will not be obscured .

Equipment :-

- Side - viewing endoscope .
- Polythene catheters .
- Fluoroscopic unit with spot film facilities .

Patient Preparation :-

- Nil orally for 4h prior to procedure .
- Premedication .
- Antibiotic cover .

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Preliminary film :-

→ Prone AP and LAO of the upper abdomen, to check for opaque gallstones and pancreatic calcification / calculi.

Films :-

Pancreas (using fine focal spot).

1) Prone, both posterior obliques.

Bile ducts

1) Early filling films to show calculi

→ Prone.

→ Supine.

2) Films following removal of the endoscope, which may obscure the duct.

3) Delayed films to assess the gallbladder and emptying of the common bile duct.

Complications :- Due to contrast medium :

1) Allergic reactions - rare.

2) Acute pancreatitis - Large volume, high pressure injections.

Due to technique :-

Local: Damage by endoscope, e.g., rupture oesophagus.

Distant: - Bacteraemia, Septicaemia.

(Approx. 70%) Acute pancreatitis (0.7 - 7.4%).

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Protocols :-

- You may have diet and medication restrictions the week before the ERCP test. Ask your Physician for detailed instructions.
- You will not be allowed any heavy meal for at least 8 hours before the procedure, light meals or opaque liquids for 6 hr before, or clear liquids for at least 2 hrs before.
- Plan to take the day off from work.
- Plan to have someone you know drive you home because the procedure is performed with general anesthesia, you will not be allowed to drive after the procedure or return to work until the next day.
- Let your physician know about any special needs, medical conditions, allergies (such as latex) and all current medications you are taking. In some cases, your doctor may prescribe an antibiotic before the procedure.
- In some cases, when Patient need certain therapeutic interventions during an ERCP procedure, they may be admitted to the hospital overnight for observation.

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Q No #4:

Which radiological procedure is recommended for evaluating the cause of female infertility? Explain the procedure in detail.

Answer:-

Hysterosalpingography (HSG) is recommended for evaluating the cause of female infertility.

HSG &

→ Hysterosalpingography (HSG) also known as uterosalpingography, is a fluoroscopic examination of the uterus and the fallopian tubes.

→ It is performed to investigate the shape of the uterine cavity and the shape and patency of the fallopian tubes.

→ Hystero means uterus

→ Salpingo means fallopian tubes.

→ Graphy means to draw.

Procedure :-

Indications :-

→ Infertility

→ Recurrent miscarriages

→ Following tubal surgery.

→ Assessment of the integrity of a Caesarean uterine scar.

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Contraindications :-

- Pregnancy
- A Purulent discharge on inspection of the vulva or cervix, or diagnosed PID in the preceding 6 months.
- Recent dilatations and curettage or abortion, or immediately post-menstruation. This applies only to oily contrast medium because of the risk of intravasation.
- Contrast sensitivity.

Contrast Mediums :-

- Oily contrast medium is no longer recommended.
- HOCM or LOCM 300. volume 10-20 ml.
- LOCM have no advantage with regard to image quality or side effects but the nonionic dimer, iotrolan, is associated with a lower incidence and decreased severity of delayed pain.

Patient Preparation :-

- The Patient should abstain from intercourse between booking the appointment and the time of the examination unless she uses a reliable

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method of contraception, or the examination can be booked between the fourth and tenth days in a patient with a regular 28-day cycle.
→ Apprehensive (fearful) patients may need premedication.

Preliminary Films :-

→ Coned PA view of the pelvic cavity.

Films :-

→ Using the undercouch tube :

1) As the tubes begin to fill.

2) when peritoneal spill has occurred and with all the instruments removed.

Complications :-

→ Bleeding from trauma to the uterus or cervix.

→ Vomiting or headache.

→ Infection.

→ Abortion.

→ Allergic phenomena - especially if contrast medium is forced into the circulation.

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QNO#5:

Explain in detail the conventional radiological procedure used for diagnosing the disorders of joints, ligaments and tendons.

Answer :-

We use Arthrography to diagnose the disorder of joints, ligaments and tendons.

Arthrography :-

Method :- Single contrast (contrast)
Double contrast (air)

Indication :-

- Joint capsule torn
- Joint cavity
- Synovial membrane
- Articular cartilage, labrum
- Ligaments
- Tendons
- Loose bodies within joints.
- Prosthesis assessment (loosening, infection).

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Contraindications :-

- Active arthritis
- Joint infection
- Bleeding Problems
- Previous sensitivity to contrast media

Equipment :-

- Fluoroscopy with spot film devices.

Preliminary Film :-

- Routine plain film radiograph.
- AP and true lateral of the joint of interest.
- Axial in shoulder and oblique view / inversion / eversion in ankle.
- Radial and ulnar deviation in wrist joint.

After Care :-

- Avoid driving for two days.
- Joint Pain may occur.

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Complication :-

- Allergic reaction
- Synovitis (inflammation of synovial membrane).
- Pain Capsular rupture.
- Trauma to adjacent structure e.g. nerves and vessels.

THE END