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DISCIPLINE : BS RADIOLOGY

PAPER : CRP & CP

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DATE : 25, June. 2020

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# QUESTION 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?

## ANSWER:

If there is non-visualization of ureteral segment on IVU and CTU the alternative procedure which is used for this is RPUG (retrograde pyelourethrography).

## RETROGRADE PYELOURETHROGRAPHY (RPUG):

- RPUG is an imaging test which uses contrast dye in urinary tract to take a better X-ray image of urinary system.
- The urinary system includes the kidney, bladder, and everything that connected to them.

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- It is similar to IVP.
- IVP is done by injecting contrast dye into a vein for better X-ray images.
- RPUG is done by cystoscopy which involves injecting contrast dye directly into the urinary tract through a thin tube called endoscope.
- RPUG is used to check the urinary tract blockages, such as tumors or stones.

## GENERAL PROTOCOLS FOR

### RPUG:

Before having an RPUG done there are few things patient should do in preparation

- Fast for a few hours before the procedure.
  - ⇒ Doctor will tell you to stop eating and drinking after midnight on the day of the procedure.
  - ⇒ Not eat or drink 4 to 12 hours before the procedure.

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2. Take a laxative:

The doctor may be given an oral laxative or an enema to make sure your digestive system is cleaned.

3. STOP MEDICATIONS:

The doctor may tell you to stop taking blood thinners or certain herbal supplements before the test.

4. Make sure to tell your doctor that if you are taking any medications or herbal supplements.

5. If you are pregnant or might be pregnant.

6. If you are allergic to any kind of contrast dye or iodine.

7. Before the procedure the technician will ask to remove all jewelry, in some cases your clothing.

8. The technician will inject the dye through catheters.

9. The healthcare provider will

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take a series of x-rays.

10. When x-rays are done the healthcare provider will remove the catheter and endoscope.

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## QUESTION NO: 2

Which radiological procedure is commonly performed for assessing congenital anomalies of renal system?

ANSWER:

The procedure which is commonly performed for congenital anomalies of renal system is IVP  
Intravenous pyelography.

## INTRAVENOUS PYELOGRAPHY (IVP) :

- It is a radiographic examination of urinary tract including renal parenchyma, calyces and pelvis after intravenous injection

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of contrast media.

## 1: INDICATIONS:

- Diseases of renal collecting system and renal pelvis.
- Differentiate function of both kidneys.
- Calculus diseases
- Abnormalities of the ureter.

## 2: CONTRAINDICATIONS:

- Pregnancy
- Infancy
- Hyperthyroidism
- Diabetes
- Generalized allergic conditions.

## 3: CONTRAST MEDIA:

- HOCM or LOCM 370 are acceptable but the following high risk should receive LOCM.
- Infants and small children and the elderly.
- Poorly hydrated patients.

ADULT DOSE:

50 ml

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## PAEDIATRIC DOSE:

1 ml Kg<sup>-1</sup>.

## 4. PATIENT PREPARATION:

- Fasting for 4 hours.
- Ask for any history of Diabetes mellitus, Renal Disease, Allergy to drugs and any specific foods.
- Do not dehydrate the patient.
- Bowel preparation
- Take informed consent form.

## 5. EQUIPMENTS:

- Abdominal compression equipment
- Pads and immobilization aids.
- IV intravenous equipments
  - Small syringe
  - filling needle
  - skin prep

## 6. FILMING TECHNIQUES:

- Low kVp (65-75)
- High mA (600-1000)

## 15 MINUTES FILM:

Visualization of ureters is better in prone position as the fill better.

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### 5 MINUTE FILMS:

Shows dilated calyces or if it is not seen than compression band is not applied.

### 30 MINUTES FILMS:

It gives complete overview of the urinary tract i.e. kidneys ureter and bladder.

### 7. COMPLICATIONS:

Due to contrast

Due to technique

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## QUESTION NO: 3

Which procedure is performed for investigation of extrahepatic biliary obstructions?

Discuss the general protocol followed for that procedure?

### ANSWER:

The procedure which is performed for the investigation of extrahepatic biliary obstructions is ERCP



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# ERCP (ENDOSCOPIC RETRO- GRADE CHOLANGIO PAN- CREATICTOGRAPHY)

## INTRODUCTION:

→ ERCP is a specialized fusion of endoscopic and radiological procedure used for diagnostic and therapeutic purposes of many diseases of the pancreas and biliary ducts under fluoroscopy examination.

→ Useful diagnostic method when the biliary ducts are not dilated and when there is no obstruction exists at ampulla.

## GENERAL PROTOCOLS FOR ERCP:

Before the ERCP procedure the patient should prepare;

1: The patient may have diet and medication restrictions the

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week before the test.

2: The patient should ask for detailed instructions from doctor.

3: The patient will not be allowed any heavy meal for at least 8 hours before, or clear liquids for at least 2 hours before.

4: Plan to have someone who drive patient to home.

5: Because the procedure is performed with general anesthesia, so patient is not allowed to drive after the procedure.

6: The patient should tell the physician about any special needs, medical conditions, allergies (such as latex) and all the medication you take.

7: The technician should explain all the procedure risks and benefits to the patient.

8. The patient sign the consent

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form.

9. Remove all the jewellery and accessories before procedure.

10. For the procedure the patient should lie on the left side of stomach on an examining table in an x-ray room.

11. The medication may be given to help you relax.

12. You will swallow the endoscope, and the physician will then guide the scope through your esophagus, stomach and duodenum until it reaches the spot where the ducts of the biliary tree and pancreas open into duodenum.

## QUESTION NO: 4

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

ANSWER:

For evaluating the cause of female infertility the HSG procedure

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Recommended.

# HYSTEROGRAPHY (HSG):

## INTRODUCTION:

→ It is also known as uterosalpingography

→ It is a radiological procedure to investigate the shape of uterine cavity and the shape and patency of the fallopian tubes.

→ It is a special x-ray using dye to look at the uterus and fallopian tubes.

## PROCEDURE:

### 1: INDICATIONS:

- Infertility
- Congenital anomalies of uterus.
- Recurrent spontaneous abortions.

## 2: CONTRAINDICATIONS:

In this situations HSG is not performed;

- Suspected pregnancy
- Acute pelvic infection
- Active vaginal bleeding
- Immediate pre and post menstrual phase.

## 3: CONTRAST MEDIA:

### LIPID SOLUBLE CONTRAST:

lipiodol

It is less often used

### WATER SOLUBLE CONTRAST:

- clearly visualized
- Gets absorbed within hours.
- Widely used and preferred.

## 4: EQUIPMENTS:

Different types of cannula are used

e.g.// acorn tip metallic cannula  
cervical vacuum cup  
Balloon catheter

## 5: PATIENT PREPARATION

It is done in first half of menstrual cycle in proliferative phase between 8<sup>th</sup> to 12<sup>th</sup> day.

- Patient is strictly to avoid sexual intercourse from the date of her period.
- Informed consent is taken.
- Antispasmodic should be given before procedure
- Spot film may be taken.

## 6: PRELIMINARY FILM:

- Corad PA view of pelvic cavity should be taken.

## 7: TECHNIQUE:

- Patient must lie supine on the table in lithotomy position (knees flexed, legs abducted and heels together).

- Use aseptic condition the radiologist or gynecologist inserts speculum and the cervix is cleaned with chlorhexidine.

2ml of CM is injected initially to outline the uterine cavity

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## 8: COMPLICATIONS:

Due to technique.  
Bleeding  
Pregnancy irradiation  
Uterine perforation  
Infection

## 9: AFTERCARE:

Advised the patient that she may have bleeding per vagina 1-2 days and pain may last for up to 2 weeks.

# QUESTION NO: 5

Which radiological procedure is recommended or used for diagnosing the disorders of joints, ligament and tendons? Explain in detail.

## ANSWER:

CONVENTIONAL RADIOLOGICAL PROCEDURE FOR DIAGNOSIS JOINTS, LIGAMENTS AND TENDONS:

The conventional radiological

procedure is arthrography.

# ARTHROGRAPHY:

## INTRODUCTION:

- ⇒ It is a type of imaging test used to look at a joint, such as shoulder, tendons and ligaments.
- ⇒ It may be done if standard X-rays do not show the needed details of the joint structure and function.
- ⇒ An arthrogram may also use fluoroscopy CT or MRI instead of X-rays to get better pictures of joint.
- ⇒ To find problems in the soft tissues of the joint, such as ligaments, tendons and cartilage.



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## 1. INDICATIONS:

- Ligaments
- Tendons
- Joint cavity

## 2. CONTRAINDICATIONS:

- Bleeding problems
- Active arthritis
- Joint infection

## 3. EQUIPMENTS:

- Fluoroscopy with spot films devices.

## 4. PRELIMINARY FILM:

- ⇒ AP and true lateral of the of interest.
- ⇒ Radial and ulnar deviation in wrist joint.

## 5. PATIENT PREPARATION:

- ⇒ Explain the whole procedure to the patient before the examination.
- ⇒ Advise the patient of any possible complications involved with doing procedure.

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⇒ Patient must provide information on allergies, medication and possible pregnancy prior to procedure.

⇒ Patient must sign an informed consent form.

## 6: COMPLICATIONS:

⇒ Pain Capsular rupture  
Allergic reaction

## 7: AFTER CARE:

⇒ Joint pain may occur  
Avoiding walking and driving.

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END OF PAPER...!