

For 6th
Year

SURGICAL RADIOLOGY

Dr. WAEL METWALY



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا

سُبْحَانَكَ رَبَّنَا إِنَّا كُنَّا

إِنَّا كُنَّا نَعْبُدُكَ

صَدَقَ اللَّهُ الْعَلِيمُ

الآية (٢٢) سورة البقرة

اللهم

- اللهم اجعل هذا العمل خالصاً لوجهك الكريم
- اللهم زدني علماً واجعل هذا العلم نافعاً لكل من يدرسه
- اللهم ارزقني من هذا العمل رضاءاً ومغفرة وعتق من النار ما حييت وبعد الممات
- اللهم اجعل هذا العمل صدقة جارية لا ينقطع بها عملي بعد موتي

اللهم آمين

اللهم آمين

وائل متولى

الذي يرحون بالدموع يحدون بالابتهاج
انظروا إلى الأجيال القديمة وتأملوا. هل توكل أحد على الرب فخرى؟
الذي بدأ معك اول الطريق له يتركه في منتصفه
هو شاييف هو عارف مش ينسى ☺

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With my best wishes

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G.I.T RADIOLOGY


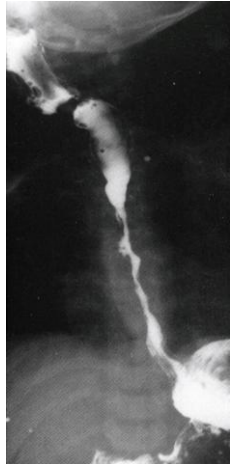


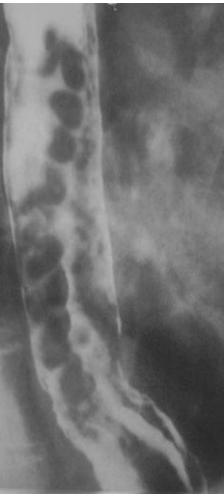


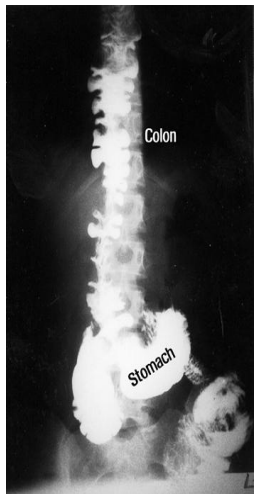
الذي يرحون بالدموع يحدون بالابتهاج
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الذي بدأ معك اول الطريق له يتركه في منتصفه
هو شاييف هو عارف مش ينسى ☺

Chapter 1

I. OESOPHAGUS

* CRITERIA OF NORMAL OESOPHAGUS IN BARIUM SWALLOW

- ☆ **About 20-30 Barium** is used.
- ☆ **Shape of oesophagus**
 - Nearly straight course
 - Width Near by 1 finger

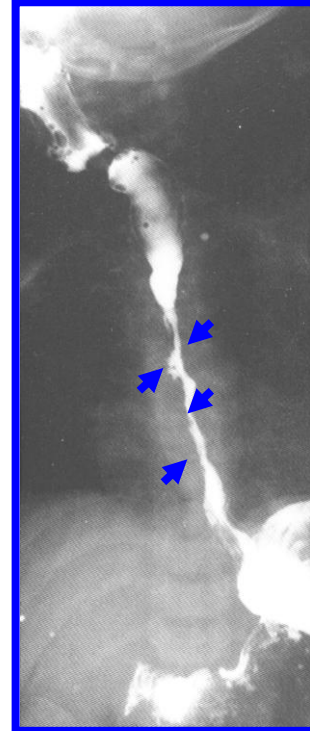
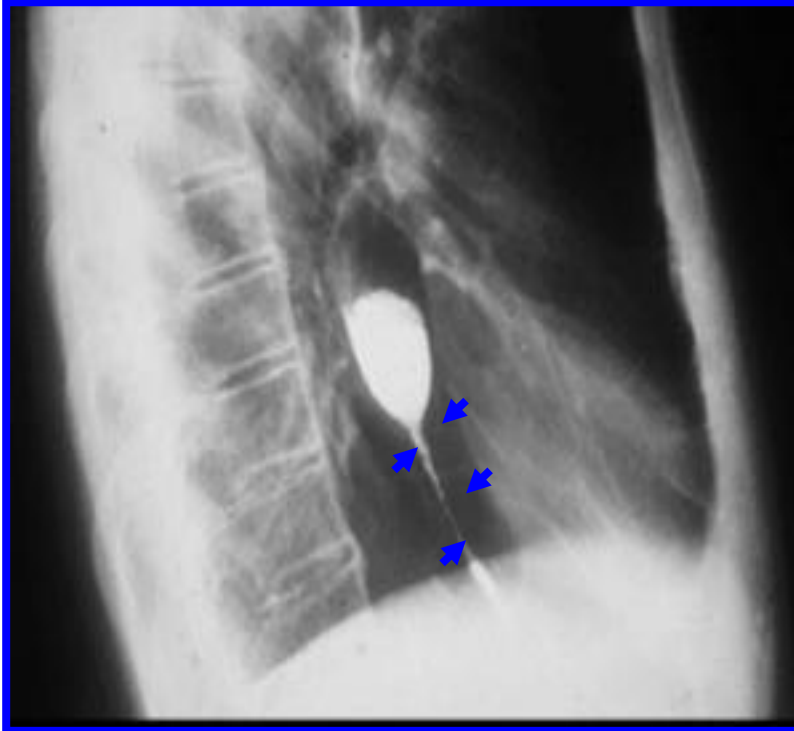
Normal oesophagus	① Stricture oesophagus	② Achalasia of oesophagus	③ Cancer oesophagus
			
④ Oesophageal Varices	⑤ Oesophageal Atresia	⑥ Pharyngeal Diverticulum	⑦ Colon by pass
			

1. CORROSIVE STRICTURE

☆ **Barium swallow** shows

Diffuse **stricture** affecting most of the oesophageal length

± mild dilatation above the stricture



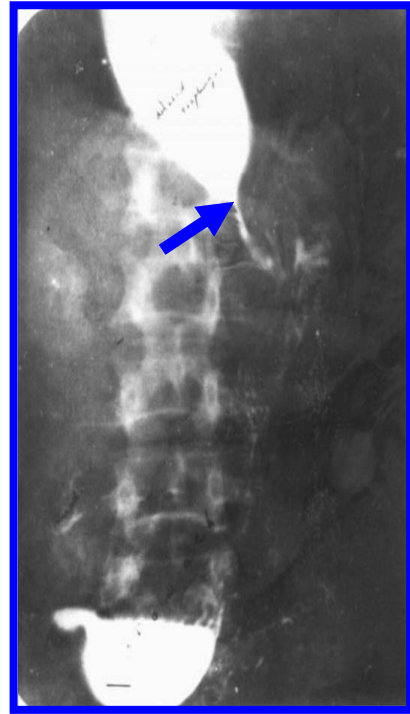
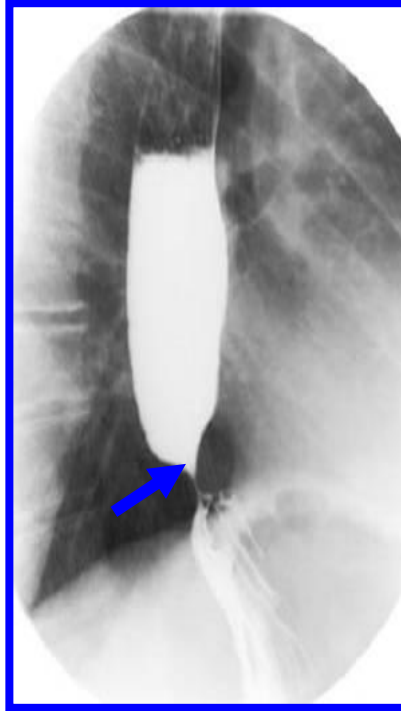
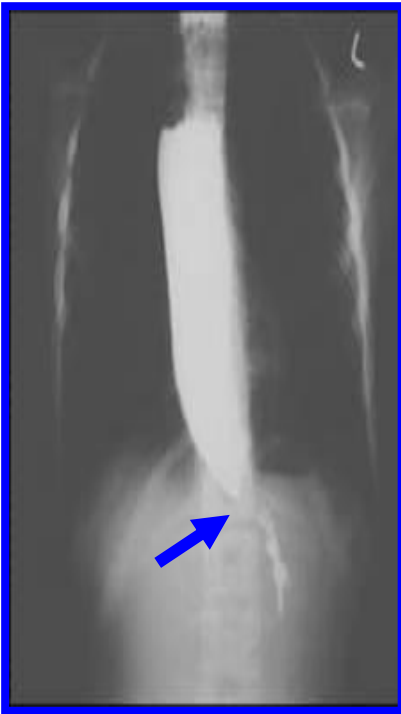
This patient gives a history of ingesting a corrosive material.
The key to diagnosis is the history

Answer by True or False

1. The lesion is traumatic ()
2. The underlying cause is ingestion of a corrosive material ()
3. The most common age is newborn ()
4. The main presentation is vomiting ()
5. Chest infection can be a possible complication ()
6. It may leads to Barrett's esophagus ()
7. Cancer esophagus can be a differential diagnosis ()
8. Chemical antidote is indicated ()
9. The principle line of treatment is dilatation ()
10. Gastric pull up can be a line of treatment ()

2. ACHALASIA OF THE CARDIA

☆ Barium swallow shows (**Parrot peak**) shape



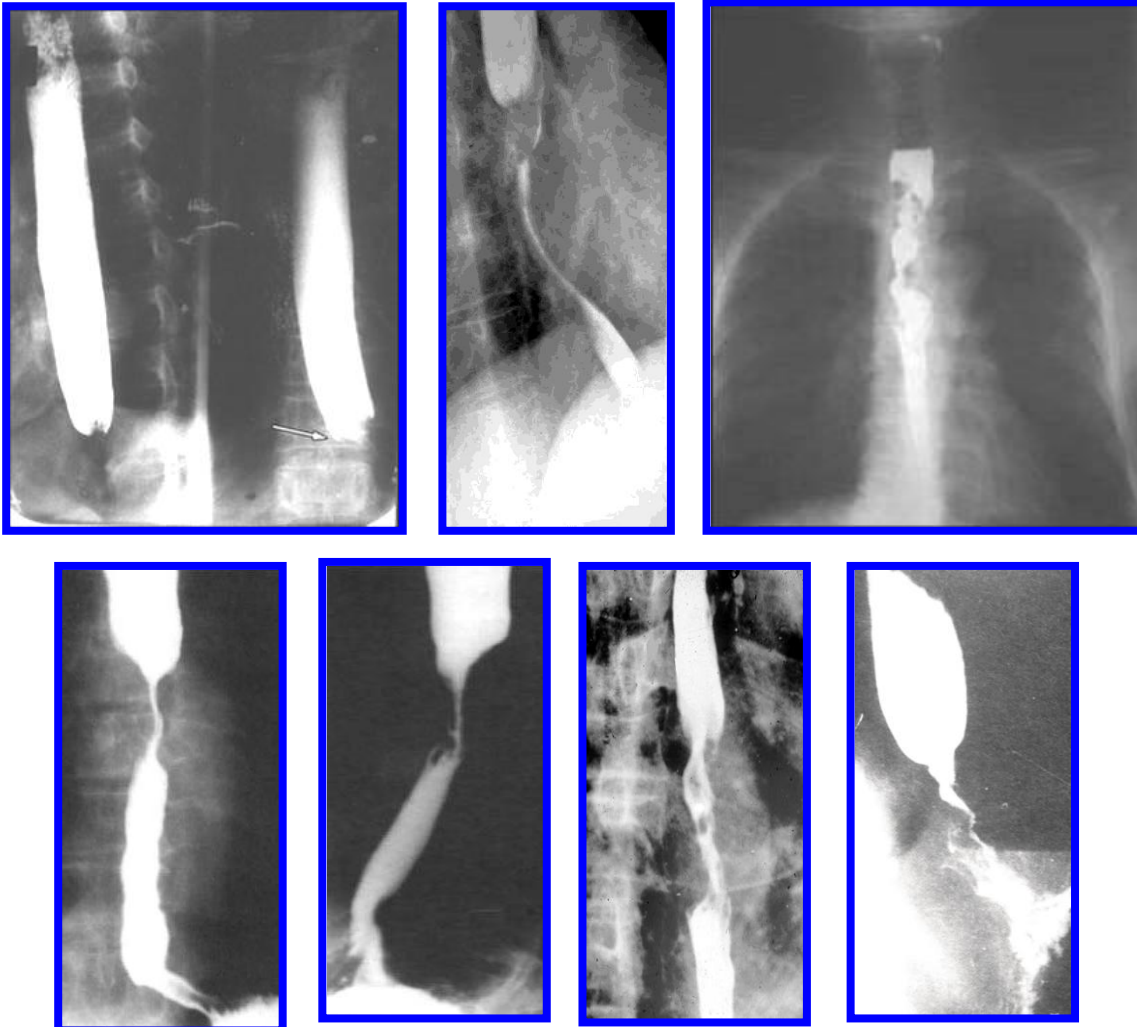
Dilatation of the oesophagus with **smooth tapered lower oesophagus**

Answer by True or False

11. This study is Barium swallow ()
12. Shoulder & Rat tail is a Radiological finding ()
13. There is a filling defect seen in this x-ray ()
14. This patient may present with dysphagia to solids ()
15. Vomiting may be a complaint ()
16. This patient may present with abdominal distention ()
17. Barrett's esophagus is a possible complication ()
18. Manometric studies is helpful in the diagnosis ()
19. PH study is the main investigation ()
20. This condition is treated by cardiomyotomy ()

3. CANCER OESOPHAGUS

★ Barium swallow shows (**Rate tail**) appearance with (**shoulder**)

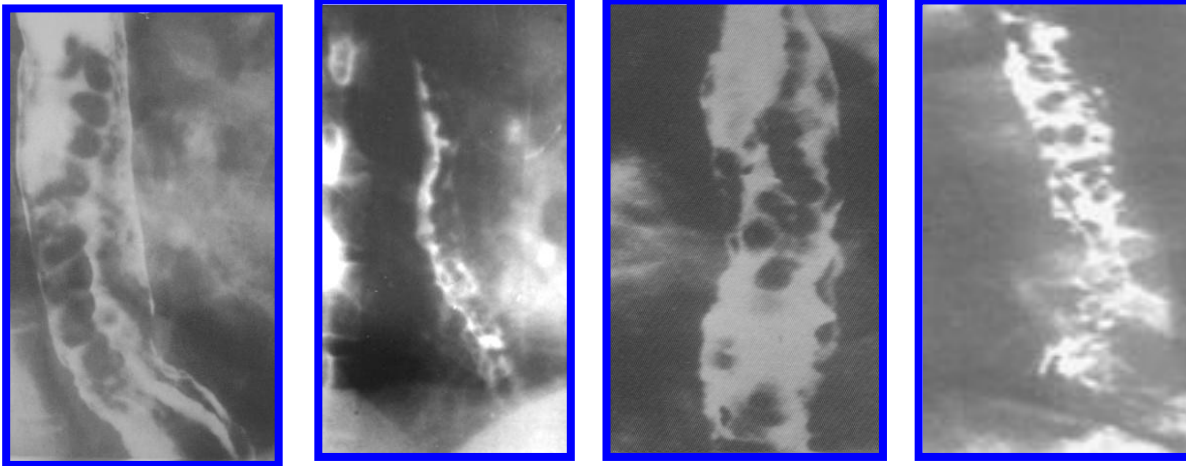


Answer by True or False

21. Plummer Vinson syndrome may be a predisposing factor ()
22. There is an irregular filling defect seen in this x-ray ()
23. This patient presents with dysphagia to fluid more than solid ()
24. This patient may present with repeated attacks of vomiting ()
25. This patient may present with lt. supra-clavicular mass ()
26. Manometric study is needed for this condition ()
27. Endoscopic biopsy is the investigation of choice ()
28. C.T Chest may be helpful in the diagnosis ()
29. Operation should be done in complicated cases only ()
30. Esophageal intubation is the most useful palliative treatment ()

4. OESOPHAGEAL VARICES

☆ **Barium swallow** shows multiple filling defects (**Grape like appearance**)



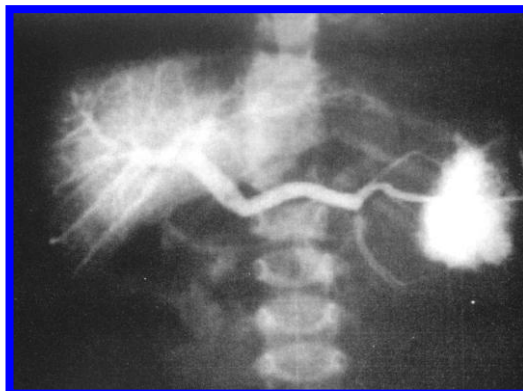
Answer by True or False

31. Liver cirrhosis is a major predisposing factor ()
32. This patient may present with dyspepsia ()
33. This patient presents mainly by haematemesis ()
34. This patient may present with a mass in the lt. upper abdomen ()
35. This condition may lead to massive fresh bleeding per rectum ()
36. It is commonly associated with secondary piles ()
37. Abdominal sonar is an essential investigation ()
38. Prothrombin time & concentration is an essential investigation ()
39. The principle line of treatment is injection sclerotherapy ()
40. The principle line of treatment is surgery ()



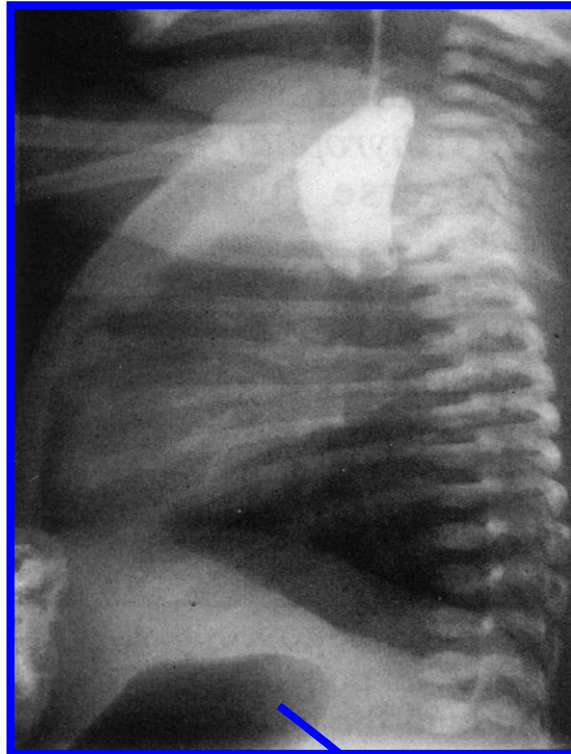
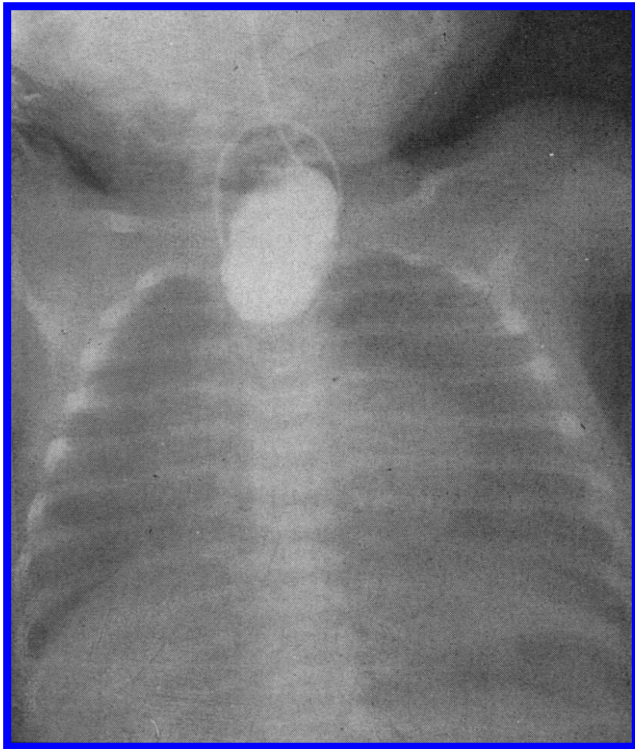
Spleno-portography

The same questions



5. OESOPHAGEAL ATRESIA

☆ Arrest of dye (**Lipidol**) i.e. blind ended upper oesophageal pouch at the mid chest.



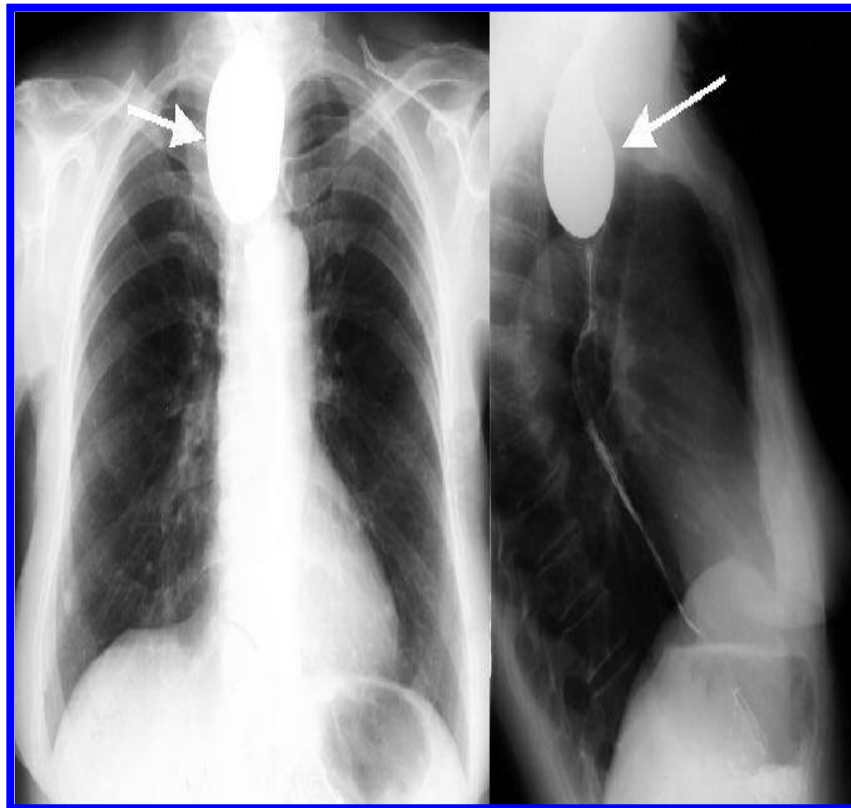
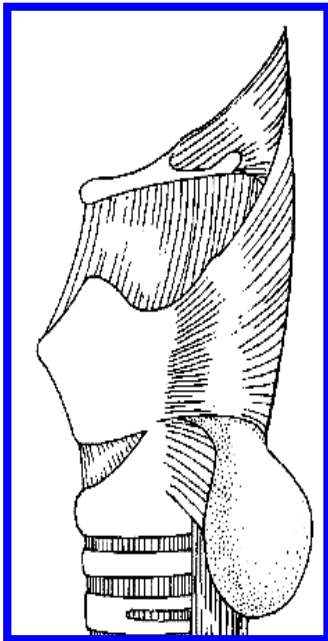
N.B : If air is visualized in the stomach = Atresia with Fistula

Answer by True or False

41. This patient is a neonate ()
42. The type of study is Gastro-graffine ()
43. The underlying cause is corrosive ingestion ()
44. It shows arrest of dye ()
45. It is commonly associated with other congenital anomalies ()
46. This patient may present with repeated vomiting ()
47. This patient may present with excessive salivation ()
48. This patient may suffer from chest infection ()
49. Endoscopy is the investigation of choice ()
50. Ligation & restoration of esophagus is the treatment ()

6. PHARYNGEAL DIVERTICULUM

☆ Barium swallow shows (**Pharyngeal pouch**)



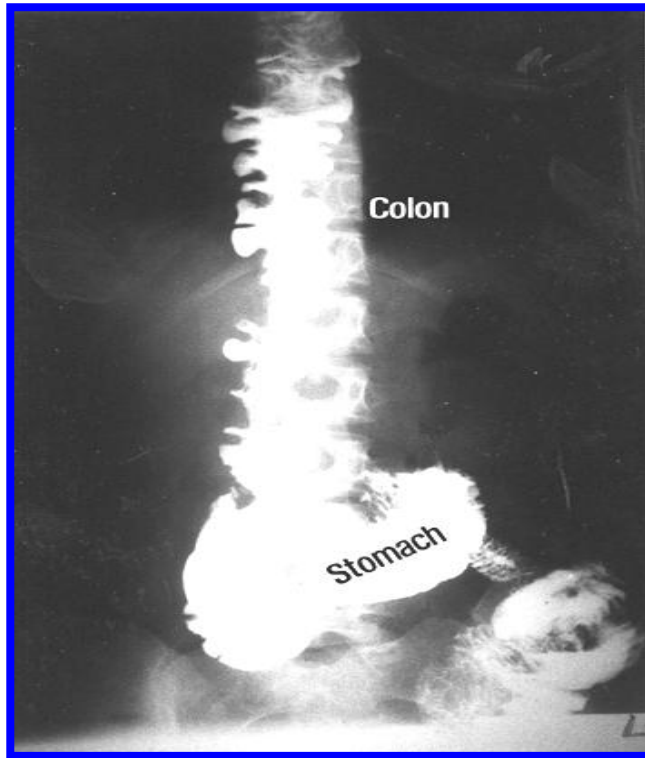
Answer by True or False

51. This is Barium Swallow ()
52. There is an irregular filling defect seen ()
53. The underlying cause is neuromuscular in-coordination ()
54. This patient present with a swelling in the post. Δ of neck ()
55. Dysphagia is the main presentation ()
56. This condition should be DD from post - cricoid carcinoma ()
57. This condition should be DD from post corrosive injury ()
58. Cricomyotomy is the line of treatment in early cases ()
59. This principle treatment is cardiomyotomy ()
60. Excision should be done in advanced cases ()

7. COLON BY PASS

☆ Barium swallow shows

A colonic loop with the characteristic **haustration**



Answer by True or False

61. This study is a barium swallow ()
62. Gastric Rugea is seen in the chest ()
63. This procedure may complicates with Mediastinitis ()
64. This is a gastric pull up operation ()
65. It is the treatment of choice in cases of reflux oesophagitis ()
66. It can be a line of treatment in corrosive oesophagitis ()
67. It is indicated in treatment of early cancer esophagus ()



ANSWERS

ESOPHAGUS

1. True	21. True	41. True	61. True
2. True	22. True	42. <u>False</u>	62. <u>False</u>
3. <u>False</u>	23. <u>False</u>	43. <u>False</u>	63. True
4. <u>False</u>	24. <u>False</u>	44. True	64. <u>False</u>
5. True	25. True	45. True	65. <u>False</u>
6. <u>False</u>	26. <u>False</u>	46. <u>False</u>	66. True
7. True	27. True	47. True	67. <u>False</u>
8. <u>False</u>	28. True	48. True	
9. True	29. <u>False</u>	49. True	
10. <u>False</u>	30. True	50. True	
11. True	31. True	51. True	
12. <u>False</u>	32. True	52. <u>False</u>	
13. <u>False</u>	33. True	53. True	
14. <u>False</u>	34. True	54. True	
15. <u>False</u>	35. <u>False</u>	55. True	
16. <u>False</u>	36. True	56. True	
17. <u>False</u>	37. True	57. True	
18. True	38. True	58. True	
19. <u>False</u>	39. True	59. <u>False</u>	
20. True	40. <u>False</u>	50. True	

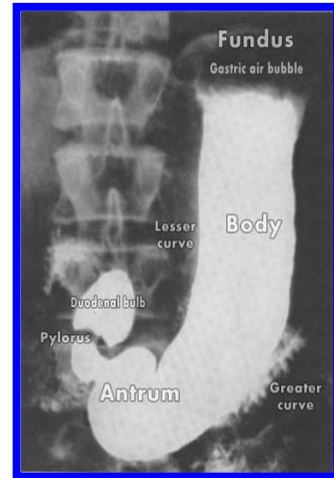
GOOD LUCK



II. STOMACH & DUODENUM

* CRITERIA OF NORMAL STOMACH IN BA. MEAL

- ☆ **About 200-300 Barium** is used.
- ☆ **Shape of stomach:** J. shaped.
 - **Lesser Curve:** Smooth continuous line.
 - **Greater Curve:** Serrated.
 - **Pyloric part:** Rounded & smooth.
 - **Duodenal Cap:** (1st inch of 1st part of duodenum, nearly triangular with smooth outlines).
 - **If Fundus filled with smooth out lines barium**
 - ← This means Trendlenburg's position which is indicated with Hiatus Hernia or Fundal Lesion.



HOW TO DIAGNOSE Ba. Meal

I Look for (Site)

Normal site

Abnormal site

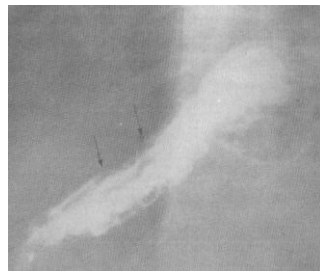
II Look for (Size)

Normal

Dilated

Shrunken

* See next page



* Linitis Plastica

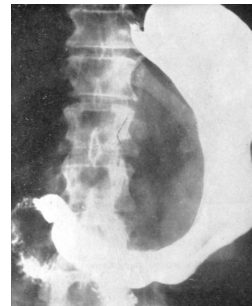
Adult

* Pyloric obstruction



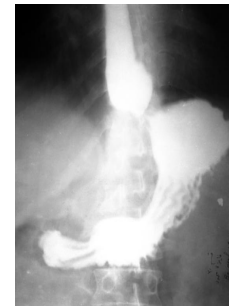
Infant

* CHPS



Displacement & Compression on stomach

* Pseudo-Pancreatic Cyst



Part of the stomach in chest

* Hiatus Hernia

Normal Size

III Look at (Lesser Curve)

For out-pouching i.e. Barium is seen Outside the Line of gastric wall i.e. Ulcer Niche

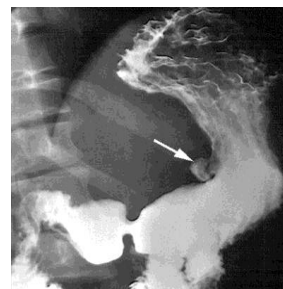
- Ve

+ Ve

IV Look For ↗
Duodenal Cap for deformity

- Ve

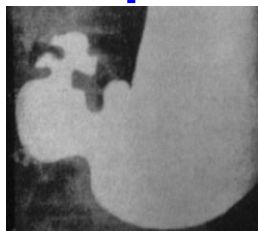
+ Ve



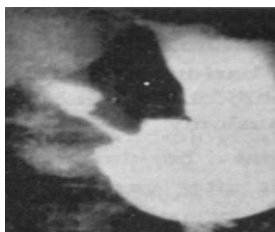
★ Benign Gastric Ulcer

V Look For

Greater curve or pyloric part for any Filling defects



★ Chronic Duodenal Ulcer



★ Cancer Pylorus



★ Cancer body

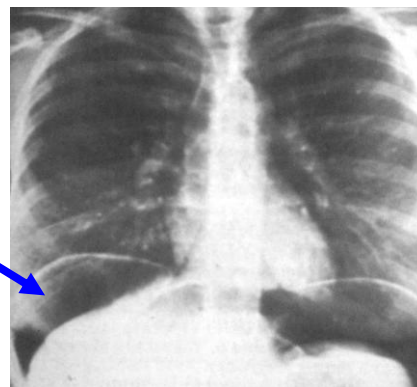
N.B

Erect [Plain X-ray]

Demonstrating air under diaphragm

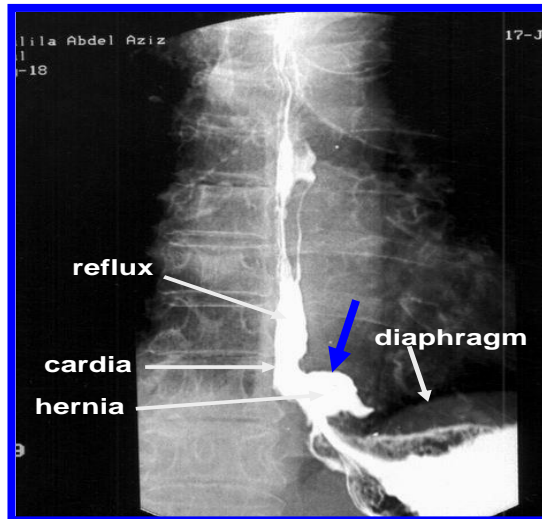
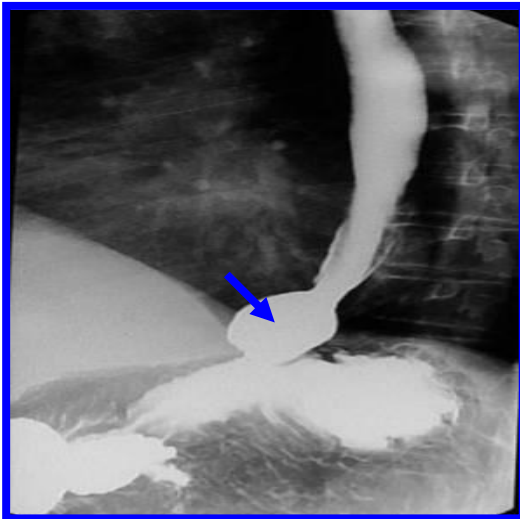
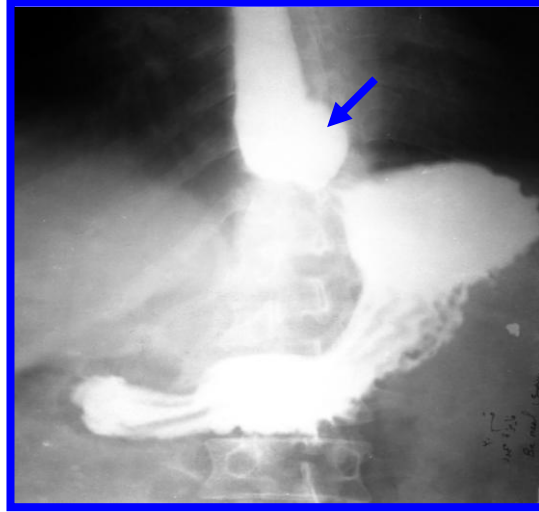
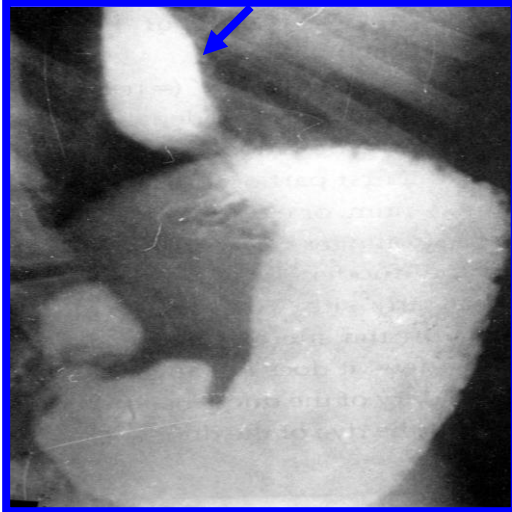
= Acute Perforated D.U

= Pneumoperitoneum



1. HIATUS HERNIA

☆ **Barium meal Trendlenburg's position** shows globular white swelling present above the copula of the diaphragm.



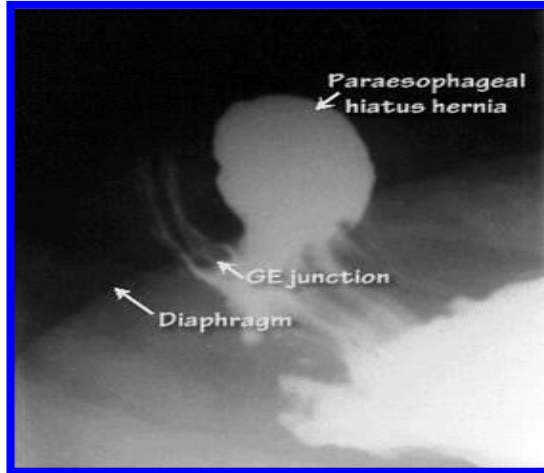
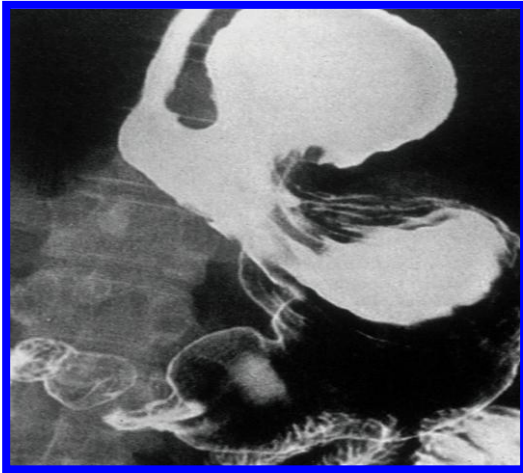
Answer by True or False

1. The Cardia is seen above the diaphragm ()
2. This study was done while the patient is standing up ()
3. This patient can present by chest pain ()
4. Barrette's esophagus is a common complication ()
5. Long standing cases may lead to esophageal stricture ()
6. PH study is the investigation of choice ()
7. Endoscopy and biopsy can be a helpful investigation ()
8. Manometric study can be a helpful investigation ()
9. Fundoplication can be a line of treatment ()
10. Antacids may be given in the treatment of this condition ()



PARA-OESOPHAGEAL HERNIA

☆ **Barium meal Trendlenburg's position** shows part of gastric fundus full of contrast in the chest beside the oesophageal shadow.



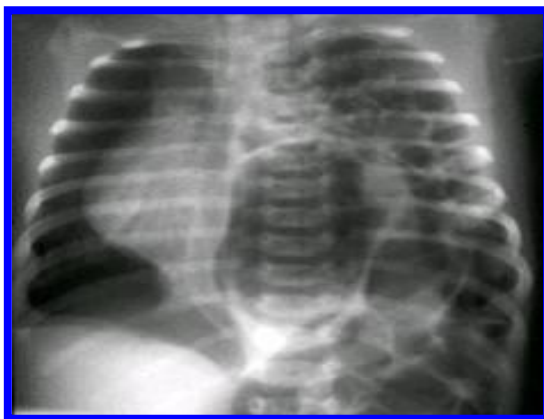
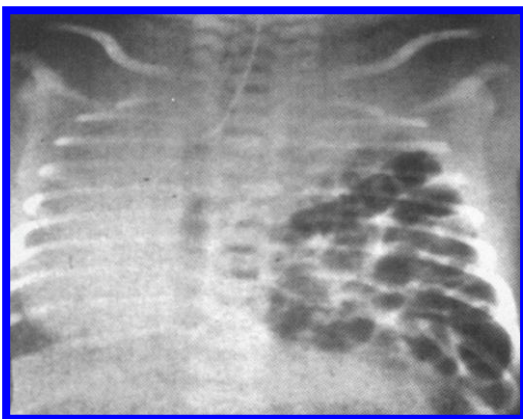
Answer by True or False

- 11. The Cardia is present below the diaphragm ()
- 12. It is a herniation of lesser sac ()
- 13. This patient may present with dyspnea following meals ()
- 14. Antacids can be a line of treatment ()



CONGENITAL DIAPHRAGMATIC HERNIA

☆ **Plain X-rays chest** shows air bubbles

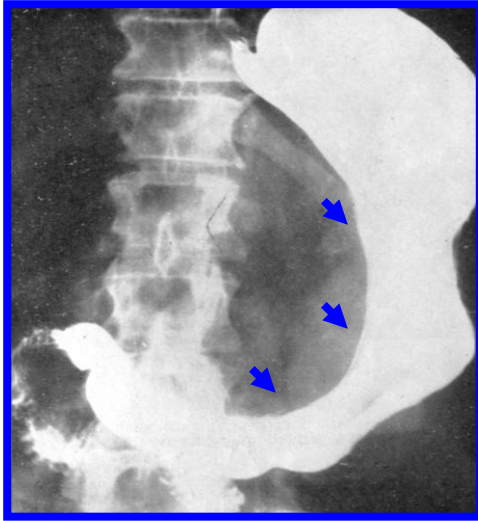


Answer by True or False

- 15. This patient is a child ()
- 16. There are air bubbles seen in the Rt. hemi-thorax ()
- 17. This patient presents with dyspnea ()
- 18. Surgery is the best line of treatment ()

2. PSEUDO-PANCREATIC CYST

☆ **Barium meal** shows **Displacement & Compression** on stomach



Answer by True or False

19. The cyst seen inside the pancreas ()
22. This cystic swelling is related to the pancreas ()
21. Infection and abscess formation is a possible complication ()
22. The condition may be started as a complication of biliary stones ()
23. Barium meal can be a useful method of investigation ()
24. ERCP can be a method of treatment of this condition ()
25. Abdominal aortic aneurysm is a differential diagnosis ()
26. The best surgical treatment is gastro-jejunostomy ()
27. Percutaneous aspiration is better than drain ()
28. Cysto-gastrotomy is the treatment of choice ()

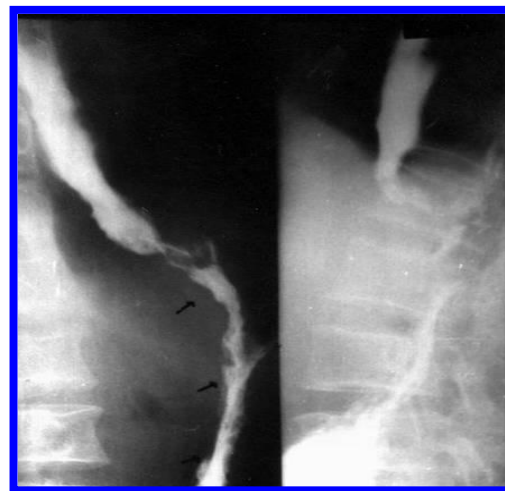
3. LINITIS PLASTICA

☆ **Barium meal** shows stomach which

is **shrunk** in Size

(**Linitis Plastica**)

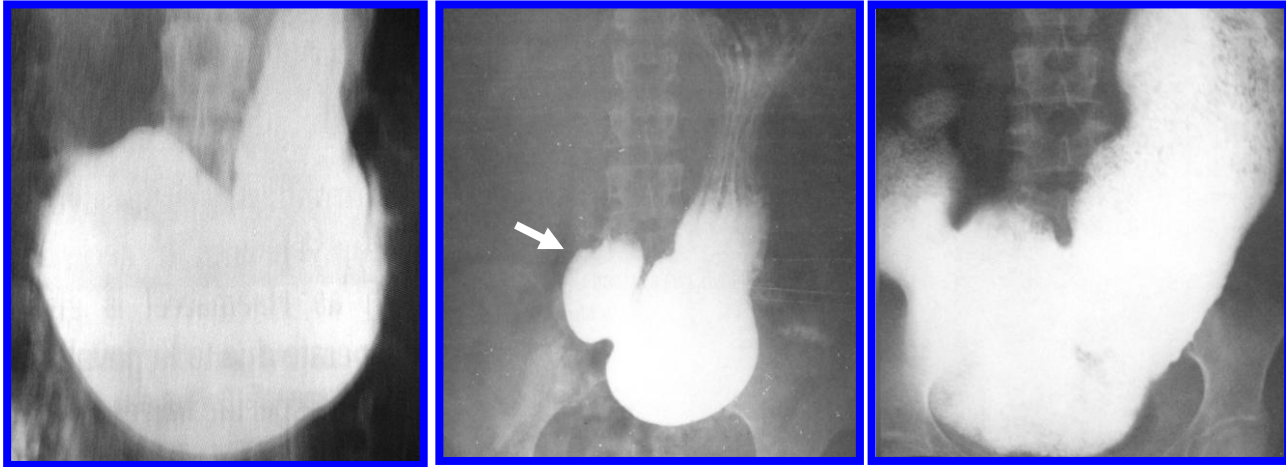
= **Cancer Stomach**



4. PYLORIC STENOSIS

☆ **Barium meal** shows stomach which is **dilated** in Size

(may be reaching the pelvis) i.e. (**Soap dish appearance**)



Answer by True or False

29. This study is contraindicated in patient known to be allergic to iodine ()
30. The underlying cause is fibrosed duodenal ulcer ()
31. This patient may present with Carpo-pedal spasm ()
32. This patient may present with Pulsatile epigastric swelling ()
33. This condition may leads to metabolic acidosis ()
34. Vagotomy and gastro-jejunostomy is the principle surgical treatment ()

N.B

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS (C.H.P.S)

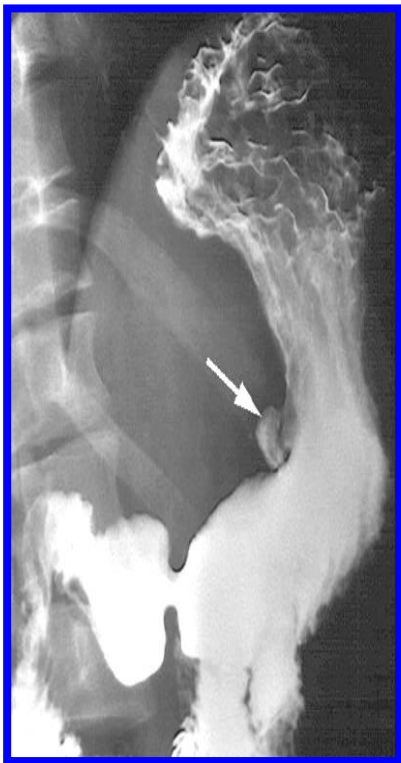
Answer by True or False

35. This condition is commonly seen among infants ()
36. The presentation at birth ()
37. Patient represented by projectile biliary vomiting ()
38. Diarrhea is a common symptom ()
39. Pyloroplasty is the principle treatment ()
40. Pyloromyotomy is the main line of treatment ()



5. BENIGN GASTRIC ULCER

☆ Barium meal shows stomach with ulcer niche on lesser curve.



Answer by True or False

41. Barium meal shows ulcer niche ()
42. This lesion at the commonest site ()
43. Helicobacter infection can be a predisposing factor ()
44. Pernicious Anaemia can be a predisposing factor ()
45. Periodic exacerbation of symptoms is a common clinical feature ()
46. Haematemesis can be a possible complication of this condition ()
47. Gastric function tests will reveal hyperacidity ()
48. Endoscopy is the investigation of choice ()
49. Vagotomy and drainage is the main line of treatment ()
50. Partial gastrectomy can be a line of treatment of this condition ()

6. CHRONIC DUODENAL ULCER

☆ **Barium meal** shows stomach with **deformity of duodenal cap**.

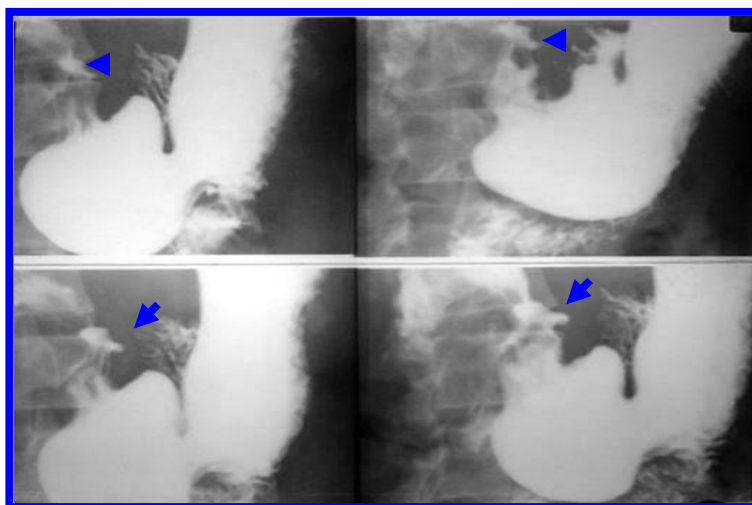


Answer by True or False

51. This is x-ray is suggestive of chronic duodenal ulcer ()
52. This study was done while the patient is standing up ()
53. The underlying cause could be Zollinger Ellison syndrome ()
54. Hyperacidity is the main underlying cause ()
55. This patient may present with vomiting and chest pain ()
56. Haematemesis is a possible complication ()
57. Complicated cases may present with acute abdomen ()
58. Endoscopy and biopsy is needed for exclusion of malignancy ()
59. Endoscopy is more accurate in the diagnosis of this condition ()
60. If uncomplicated medical treatment is the treatment of choice ()

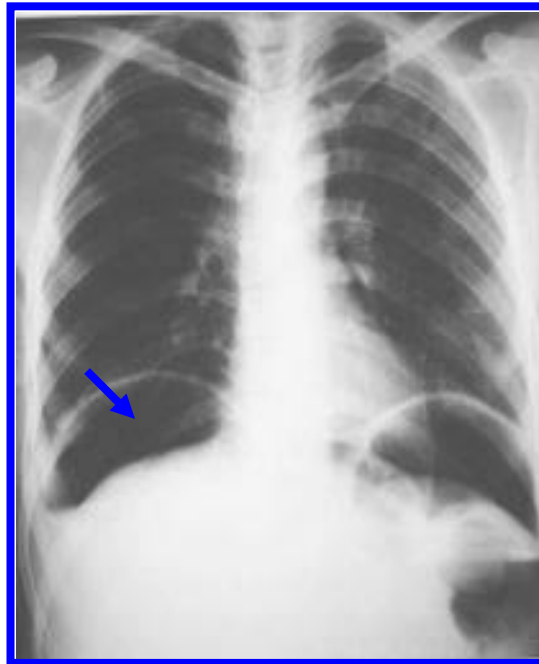
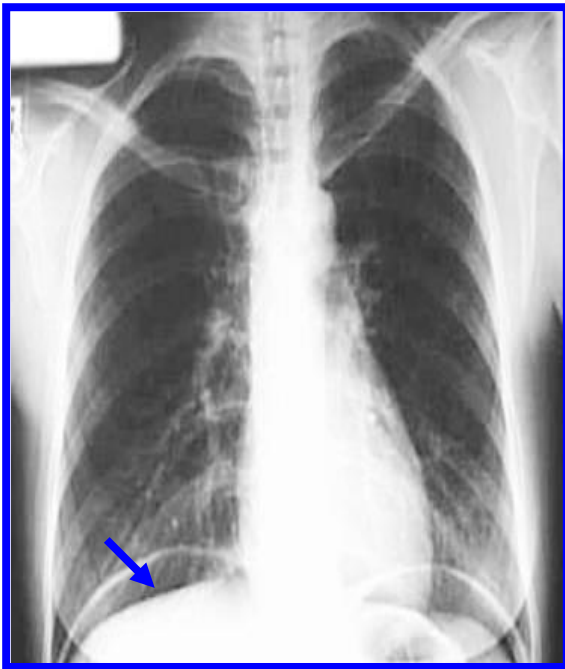


Persistent deformity of the duodenal cap in a serial film



7. ACUTE PERFORATED D.U

☆ Plain X-ray with Air under diaphragm.

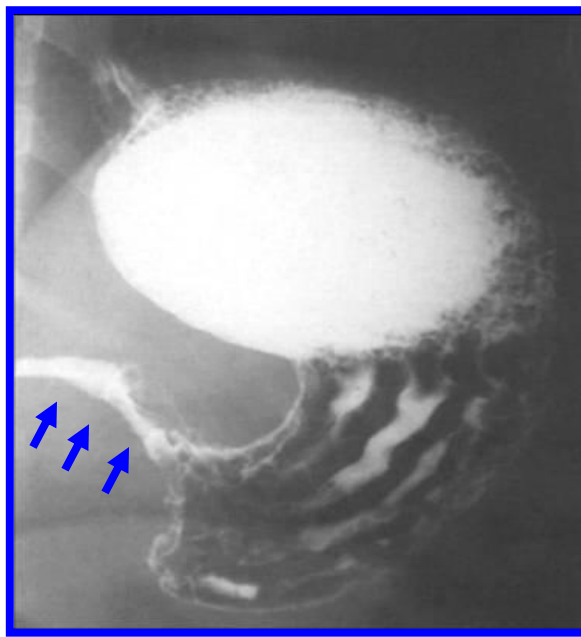


Answer by True or False

61. This a plain x -ray abdomen erect ()
62. There is air with a fluid level seen under the diaphragm ()
63. Multiple air fluid level is seen in this x-ray ()
64. There is air seen in the pleural cavity ()
65. The underlying cause is high small intestinal obstruction ()
66. Perforated peptic ulcer is the commonest cause ()
67. This condition can be seen after laparoscopy operations ()
68. Acute pancreatitis could be an underlying cause ()
69. This patient is presenting with peritonitis ()
70. Urgent laparoscopy is indicated ()

8. CANCER STOMACH

☆ **Barium meal** shows stomach with **Filling defect at pylorus (Cancer Pylorus)**

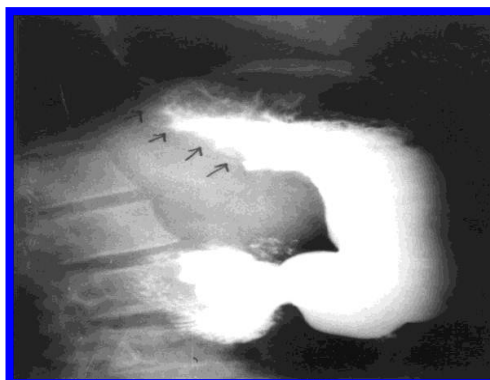


Answer by True or False

71. This study is a barium meal with the head down position ()
72. There is an irregular filling defect at the pyloric region ()
73. This lesion at the commonest site ()
74. The underlying cause is malignant neoplasm ()
75. This patient may complain from acute upper abdomen ()
76. The patient can present with bilious vomiting ()
77. Gastroscopy & biopsy is investigation of choice ()
78. Subtotal radical gastrectomy is the line of treatment in early cases ()
79. Gastro-jejunostomy can be a line of treatment for complicated cases ()
80. Radiotherapy is the best line of treatment ()



Barium meal showing an irregular filling defect in the upper part of lesser curve





ANSWERS

STOMACH & DUODENUM

1. True	21. True	41. True	61. True
2. <u>False</u>	22. True	42. True	62. <u>False</u>
3. True	23. True	43. True	63. <u>False</u>
4. True	24. <u>False</u>	44. <u>False</u>	64. <u>False</u>
5. True	25. True	45. <u>False</u>	65. <u>False</u>
6. True	26. <u>False</u>	46. True	66. True
7. True	27. <u>False</u>	47. <u>False</u>	67. True
8. True	28. True	48. True	68. <u>False</u>
9. True	29. <u>False</u>	49. <u>False</u>	69. True
10. True	30. True	50. True	70. True
11. True	31. True	51. True	71. <u>False</u>
12. <u>False</u>	32. <u>False</u>	52. True	72. True
13. True	33. <u>False</u>	53. True	73. True
14. <u>False</u>	34. True	54. True	74. True
15. True	35. True	55. True	75. <u>False</u>
16. True	36. <u>False</u>	56. True	76. <u>False</u>
17. True	37. <u>False</u>	57. True	77. True
18. True	38. <u>False</u>	58. <u>False</u>	78. True
19. <u>False</u>	39. <u>False</u>	59. True	79. True
20. True	40. True	60. <u>False</u>	80. <u>False</u>

GOOD LUCK

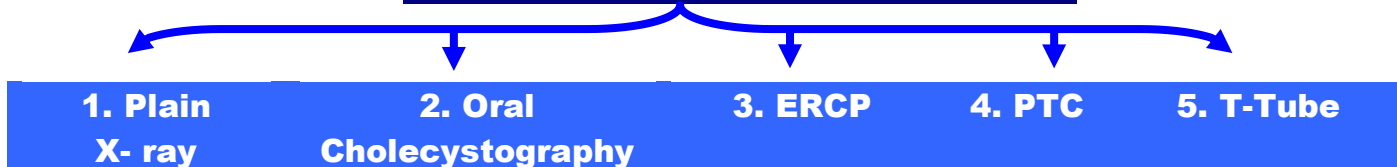


III. HEPATO-BILIARY SYSTEM

GALL STONES

	Cholesterol Stones		Pigment Stones	
Type	mixed	pure	Black	Brown
Incidence	90%	7%	3%	
Composition	Cholesterol + Ca bilirubin + Ca palmitat	<u>Pure</u> cholesterol	Ca bilirubin	Ca bilirubin + Ca palmitat & Cholesterol
Number	Multiple	Single (Solitaire)	Multiple	Multiple
Size	< 2.5 cm	> 2.5 cm	< 2.5 cm	< 2.5 cm
Shape	Faceted	Mamillated	Spicules	Laminated
X. ray	Radio-opaque	Radiolucent	Radio-opaque	Radio-opaque

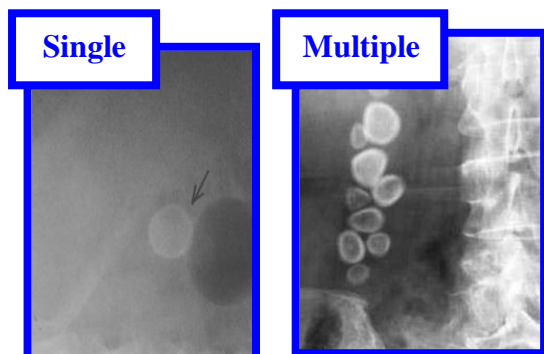
RADIOLOGICAL METHODS



1. Plain X-ray (Rt. hypochondrium)

For Radio-opaque shadow

N.B : If **Single** stone, lateral view film is indicated to shows gall stone in front of the vertebral bodies

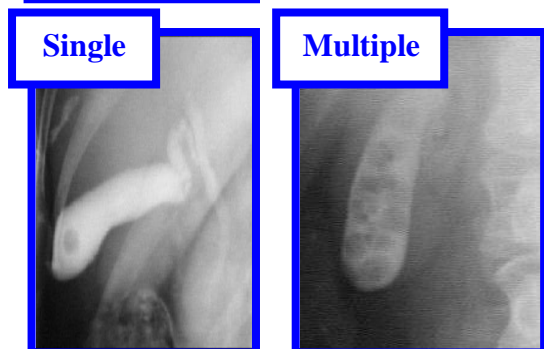


2. Oral Cholecystography

For Radiolucent stones (mainly) & Radio-opaque stones

- If **Single** → **Pure Cholesterol** stone
- If **Multiple** → **Mixed** or **Pigment** stones

N.B : The dye used **Telepaque** 6 Tables are given 12 hours before examination

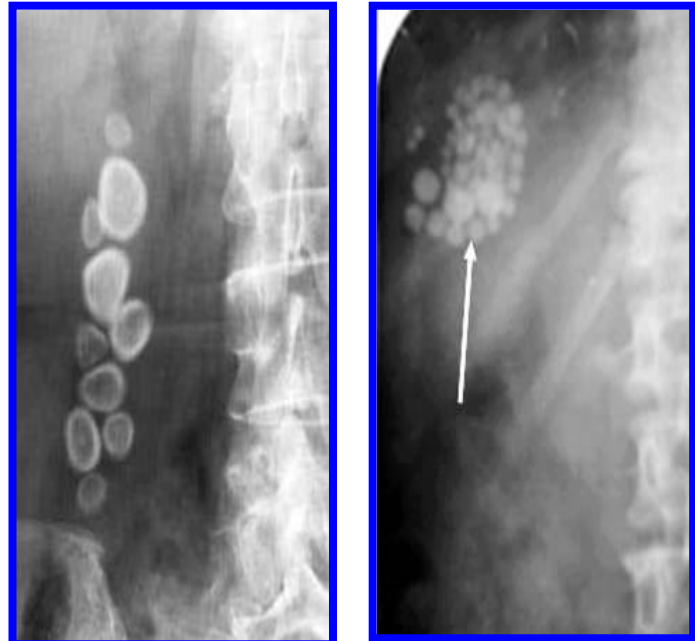
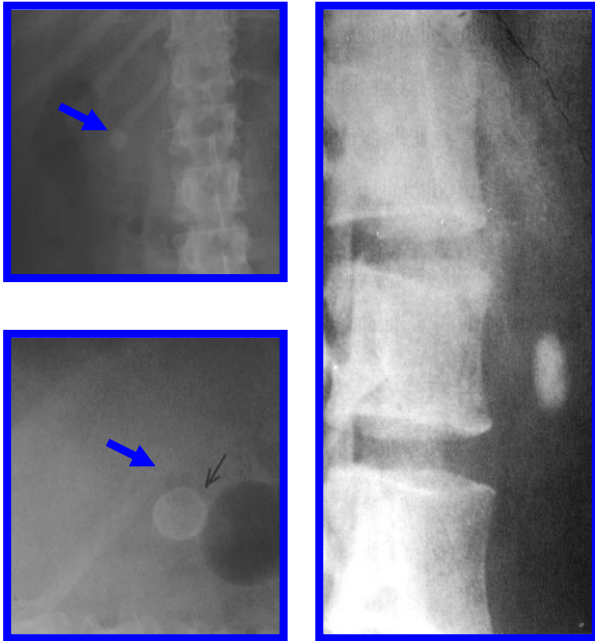


1. PLAIN X- RAY

☆ Radio-opaque shadows in Rt. Hypochondrium

☆ Single

☆ Multiple



N.B. : If Single stone,
lateral view film shows gall stone in
front of the vertebral bodies

Answer by True or False

1. This is an oral cholecystography ()
2. This study is contraindicated in cases of acute abdomen ()
3. Oral cholecystography help in the diagnosis if Radiolucent stones ()
4. The stones seen are inside the gall bladder ()
5. May be seen in patients less than 40 years old ()
6. They may cause obstructive jaundice ()
7. This patient is suffering now from acute Cholecystitis ()
8. Ultra-sound is the investigation of choice of this condition ()
9. Medical dissolution is the treatment of choice if asymptomatic ()
10. The treatment of this condition is mainly medical ()

2. ORAL CHOLECYSTOGRAPHY

☆ Single



☆ Multiple

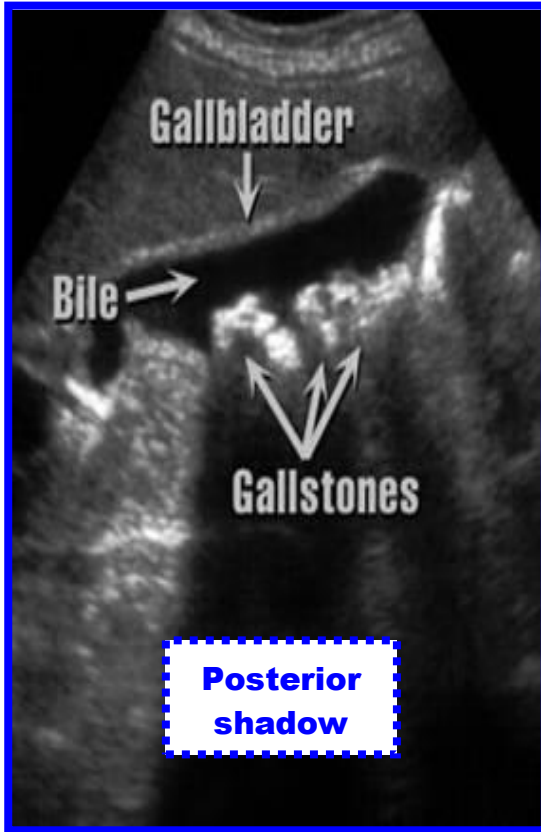


Answer by True or False

11. The study is contra-indicated in patient known to be allergic to iodine ()
12. This condition is more commonly seen among middle aged females ()
13. This patient is presenting now with acute Cholecystitis ()
14. Diarrhea & vomiting are contraindications for this study ()
15. This patient may present with colicky pain in the upper abdomen ()
16. Intestinal obstruction is a possible complication ()
17. Acute Pancreatitis is a possible complication ()
18. Abdominal ultrasound can confirm the diagnosis ()
19. Cholecystectomy is reserved after failure of medical treatment ()
20. Cholecystostomy is the surgical treatment of choice ()

ABDOMINAL ULTRASOUND

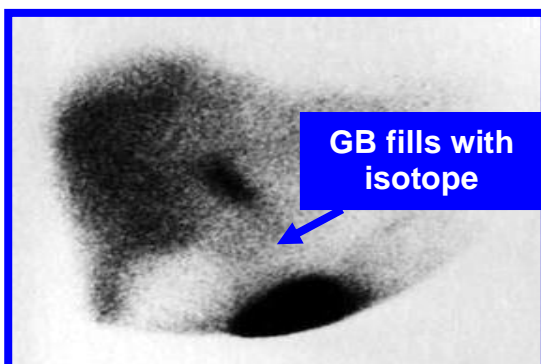
N.B ☆ Gall bladder stones show as opacities that cast a **posterior shadow**



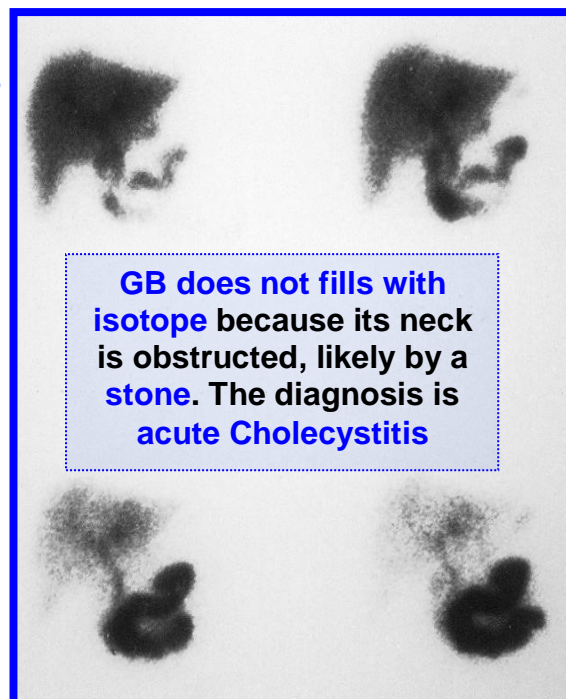
N.B HIDA SCAN

HEPATIC IMINO DIACETIC ACID ISOTOPE SCAN

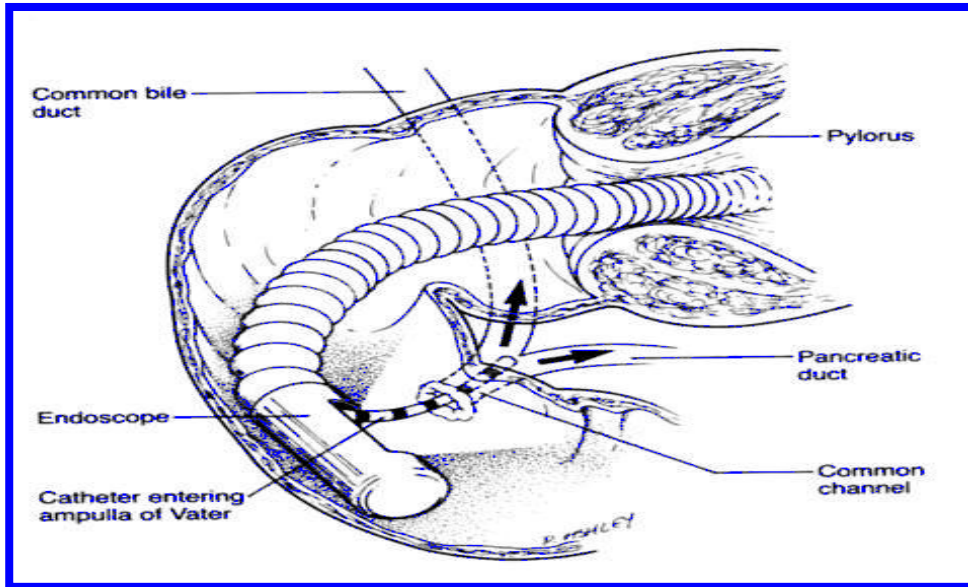
☆ **Indicated** with
Suspected **acute Cholecystitis**



Acute abdominal pain is **not** caused by acute Cholecystitis as the neck of gall bladder is **not** obstructed

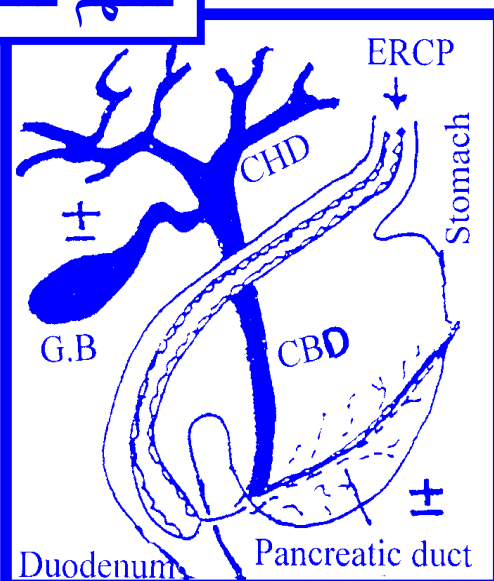


3. ERCP Endoscopic Retrograde Cholangio-Pancreatography

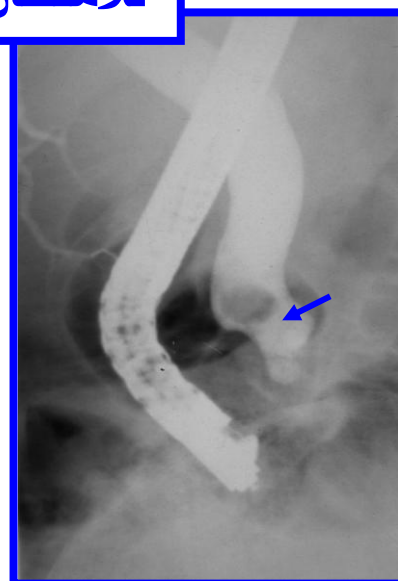


- **ERCP Visualizes** CBD ± G.B ± Pancreatic duct.
- **ERCP Detects**
 - ① G.B stones
 - ② CBD stones
 - ③ **Strictures of pancreatic duct** - Chronic pancreatitis.
- Cancer head of pancreas.
- Cholangiocarcinoma.As **filling defect**
- **ERCP is Complicated**
By
 - ① Bleeding (Haemobilia).
 - ② Acute cholangitis.
 - ③ Acute pancreatitis

الفهم فقط



للامتحان



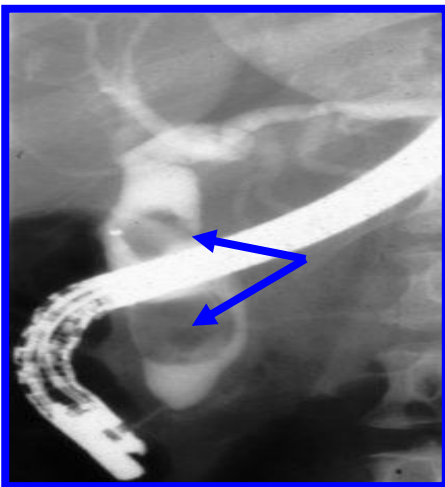
ERCP



Multiple stones in CBD



Single stone in CBD



Multiple stones in CBD



**Malignant obstruction ??
in CBD**

Answer by True or False

21. There is a missed stone in the common bile duct ()
22. There is an endoscope visualized in this study ()
23. Bleeding tendency is a contraindication for this procedure ()
24. Bleeding tendency can be corrected by intravenous vitamin K ()
25. This patient may present with epigastric pain, referred to the back ()
26. This patient can present with jaundice and upper abdominal pain ()
27. Pancreatitis is a possible complication of this procedure ()
28. Abdominal U/S is an essential investigation before this procedure ()
29. The gall bladder is not visualized because it was removed ()
30. Endoscopic removal of stones can be a line of treatment ()



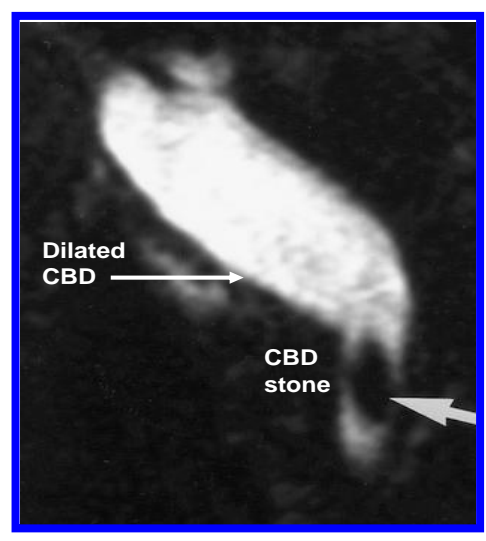
MRCP

MAGNETIC RESONANCE CHOLANGIO-PANCREATOGRAPHY

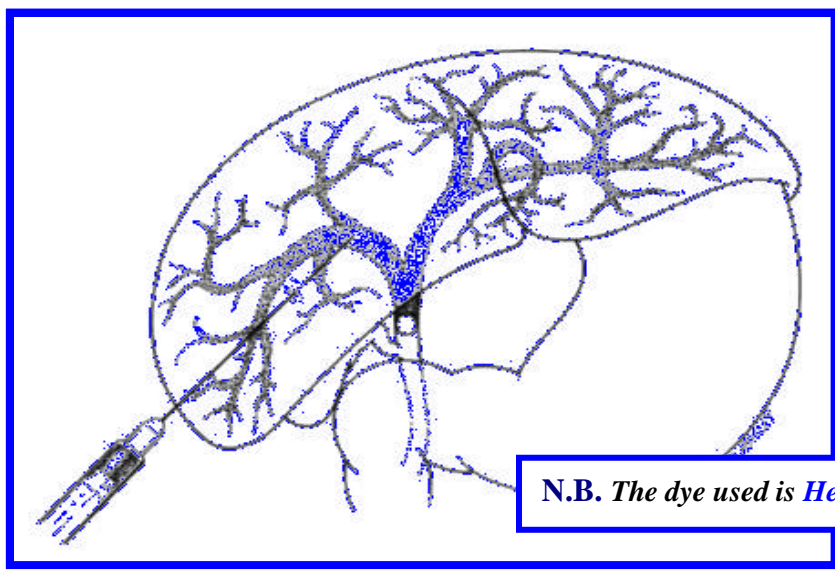
This is a form of **Magnetic Resonance Imaging**

Non-invasive, no contrast used, but computer generates the image as shown (CBD stone)

Unlike ERCP this test is non-therapeutic



4. P.T.C Percutaneous Trans-hepatic Cholangiography



N.B. The dye used is *Hepaque = Urografin*

- **P.T.C visualizes** All intra-hepatic biliary tree.
- **P.T.C detects** obstruction high up in hepatic ducts



Sudden arrest of the dye
(usually at the level of C.H.D)

- It means**
- Stricture.
 - Malignancy.
 - Stone.

P.T.C

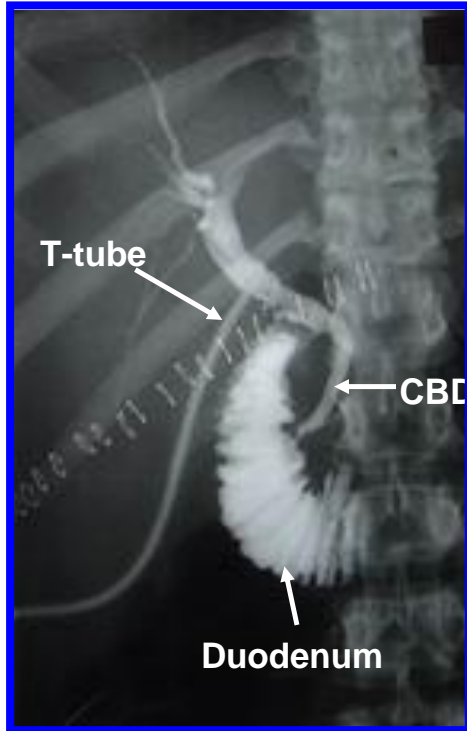


Answer by True or False

31. This x-ray shows dilated intra-hepatic bile ducts ()
32. The gall bladder is visualized containing stones ()
33. There is a stone in the common bile duct ()
34. It is indicated with Hypo-prothrombinemia ()
35. Bleeding tendency is due to hypo-prothrombinaemia ()
36. Vitamin K tablets are given few days before this procedure ()
37. This patient is presenting with dark urine and pale stools ()
38. Serum urea and creatinine is an essential investigation ()
39. Surgery for the obstruction is the main line of treatment ()
40. Insertion of a stent can be a line of treatment ()

5. T-TUBE CHOLANGIOGRAPHY

NORMAL T-TUBE



- **No** filling defects in CBD.
- CBD **Not** dilated.
- The dye **reach** the duodenum.

ABNORMAL T-TUBE



- Filling defect in CBD **i.e. stone**
- CBD dilated.
- The dye **± reach** the duodenum.

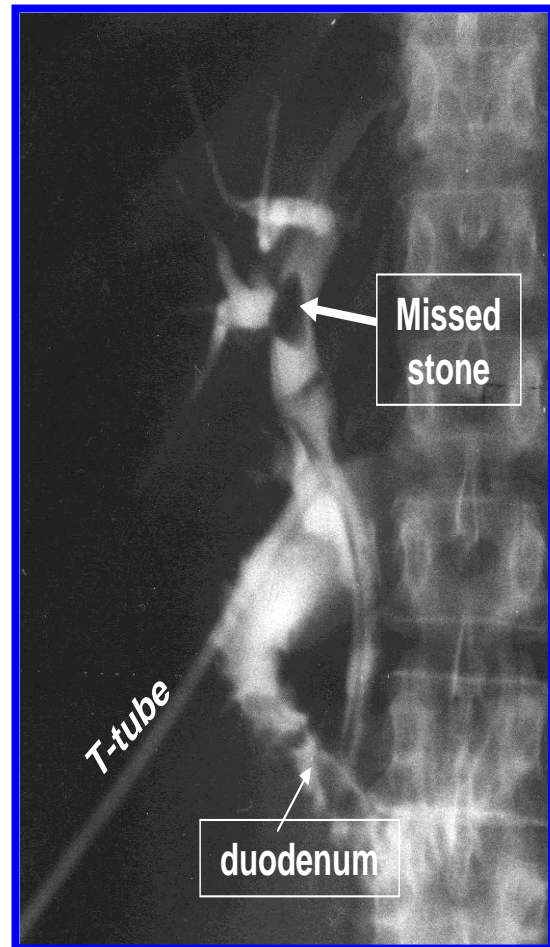
A NORMAL T-TUBE CHOLANGIOGRAPHY

Answer by True or False

41. 2 days post-operative investigation ()
42. Gall bladder is not seen as dye not reach ()
43. No filling defect ()
44. The dye descend to duodenum ()
45. It can be removed early ()



B ABNORMAL T-TUBE CHOLANGIOGRAPHY



Answer by True or False

46. The dye used is Urographin ()
47. This study is commonly done at the 2nd postoperative day ()
48. Free flow of the dye to the duodenum can be seen in this x-ray ()
49. There is marked dilatation of the intra hepatic biliary ducts ()
50. The gall bladder is not visible as the dye didn't reach it ()
51. Removal of the tube can be done safely in this patient ()
52. Removal of the tube now can lead to biliary fistula ()
53. This patient may present with dark stools and pale urine ()
54. This patient can present with obstructive jaundice ()
55. The operation done for this patient was Cholecystectomy ()



INTRA-OPERATIVE CHOLANGIOGRAM

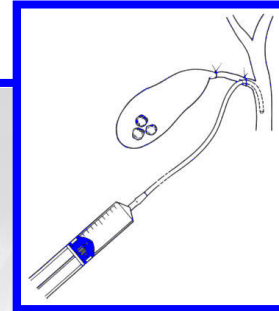
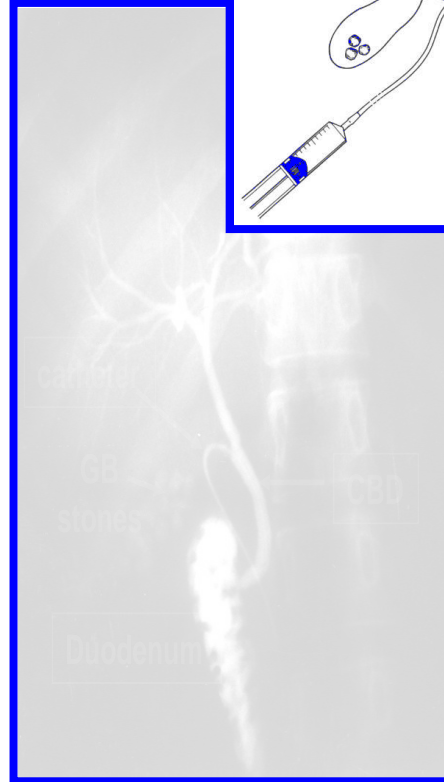
NORMAL

In some cases, during surgery, where bile duct stones are suspected a fine catheter is introduced through the cystic duct before dividing it.

A contrast material is injected

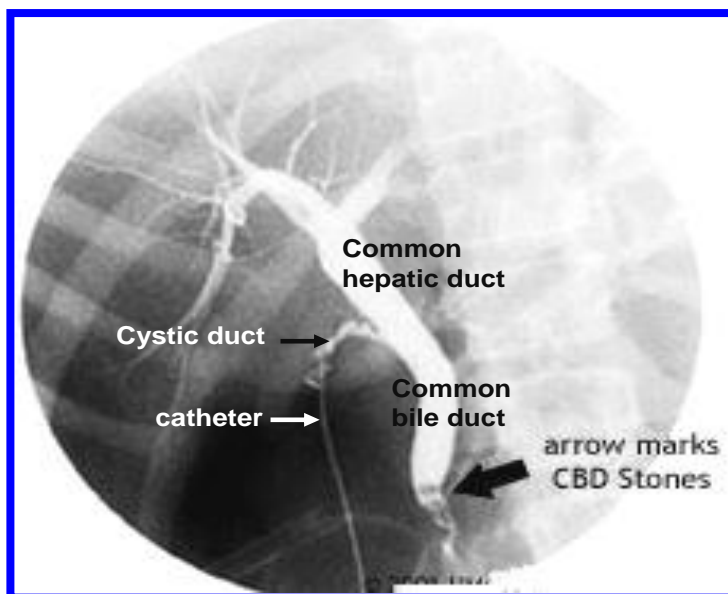
In this normal case :

1. There are **no** filling defects i.e.(**No stones**) in bile ducts
2. Bile ducts (both intra and extrahepatic are of **normal** diameter
3. The contrast material **enters** the duodenum.



ABNORMAL

Common bile duct stones discovered by Intra-operative cholangiogram done at surgery before gall bladder removal





ANSWERS

HEPATO-BILIARY SYSTEM

1. False	21. False	41. False
2. False	22. True	42. False
3. True	23. False	43. True
4. True	24. True	44. True
5. True	25. False	45. True
6. True	26. True	46. True
7. False	27. True	47. False
8. True	28. True	48. False
9. False	29. False	49. False
10. False	30. True	50. False
11. True	31. True	51. False
12. True	32. False	52. True
13. False	33. False	53. False
14. True	34. False	54. False
15. True	35. True	55. True
16. True	36. False	
17. True	37. True	
18. True	38. True	
19. False	39. True	
20. False	40. True	

GOOD LUCK

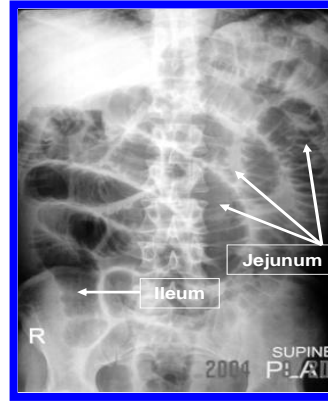
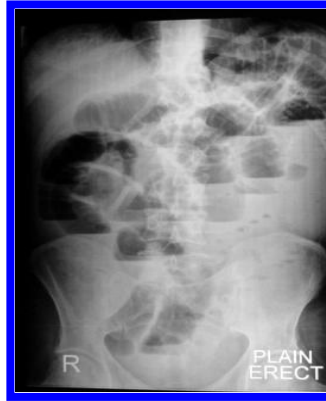


IV. SMALL & LARGE INTESTINE

I. Plain X-ray

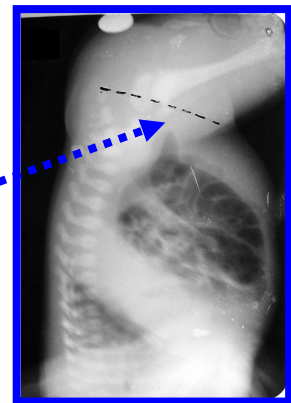
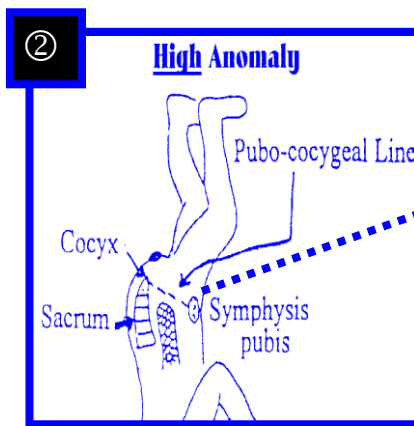
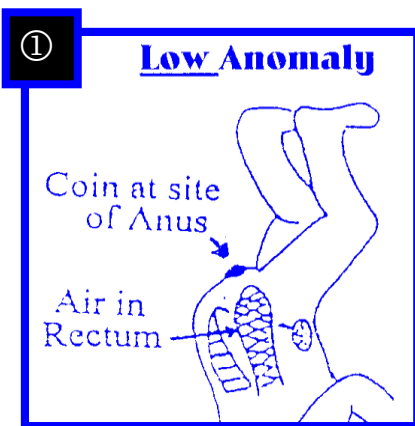
Abdomen

= Intestinal obstruction



II. Invertogram = Imperforated Anus

- **24 hours after birth**
(the infant held upside down with a radio-opaque marker on the anus)
then a line is drawn from the symphysis pubis to the coccyx.
- **IF** The gas shadow in the Rectum is seen above the pubo-coccygeal line **the anomaly is Low** see (Fig. ①)
- **But IF** below the line **the anomaly is High** see (Fig.②)



III. Barium Enema

Normal Appearance ----->

Shows All parts of colon

With ① The Haustrations are obvious.

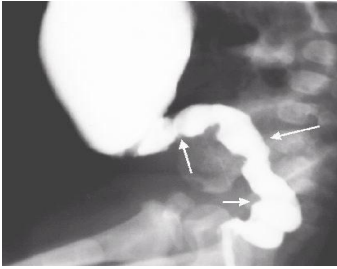
② Hepatic Flexure is Lower Than Splenic Flexure.

③ Caecum lies in Rt. Iliac fossa.

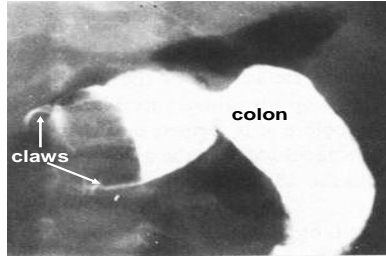


1. Look for

Congenital Megacolon (Infant)



Colonic Intussusceptions (Adult)

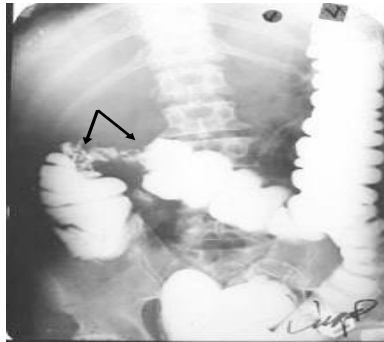


Filling Defect (Cancer colon)

Rt. side colon



Hepatic flexure of colon



Lt. side colon



If We Exclude All of Above

2. Look for HAUSTRATIONS

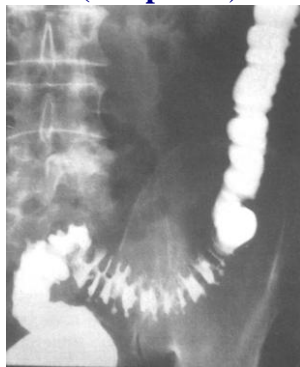
Abnormal

Lost



★ Ulcerative Colitis

Exaggerated (out-pouch)



★ Diverticulosis Coli

Normal

With (Rounded filling defect)

Sigmoid only



★ Bilharzial Colitis

Whole colon

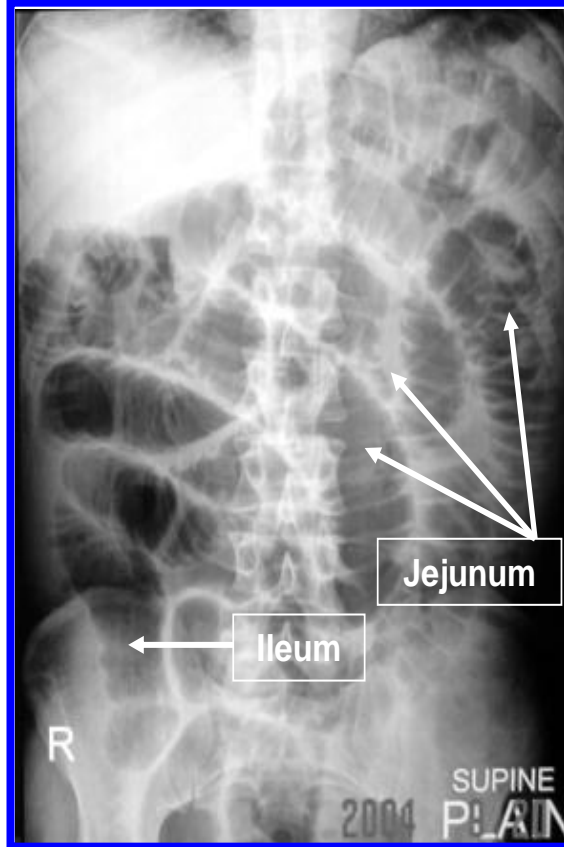


★ Familial Polyposis Coli (F.P.C.)

1. PLAIN X- RAY (Abdomen)



Plain x. ray abdomen
(**Erect** position)
Shows **multiple air fluid levels**



Plain x. ray abdomen
(**Supine** position)
Shows **dilated jejunal loops**

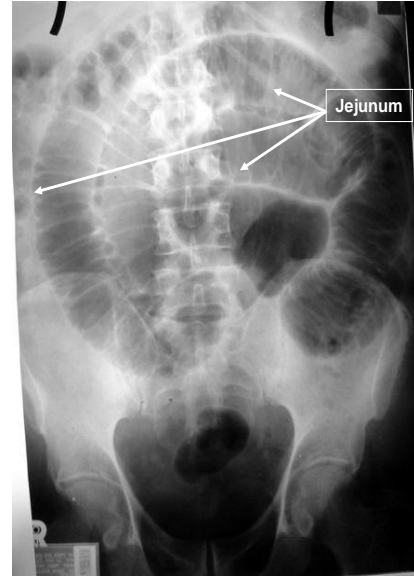
Answer by True or False

1. This study is barium meal follow through ()
2. This x. ray shows air under the copula of the diaphragm ()
3. Postoperative adhesion could be the underlying cause ()
4. This patient is presenting with abdominal pain and vomiting ()
5. Patient has painless abdominal distention ()
6. Patient may presents by greenish vomiting ()
7. Patient complicated by Haematemesis & Melena ()
8. Tenderness & rigidity needs urgent laparotomy ()
9. Initial treatment is by naso-gastric tube and LV fluids ()
10. The treatment is urgent exploration ()

PLAIN X-RAY FOR INTESTINAL OBSTRUCTION



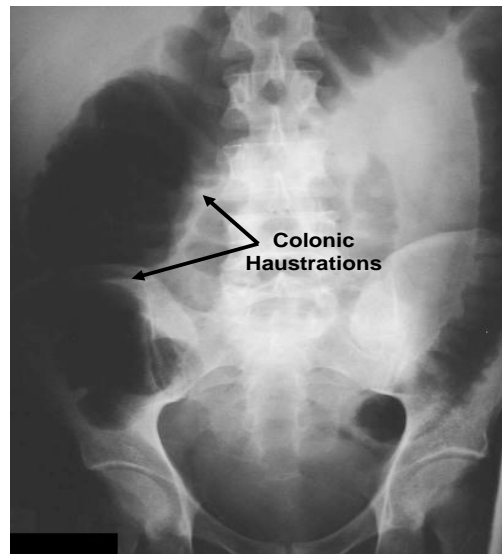
Plain x. ray abdomen
(**Erect position**)
Shows **multiple air fluid levels**



Plain x. ray abdomen
(**Supine position**)
Shows **high small bowel obstruction**



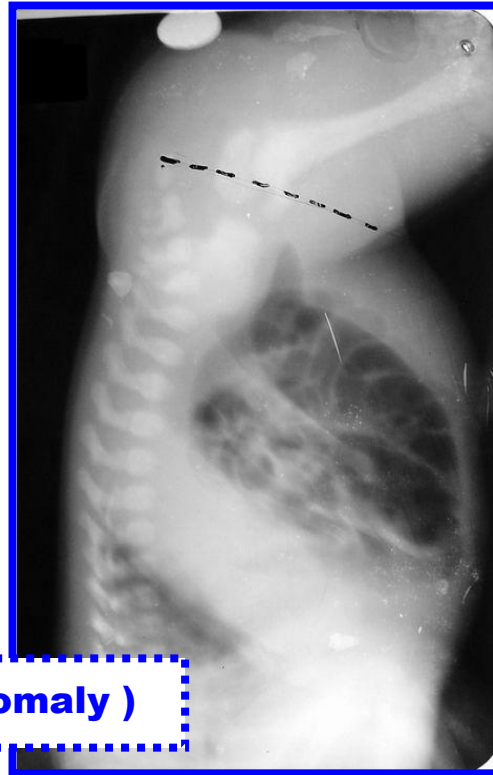
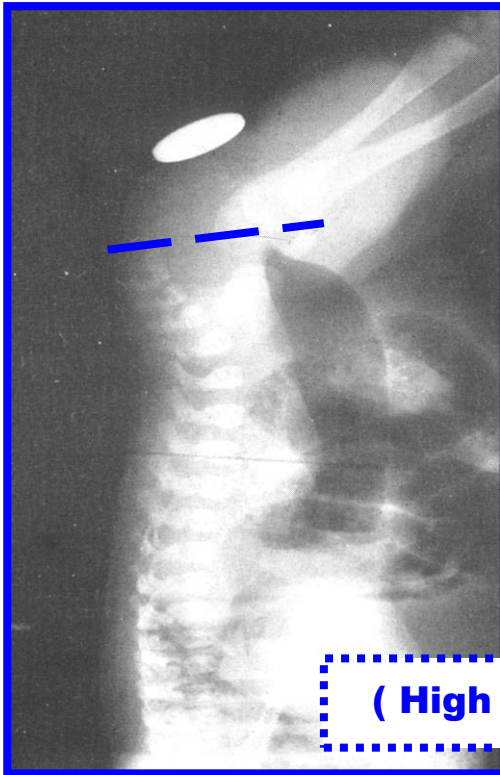
Plain x. ray abdomen
(**Supine position**)
Shows **Sigmoid volvulus**



Plain x. ray abdomen
(**Supine position**)
Shows a markedly distended colon down to the sigmoid.
Sigmoid colon obstruction

2. **INVERTOGRAM** (**Imperforated Anus**)

- **24 hours after birth**
(the infant held upside down with a radio-opaque marker on the anus)
then a line is drawn from the symphysis pubis to the coccyx.
- **IF** The gas shadow in the Rectum is seen above the pubo-coccygeal line **the anomaly is Low** see (Fig. ①)
- **But IF** below the line **the anomaly is High** see (Fig.②)



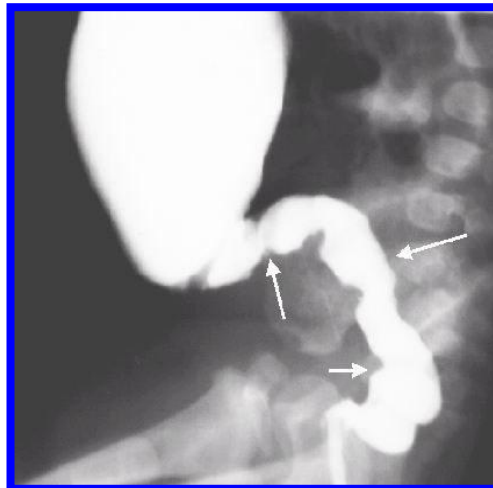
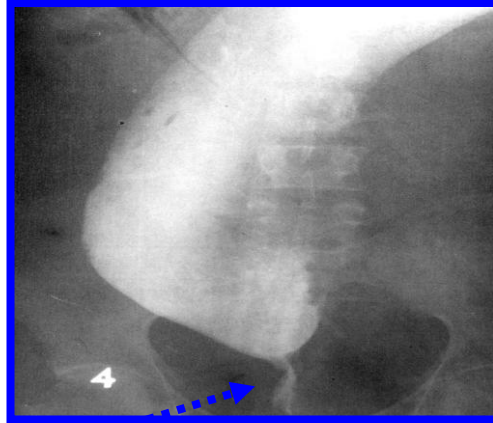
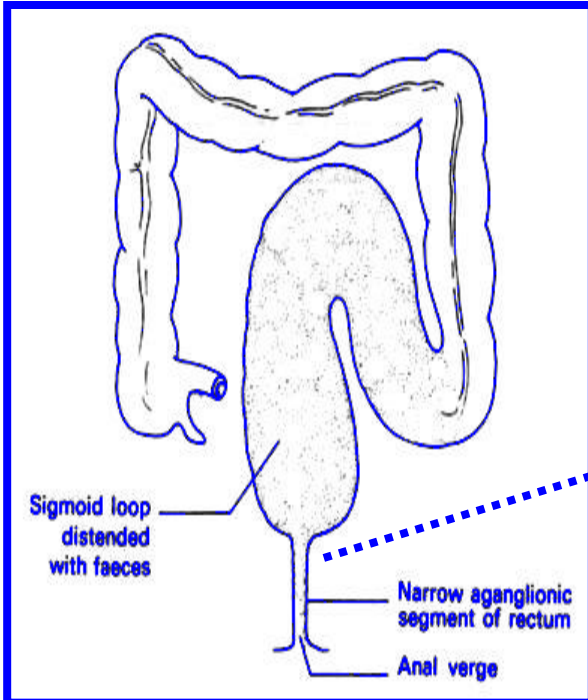
(High Anomaly)

Answer by True or False

11. This patient is a neonate ()
12. It shows abdominal distention ()
13. There is air seen under the diaphragm ()
14. This patient may pass me conium per vagina or urethra ()
15. The patient may present with repeated vomiting ()
16. This patient present with absence of me conium per anus after birth ()
17. Abdominal distention is a main presentation ()
18. Urinary tract infection is a possible complication ()
19. Colostomy is the only line of treatment ()
20. Continuous aspiration + intravenous fluid is the treatment of choice ()

3. CONGENITAL MEGACOLON

Hirschsprung's Disease (Aganglionic Megacolon)

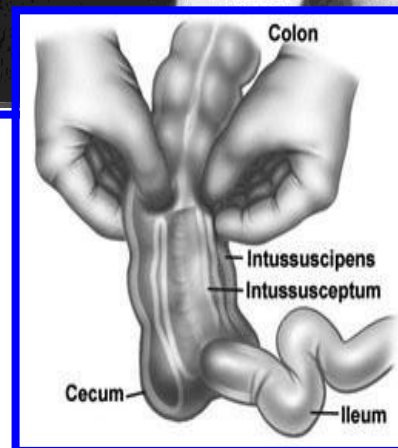
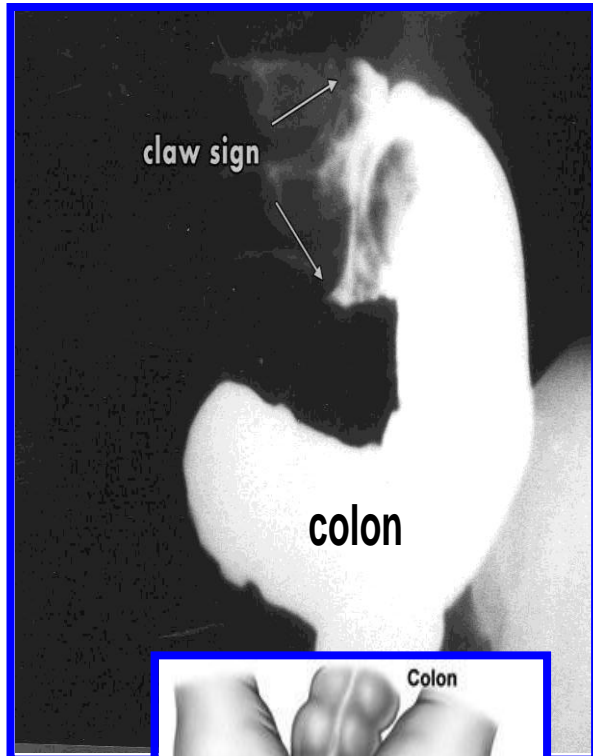
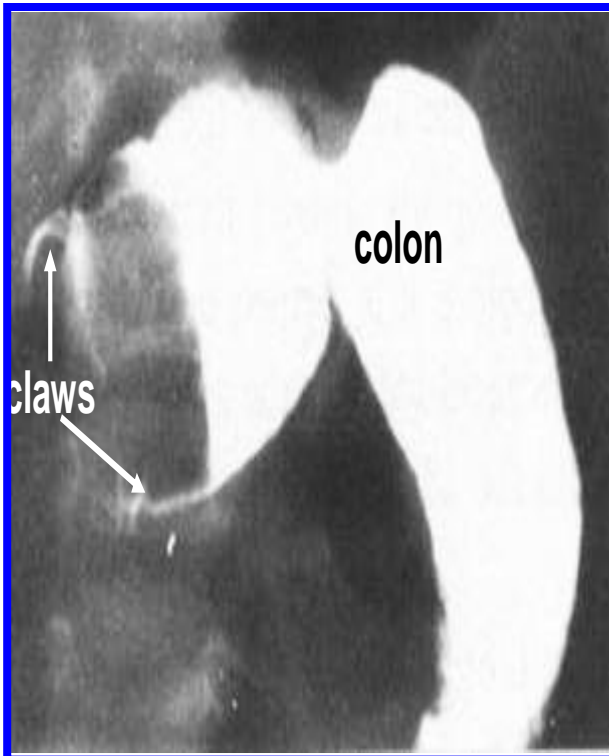


Barium Enemas in a child showing Marked dilatation of sigmoid colon with distal funneling of anal canal

Answer by True or False

21. There underlying cause is congenital ()
22. Anal Atresia is a possible underlying cause ()
23. There is organic stricture seen of the anal canal ()
24. There are multiple filling defects seen in the rectum ()
25. Abdominal distention is a common presentations ()
26. Constipation after birth & stunted growth are complications ()
27. Rectal mucosal biopsy is the investigation of choice ()
28. Manometric study can help in the diagnosis ()
29. Anal dilatation and laxative can be a line of treatment ()
30. Surgery is the only curative line of treatment ()

4. COLONIC INTUSSUSCEPTION (Claw sign)

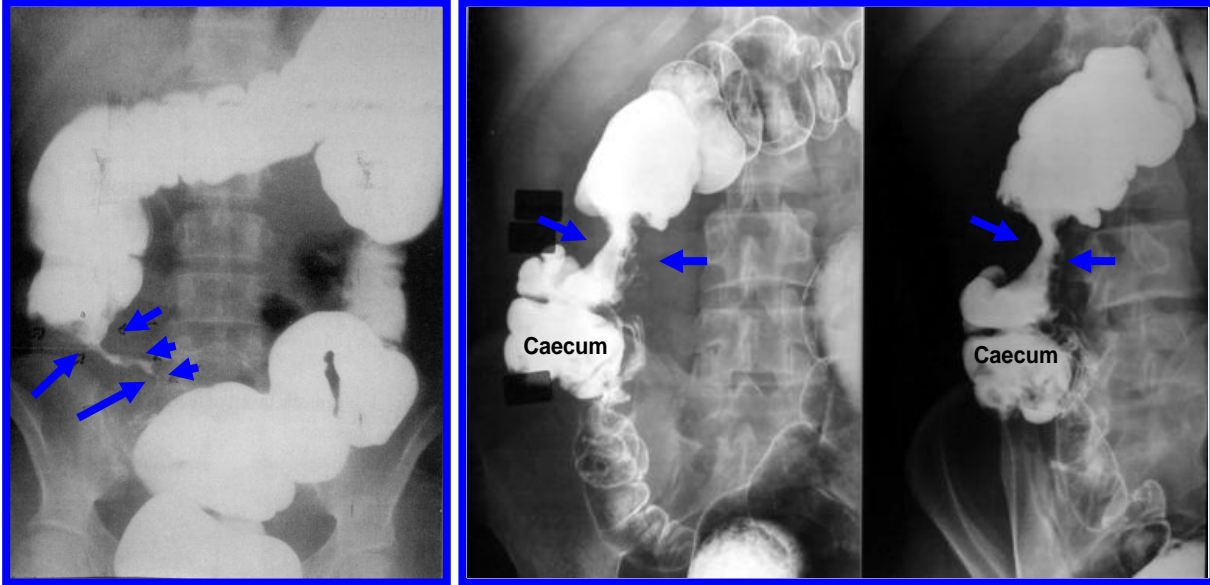


Barium Enemas in infants showing Sudden arrest of the barium in a crescent manner
“Claw sign”
of intussusception

Answer by True or False

31. There is a Claw appearance seen at the transverse colon ()
32. This condition is commonly seen in children ()
33. Familial Polyposis can be a predisposing factor ()
34. This is carcinoma of the transverse colon ()
35. patient present with abdominal distention and greenish vomiting ()
36. A palpable abdominal mass may be felt on clinical examination ()
37. Bloody diarrhea can be a clinical presentation ()
38. Hypocalcaemia and hyponatremia are possible complications ()
39. Ryle tube + intravenous fluids in the main line of treatment ()
40. Urgent surgery is the best line of treatment of this patient ()

5. CARCINOMA OF THE RT. COLON



Barium Enemas showing the characteristic persistent irregular filling defect of Cancer Rt. Colon

Answer by True or False

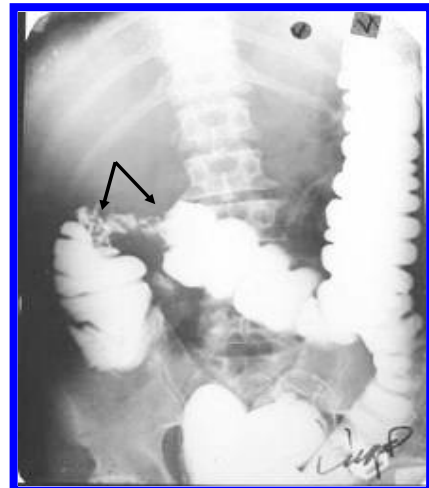
41. There is an irregular filling defect in the right colon ()
42. This picture is suggestive of malignancy ()
43. This patient presents with chronic progressive constipation ()
44. This patient presents with anorexia, weakness, weight loss ()
45. Colonoscopy and biopsy is the best investigation ()
46. Stool analysis and cytology can help to confirm the diagnosis ()
47. Extended Rt. hemi-colectomy is the treatment of choice ()
48. Colostomy may be needed in obstructed cases ()

N.B

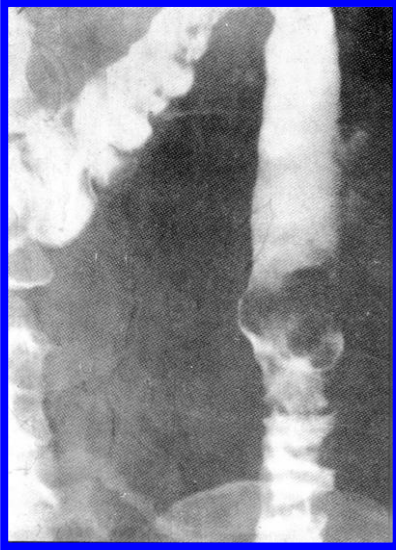
CARCINOMA OF HEPATIC FLEXURE OF COLON

Answer by True or False

49. Hartman's procedure is indicated ()
50. Extended Rt. hemi-colectomy is the treatment of choice for this patient ()



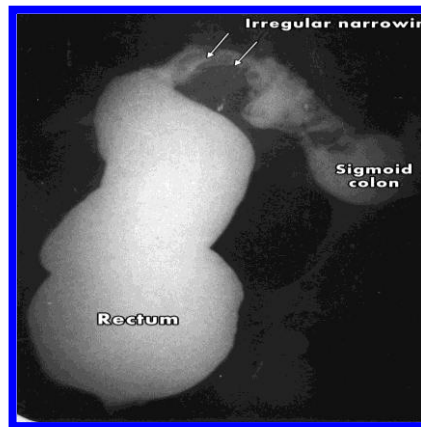
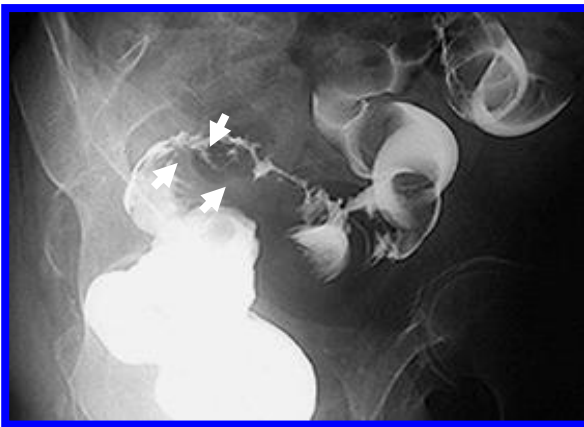
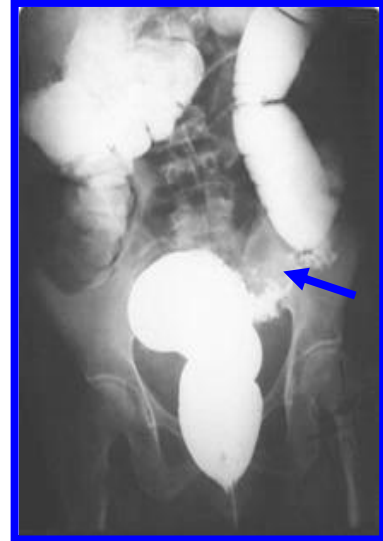
6. CARCINOMA OF THE LT. COLON & SIGMOID COLON



Cancer Descending Colon



Cancer Sigmoid Colon

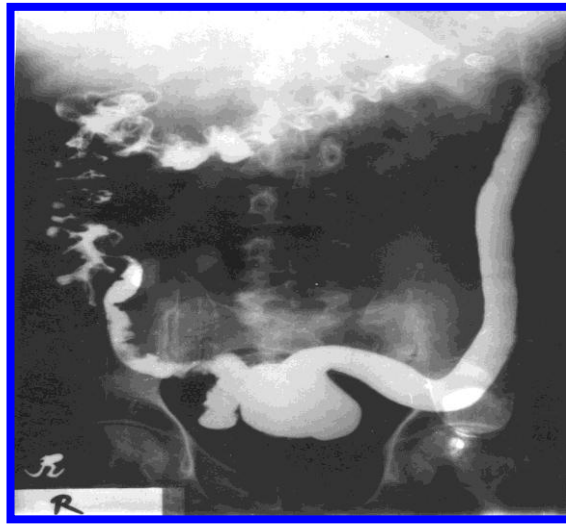
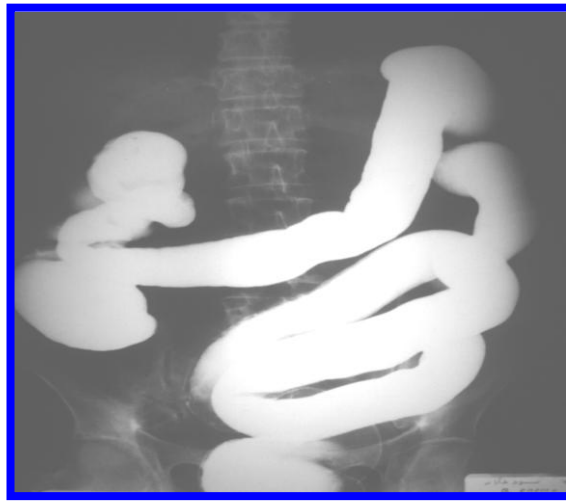
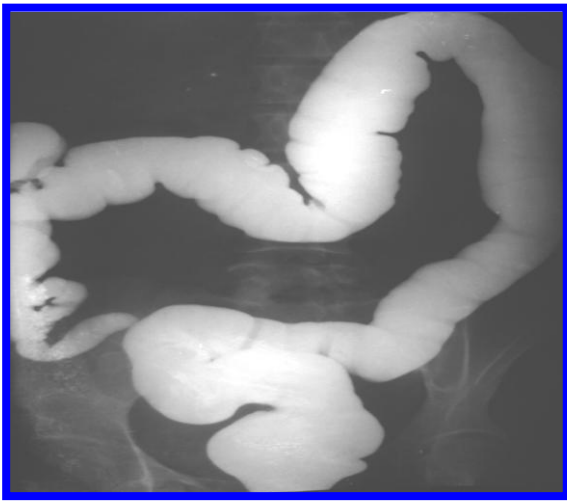


Cancer Sigmoid & Recto-sigmoid Junction

Answer by True or False

51. This study is a barium enema double contrast ()
52. There is an irregular filling defect at the sigmoid region ()
53. Bilharzias is could be a predisposing factor ()
54. The main clinical presentation is a mass in the left lower abdomen ()
55. This condition usually complicates with intestinal obstruction ()
56. Fresh bleeding per rectum is a possible clinical presentation ()
57. Chronic progressive constipation is the main clinical presentation ()
58. Dyspepsia, weakness and weight loss are the main presentations ()
59. Hartman's procedure is the treatment of early cases ()
60. Hartman's procedure can be done for obstructed cases ()

7. **ULCERATIVE COLITIS** (**Pipe-stem appearance**)



Barium Enemas showing narrowing & **loss of Haustrations** of colon.

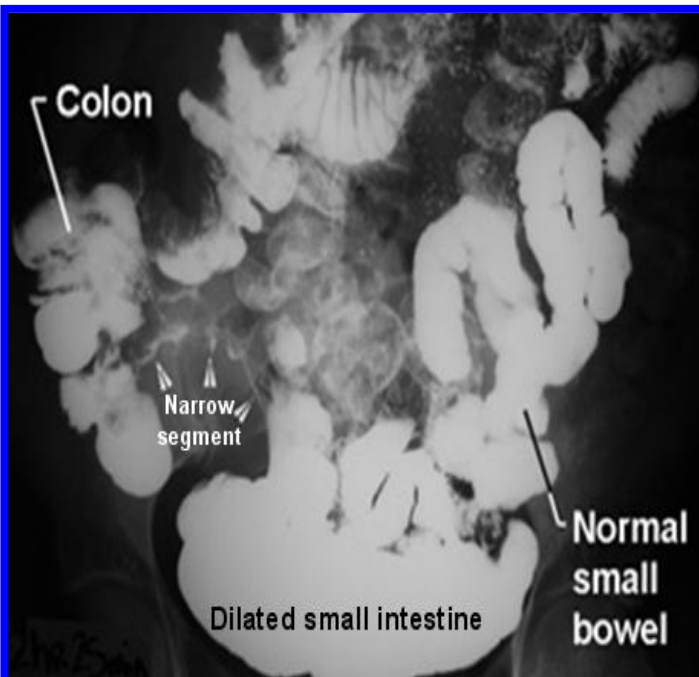
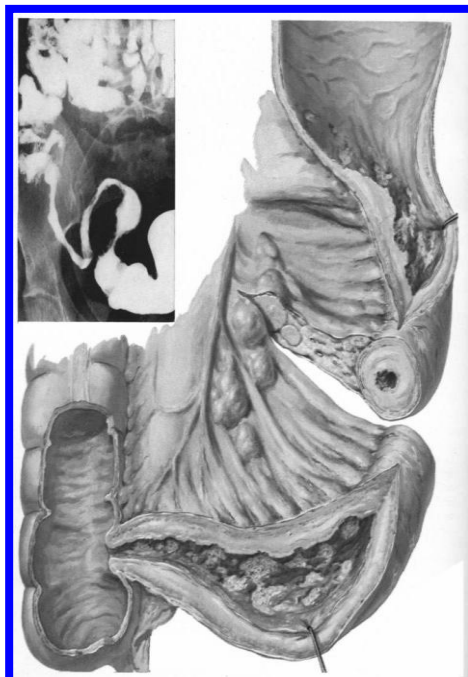
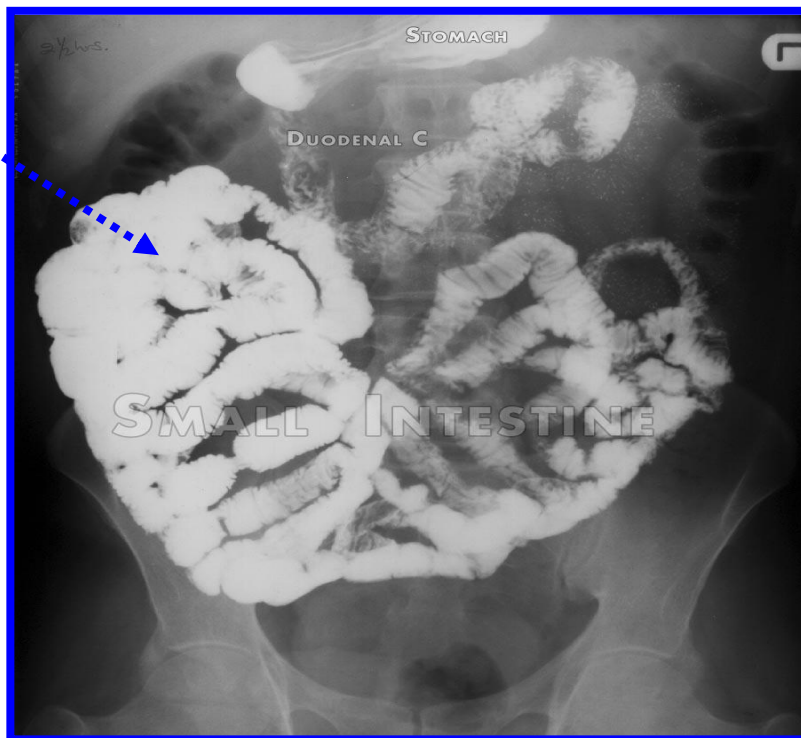
Answer by True or False

61. There is an irregular filling defect in the right colon ()
62. This condition can turn malignant ()
63. The possible underlying cause is aganglioneosis ()
64. Tender palpable colon and weight loss are common features ()
65. Diarrhea, blood and mucus per rectum are common presentations ()
66. Stool analysis can confirm the diagnosis ()
67. Colonoscopy can confirm the diagnosis ()
68. Medical treatment is the principle line ()
69. Surgery is reserved for complicated cases ()
70. Hartman's procedure is the main surgical treatment ()

8. CRHON'S DISEASE

N.B

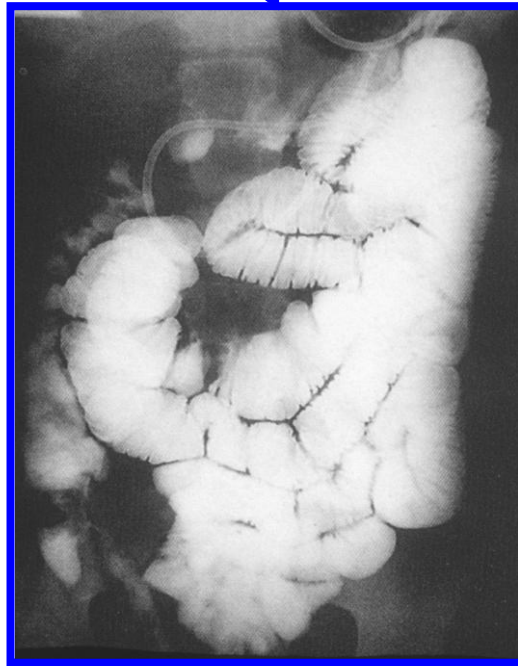
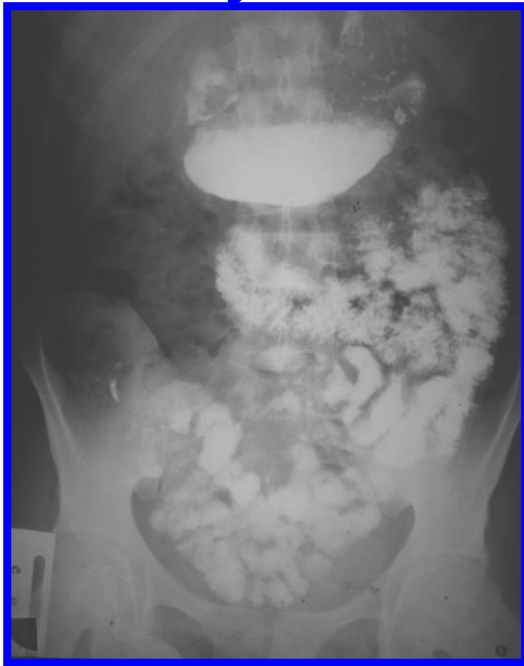
Normal
Barium meal
follow-
through



Barium meal follow through showing narrowing of terminal ileum and proximal dilatation.

String sign of Kantor is the radiological sign

CRHON'S DISEASE

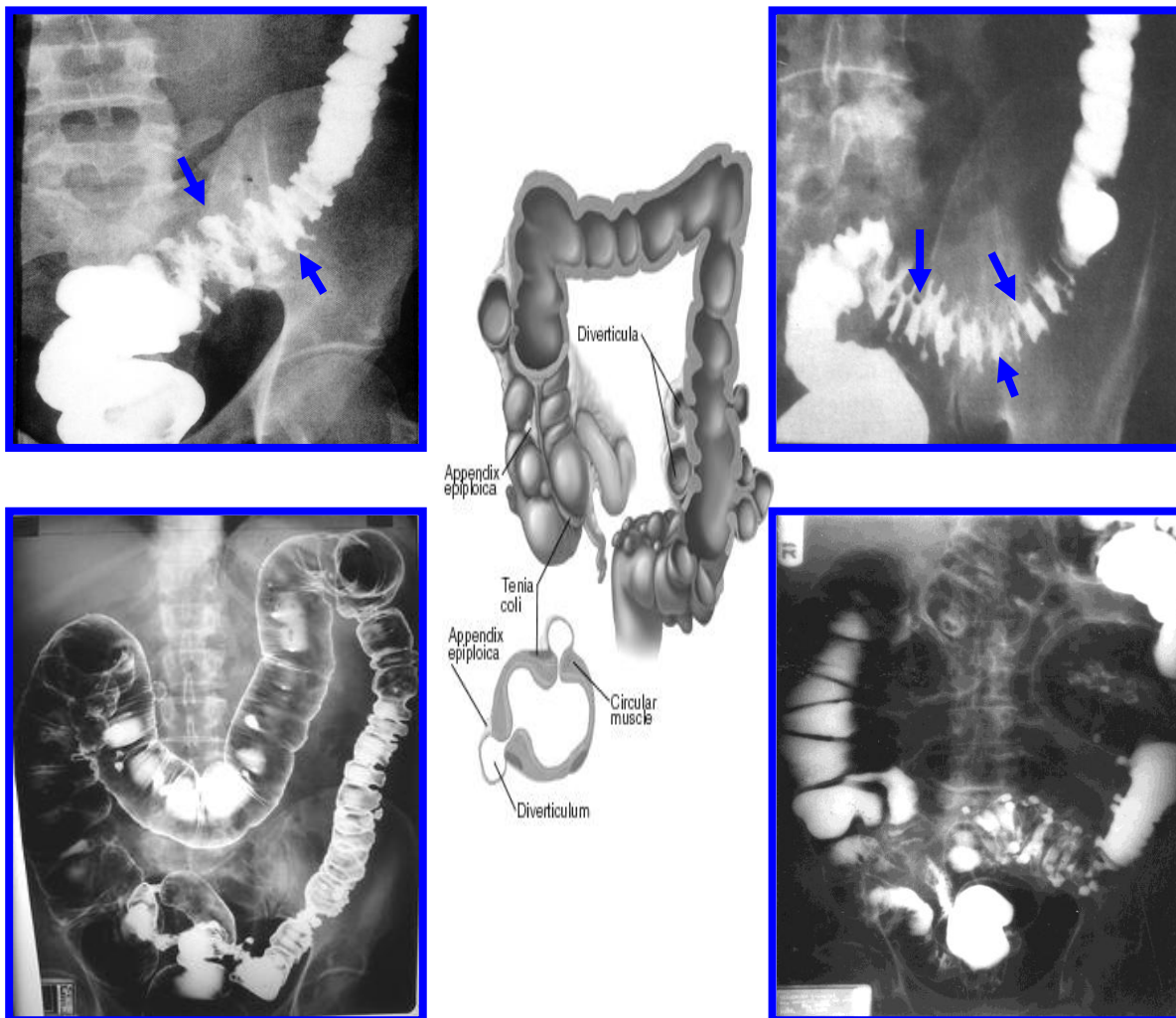


Barium meal follow through showing segmental areas of strictures of small intestine

Answer by True or False

71. This is Barium enema ()
72. Apple core appearance is the characteristic radiological sign ()
73. Autoimmune disorder can be an underlying cause ()
74. Malabsorption and weight loss are the main presentation ()
75. Massive bleeding per rectum is possible complication ()
76. Intestinal obstruction is a possible complication ()
77. Fistula formation is a common complication ()
78. Medical conservative treatment is the first step in the management ()
79. Rt. hemi-colectomy is the treatment of choice ()
80. Total colectomy is indicated as the condition is precancerous ()

9. DIVERTICULOSIS COLI (Saw teeth appearance)

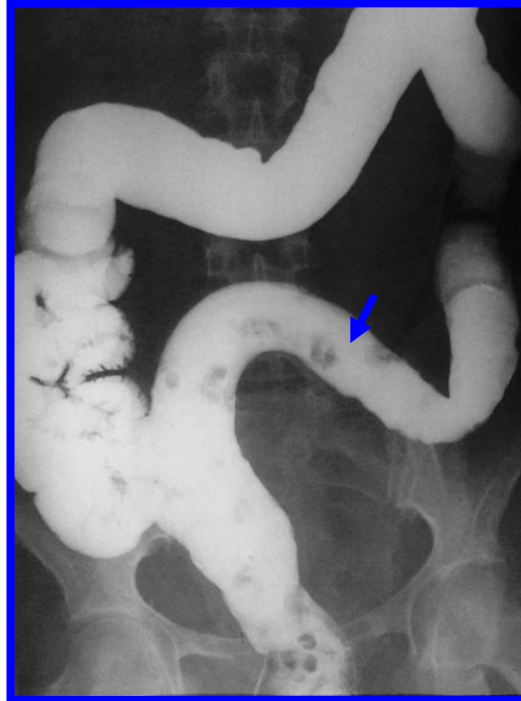
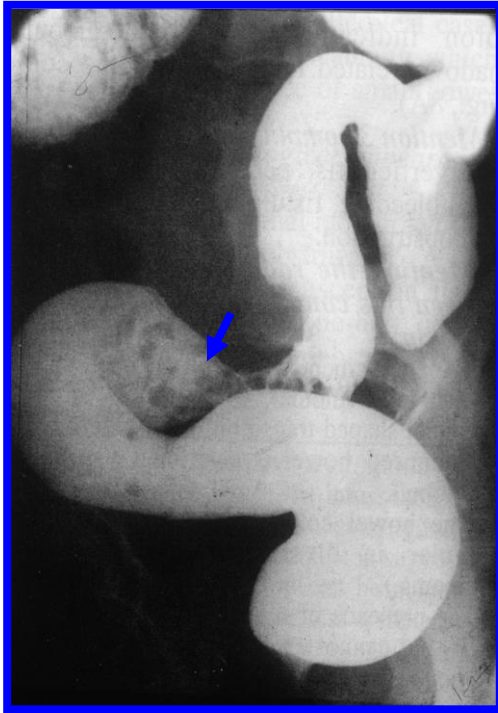


Barium Enemas showing Colonic diverticulae

Answer by True or False

81. The possible underlying cause is Diverticulosis coli ()
82. This condition could turn malignant ()
83. The possible underlying cause is Bilharziasis ()
84. Chronic constipation is the main underlying cause ()
85. Acute abdomen is a possible complication ()
86. This patient may present with a mass in his left lower abdomen ()
87. Bleeding per rectum is a possible complication ()
88. Colonoscopy is the investigation of choice ()
89. Surgery is reserved for complicated cases only ()
90. The main treatment is correct constipation ()

10. **BILHARZIAL POLYPOSIS (Colitis)**



Barium Enema showing **Multiple Rounded Filling defects** at **Sigmoid only**

Answer by True or False

91. The possible underlying cause is Bilharziasis ()
92. This condition never turn malignant ()
93. The possible underlying cause is constipation ()
94. Patient presents by anemia, tenesmus & dyspepsia ()
95. Intestinal obstruction is a possible complication ()
96. This patient may present with a mass in his left lower abdomen ()
97. Bleeding per rectum is a possible complication ()
98. Colonoscopy is the investigation of choice ()
99. Barium swallow is indicated ()
100. The main treatment is correct the cause ()

11. **FAMILIAL POLYPOSIS COLI [F.P.C]**



Barium Enema showing **Multiple Rounded Filling defects** at **whole colon**

Answer by True or False

101. The contrast used is barium enema ()
102. The lesion is adenomas ()
103. This patient may complain of with diarrhea ()
104. This patient may present with acute abdominal pain ()
105. it can turn malignant ()
106. Chronic constipation is the main clinical presentation ()
107. The lesion involves the whole colon ()
108. Stool analysis can help in the diagnosis ()
109. Colonoscopy and biopsy is the investigation of choice ()
110. Surgery is the only line of treatment ()



ANSWERS

SMALL & LARGE INTESTINE

1. False	21. True	41. True	61. False	81. True	101. True
2. False	22. False	42. True	62. True	82. False	102. True
3. True	23. False	43. False	63. False	83. False	103. True
4. True	24. False	44. True	64. True	84. True	104. True
5. False	25. True	45. True	65. True	85. True	105. True
6. True	26. True	46. False	66. False	86. True	106. False
7. False	27. True	47. False	67. True	87. True	107. True
8. True	28. True	48. False	68. True	88. True	108. False
9. True	29. False	49. False	69. True	89. True	109. True
10. True	30. True	50. True	70. False	90. True	110. True
11. True	31. True	51. False	71. False	91. True	
12. True	32. True	52. True	72. False	92. True	
13. False	33. True	53. False	73. True	93. False	
14. True	34. False	54. False	74. True	94. True	
15. True	35. True	55. True	75. False	95. True	
16. True	36. True	56. True	76. True	96. True	
17. True	37. True	57. True	77. True	97. True	
18. True	38. True	58. False	78. True	98. True	
19. False	39. False	59. False	79. False	99. True	
20. False	40. True	60. True	80. False	100. True	

GOOD LUCK



URINARY TRACT RADIOLOGY

Chapter 2

THE URINARY TRACT

A. Plain X-ray

B. I.V.U

A. Plain X-ray

Urinary Stones

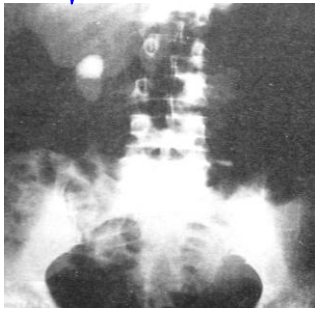
Bilharzial Calcification of (U.B)

Ectopia Vesica (Extrophy)



	OXALATE	PHOSPHATE	URIC ACID	CYSTINE
<i>Incidence</i>	70%	15 %	7-9 %	V. rare
<i>Chemistry</i>	Ca oxalate	Ca <u>phosphate</u> or combine with Ammonium <u>phosphate</u> & Magnesium <u>phosphate</u> i.e. Triple phosphate	<u>Uric acid</u>	Non essential amino acid
<i>Number</i>	Single	Single or multiple	Multiple	Multiple
<i>Size</i>	Moderate	Large It may fill the renal pelvis & the calyces taking their shape i.e. Stag horn stone	Small	Small
<i>Surface & Shape</i>	Irregular & <u>spiky</u>	Smooth	Smooth	Smooth
<i>Consistency</i>	Very hard	Chalky & Friable	Hard	Soft
<i>X-ray</i>	Radio-opaque	Radio-opaque	<u>Radiolucent</u>	Radio-opaque

So We will study ↗



Renal stone



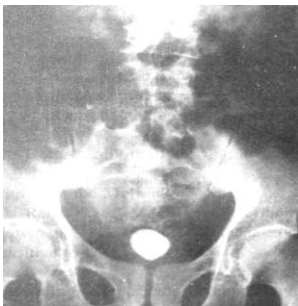
Lat. view



Stag horn stones



Ureteric stone



Urinary bladder With Phosphate stone



Urinary bladder With Oxalate stone



Urinary bladder & Post. Urethra stones



Stone Ant. Urethra

B. I.V.U

☆ **Normal I.V.U** [Intra-Venous Urography]

• The dye : Urographin (Hypaque)

☆ **Cystography**

Ascending

If there is a catheter or non visualization of the ureter

Descending

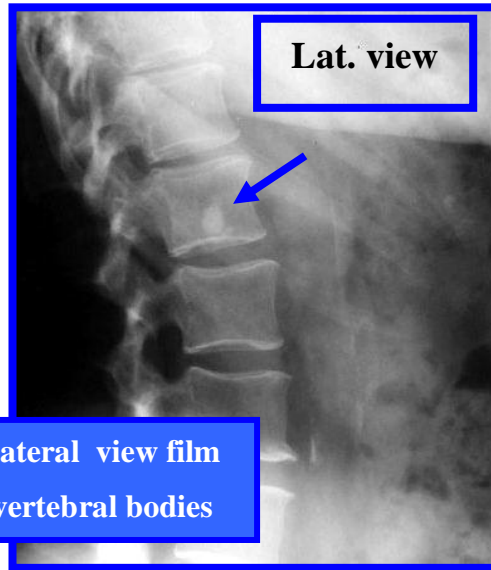
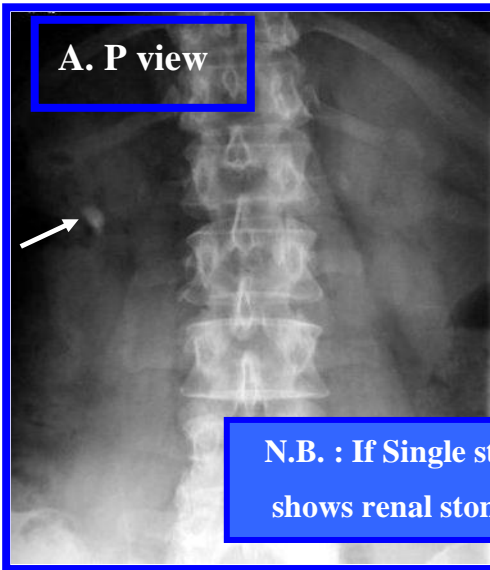
If there is the terminal end of the ureter

☆ **Urethrography**

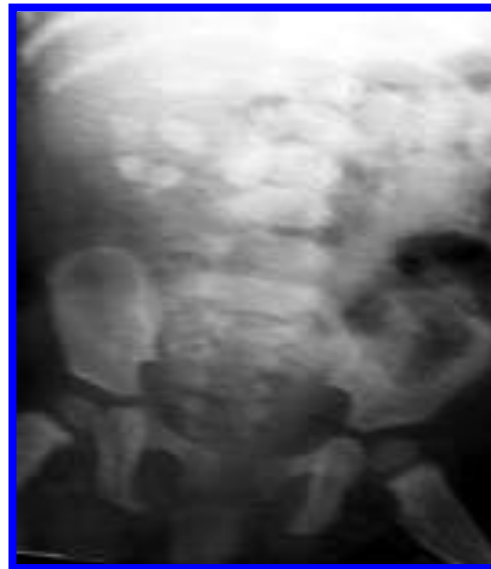
If only the urethra is visualized



1. STONE KIDNEY



N.B. : If Single stone, lateral view film shows renal stone on vertebral bodies



Answer by True or False

1. This is a plain x-ray ()
2. This is an intravenous Pyelography ()
3. Radio-opaque shadows are seen ()
4. Hypoparathyroidism is the possible underlying cause ()
5. This patient may present with Carpo-pedal spasm ()
6. Loin pain is a common clinical presentation ()
7. Hydroureter and hydronephrosis are possible complications ()
8. Abdominal ultrasound can help in the diagnosis ()
9. The next investigation is needed is CT abdomen ()
10. ESWL can be a line of treatment ()



STAG HORN STONE KIDNEY



Plain x-ray showing **Bilateral Stag horn stones**



Plain x-ray showing **Rt. Stag horn stone & Lt. Ureteric stones.**

Multiple stones raise suspicion of [hyperparathyroidism](#) which is the disease of **Bones , Stones , Abdominal groans , Psychic moans & Fatigue overtones**



Plain x-ray showing **Rt. Stag horn stone.**
An IVU is needed for confirmation.
These are phosphate stones that are usually related to infection

2. STONE URETER

☆ Ureteric Stones Usually opposite ↗

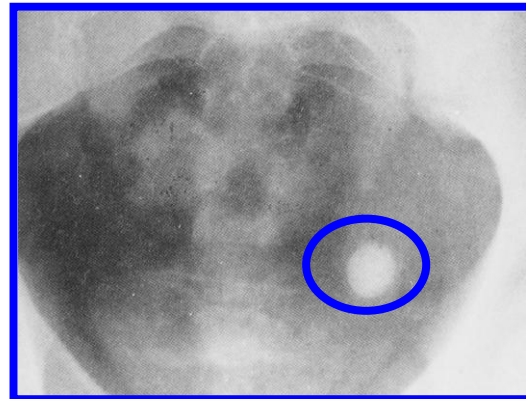
- ① Transverse lumbar vertebrae.
- ② Sacroiliac Joint.
- ③ Ischeal spine.



Plain x-ray showing Ureteric stone at **Transverse lumbar vertebrae**



Plain x-ray showing Ureteric stone at **Sacroiliac Joint**



Plain x-ray showing Ureteric stone at **Ischeal spine**

Answer by True or False

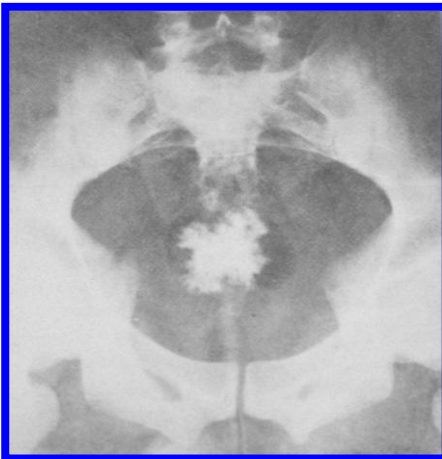
11. There is a radio-opaque shadow in the ureter ()
12. IVU is indicated for this condition ()
13. Bilharzias is can be a possible predisposing factor ()
14. This patient may present with burning micturation ()
15. This patient can present with a colicky loin pain ()
16. Acute appendicitis can be D.D from Rt. side lesion ()
17. Abdominal sonar is a useful investigation ()
18. ESWL can be a line of treatment ()
19. Dormia Basket can be a line of treatment ()
20. Surgery is the best line of treatment for this condition ()

☆ Plain X-ray shows

Phosphate Stones



Oxalate Stones

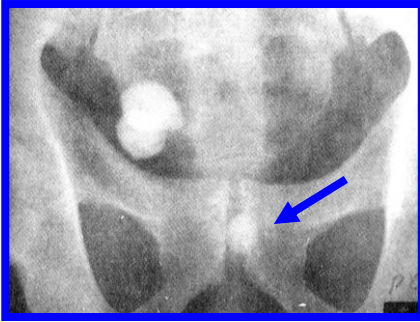


Answer by True or False

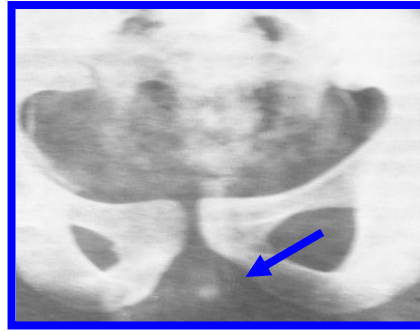
21. This is a plain x-ray ()
22. This patient can present with painless Haematuria ()
23. IVU is indicated for this patient ()
24. Frequency and Dysuria are a common presentation ()
25. This patient can present with terminal Haematuria ()
26. This stone can pass spontaneously during micturation ()
27. Acute retention of urine is a possible complication ()
28. Abdominal sonar is a useful investigation ()
29. Surgery is the best line of treatment for this patient ()
30. Cystolithotomy is the treatment of choice ()

4. STONE URETHRA

☆ Plain X-ray shows



U.B & Post. Urethra stones



Ant. Urethra stone

5. CALCIFIED URINARY BLADDER

☆ Plain X-ray shows

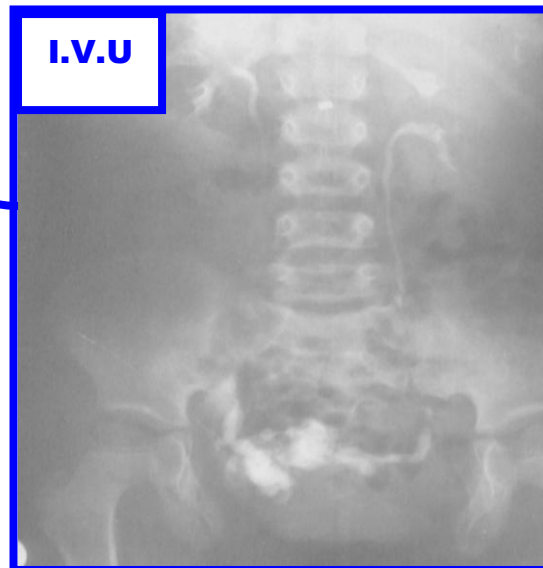
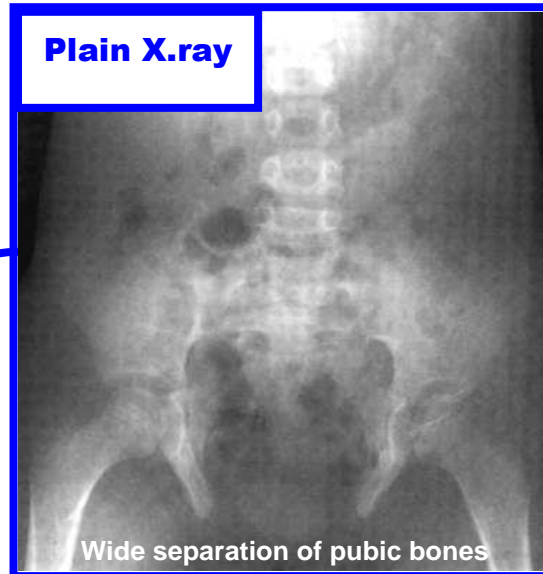


Answer by True or False

31. The dye used is Urographin ()
32. Schistosomiasis is the underlying cause ()
33. This condition can turn malignant ()
34. This patient can present with terminal Haematuria ()
35. Burning micturation and supra-pubic pain are the main presentations ()
36. Acute retention of urine is a common feature ()
37. Urine analysis can confirm the diagnosis ()
38. Cystoscopy can help in the diagnosis ()
39. Anti-bilharizal drugs is the treatment of choice ()
40. Curettage & litholapexy is the I treatment of choice ()

6. **ECTOPIA VESICA** (**Extrophy**)

☆ **Deficient** Symphysis Pubis & both pubic rami



Answer by True or False

41. Wide separation of pubic bone ()
42. Absence of the pubic and ischial rami is seen in this x-ray ()
43. A horse shoe kidney is seen in this x-ray ()
44. There is an irregular filling defect in the bladder ()
45. This patient is incontinent to urine ()
46. Waddling gait is a common presentation ()
47. Malignancy is a possible complication ()
48. Renal failure is a common complication ()
49. Antibiotics can be given to this patient ()
50. Surgery is the only line of treatment ()

B. Intra-Venous Urography (I.V.U)

☆ Normal I.V.U [Intra-Venous Urography]

• The dye ↗

Urographin (Hypaque) which is concentrated & excreted in urine

• Contraindication with ↗

- ① Urea > 100 mg % i.e. Uraemia
- ② Poor Renal function i.e. Anuria
- ③ Urinary tract infection
i.e. Pyelonephritis
- ④ Pregnancy & Thyrotoxicosis
- ⑤ Sensitivity to dye & Iodine allergy

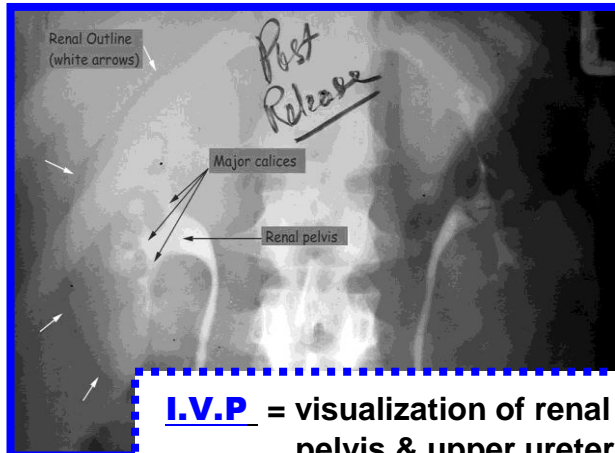
• The Mechanism ↗

The Iodine dye is injected I.V

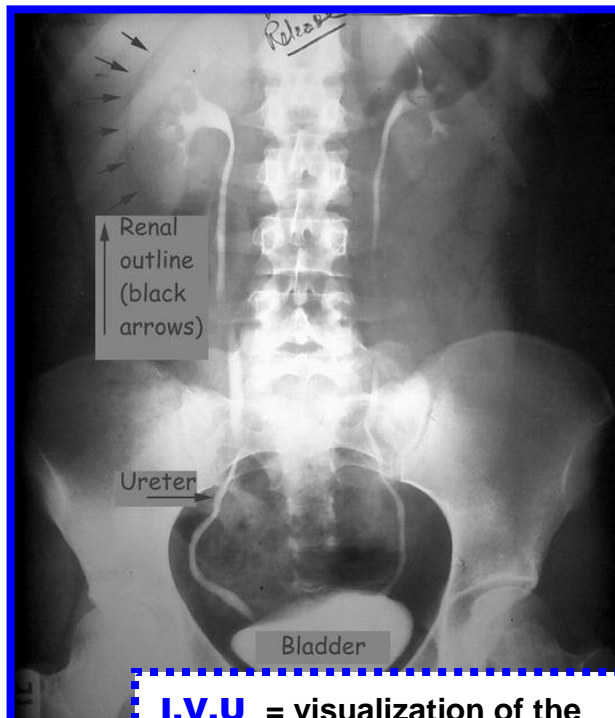
Normally the dye appears in Pelvi-calyceal system after 5 min. & completely excreted in 1 – 1.5 hour

• You should look for ↗

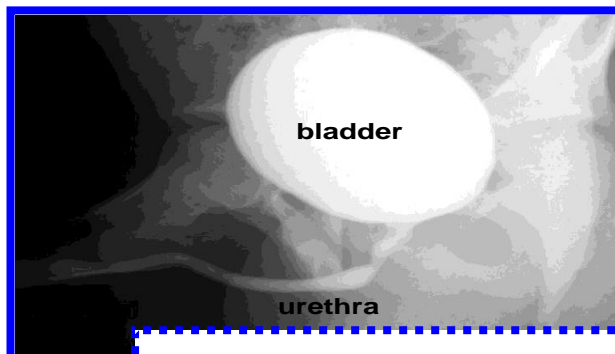
- ① The shape, size, & direction of calices.
- ② Dilatation of the ureter & Pelvi-calyceal system.
- ③ Ureteric stricture & its level.
- ④ Any filling defect in the bladder.



I.V.P = visualization of renal pelvis & upper ureter



I.V.U = visualization of the whole urinary tract



Cystography = visualization of the urinary bladder only

☆ Cystography

Ascending

If there is a catheter or non visualization of the ureter

Descending

If there is the terminal end of the ureter

☆ Urethrography

If only the urethra is visualized

1. DOUBLE PELVIS & DOUBLE URETER

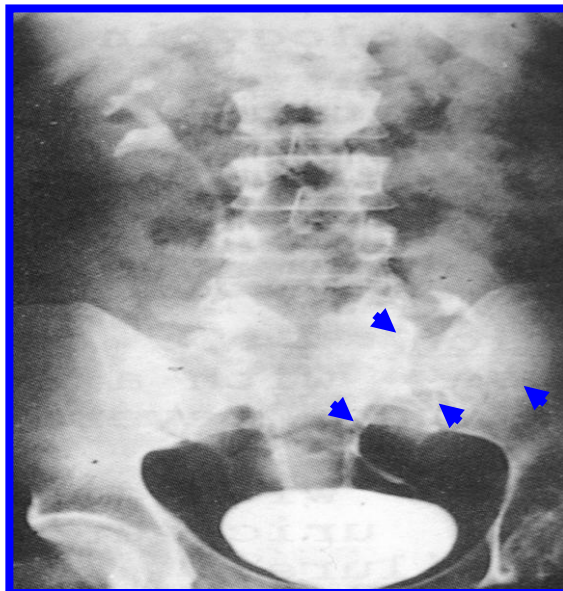


Answer by True or False

51. This study is contraindicated in cases with iodine allergy ()
52. The underlying cause is congenital ()
53. This Lesion may be complete or incomplete ()
54. Stone formation is a common complication ()
55. The principle treatment is surgical removal of the accessory ureter ()

2. ECTOPIC KIDNEY

I.V.U
Ectopic kidney
with
Short ureter



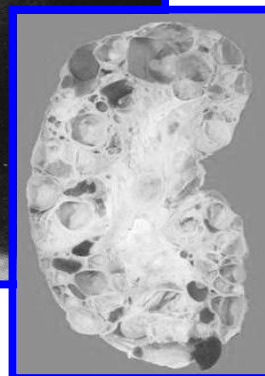
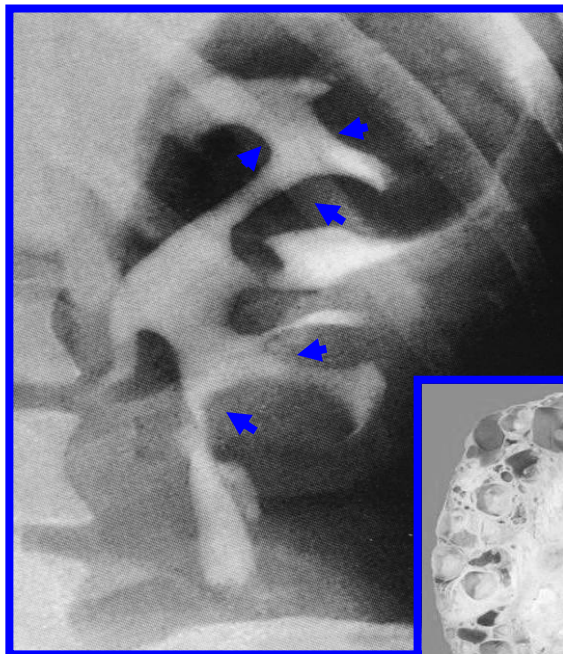
3. NEPHROPTOSIS (MOBILE KIDNEY)

I.V.U
Ptosed kidney
with
Long coiled
ureter



4. POLYCYSTIC KIDNEY (SPIDER LEG APPEARANCE)

I.V.P
Widening
between
calyces
separated by
cysts

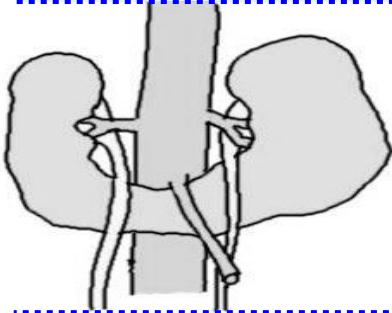


Answer by True or False

- 56. It shows spider leg appearance ()
- 57. The cause of death is Pyelonephritis ()
- 58. This patient may present with renal hypertension ()
- 59. Hydronephrosis is a common complication ()
- 60. Nephrostomy can be a line of treatment ()

5. HORSE SHOE KIDNEY

I.V.U
Both kidneys at lower level



Bilateral mal-rotation of kidneys, as evidenced by the medially-facing lower calyces



6. PELVI-URETERIC JUNCTION OBSTRUCTION (P.U.J.O)

I.V.P
The lt. renal pelvis & the calyces are markedly distended

The lt. Obstruction is at the Pelvi-ureteric junction (P.U.J)

The most usual cause is idiopathic P.U.J Obstruction



7. HYDROURETER & HYDRONEPHROSIS



IVU

Bilateral hydroureter & hydronephrosis, probably caused by ureteric stricture. A common cause is Bilharziasis



IVU

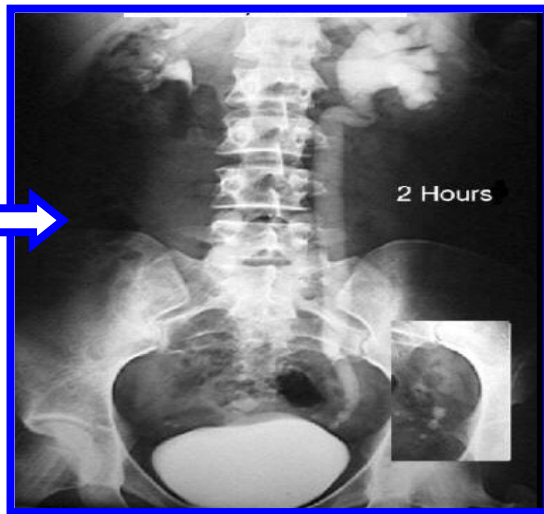
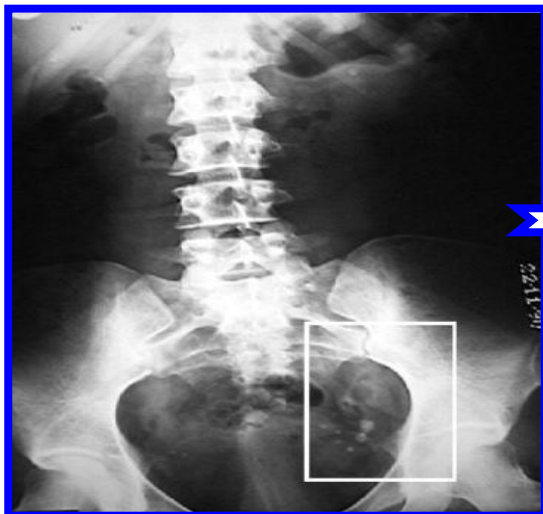
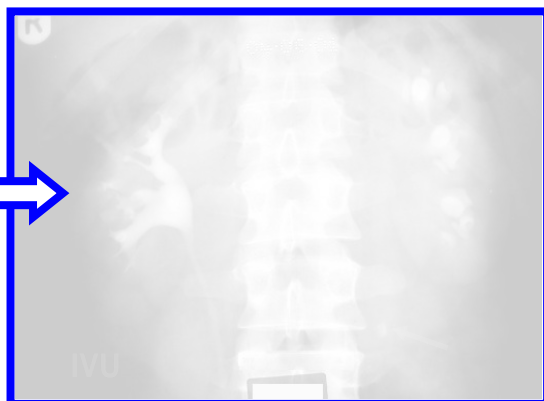
Lt. hydroureter & hydronephrosis possibly caused by a stone in lower ureter.

Answer by True or False

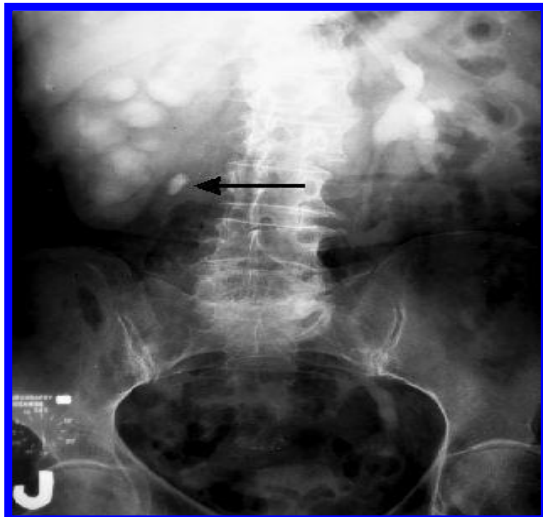
61. The contrast used contains iodine ()
62. The dye was given intravenous ()
63. This patient is presenting with chronic renal failure ()
64. This patient may present with abdominal pain and loin swelling ()
65. Haematuria is the main presentation ()
66. Pyonephrosis is a common complication ()
67. Renal isotopic scan can help in the diagnosis ()
68. Abdominal sonar is an essential investigation ()
69. Treatment of the cause of mass ()
70. Nephrostomy can be a line of treatment ()



HYDROURETER & HYDRONEPHROSIS



Plain x-ray showing Lt. ureter stone.
An IVU showing lt. hydronephrosis



IVU
Rt. obstructing PUJ stone with hydronephrosis

IVU
carcinoma of the urinary bladder & Bilateral hydroureter & hydronephrosis

8. RENAL INJURIES

IVU
 Escape of contrast material out of **Renal pelvis**
 Deep laceration of Rt. kidney



Answer by True or False

71. This a plain x -ray abdomen erect ()
72. The underlying cause could be malignant invasion ()
73. There is evidence of left sided renal injury ()
74. This patient may present with abdominal distention and vomiting ()
75. Terminal Haematuria is a common feature ()
76. Shock may be a possible complication ()
77. CT abdomen is the investigation of choice ()
78. Antibiotics can be a line of treatment ()
79. The principle treatment is right side nephrectomy ()
80. Surgery is reserved for complicated cases only ()

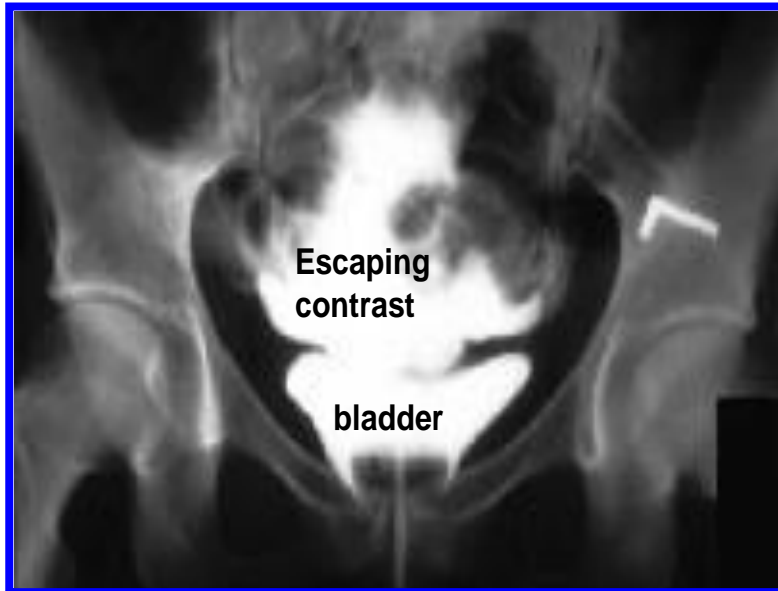
9. URETERIC INJURIES

IVU
 Escape of contrast material out of **Lt. Ureter**
 The cause is iatrogenic by ureteric catheterization



10. URINARY BLADDER INJURIES

(INTRA-PERITONEAL RUPTURE BLADDER)



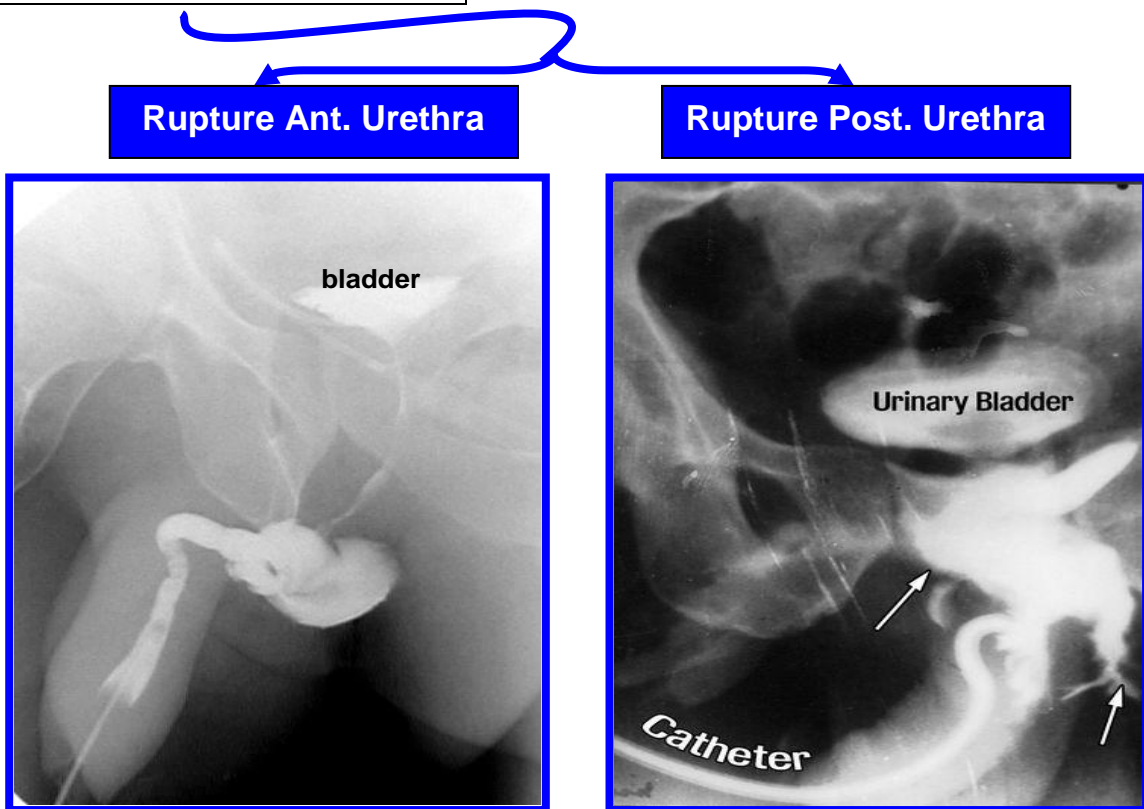
Ascending Cystography

Free escape of contrast upwards

Answer by True or False

81. There is leak of the dye seen in the peri-vesical space ()
82. The common underlying cause of this condition is fracture pelvis ()
83. This patient may present with Haematuria ()
84. This patient may present with urine retention ()
85. Peritonitis is a common complication ()
86. Abdominal distention and vomiting are common features ()
87. Shock is a possible complication ()
88. Urgent catheterization is required ()
89. Urgent surgical exploration is indicated ()
90. Supra-pubic cystostomy is the main line of treatment ()

11. URETHRAL INJURIES



Ascending Cystourethrography

Escape of contrast from an injury in **Anterior** urethra.

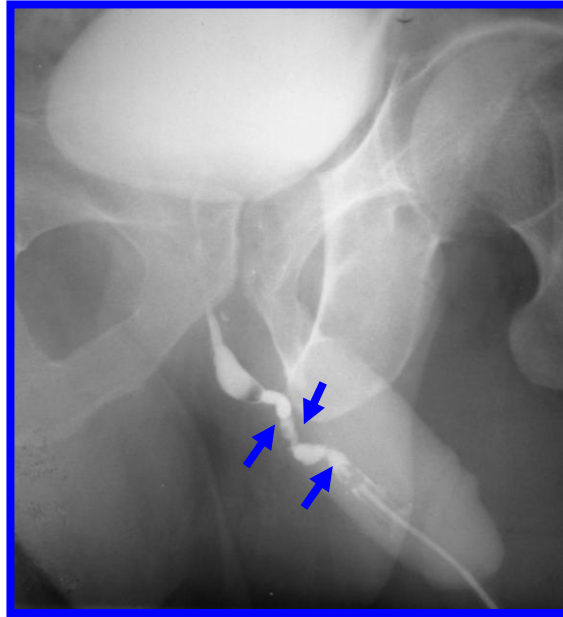
Escape of contrast from an injury in **Posterior** urethra.

Answer by True or False

- 91. This is a rupture of the urinary bladder ()
- 92. This is an ascending Cysto-urethrogram ()
- 93. The bladder is visualized by the dye ()
- 94. Injury in Posterior urethra associated with fracture pelvis ()
- 95. This patient may present with Haematuria ()
- 96. This patient may present with urine retention ()
- 97. Stricture is the commonest complication of this condition ()
- 98. Pre- operative catheterization is required ()
- 99. Urgent surgery is required for the treatment of this condition ()
- 100. Supra-pubic cystostomy tube is needed ()

12. URETHRAL STRICTURE

Ascending
Cysto- urethrography



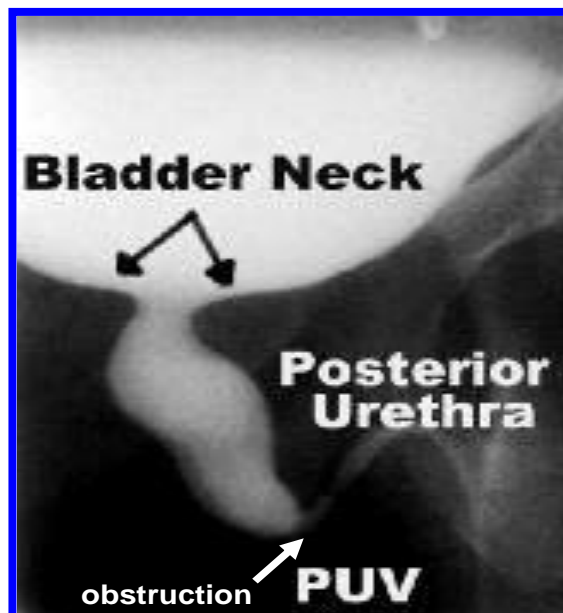
Answer by True or False

- 101. The underlying cause is traumatic ()
- 102. Difficulty & burning micturation are common clinical presentation ()
- 103. Urine retention is a common complication ()
- 104. Urine flowmetry can help in the diagnosis ()
- 105. The principle treatment is regular trans-urethral dilatation ()

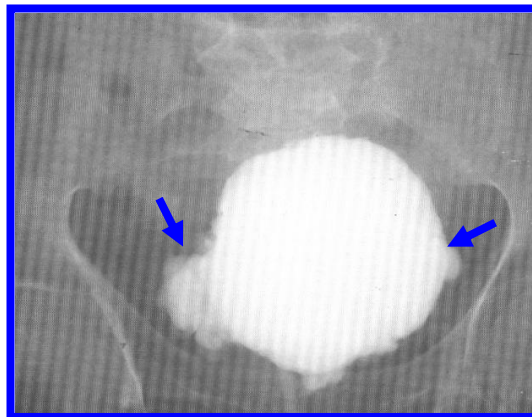
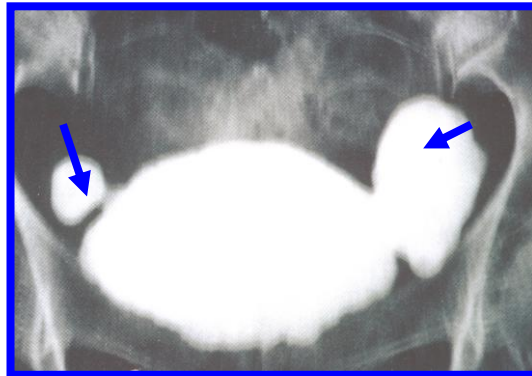
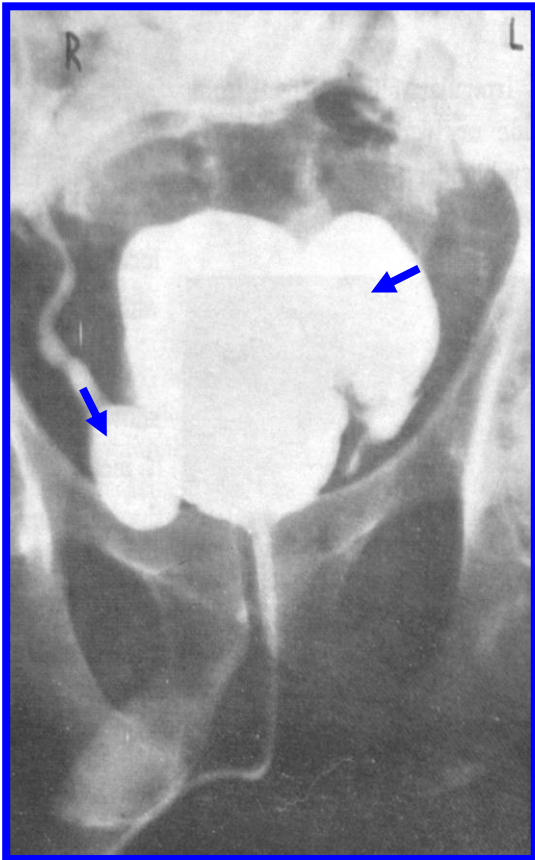
13. POSTERIOR URETHRAL VALVE

Micturation
Cysto- urethrography

Obstruction of posterior
urethra with proximal
urethral dilatation



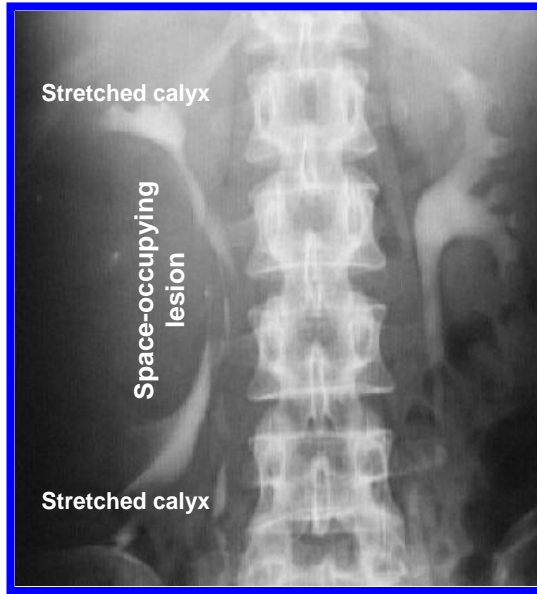
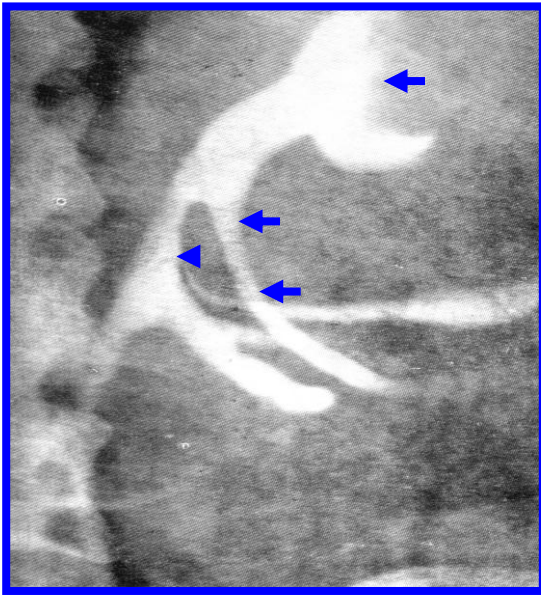
14. URINARY BLADDER DIVERTICULUM



Answer by True or False

106. There is radiological signs of fracture pelvis seen in this x-ray ()
107. This is an ascending Cystography film ()
108. Benign Prostatic hyperplasia is a major underlying cause ()
109. Bilharziasis can be a possible predisposing factor ()
110. This patient may present with double micturation ()
111. Trans rectal ultrasound can help in the diagnosis of this condition ()
112. Cystoscopy can help in the diagnosis ()
113. Medical conservative treatment is the best choice ()
114. Antibiotics may be given as a line of treatment ()
115. Surgery for complicated cases only ()

15. HYPERNEPHROMA



IVU showing a **space-occupying lesion** in Rt. kidney

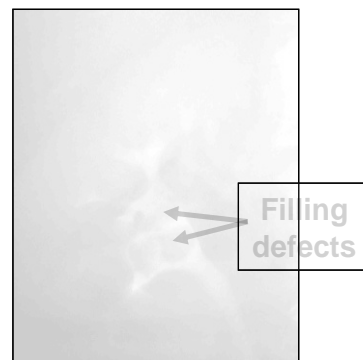
Answer by True or False

- 116. This is a left sided peri-nephric abscess ()
- 117. This patient may present with Necroturia ()
- 118. Painless Haematuria is the commonest presentation ()
- 119. The common site of this lesion is the lower pole of the kidney ()
- 120. Varicocele is a common complication ()
- 121. Hypertension is a possible complication ()
- 122. Urine cytology can confirm the diagnosis ()
- 123. CT abdomen is the investigation of choice ()
- 124. Nephrectomy is the best line of treatment of this condition ()
- 125. Nephrostomy is the principle treatment for advanced cases ()

16. TRANSITIONAL CELL CARCINOMA

Lt. nephro-ureterectomy for TCC of Lt. kidney
1 year ago.
Recurrence of haematuria.

IVU shows filling defects of Rt. renal pelvis



17. **CANCER BLADDER**



IVU

showing an **irregular filling defect** of the urinary bladder
Bilateral hydroureter & hydronephrosis



Descending Cystography

showing an **irregular filling defect** of the urinary bladder

Answer by True or False

126. There is a lateral wall filling defect seen in the bladder ()
127. The contrast used is Urographin ()
128. This condition is commonly associated with Haematuria ()
129. The underlying cause is a benign adenomatous disease ()
130. This patient can present with Necroturia ()
131. Bilharziasis is a major underlying cause ()
132. The age of this patient is under 18 years ()
133. This investigation may cause ascending Pyelonephritis ()
134. Cystoscopy is indicated for this condition ()
135. The principle treatment is conservative ()

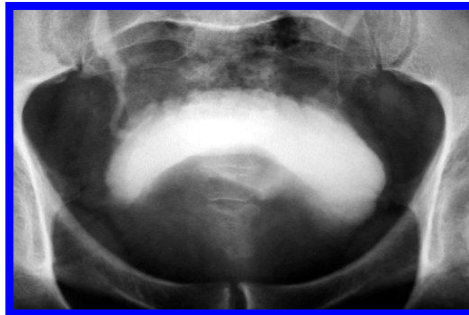
18. SENILE ENLARGEMENT PROSTATE (S.E.P)



IVU showing a **smooth Basal filling defect** of the urinary bladder with **Rt. hydronephrosis**



IVU showing a **smooth Basal filling defect** of the urinary bladder with **Diverticulum**



IVU showing a **smooth Basal filling defect** of the urinary bladder with **Sacculation of bladder wall**

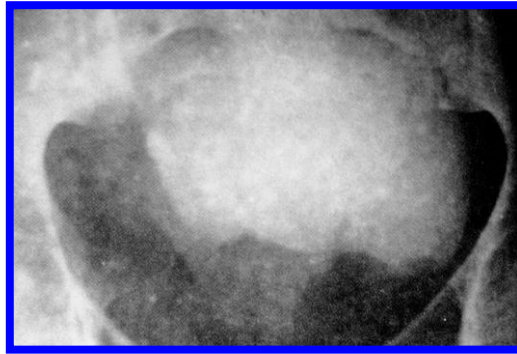
Answer by True or False

136. The underlying cause is a benign adenomatous disease ()
137. This patient may present with acute urine retention ()
138. may be complicated with ascending urinary tract infection ()
139. This patient may present with bilateral groin swellings ()
140. Bilateral hydronephrosis is a possible complication ()
141. Renal failure could be a complication in neglected cases ()
142. Frequency and burning micturation are common presentations ()
143. Malignant transformation is a possible complication ()
144. Trans rectal ultrasound is useful ()
145. TUR is the surgical treatment of choice for this condition ()

19. **CANCER PROSTATE**

Descending Cystography

showing an **irregular Basal filling defect** of the urinary bladder



ANSWERS

THE URINARY TRACT

1. True	16. True	31. <u>False</u>	46. True
2. <u>False</u>	17. True	32. True	47. True
3. True	18. <u>False</u>	33. True	48. True
4. <u>False</u>	19. True	34. <u>False</u>	49. True
5. <u>False</u>	20. True	35. True	50. True
6. True	21. True	36. <u>False</u>	51. True
7. <u>False</u>	22. <u>False</u>	37. <u>False</u>	52. True
8. True	23. True	38. True	53. True
9. <u>False</u>	24. True	39. <u>False</u>	54. <u>False</u>
10. True	25. True	40. True	55. True
11. True	26. <u>False</u>	41. True	56. True
12. True	27. True	42. True	57. True
13. True	28. True	43. <u>False</u>	58. True
14. True	29. True	44. <u>False</u>	59. <u>False</u>
15. True	30. True	45. True	60. <u>False</u>

61. True	83. False	105. True	127. True
62. True	84. False	106. False	128. True
63. False	85. True	107. True	129. False
64. True	86. True	108. True	130. True
65. False	87. True	109. True	131. True
66. True	88. False	110. True	132. False
67. True	89. True	111. False	133. False
68. True	90. False	112. True	134. True
69. True	91. False	113. False	135. False
70. True	92. True	114. True	136. True
71. False	93. True	115. True	137. True
72. False	94. True	116. False	138. False
73. False	95. True	117. False	139. True
74. True	96. True	118. True	140. True
75. False	97. True	119. False	141. True
76. True	98. False	120. True	142. True
77. True	99. False	121. False	143. False
78. True	100. True	122. False	144. True
79. False	101. True	123. True	145. True
80. True	102. True	124. True	
81. False	103. True	125. False	
82. False	104. True	126. True	

GOOD LUCK



ORTHOPAEDICS

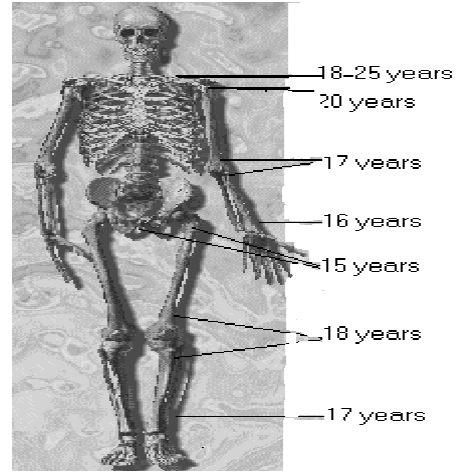
X.RAYS

Chapter 3

ORTHOPAEDIC X-RAYS

☆ Look for ↗

1. **Site & Shape** of Fractures or Dislocation.
2. **Type of Trauma:**
 - a. *Direct* : Transverse or at **same** level.
 - b. *Indirect* : Oblique or at **different** level.
3. **Detect the Age :**
i.e. Epiphysis Cartilage becomes ossified at certain ages →



UPPER LIMB FRACTURES



1. # Clavicle



2. Ant. Shoulder Dislocation



3. # Surgical Neck Humerus



4. # Shaft Humerus



5. Supra-Condylar # humerus



6. Post. Elbow Dislocation

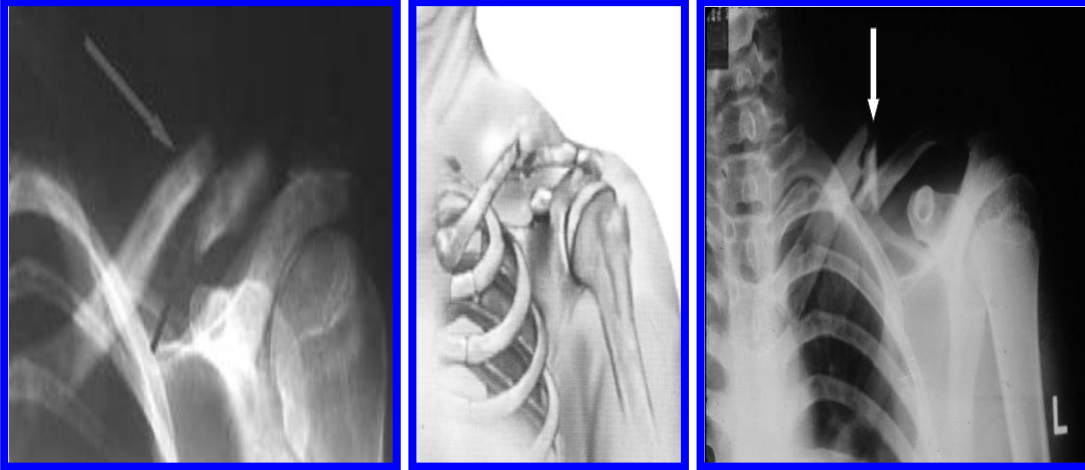


7. # Shaft Radius & Ulna



8. Colle's #

1. FRACTURE CLAVICLE



Answer by True or False

1. The underlying cause is indirect trauma ()
2. This is the common site for this type of fracture ()
3. Mal-union is a common complication ()
4. Arm to neck sling is enough to reduce this fracture ()
5. Open reduction + Internal fixation is the main line of treatment ()

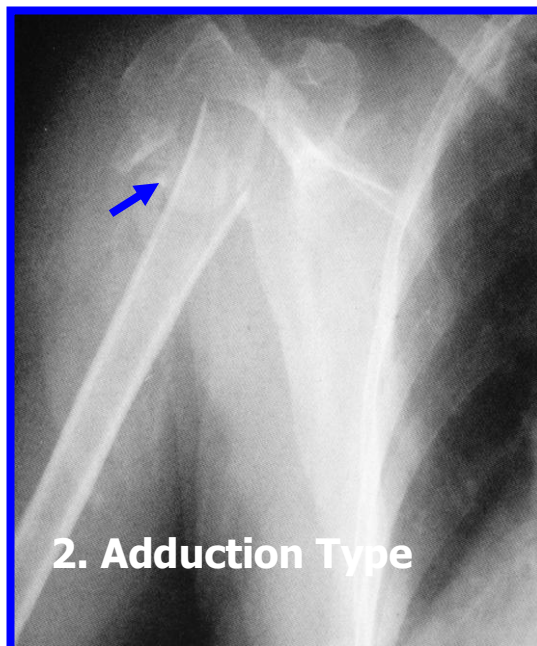
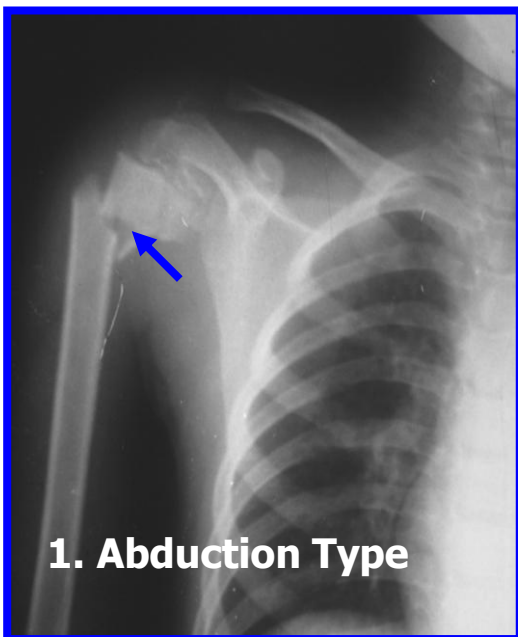
2. ANT. SHOULDER DISLOCATION



Answer by True or False

6. This patient presents with locking of shoulder movements ()
7. Palpable bony crepitus is a clinical sign to diagnose this condition ()
8. Abduction deformity can be seen in this x-ray ()
9. Injury of the joint capsule is a famous complication ()
10. Closed reduction + fixation in adduction is the best treatment ()

3. FRACTURE SURGICAL NECK HUMERUS

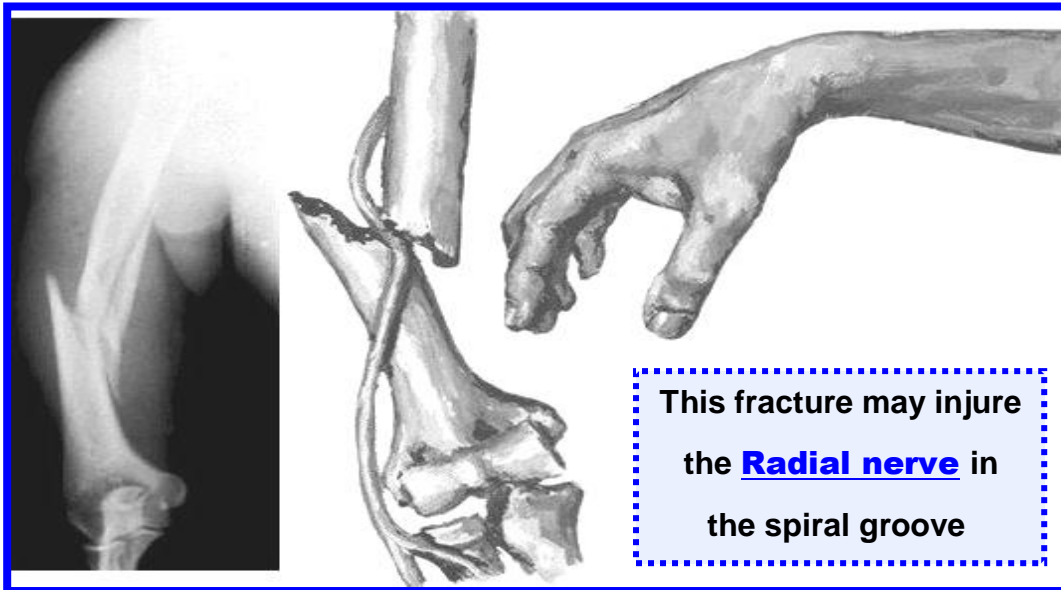


This fracture may injure the **Circumflex (Axillary) nerve C5,6**

Answer by True or False

11. A pathological fracture of the neck Humerus is the cause ()
12. Flattening of shoulder contour may be a clinical feature ()
13. Axillary nerve injury is a possible complication ()
14. Myositis Ossificans is a possible complication ()
15. Closed reduction + fixation in plaster cast is indicated ()

4. FRACTURE SHAFT OF HUMERUS



This fracture may injure the **Radial nerve** in the spiral groove



Pathological fracture where the bone is weakened by the presence of a multilocular cyst

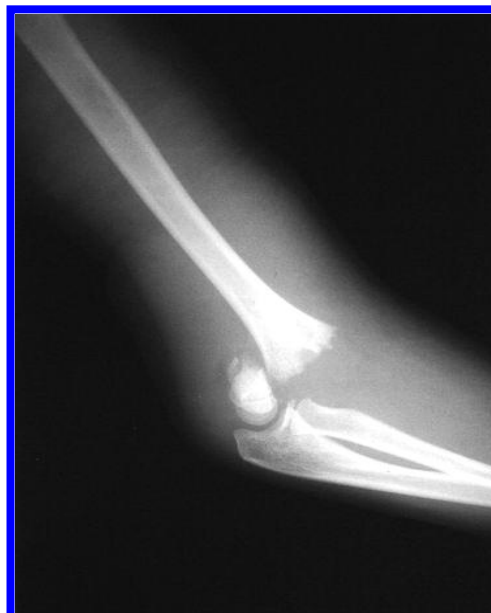
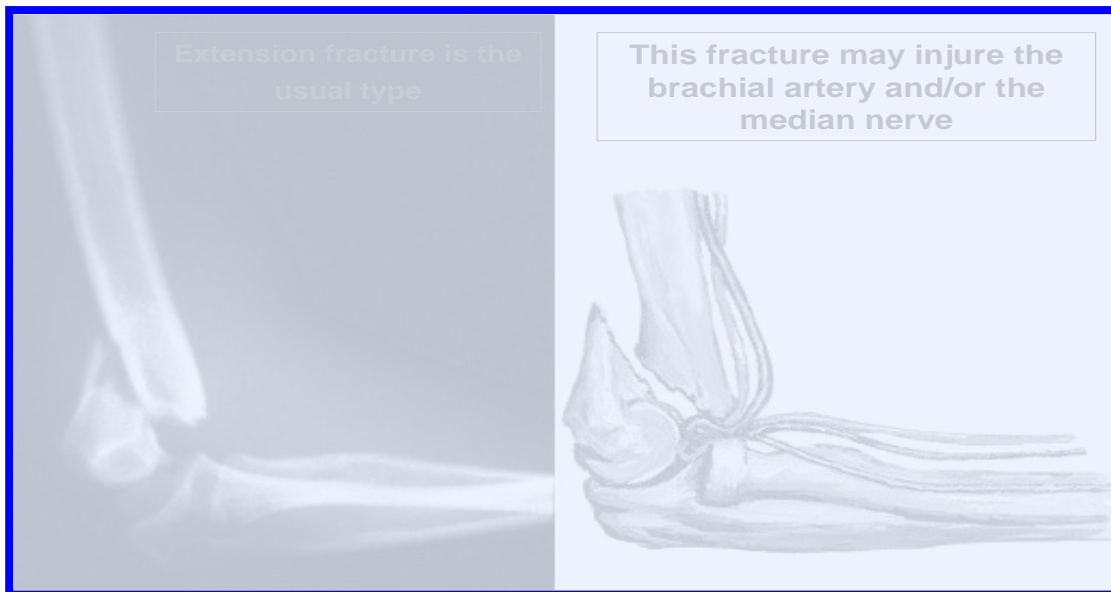


Comminuted fracture

Answer by True or False

16. This is an avulsion fracture of the Humerus ()
17. Myositis Ossificans is a possible complication ()
18. Volkmann's contracture is a common complication ()
19. Radial nerve injury is a possible complication ()
20. Closed reduction + "U" shaped slap is a line of treatment ()

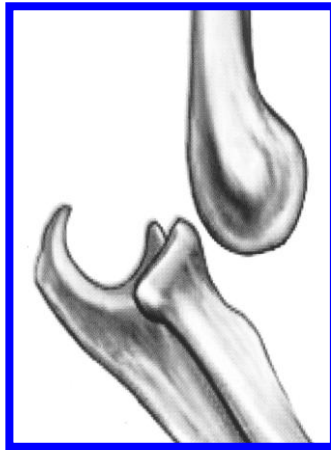
5. SUPRA-CONDYLAR FRACTURE HUMERUS



Answer by True or False

21. This is the commonest type of this fracture ()
22. This fracture can lead to a disturbance in carrying angle of the forearm ()
23. There is a disruption between condyles & olecranon process ()
24. This condition can be associated with Volkmann's contracture ()
25. Internal fixation is the principle line of treatment ()

\6. POSTERIOR ELBOW DISLOCATION



Answer by True or False

- 26. This condition is commonly seen among children ()
- 27. The underlying cause is direct trauma to the olecranon process ()
- 28. Disruption of the joint line between condyles & olecranon can be seen ()
- 29. Cubitus Valgus is a common feature ()
- 30. Internal fixation is the treatment of choice ()



FRACTURE OLECRENON



This fracture may lead to **Anterior Elbow Dislocation**

FRACTURE MEDIAL EPICONDYLE



This fracture may injure the **Ulnar nerve**

7. FRACTURE SHAFT OF ULNA & RADIUS



Answer by True or False

31. Cubitus Valgus is a common feature ()
32. Volkmann's contraction is a complication ()
33. Sudeck's atrophy is developed ()
34. Vitamin D + calcium can be a line of treatment ()
35. Internal fixation is the rule in this type of fracture ()

FRACTURE 5TH METACARPAL



N.B

SCAPHOID FRACTURE

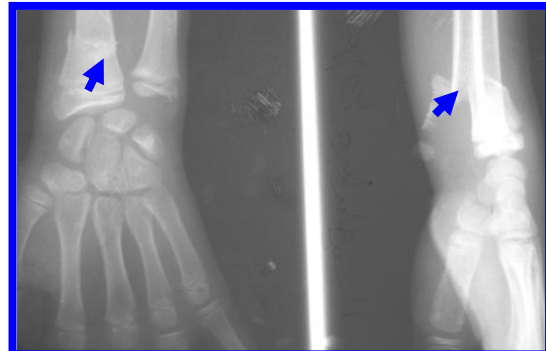


8. COLLE'S FRACTURE



Colles' fracture

Fracture of
distal inch
of Radius.



Answer by True or False

36. It is commonly seen in young adults ()
37. Osteoporosis can be a predisposing factor ()
38. There is a backward & upward displacement of distal end of the ulna ()
39. Sudeck's atrophy is liable to occur in this type of fracture ()
40. Internal fixation is the principle line of treatment ()

LOWER LIMB FRACTURES



Pelvis



Post. Hip Dislocation



Fracture neck Femur



Austin moor



DHS



Shaft Femur



Intra-medullary nail



Thomas splint

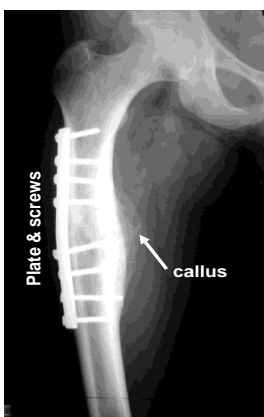


Plate & Screws



Pattela



Tibia & Fibula

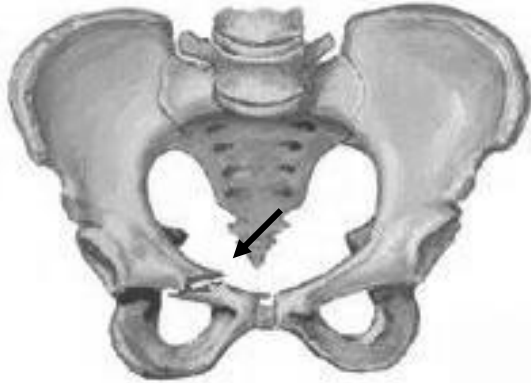


Pott's Ankle

LOWER LIMB FRACTURES

1. FRACTURE PELVIS

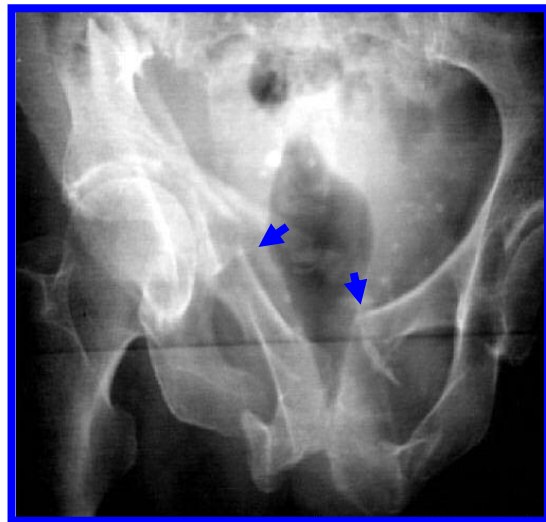
A. SOLITARY FRACTURE OF PELVIS



Fracture of superior pubic ramus

B. DOUBLE FRACTURE OF PELVIS

1. Butter Fly Fracture



Answer by True or False

41. This is unstable fracture ()
42. Intra-peritoneal rupture bladder is a complication of this fracture ()
43. Usually associated with marked blood loss ()
44. The priority in management is directed toward correction of shock ()
45. Urgent surgical exploration may be needed for this patient ()

2. Open Book Fracture

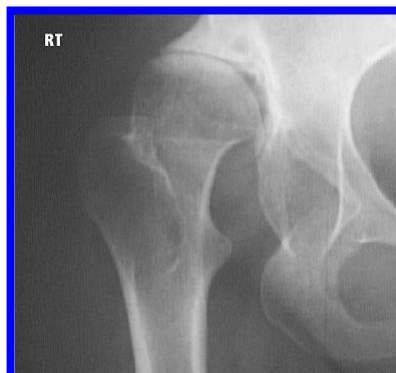
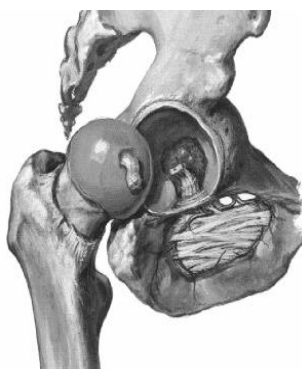
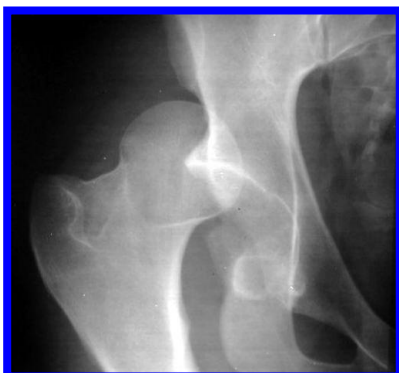


Answer by True or False

46. Road traffic accidents is a major underlying cause ()
47. A double level fracture can be seen ()
48. Major blood loss is a common presentation ()
49. Intra-pelvic rupture urethra is a common complication ()
50. External fixation in a plaster cast in the main line of treatment ()

2. HIP JOINT DISLOCATION

A. Posterior HIP DISLOCATION



This is the most frequent variety of hip dislocation

Answer by True or False

51. This patient presents with locking joint ()
52. Palpable bony crepitus is a sure clinical sign to diagnose this condition ()
53. Abduction deformity can be seen in this x-ray ()
54. Injury of the joint capsule is a famous complication ()
55. Closed reduction + Hip Spica is the best treatment ()

B. Anterior HIP DISLOCATION

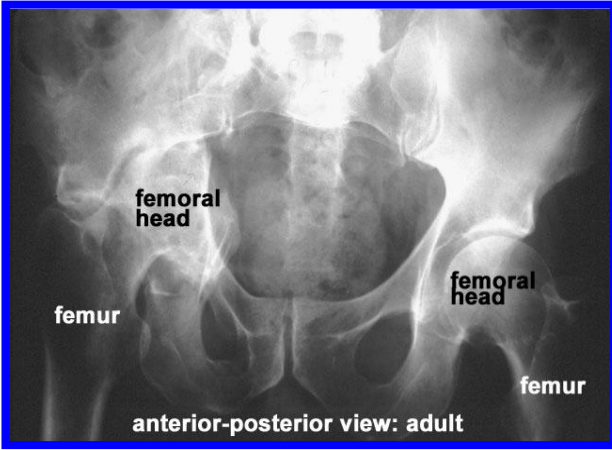
This is the **less frequent** variety of hip dislocation



B. Central HIP DISLOCATION

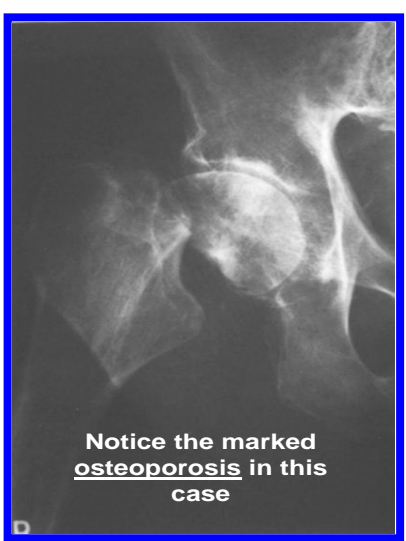
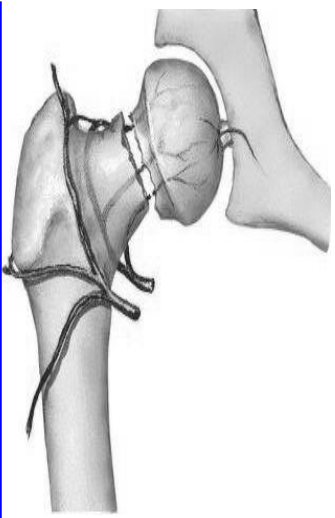
This is the **rarest** variety of hip dislocation

Central hip dislocation
(Acetabular fracture)
on the Rt. side



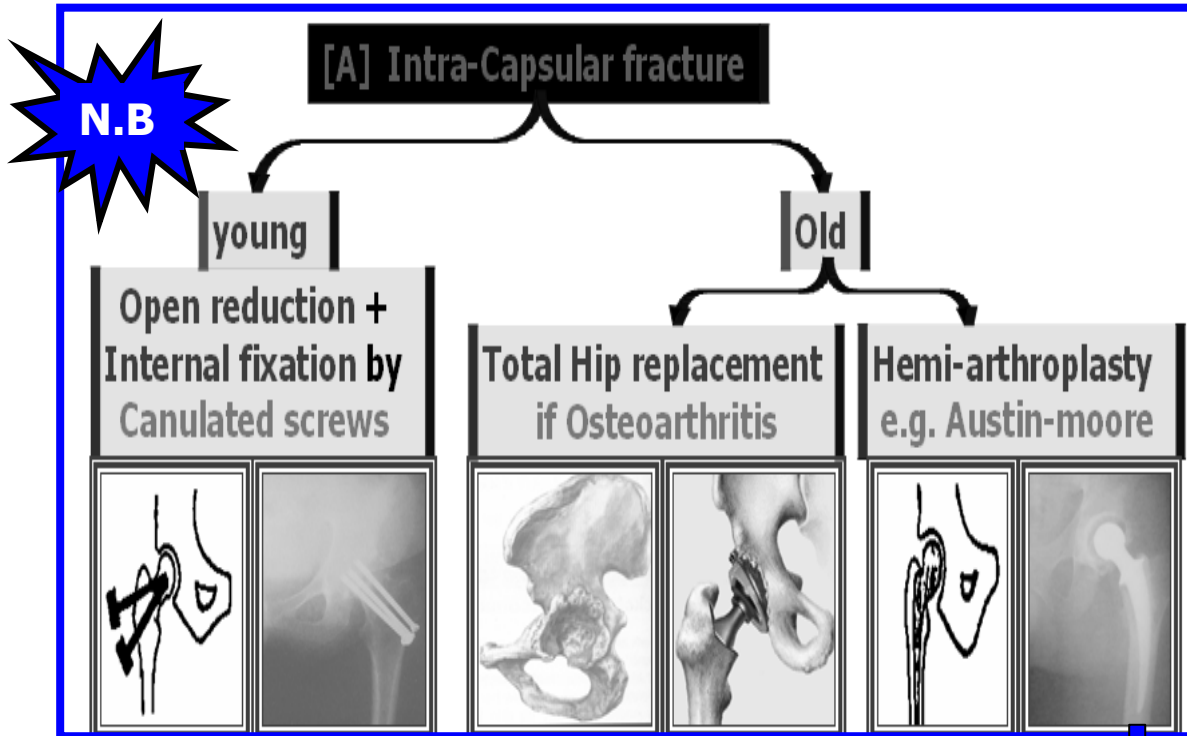
3. FRACTURE NECK FEMUR

A. INTRA-CAPSULAR TYPE



Answer by True or False

- 56. This fracture is common in elderly ()
- 57. A vascular necrosis of femoral head is a common complication ()
- 58. Coxa Vera is a possible complication of this fracture ()
- 59. Early surgery is recommended for this patient ()
- 60. Hemi-arthroplasty is indicated ()



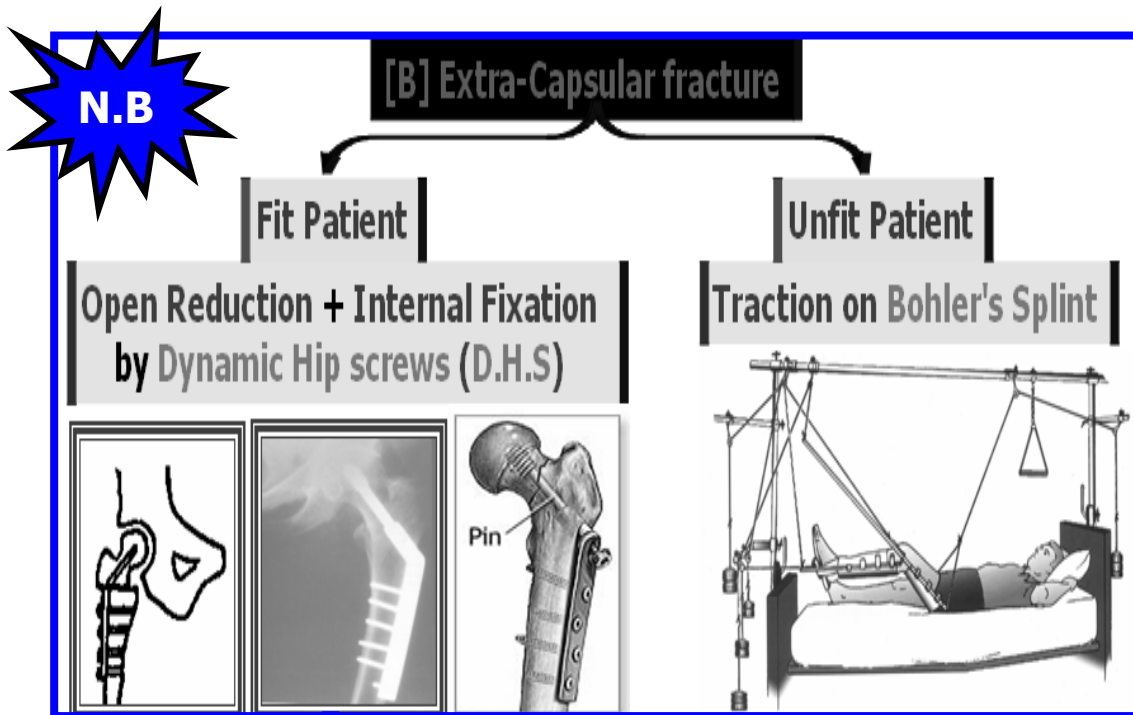
**Partial Hip Arthroplasty
Austin - Moore**



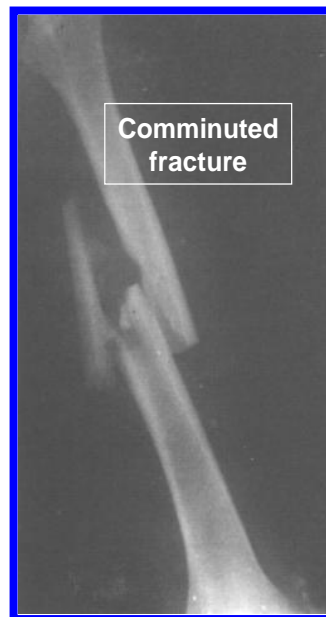
Answer by True or False

- 61. This is a dynamic hip screw ()
- 62. This patient was suffering from fracture neck femur ()
- 63. This procedure is indicated for a vascular necrosis head femur ()
- 64. This procedure is indicated in inter-trochanteric fracture neck femur ()
- 65. Hip joint stiffness is a possible complication of this procedure ()

B. EXTRA-CAPSULAR TYPE



4. FRACTURE SHAFT OF FEMUR



Answer by True or False

66. This underlying cause is a mild trauma ()
67. It can complicate with avascular necrosis ()
68. It is commonly associated with major blood loss ()
69. This patient may suffer from oliguria ()
70. Associated arterial injury indicates internal fixation of the fracture ()

Intra-Medullary Nail



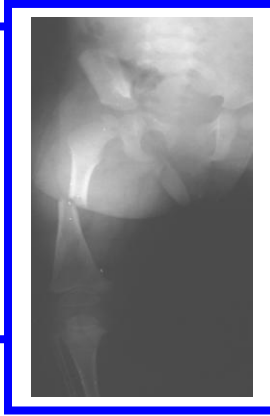
Answer by True or False

71. This is a post reduction film ()
72. This procedure is indicated in open compound fracture femur ()
73. It is contraindicated in children with fracture shaft femur ()
74. It is the best line of treatment in simple transverse fracture shaft femur ()
75. It can interfere with the movement of knee joint if not properly placed ()



In This x-ray
Fracture shaft femur
The Age of this patient (<15 years)

So The line of Treatment is
Skin Traction over Thomas splint



Thomas Splint



Answer by True or False

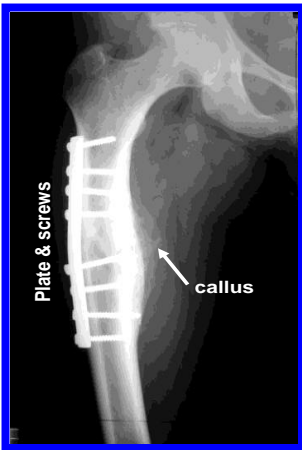
- 76. This is a type of skeletal traction ()
- 77. It is a skin traction over Thomas ()
- 78. The best line of treatment ()
- 79. This fracture is commonly a compound fracture ()
- 80. The time of fixation is 3 weeks ()

SUPRA-CONDYLAR FRACTURE FEMUR

N.B

PLATE & SCREWS

This fracture may injure the popliteal artery



The age of this patient (> 15 years)

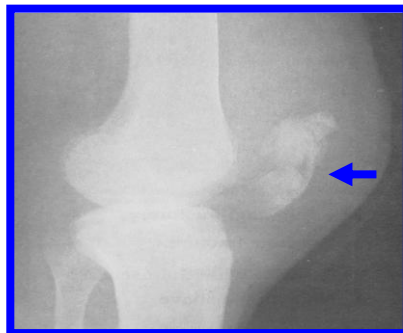
5. AMPUTATION STUMP



Answer by True or False

81. This is fracture tibia and fibula ()
82. The underlying cause is indirect trauma ()
83. It can be a line of treatment of chronic ischemia of the limb ()
84. Cross union is a possible complication ()
85. The stump seen is ideal regarding the level of bone section ()

6. FRACTURE PATTELA



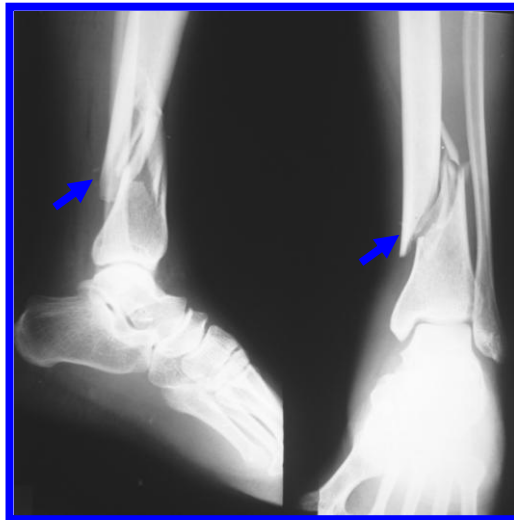
Wide separation of bone fragments

Answer by True or False

86. This fracture is unstable ()
87. The patient presents with distal ischaemia ()
88. Associated Patellar fluctuation ()
89. Haemoarthrosis is a complication ()
90. Total Patellectomy may be indicated ()

7. FRACTURE TIBIA & FIBULA

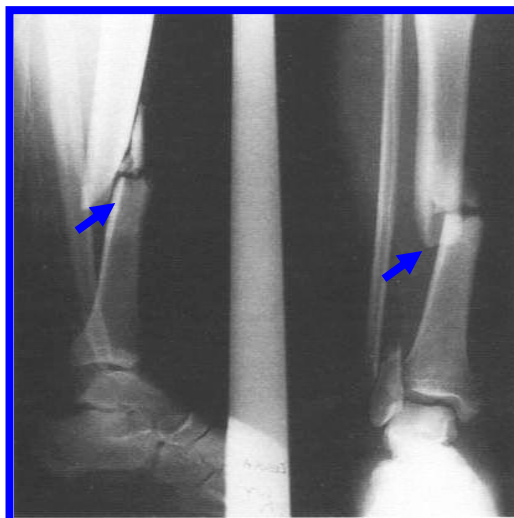
A. FRACTURE TIBIA ALONE



Answer by True or False

91. The underlying cause is direct trauma ()
92. Cross union is a possible complication ()
93. Sundeck's atrophy is a possible complication ()
94. Below knee cast is the best treatment ()
95. Internal fixation by intra medullary nail is the treatment of choice ()

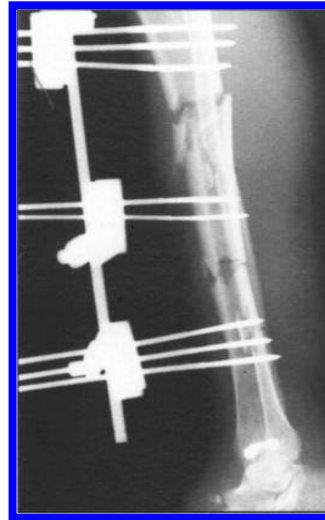
B. FRACTURE TIBIA & FIBULA



Answer by True or False

96. This is an unstable fracture ()
97. It may leads to ankle stiffness ()
98. This is commonly a compound fracture ()
99. Above knee plaster cast can be a line of treatment of this fracture ()
100. It is best treated by Internal fixation of the fibula alone ()

C. EXTERNAL SKELETAL FIXATION FOR FRACTURE TIBIA & FIBULA



Answer by True or False

- 101. This is a comminuted fracture ()
- 102. This x. ray show evidence of healing ()
- 103. This x. ray show evidence of bone impaction ()
- 104. It may be complicated by Avascular necrosis ()
- 105. This procedure allows early mobilization ()

8. POTT'S FRACTURE OF ANKLE



1st Degree



2nd Degree



Internal fixation is the best line of treatment

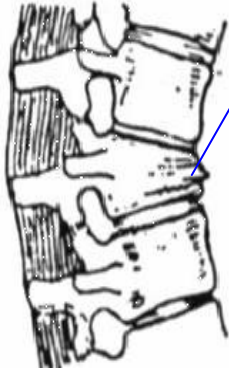
Answer by True or False

- 106. This is a third degree ankle fracture dislocation ()
- 107. Ankle stiffness is a common complication ()
- 108. Sudeck's atrophy is a possible complication ()
- 109. Below knee plaster cast can be a line of treatment for this patient ()
- 110. Internal fixation is the best line of treatment for this patient ()

SPINE DEFORMITIES & DISC PROLAPSE

1. FRACTURE SPINE

A. WEDGE # SPINE



2nd lumbar vertebra
Notice the osteoporosis



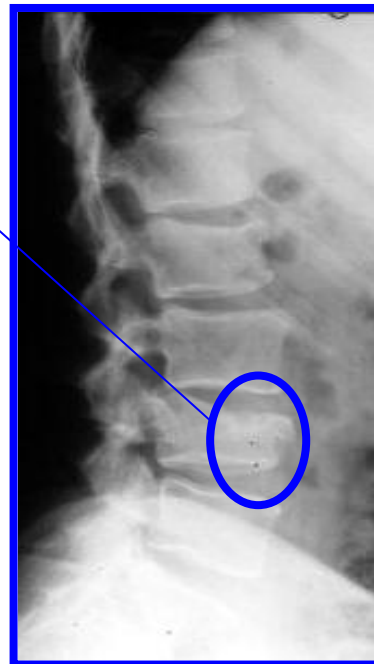
Answer by True or False

- 111. This is a wedge compression fracture ()
- 112. This a stable fracture ()
- 113. The fracture seen is at the level of L3 ()
- 114. Multiple metastatic deposits are seen ()
- 115. Internal fixation is a line of treatment ()

B. COMINUTED # SPINE



4th lumbar vertebra



Answer by True or False

- 116. The spinal cord is usually affected ()
- 117. This is a pathological fracture ()
- 118. The fracture seen is at the level of L4 ()
- 119. Myodil myelography is urgently indicated ()
- 120. Internal fixation is a line of treatment ()

C. # DISLOCATION SPINE



Thoracic spine



Cervical spine

Answer by True or False

- 121. This is unstable fracture ()
- 122. The spinal cord is usually affected ()
- 123. The cause is a flexion rotation injury ()
- 124. Myodil myelography is urgently indicated ()
- 125. Urgent surgery is required ()



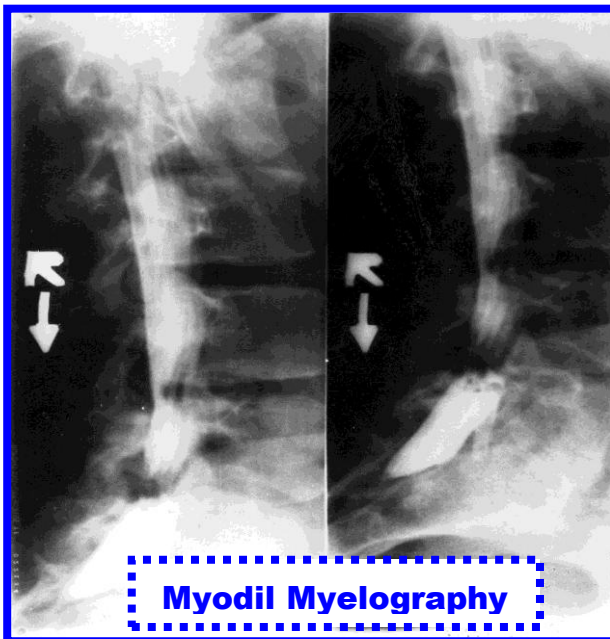
2. SPINA BIFIDA



Answer by True or False

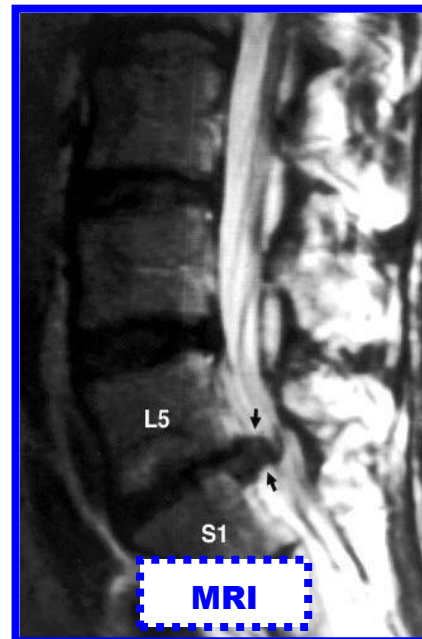
- 126. This is a Plain x. ray ()
- 127. There is a congenital absence of post. Neural arch of the vertebrae ()
- 128. The most common site at lumbo-sacral ()
- 129. This lesion may be occulta or manifesta ()
- 130. Surgical repair is the only line of treatment ()

3. DISK PROLAPSE



Myodil Myelography

- . Old **invasive** method
- . there are multiple levels of narrowing of Myodil column in the sub-arachnoid space.
- . Multiple-level disk prolapse



MRI

- . MRI is a **non-invasive**
- . Prolapse of disk between **L5** and **S1**

Answer by True or False

- 131. This is a barium swallow ()
- 132. There is a dye seen in the spinal canal ()
- 133. The underlying cause could be a degenerative disease ()
- 134. MRI is an essential investigation for this patient ()
- 135. Surgery is only reserved for complicated cases ()

BONE DISEASES



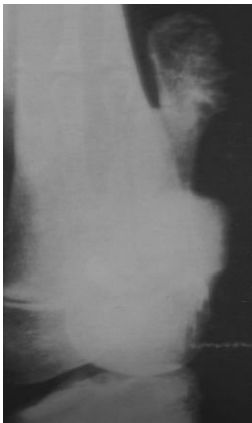
1- Chronic Osteomyelitis



2- Pott's disease of Spine



3- Hyperparathyroidism



4- Exostosis



5- Osteoclastoma



6- Osteosarcoma



7- Chondroma



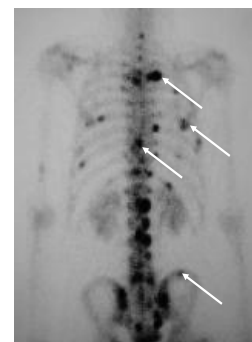
8- Chondrosarcoma



9- Ewing's sarcoma



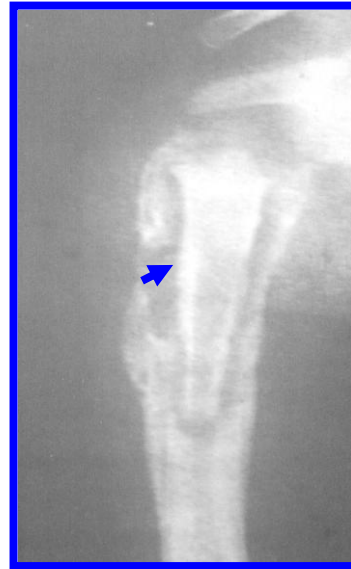
10- Bone metastasis



11- Bone scan

1. CHRONIC OSTEOMYELITIS

A. LONG BONE (HUMERUS)



Answer by True or False

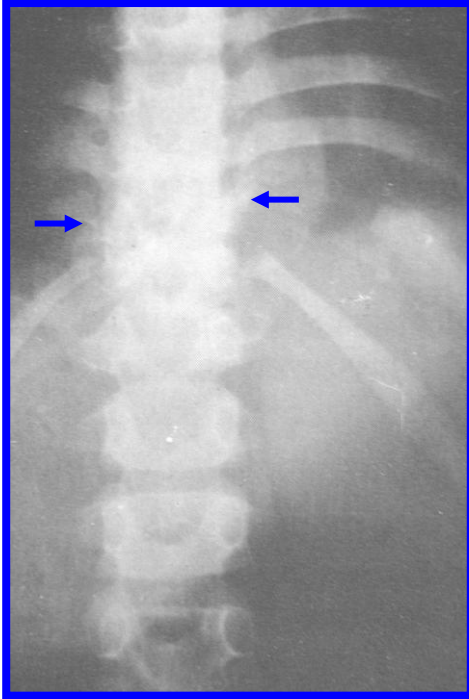
- 136. This patient is a child ()
- 137. Sequestrum is seen in this x-ray ()
- 138. Limitation of movements of joint is a common clinical presentation ()
- 139. Ewing sarcoma is a differential diagnosis ()
- 140. Sequestrectomy + Saucerization is the best treatment ()

B. DIABETIC (FOOT)



Chronic non-specific osteomyelitis is also a common occurrence with diabetic foot infections. Notice that the joints are destroyed because of defective sensation (**Charcot joints**)

2. POTT'S DISEASE OF SPINE (T.B DISEASE)



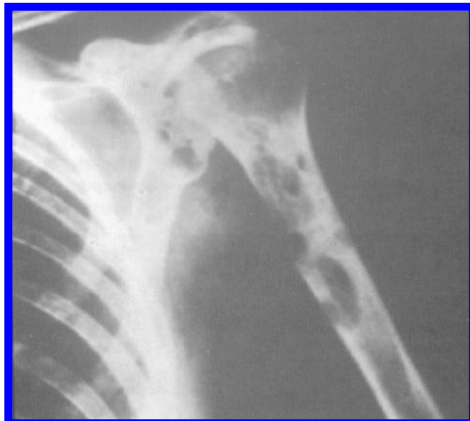
More than one vertebra are affected with **destruction** of Inter-vertebral disc

Answer by True or False

- 141. The underlying cause of this condition is direct trauma ()
- 142. Spine deformity is a common presentation ()
- 143. Paraplegia is a possible complication ()
- 144. Anti-tuberculus drugs can be given ()
- 145. Surgery is only done for complicated cases ()

3. HYPERPARATHYROIDISM (OSTEITIS FIBROSA CYSTICA)

Multiple
bone
cysts



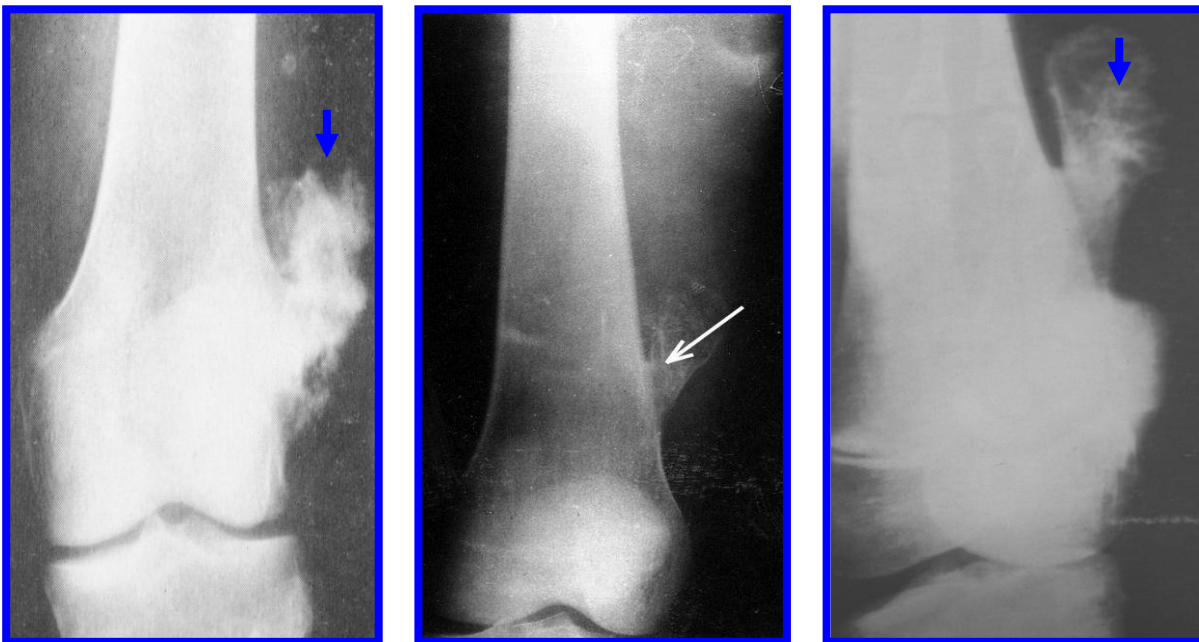
Answer by True or False

- 146. This lesion could be Ostitis fibrosa cystica ()
- 147. Hypocalcaemia is a common finding ()
- 148. Urinary calculi is a common complication ()
- 149. C.T neck can be a useful investigation ()
- 150. Vitamin D and calcium can be a line of treatment ()

4. OSTEOCHONDROMA (EXOSTOSIS)

= Cartilage Capped Exostosis

Arises from Metophysis of long bone.



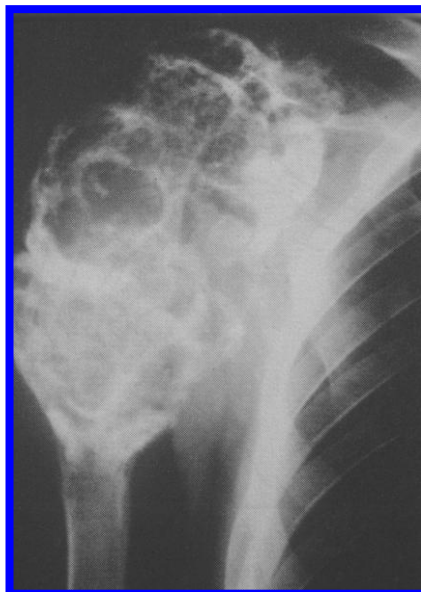
**Osteochondroma (Exostosis) at its typical position
the metaphysis of the lower femur**

Answer by True or False

- 151. The site of the lesion is epiphyseal ()
- 152. There is a bone expanding lesion seen in this x-ray ()
- 153. This lesion can turn malignant ()
- 154. It can leads to limitation of movements in the knee joint ()
- 155. Radiotherapy is the treatment of choice in advanced cases ()

5. **OSTEOCLASTOMA** (**GIANT CELL TUMOR**)

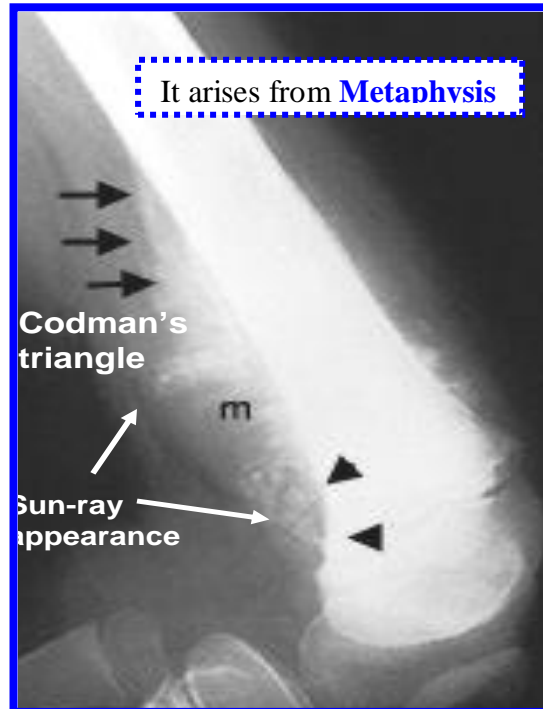
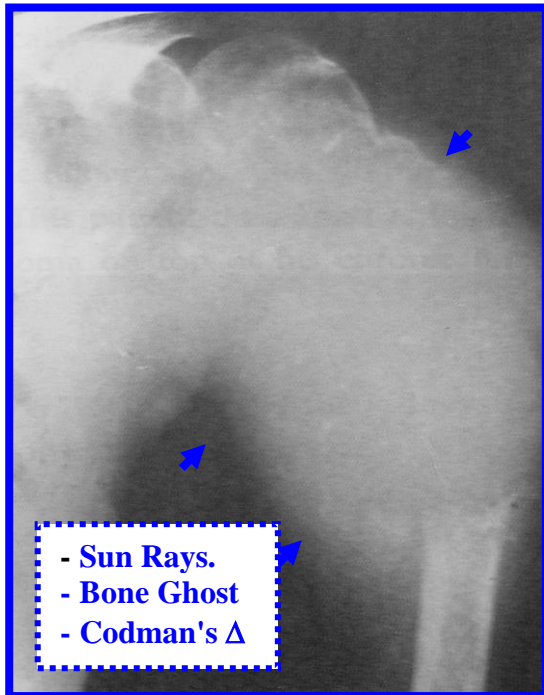
- It is a **Locally malignant tumor**
- It arises from **Epiphysis > 20 years**.
- It shows **Soap bubbles** appearance.



Answer by True or False

156. This condition is commonly seen in children ()
157. A medullary plug can be seen in this x-ray ()
158. Recurrence after treatment is a famous complication ()
159. MRI may help in the diagnosis ()
160. Radiotherapy is the best line of treatment ()

6. OSTEOSARCOMA



Answer by True or False

- 161. This condition is commonly seen among children ()
- 162. It is a locally malignant tumor ()
- 163. The origin of this lesion is metaphyseal ()
- 164. Sun rays and Codman's triangle are seen in this x-ray ()
- 165. Surgery is the best line of treatment ()

N.B

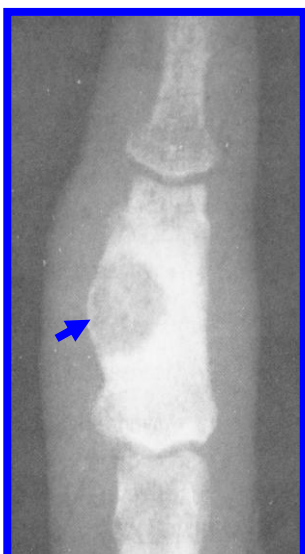
ANEURYSMAL BONE CYST



SIMPLE BONE CYST



7. CHONDROMA



ECchondroma



ENchondroma



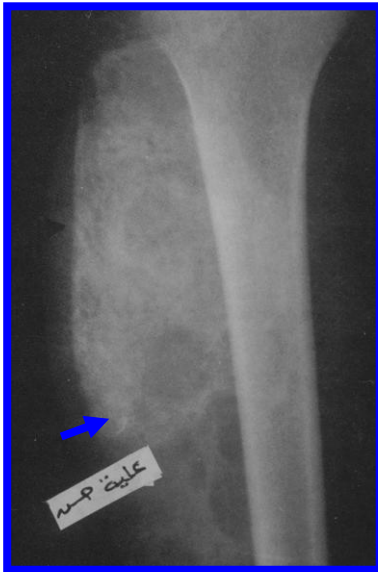
Enchondromas expand bone from inside.

They may be multiple & may cause pathological fracture

Answer by True or False

- 166. The lesion is traumatic ()
- 167. It affects short long bone ()
- 168. Patient presents by Toxaemia ()
- 169. Associated with Egg shell crackling sensation ()
- 170. Curettage & bone graft is the treatment of choice ()

8. CHONDROSARCOMA

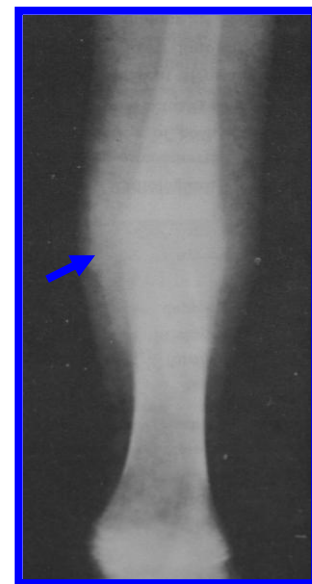


Answer by True or False

- 171. The characteristic radiological sign is fluffy cotton appearance ()
- 172. This condition is commonly seen among flat bones ()
- 173. Radiotherapy is the best line of treatment ()
- 174. Wide local resection is the treatment of choice in advanced cases ()
- 175. Hemi-arthroplasty is the best surgical treatment ()

9. EWING'S SARCOMA

- It arises from Diaphysis.
- It shows **Onion peel** appearance



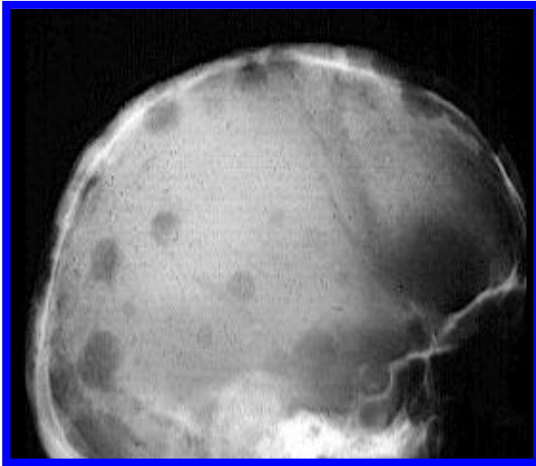
Ewing's Sarcoma of Femur & Tibia

Answer by True or False

- 176. The lesion is malignant ()
- 177. It affects the Diaphysis ()
- 178. Patient presents by Toxaemia ()
- 179. DD from acute osteomyelitis ()
- 180. Curettage & bone graft is the treatment of choice ()

10. OSTEOLYTIC LESIONS

(**METASTASES OR MULTIPLE MYELOMA**)



Skull



Pelvis & upper femurs

Sites of
**Metastases
&
Multiple Myeloma**



Answer by True or False

- 181. This is Chondrosarcoma pelvis ()
- 182. Pathological fracture of the right iliac bone is seen in this x-ray ()
- 183. Cancer prostate is a common underlying cause ()
- 184. Low back pain is a common clinical presentation ()
- 185. Radiotherapy can be a line of treatment ()

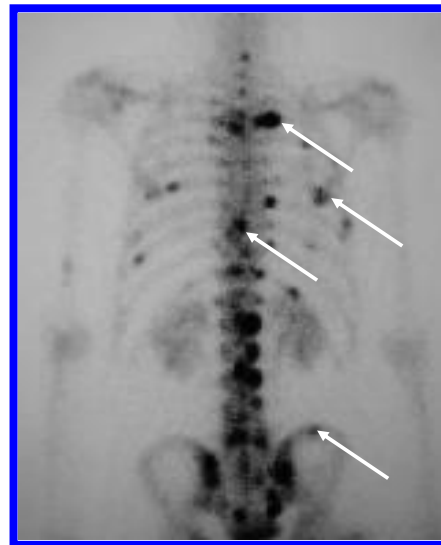
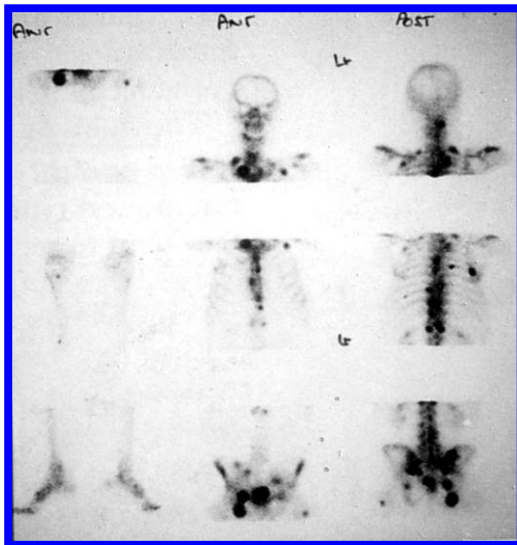
BILATERAL CONGENITAL HIP DISLOCATION (C.H.D)



BILATERAL HIP OSTEOARTHRITIS



11. BONE SCAN (BONE METASTASES)



Multiple bone metastases that appear as **dark spots**

Answer by True or False

- 186. The Radio isotope used is technichum 99 ()
- 187. Pathological fracture is a common complication ()
- 188. Alkaline phosphates enzyme is commonly raised ()
- 189. Surgical excision is the best treatment ()
- 190. The prognosis of this condition is usually good ()



ANSWERS

ORTHOPAEDICS

1. True	21. True	41. True	61. False	81. False
2. True	22. True	42. False	62. True	82. False
3. True	23. False	43. True	63. True	83. True
4. True	24. True	44. True	64. False	84. False
5. False	25. False	45. True	65. False	85. True
6. True	26. False	46. True	66. False	86. True
7. False	27. False	47. True	67. False	87. False
8. True	28. True	48. True	68. True	88. True
9. True	29. False	49. False	69. True	89. True
10. True	30. False	50. False	70. True	90. True
11. False	31. False	51. True	71. True	91. True
12. True	32. False	52. False	72. False	92. False
13. True	33. False	53. False	73. True	93. False
14. False	34. False	54. False	74. True	94. False
15. False	35. True	55. True	75. True	95. False
16. False	36. False	56. True	76. False	96. True
17. False	37. True	57. True	77. True	97. True
18. False	38. False	58. True	78. True	98. True
19. True	39. True	59. True	79. False	99. False
20. True	40. False	60. True	80. False	100. False

101. True	121. True	141. False	161. True	181. False
102. False	122. True	142. True	162. False	182. False
103. False	123. True	143. True	163. True	183. True
104. False	124. False	144. True	164. True	184. True
105. True	125. True	145. True	165. True	185. True
106. False	126. True	146. True	166. False	186. True
107. True	127. True	147. False	167. True	187. True
108. True	128. True	148. True	168. False	188. True
109. True	129. True	149. True	169. False	189. False
110. True	130. True	150. False	170. True	190. False
111. True	131. False	151. False	171. True	
112. True	132. True	152. True	172. True	
113. False	133. True	153. True	173. False	
114. False	134. True	154. True	174. True	
115. False	135. True	155. False	175. False	
116. False	136. True	156. False	176. True	
117. False	137. True	157. True	177. True	
118. True	138. True	158. True	178. True	
119. False	139. False	159. True	179. True	
120. False	140. True	160. False	180. False	

GOOD LUCK



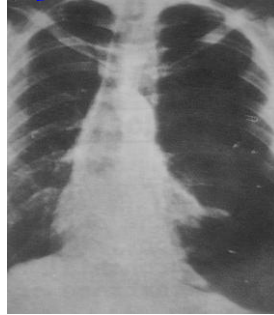
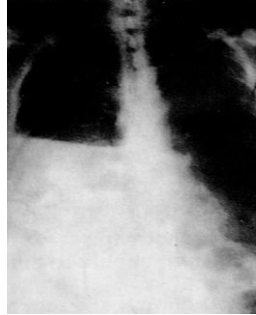
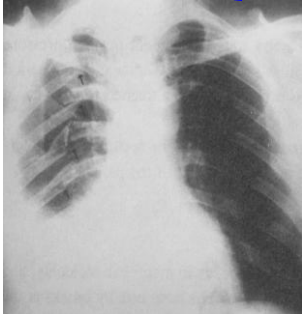
MISCELLANEOUS X.RAYS

Chapter 4

MISCELLANEOUS X-RAY

CHEST X-RAYS

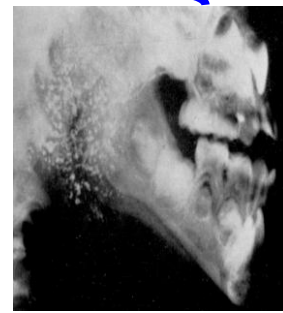
NECK X-RAYS



Fracture Ribs Haemothorax Pneumothorax Cervical Rib

SKULL X-RAYS

MANDIBLE X-RAYS

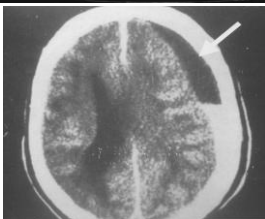


Fissured fracture Depressed fracture Submandibular salivary stone Parotid sialogram

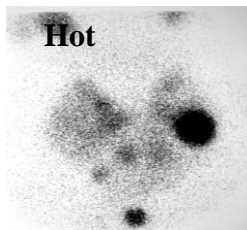
CT SCAN

THYROID

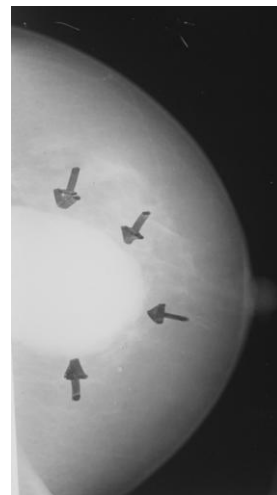
BREAST



Brain & Abdomen



Thyroid scan



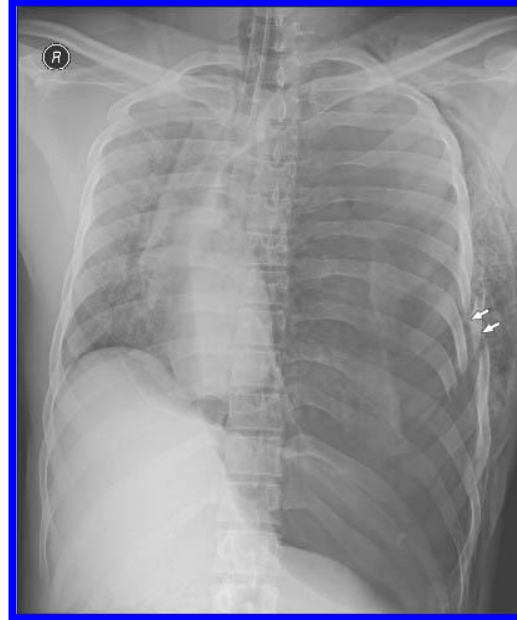
Soft tissue mammography

CHEST X-RAYS

1. FRACTURE OF THE RIBS (FLAIL CHEST)



- . Plain Chest P- A view
 - . Multiple fractures of ribs
 - . Opacity obliterates the costo-phrenic angle
- i.e. **Rt. Haemothorax**



- . Plain Chest P- A view
 - . Multiple fractures of ribs (Small arrows)
 - . Lt. surgical emphysema (Thick arrow)
- Lt.Tension Pneumothorax**

Answer by True or False

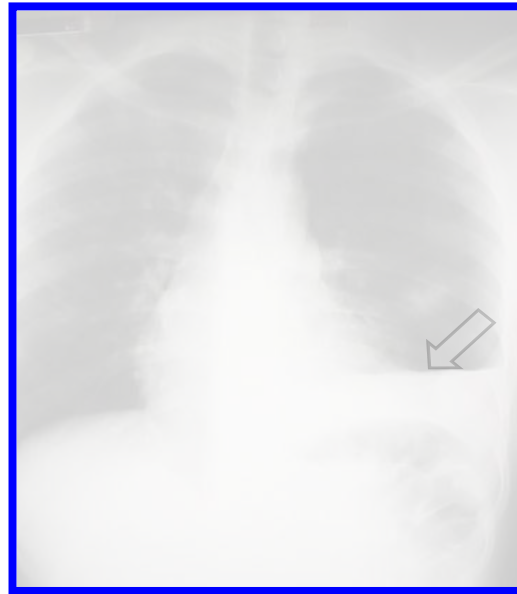
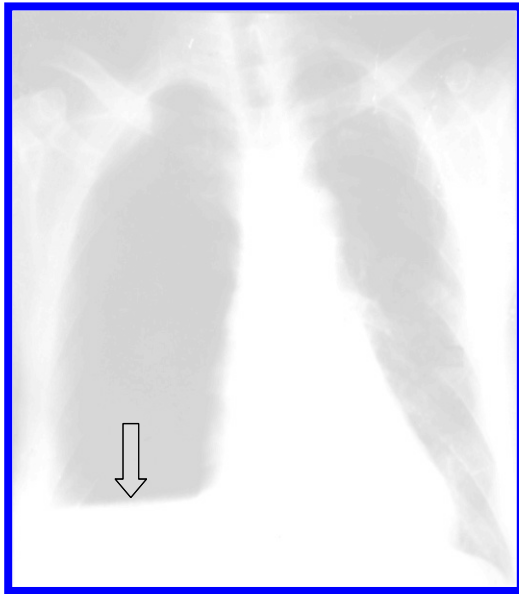
1. This is the common site for rib fracture ()
2. The underlying cause is pathological fracture ()
3. Trauma is the underlying cause ()
4. This patient present with chest pain ()
5. The Rt. lung shows pneumothorax ()

2. HAEMOTHORAX

Opacity obliterates the costo-phrenic angle
& raised towards axilla



3. HAEMO-PNEUMOTHORAX

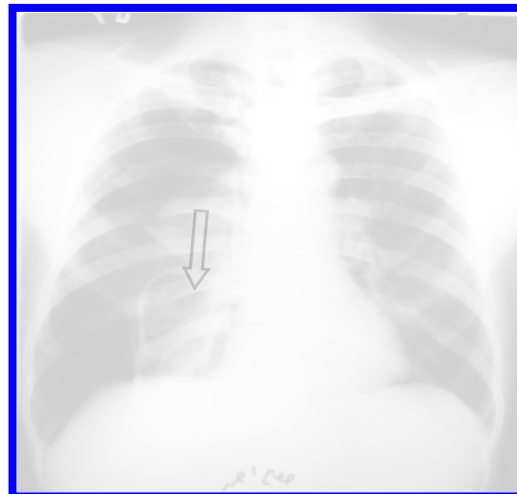
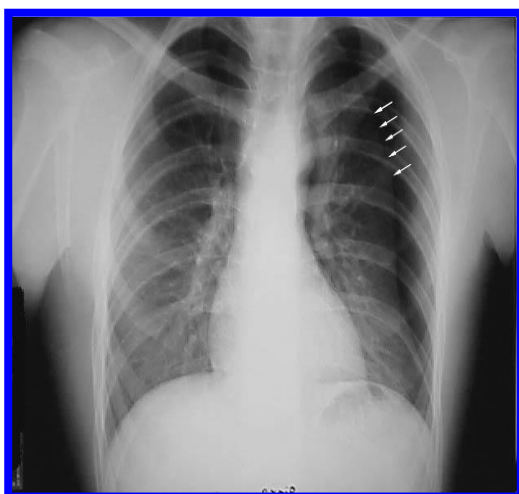


. Plain Chest P- A view
. The arrows points at a transverse air-fluid level

Answer by True or False

- 6. There is Rt. side Haemo-pneumothorax ()
- 7. The underlying aetiology could be pathological ()
- 8. The patient may present with congested neck veins ()
- 9. Secondary infection is a possible complication ()
- 10. Intercostal tube insertion is the principle treatment ()

4. PNEUMOTHORAX



The arrows points at the edge of collapsed lungs.

5. TENSION PNEUMOTHORAX



- . Plain Chest P- A view
- . The chest looks **jet black** with no bronchovascular markings

Answer by True or False

11. This is open Pneumothorax ()
12. There is evidence of lung collapse ()
13. A Mediastinal shift is seen in this x-ray ()
14. There is evidence of surgical emphysema ()
15. This patient could be shocked ()

6. SOLITARY COIN SHADOW

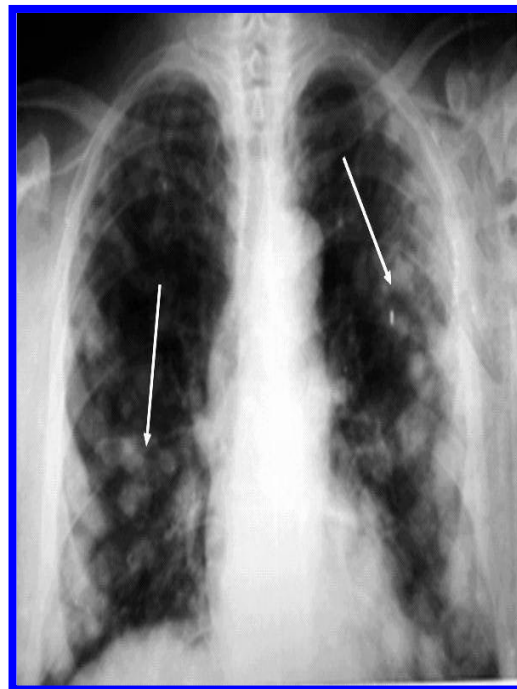
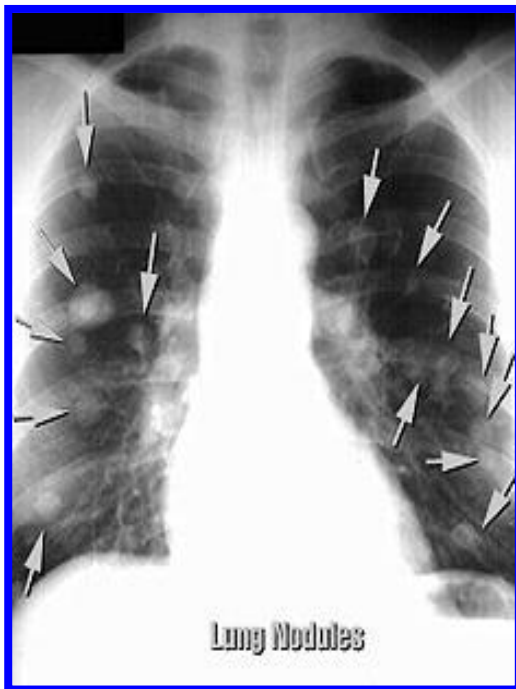
- . Plain Chest P-A view
- . Solitary **coin shadow** (arrows)
- . **D.D includes** bronchial cancer, solitary metastasis, adenoma, lung cyst, lung abscess



Answer by True or False

- 16. There is bilateral fracture Clavicle ()
- 17. Trachea is central ()
- 18. Can this lesion be bronchogenic carcinoma ()
- 19. Can this lesion be bronchial adenoma ()
- 20. Biopsy is indicated ()

7. LUNG METASTASES

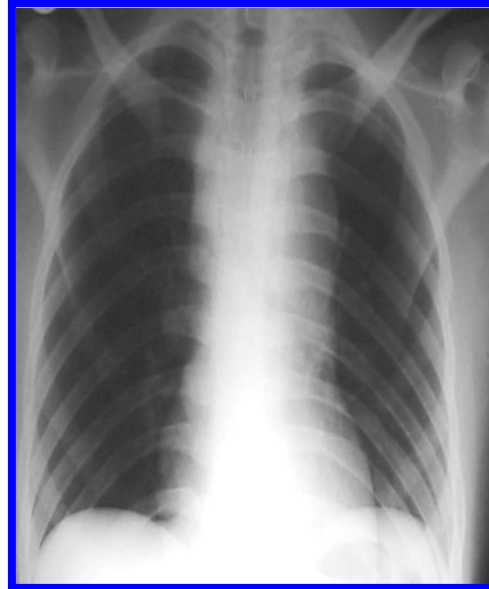
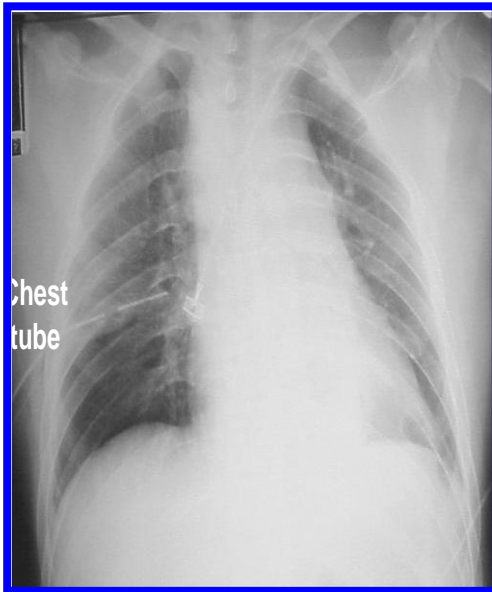


. Plain Chest P-A view
. Multiple pulmonary metastases

Answer by True or False

- 21. This x-ray shows bilateral pulmonary filling defects ()
- 22. The characteristic radiological sign is fluffy cotton appearance ()
- 23. The underlying cause could be cancer breast ()
- 24. Cough and dyspnea are main clinical presentations ()
- 25. Palliative treatment is the treatment of choice ()

8. WIDE MEDIASTINUM



. Plain Chest P- A view

. **Common causes of a wide superior mediastinum :**

1. Retrosternal goitre.
2. lymph node enlargement
3. thymus tumors

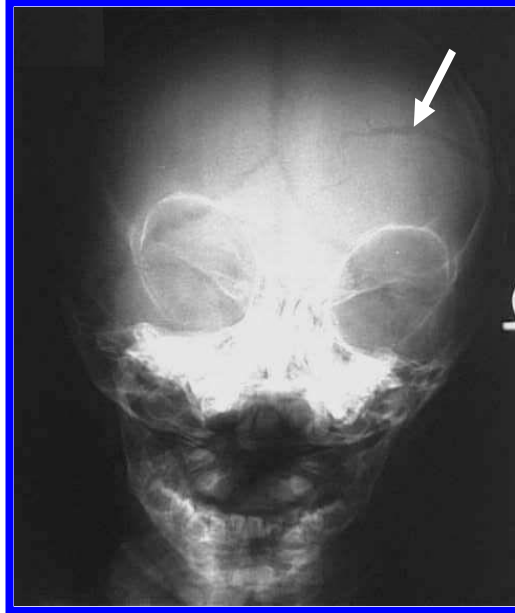
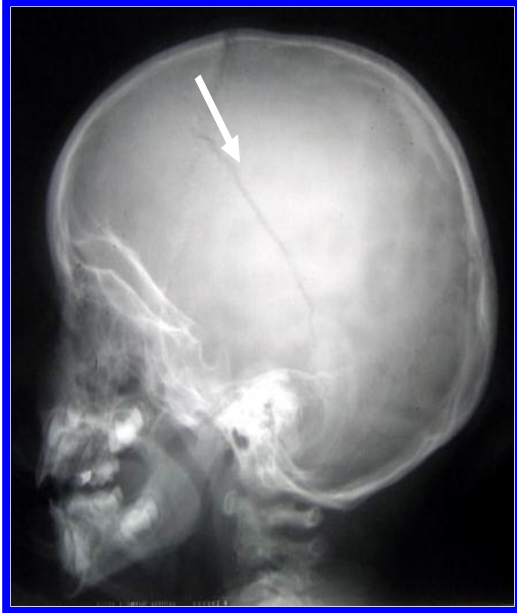
In a trauma victim it may be caused by rupture of aortic arch

Answer by True or False

26. Retrosternal goiter can be the underlying cause ()
27. Aneurysm of the thoracic aorta is a differential diagnosis ()
28. This patient may present with hoarseness of voice ()
29. This patient may present with cyanosis & congested neck veins ()
30. C.T chest can confirm the diagnosis ()

SKULL X-RAYS

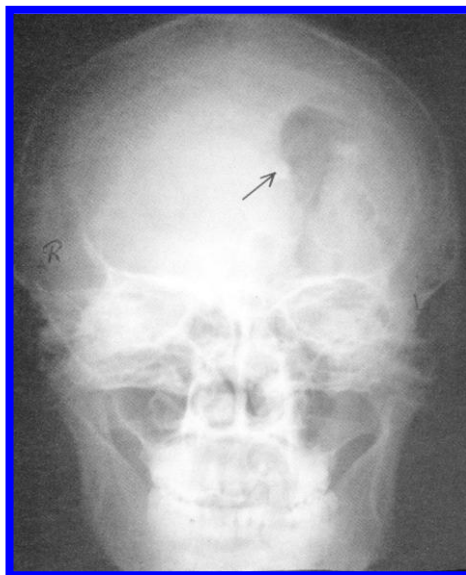
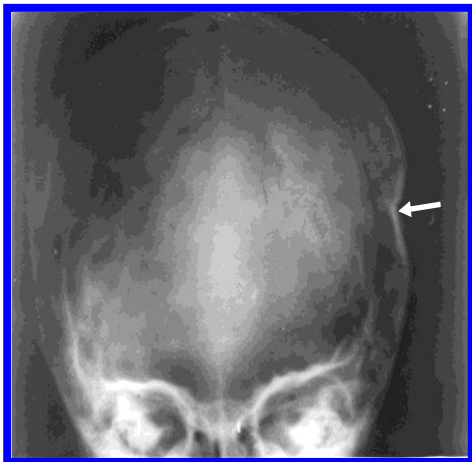
1. FISSURE FRACTURE



Answer by True or False

- 31. Epistaxis and CSF leak is a common complication ()
- 32. Extra-dural Haematoma can be a possible complication ()
- 33. Craniostenosis can be a possible complication ()
- 34. Carotid angiography is needed for detection of intra-cranial bleeding ()
- 35. Surgery is indicated in complicated cases only ()

2. DEPRESSED FRACTURE

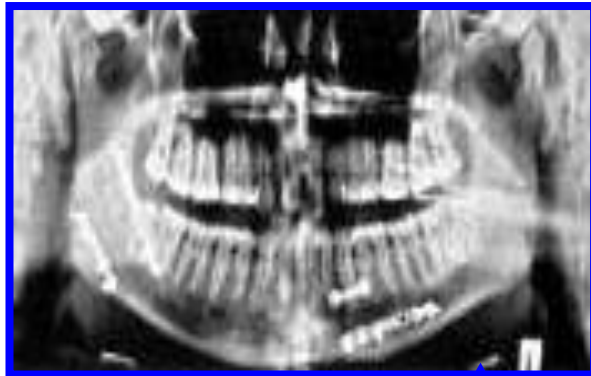
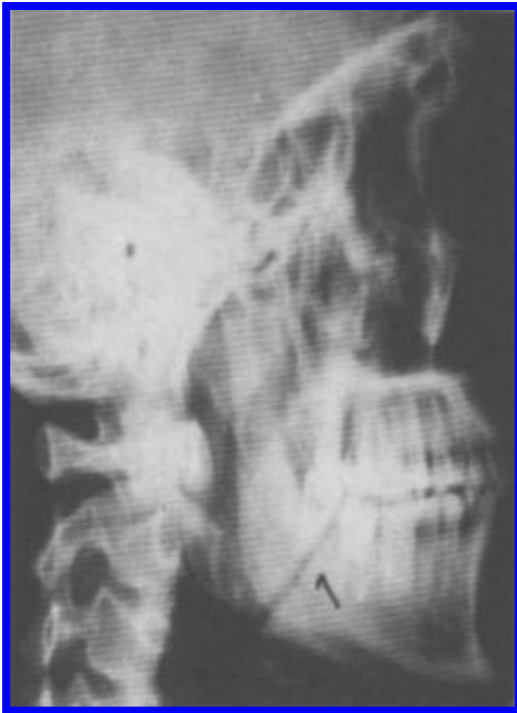


Answer by True or False

36. This type of fracture is commonly compound ()
37. Intra-cranial Haematoma is a common complication ()
38. Subconjunctival hemorrhage is a common clinical presentation ()
39. Bone scan can confirm the diagnosis ()
40. Urgent surgery is the main line of treatment ()

JAW X-RAYS

1. FRACTURE MANDIBLE



Panoramic view

- . This is the commonest site of mandible fracture.
- . The fracture is fixed by plates and screws

Answer by True or False

41. This type of fracture is common site ()
42. The cause is pathological ()
43. Associated with Irregularity of the line of teeth ()
44. Panoramic view is indicated ()
45. Urgent surgery is the main line of treatment ()

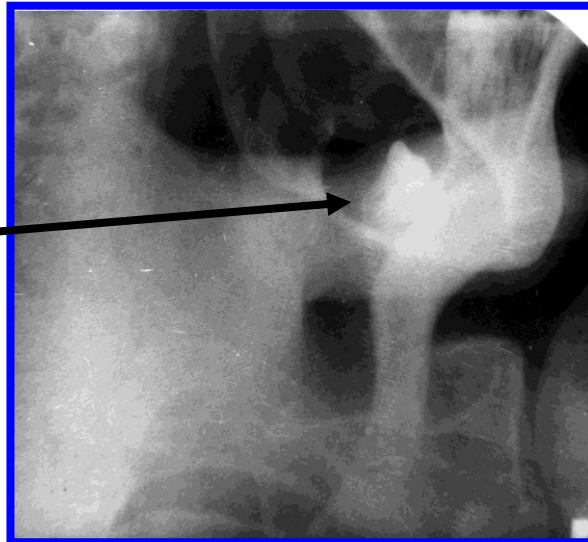
2. DENTAL CYST

A unilocular cyst of the jaw that is related to a **carious tooth**



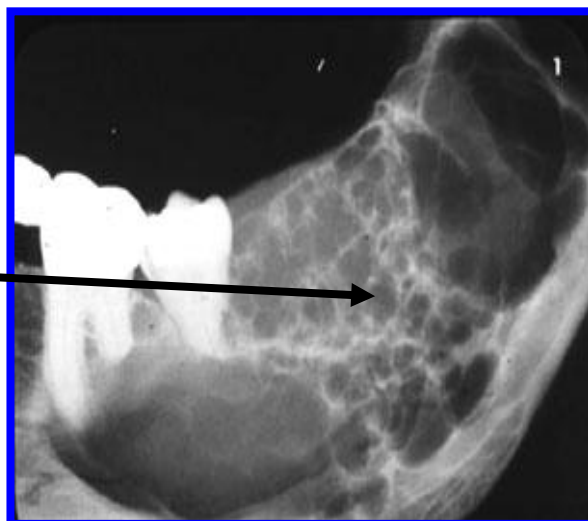
3. DENTIGEROUS CYST

A unilocular cyst of the jaw that contains an **unerupted tooth**



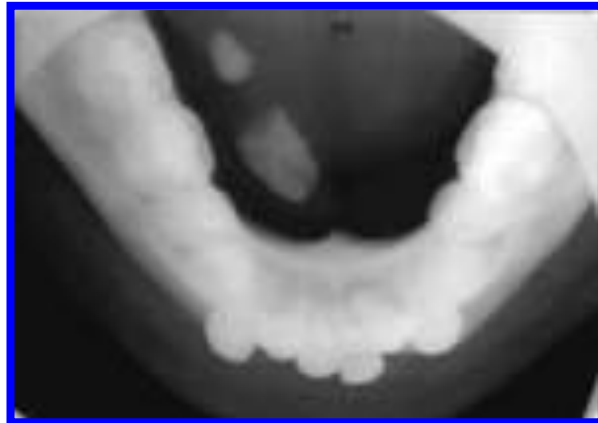
4. ADAMANTINOMA

A multilocular cyst at the angle of the mandible (**Ameloblastoma**)



SALIVARY GLANDS X-RAYS

1. **SUBMANDIBULAR SALIVARY STONE** (Plain X-ray)



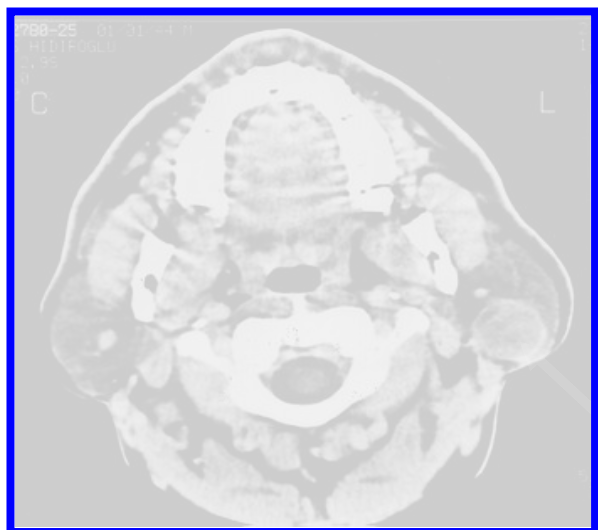
Occlusal view is best for detecting submandibular stones

Answer by True or False

- 46. The radio-opaque shadow seen is in the submandibular duct ()
- 47. It lies inside the submandibular gland ()
- 48. This condition is precancerous ()
- 49. This patient may present with severe pain with mastication ()
- 50. The treatment of choice is surgical removal of the gland ()

2. **PLEOMORPHIC ADENOMA**

CT scan showing a well-defined mass in left parotid gland.



Answer by True or False

- 51. The lesion seen in this study is malignant ()
- 52. Facial palsy is a common complication of this study ()
- 53. Surgical enucleation of the mass is the best ()
- 54. Superficial conservative parotidectomy is the treatment of choice ()
- 55. Radiotherapy is the treatment in advanced cases ()

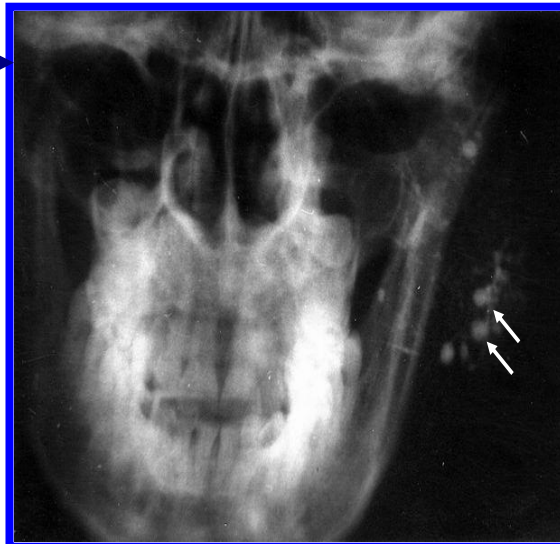
3. PAROTID SIALOGRAPHY (Sialectasis)

**Normal
Parotid
Sialogram**



Sialectasis

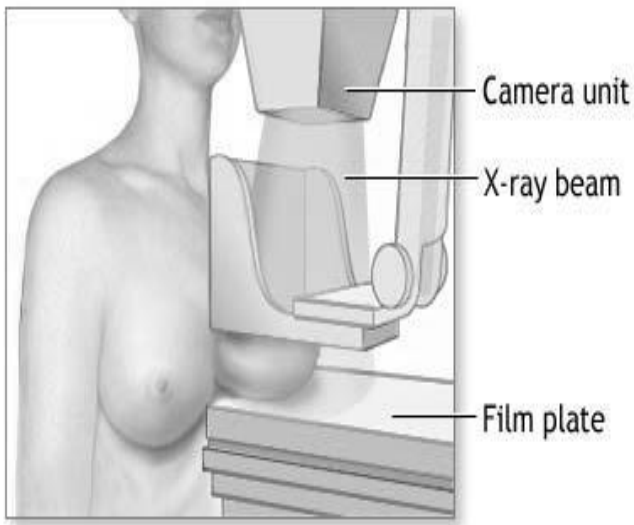
Parotid Sialography
· Lt. parotid duct branches get bigger in size.
· This cause recurrent sialadenitis



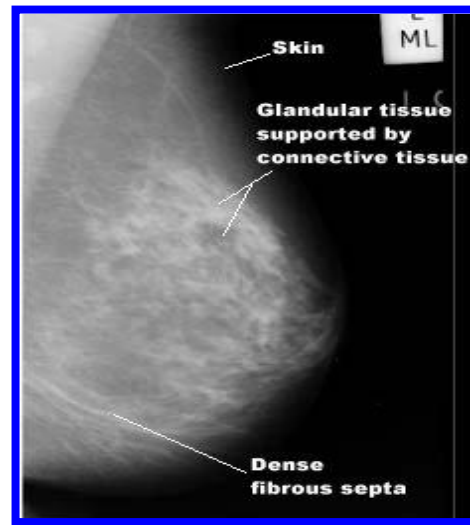
Answer by True or False

- 56. The contrast used is Lipidol ()
- 57. There is a stricture seen in the parotid duct ()
- 58. The Radiological sign is snow storm appearance ()
- 59. Conservative treatment is the treatment of choice ()
- 60. Surgery is reserved for complicated cases only ()

SOFT TISSUE MAMMOGRAPHY

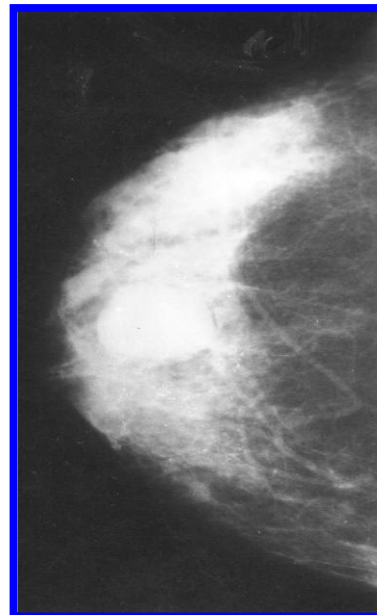
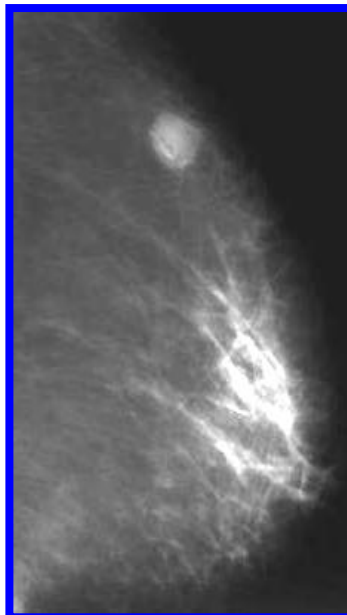
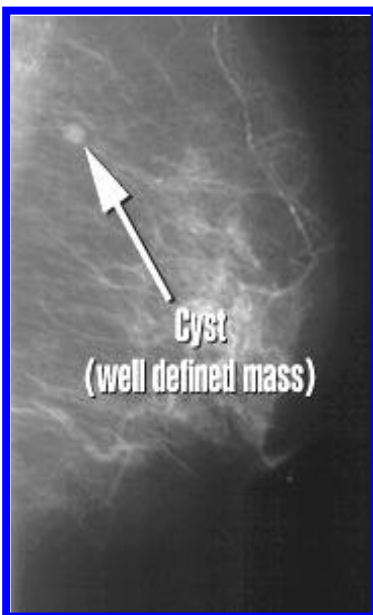


Technique



Normal

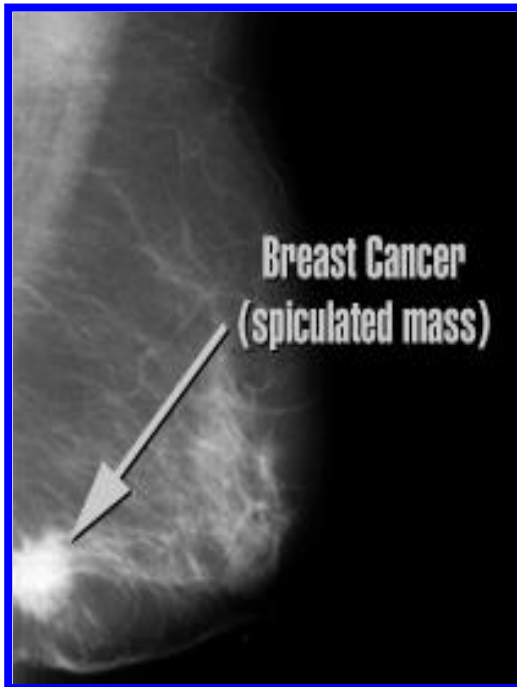
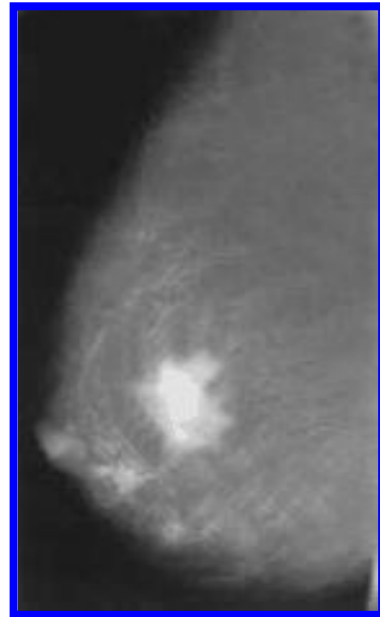
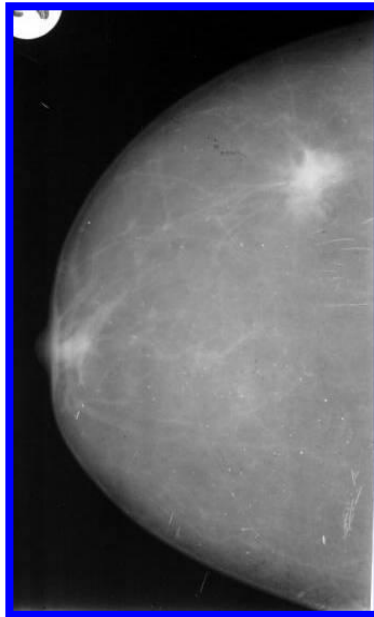
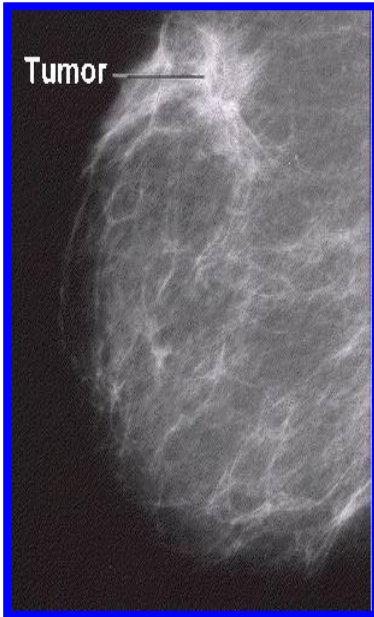
1. BENIGN LESIONS (Fibroadenoma or Cyst)



Answer by True or False

61. The contrast used in this study is Lipidol ()
62. The study is an accurate to diagnose a mass in young females ()
63. It can be used in screening programs ()
64. This study is confirmative for malignancy ()
65. FNAC is the next investigation required ()

2. MALIGNANT LESIONS



Answer by True or False

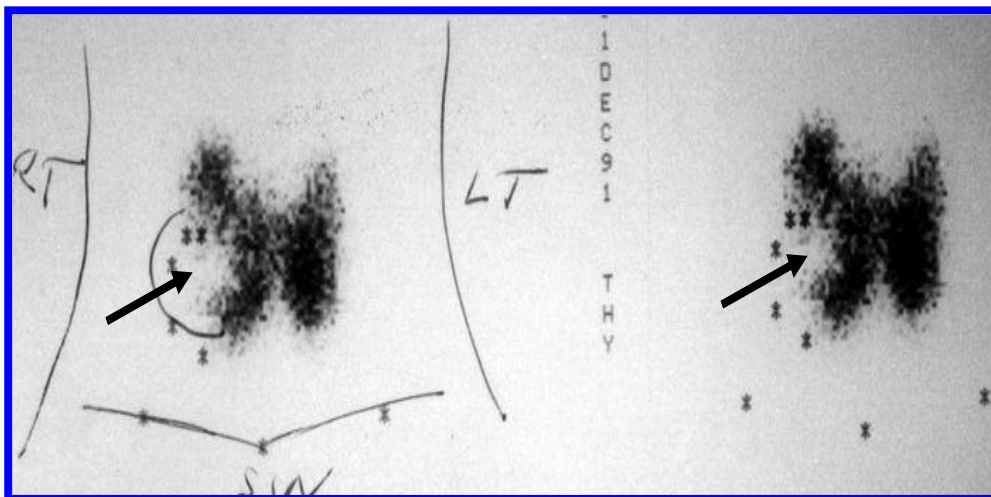
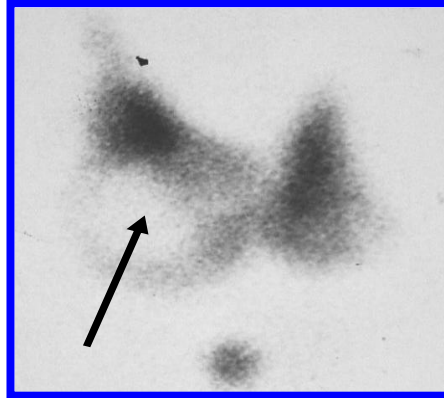
- 66. The lesion seen in this study is mostly malignant ()
- 67. This patient is presenting with a painless hard mass ()
- 68. Bleeding per nipple is a possible complication ()
- 69. Simple mastectomy can be a diagnostic procedure ()
- 70. Radical surgery is the treatment of choice in early cases ()

THYROID SCAN

1. COLD NODULE

The differential diagnosis include :

1. Malignant tumor.
2. Benign tumor.
3. Colloid nodule.
4. Colloid cyst.



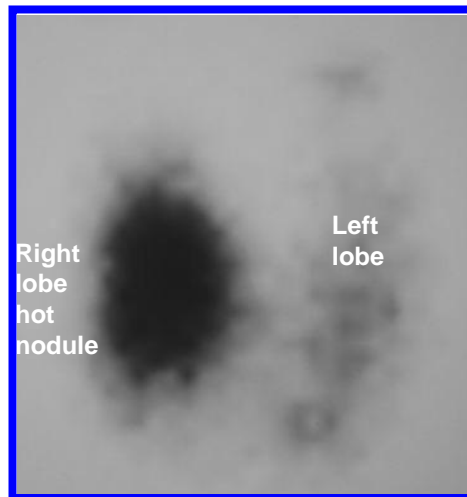
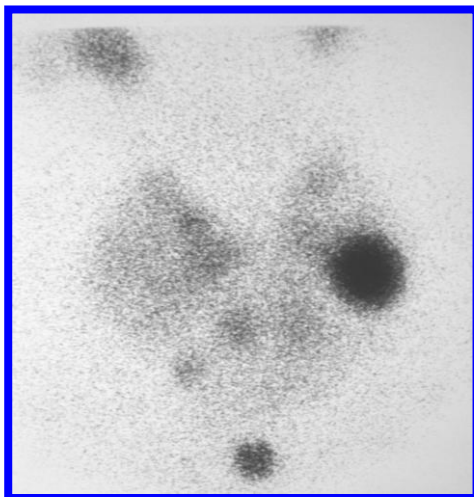
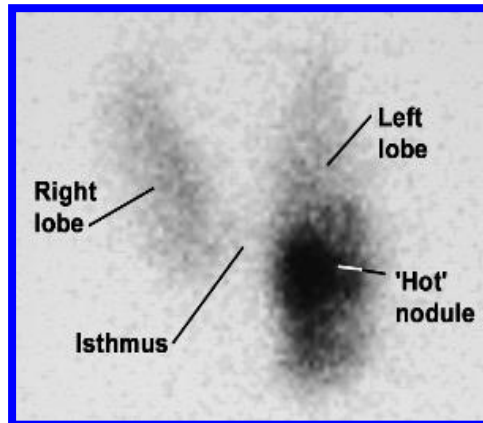
Answer by True or False

71. Simple nodular goiter is the main underlying cause ()
72. This patient has Thyrotoxicosis ()
73. It may be a malignant lesion ()
74. FNAC is contra indicated ()
75. Biopsy is needed to confirm the diagnosis ()
76. Neck u/s can differentiate solid from cyst ()
77. Radioactive iodine is the first line of treatment ()
78. Propranolol can be useful treatment for this patient ()
79. Surgery is the principle line of treatment ()
80. Tetany can be a post operative complication ()

2. HOT NODULE

Autonomous toxic nodule

The rest of the gland shows reduced isotope uptake because of a low TSH



Answer by True or False

81. The Radio-isotope used is technetium 99 ()
82. Bradycardia is a common sign ()
83. Carpo-pedal spasm is a common clinical sign ()
84. It could turn malignant ()
85. The patient has thyrotoxicosis ()
86. Neck u/s can help in diagnosis ()
87. Estimation of serum T3, T4 and TSH can confirm the diagnosis ()
88. Medical treatment is the treatment of choice ()
89. Thyrotoxic crisis is a possible complication ()
90. Radiotherapy is reserved for complicated cases only ()

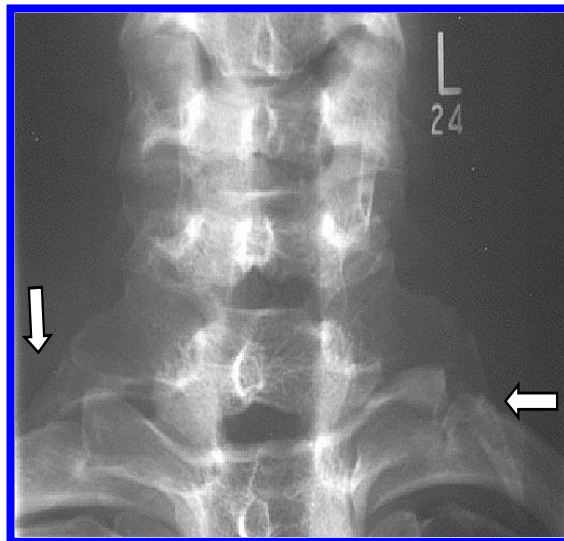
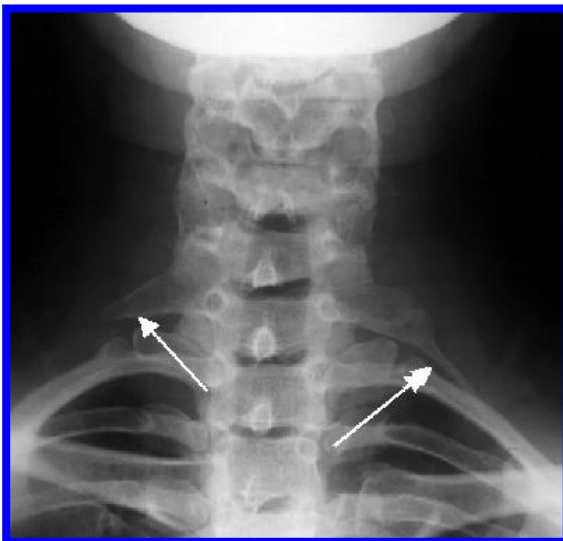
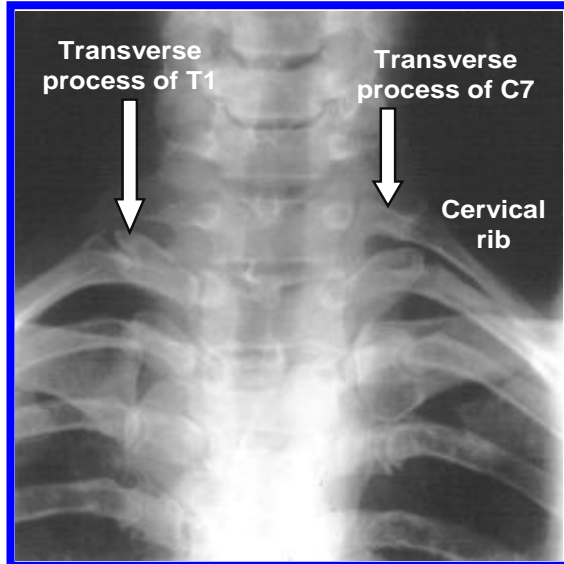
NECK X-RAYS

CERVICAL RIB

Lt. Cervical rib →

Plain X-ray

. Notice that the transverse process of a thoracic vertebra is directed up, while that of a cervical vertebra is directed down



Bilateral cervical ribs

Answer by True or False

91. There is a cervical rib seen in this x-ray ()
92. There is sensory & motor changes in the upper limb ()
93. Cervical spondylosis can be a clinical DD of this condition ()
94. Nerve conduction study is a useful investigation ()
95. Surgery is the treatment of choice ()

ARTERIOGRAPHY

☆ **Methods :**

1. **Direct Trans-lumbar** Aortography.
2. **Retro-grade** Trans-femoral Aortography.
3. **Ante-grade** Trans-brachial Aortography.
4. **Direct Trans- femoral** Arteriography.

☆ **Contraindicated with** massive gangrene or Burger's disease

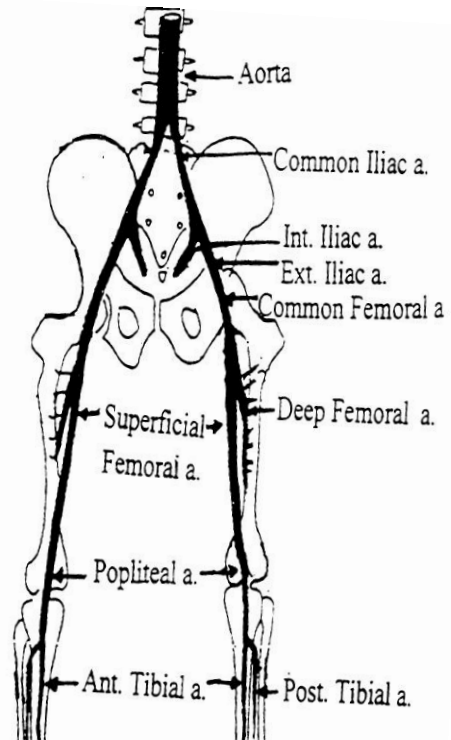
☆ **Values :**

Give idea about ↗

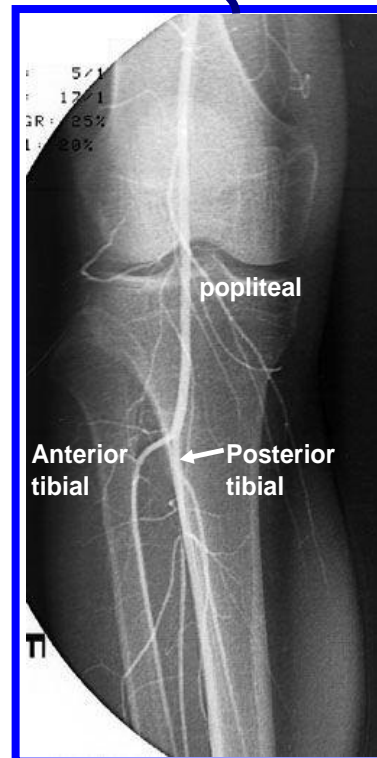
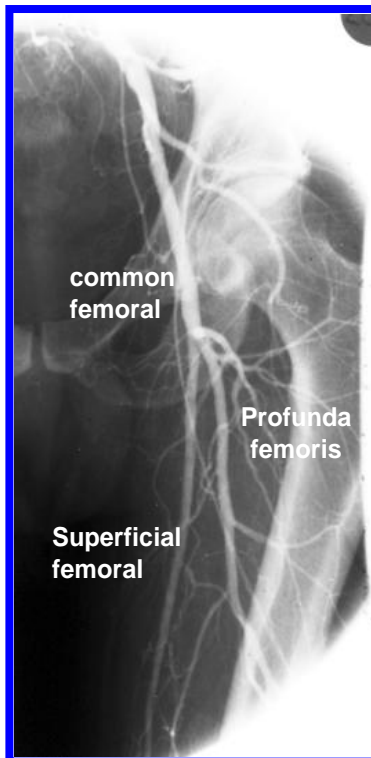
1. Site & length of obstruction.
2. State of vessels e.g. stenosis.
3. Collateral circulation good or bad.
4. **Distal run off :**
= The vessel seen **distal** to the obstruction

☆ **The Needle :** Seldinger needle

☆ **The dye :** Angiographin = Urographin.



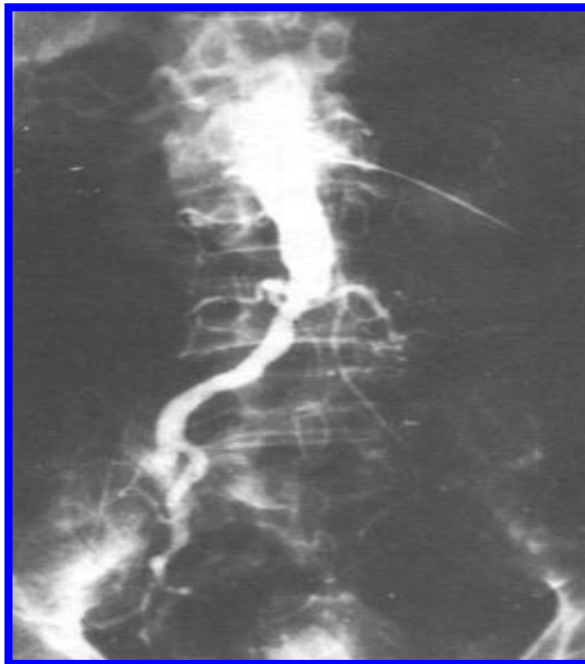
Blood supply of lower limb



A. AORTO-ILIAC ATHEROSCLEROSIS

Trans-lumbar Aortography

- . Complete occlusion of left iliac arteries
- . Occluded right external iliac artery



Answer by True or False

96. A needle is seen related to the aorta ()
97. This is an invasive study ()
98. Sever ischaemia is the main indication for this study ()
99. Le Rich syndrome is a possible complication ()
100. The first line of treatment is by lumbar sympathectomy ()

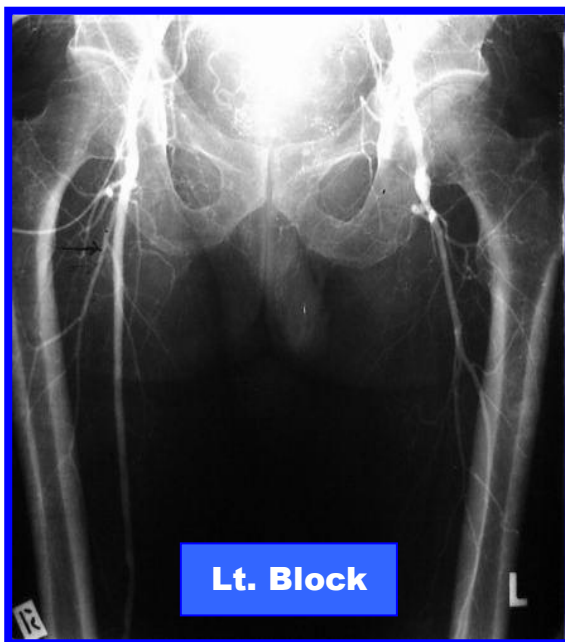
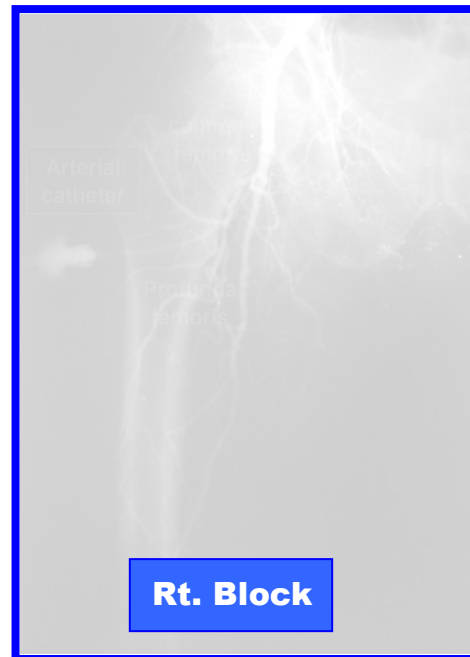
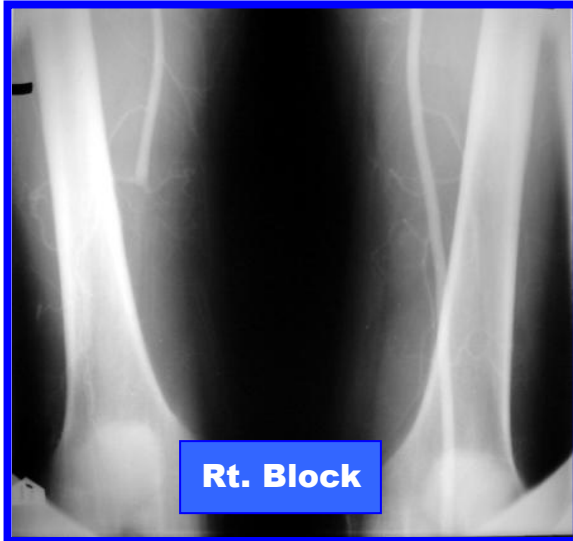
. Short stenotic segments at origins of iliac arteries

. Treated by either Percutaneous transluminal angioplasty (P.T.A) ± Stent or with Endarterectomy



B. SUPERFICIAL FEMORAL ATHEROSCLEROSIS

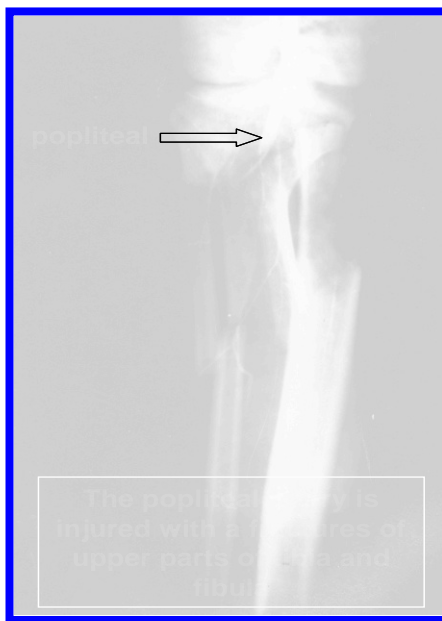
Trans-femoral Arteriography



Answer by True or False

101. This is a direct trans- femoral angiography ()
102. The catheter is inserted in the common femoral artery ()
103. The Profunda femoris is healthy ()
104. Sever ischaemia is the main indication for this study ()
105. Buerger's disease is the underlying cause ()

C. POPLITEAL ATHEROSCLEROSIS



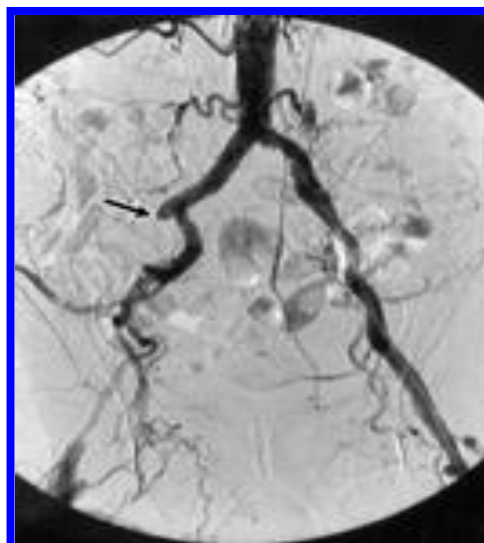
Answer by True or False

- 106. There is occlusion of the Profunda femoris seen in this study ()
 - 107. The underlying pathology is Raynaud's disease ()
 - 108. This patient may present with cramps in the thigh muscles ()
 - 109. This patient may present with ischemic heart disease ()
 - 110. Sympathectomy is indicated if there is a good distal run off ()
-

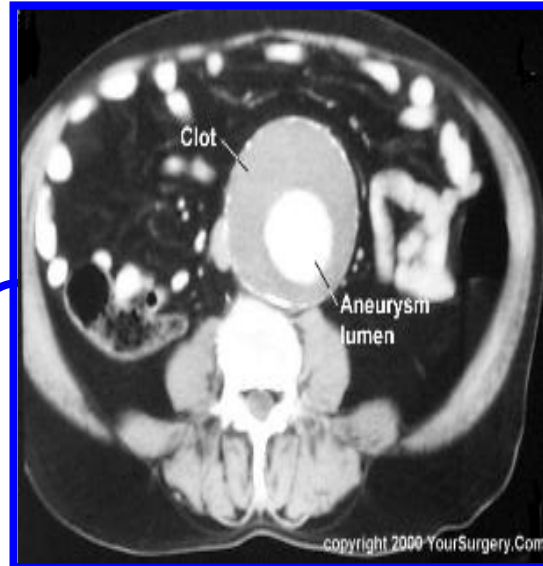
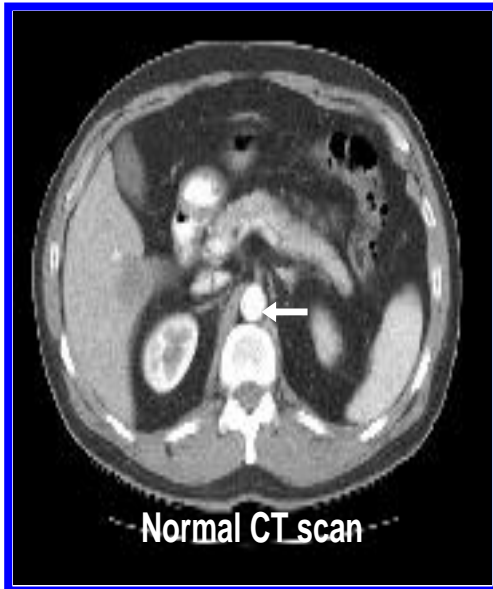
D. DIGITAL SUBTRACTION ANGIOGRAPHY (D.S.A)

. Blocked right external iliac artery (arrow)

. Notice that using digital technology allows removal of bone shadow from the film, and thus allows better focusing on the arteriogram



E. C.T SCAN ABDOMEN (I.V CONTRAST) (ANEURYSMS)



. Scans show abdominal aortic aneurysms.
. Compare their diameters with that of a normal aorta



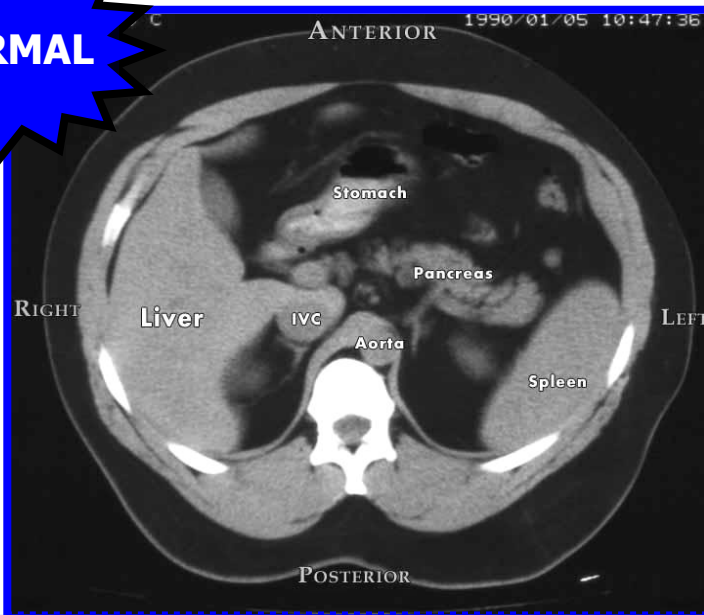
Answer by True or False

- 111. Atherosclerosis is the underlying cause ()
- 112. This patient has a poor renal function ()
- 113. This patient may suffer from bilateral lower limb ischaemia ()
- 114. Pseudo pancreatic cyst is a common differential diagnosis ()
- 115. Aorto -femoral by pass is the best surgical treatment ()

C.T SCAN ABDOMEN

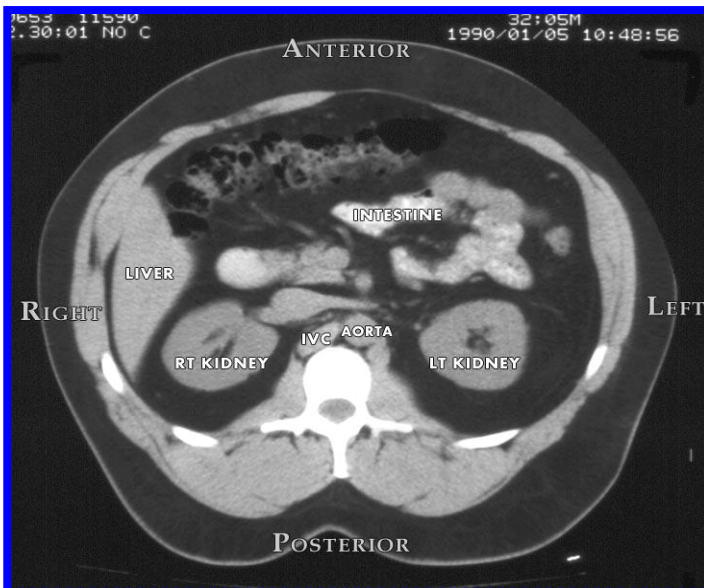
G.I.T

NORMAL



Normal CT scan abdomen without IV contrast.

Notice that the aorta and IVC look grey (compare with the white Colour of vertebra). When IV contrast is given both look white

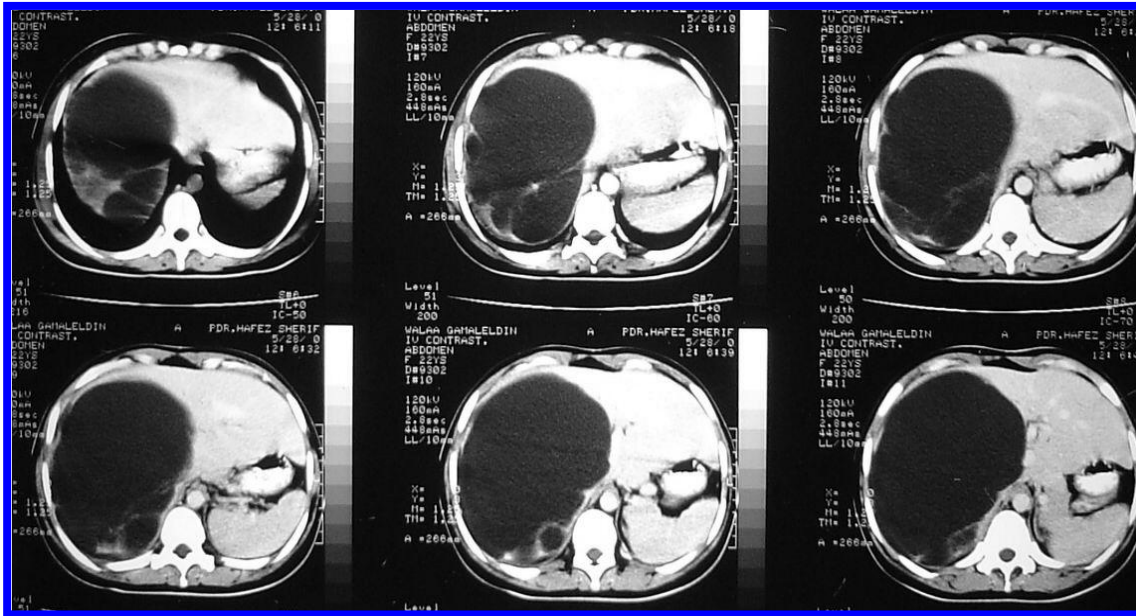


Normal CT scan abdomen without IV contrast.

at a lower level than that of the previous slide

Liver

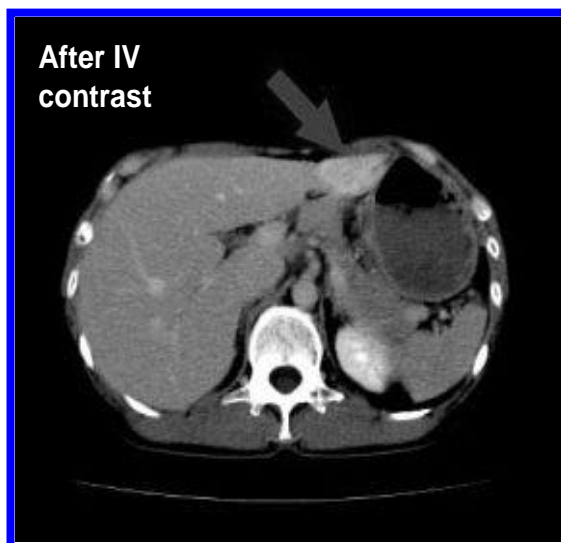
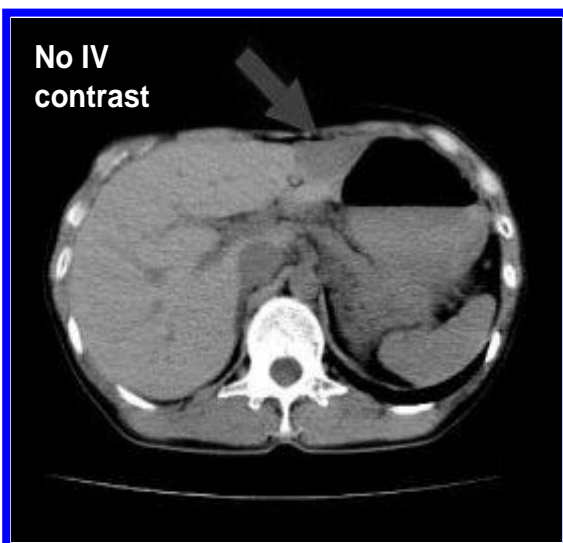
1. HYDATID CYST



Answer by True or False

- 116. The possible diagnosis is Hydatid cyst ()
- 117. There is another cyst seen in the spleen ()
- 118. Rupture of this cyst can lead to anaphylaxis ()
- 119. Metronidazole is the first line of treatment ()
- 120. Mebendazole can be a line of treatment ()

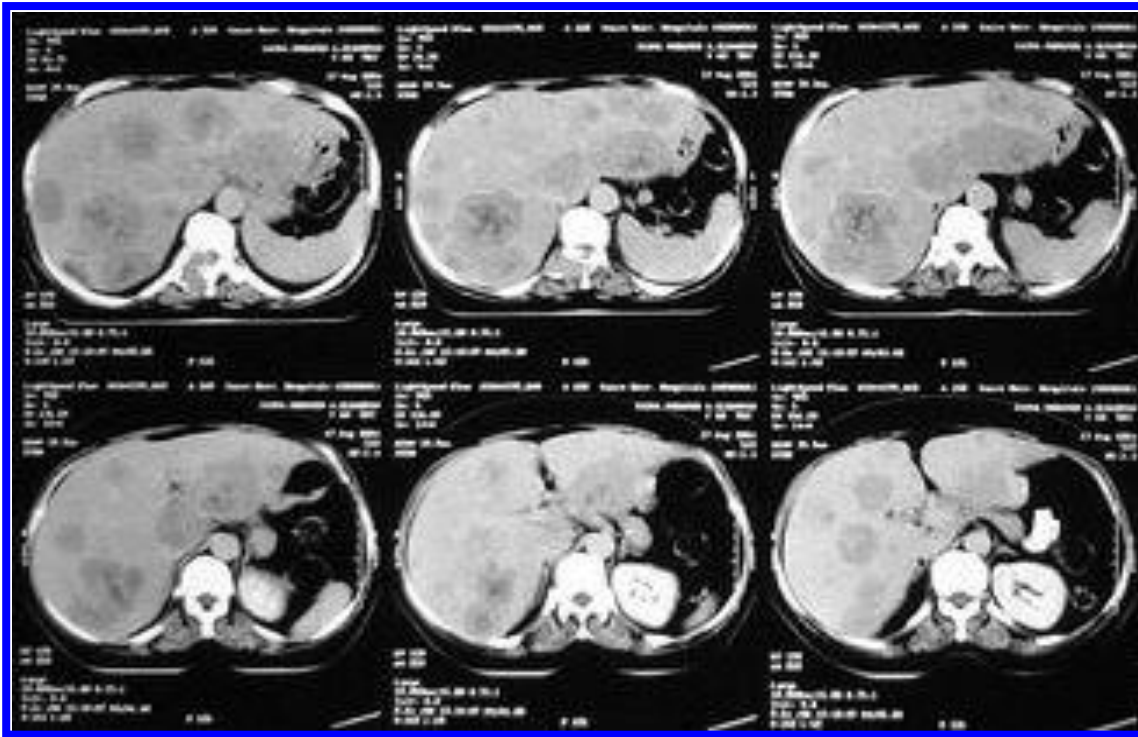
2. HEPATO-CELLULAR CARCINOMA (H.C.C)



Answer by True or False

- 121. The lesion is occupying the right lobe of the liver ()
- 122. A distended gall bladder is seen in this study ()
- 123. Cirrhosis is the common etiological factor for this condition ()
- 124. Serum alpha-fetoprotein can help in the diagnosis ()
- 125. Chemo-embolisation is the best line of treatment for advanced cases ()

3. LIVER METASTASIS (I.V CONTRAST)

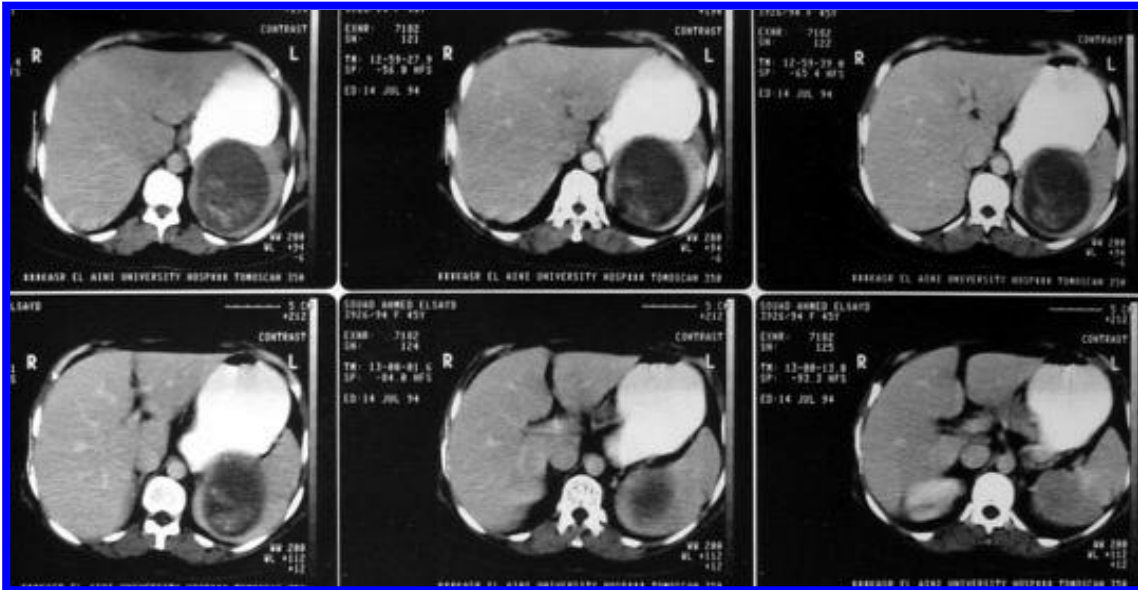


Answer by True or False

- 126. This lesion is common than 1ry tumor ()
- 127. The pathological type is adenocarcinoma ()
- 128. Patient represents by underlying cause ()
- 129. This patient present with chest pain ()
- 130. Chemotherapy is the main line of treatment ()

Spleen

1. HYDATID CYST



Answer by True or False

- 131. The possible diagnosis is Hydatid cyst ()
- 132. There is another cyst seen in the liver ()
- 133. Rupture of this cyst can lead to anaphylaxis ()
- 134. This cyst may be traumatic ()
- 135. Splenectomy is the line of treatment ()

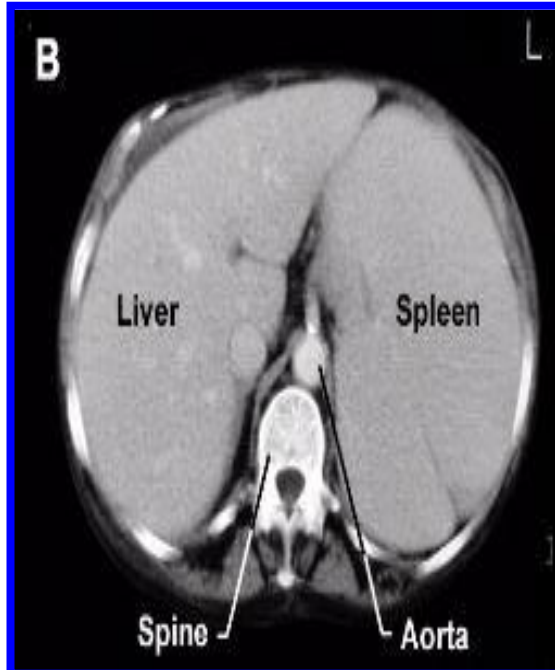
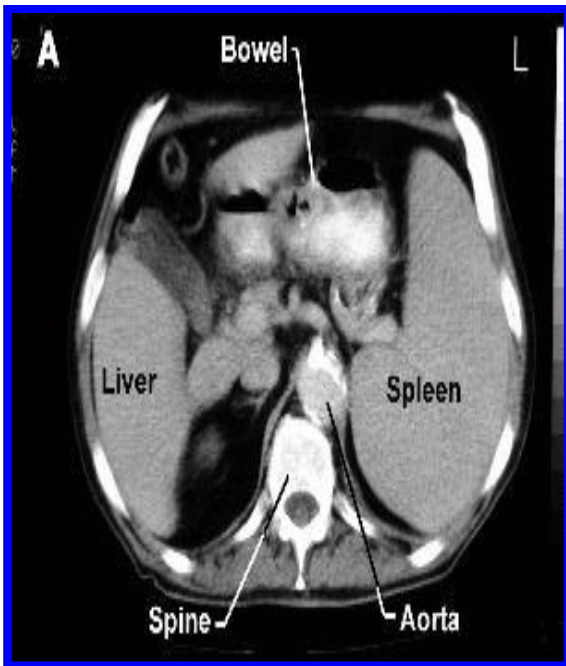
2. RUPTURE SPLEEN (I.V CONTRAST)



Answer by True or False

- 136. Trauma is the exciting cause ()
- 137. Liver shows similar lesion ()
- 138. Cullen's sign may be present ()
- 139. Splenectomy is always the line of treatment ()
- 140. Pneumovax is always indicated post-operative ()

3. SPLENOMEGALY (I.V CONTRAST)



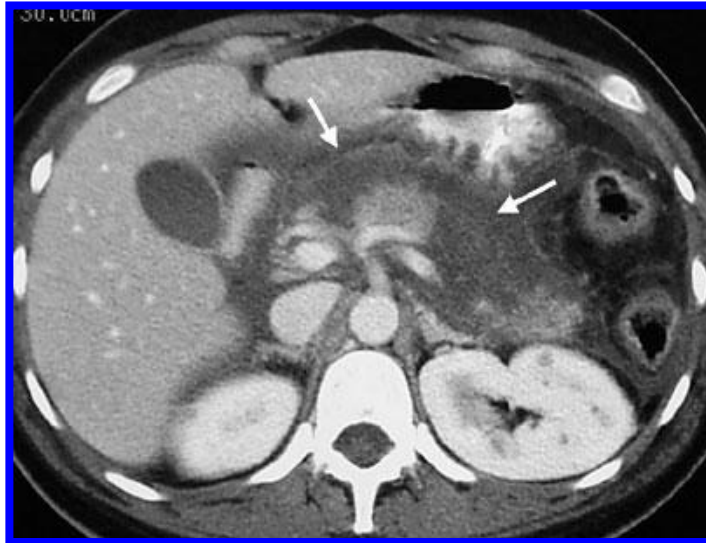
Answer by True or False

- 141. Patient presents by mass in Rt. hypochondrium ()
- 142. Patient presents by mass in Lt. hypochondrium ()
- 143. Trauma is the underlying cause ()
- 144. This spleen is always usually tender ()
- 145. This spleen is always usually huge ()

Pancreas

1. ACUTE PANCREATITIS (I.V CONTRAST)

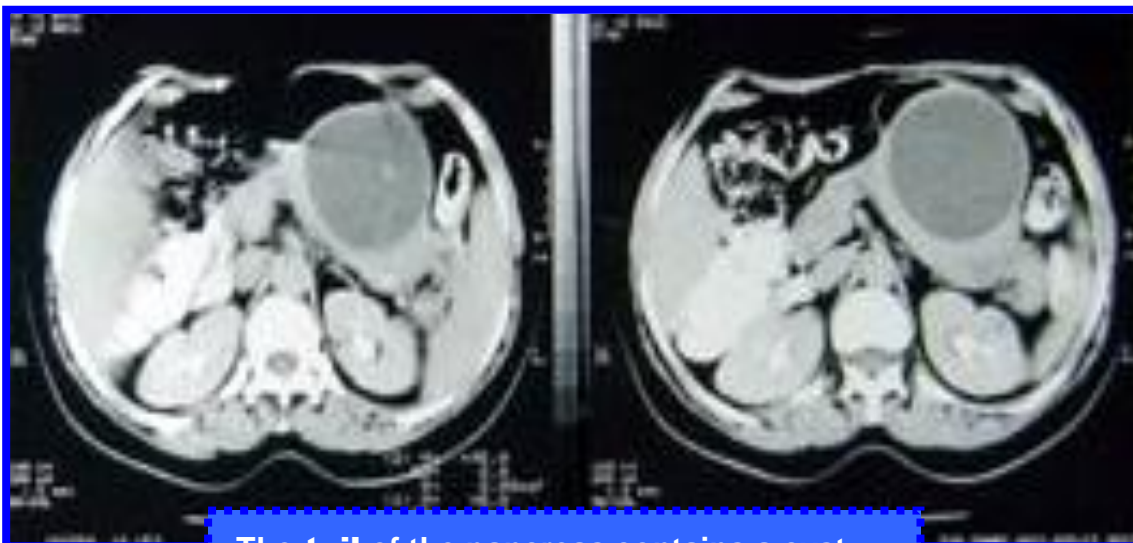
. The pancreas is markedly thickened & oedematous



Answer by True or False

- 146. There is a swollen edematous pancreas seen in this study ()
- 147. Biliary obstruction by stones could be the underlying cause ()
- 148. Cyst formation in the lesser sac could be a possible complication ()
- 149. Serum amylase can help in the diagnosis ()
- 150. Surgery is the first line of treatment ()

2. PANCREATIC PSEUDOCYST (WITHOUT I.V CONTRAST)

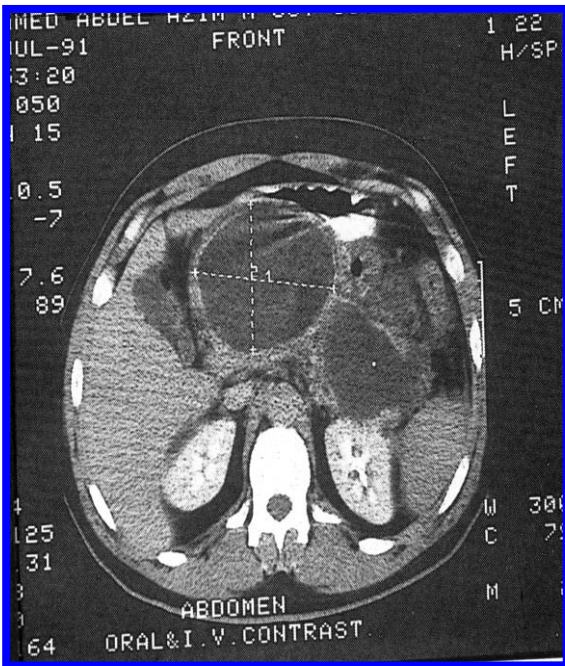


The tail of the pancreas contains a cyst

Answer by True or False

- 151. This cystic swelling is related to the pancreas ()
- 152. Infection and abscess formation is a possible complication ()
- 153. Barium meal can be a useful method of investigation ()
- 154. ERCP can be a method of treatment of this condition ()
- 155. Cysto-gastrostomy is the treatment of choice ()

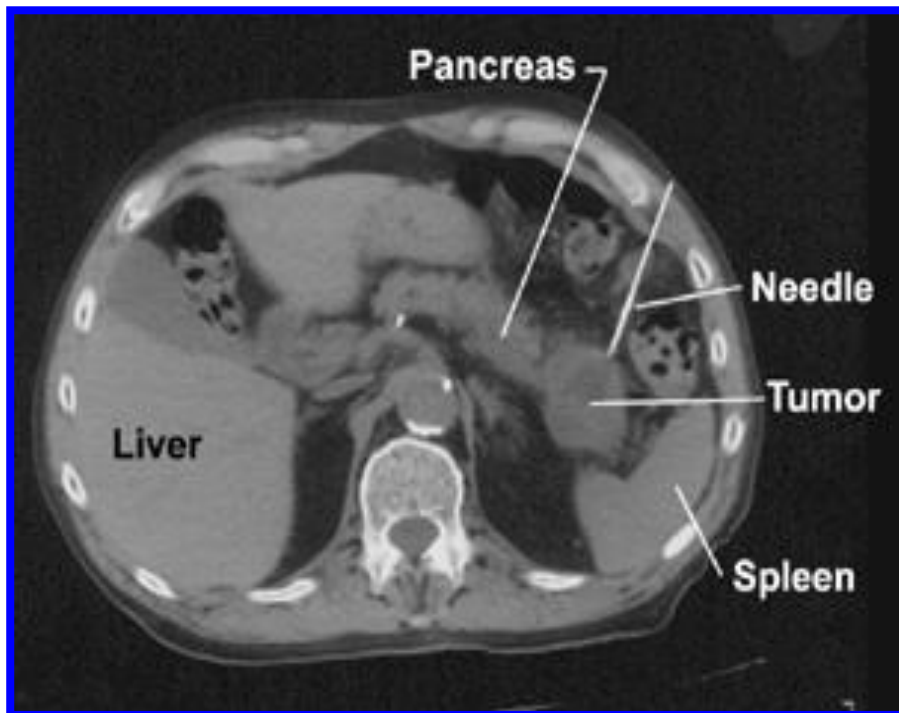
3. CANCER HEAD PANCREAS (WITHOUT I.V CONTRAST)



Answer by True or False

- 156. The possible diagnosis is cancer tail pancreas ()
- 157. There is another cyst related to pancreas ()
- 158. It considers the commonest site ()
- 159. The presentation is obstructive jaundice ()
- 160. Surgery is the main line of treatment ()

4. **CANCER TAIL PANCREAS** (**WITHOUT I.V CONTRAST**)



Solid mass at tail of pancreas

In this case **CT-guided fine needle aspiration (FNA)** is being done to diagnose the nature of this lesion

Notice **calcification of atherosclerotic patches** in the abdominal aorta

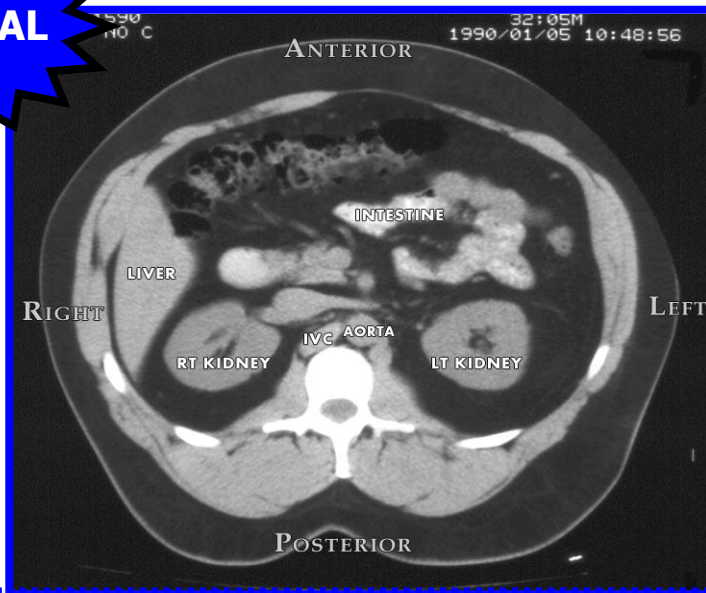
Answer by True or False

- 161. The possible diagnosis is cancer head pancreas ()
- 162. This patient is old atherosclerotic ()
- 163. It considers the commonest site ()
- 164. The presentation is obstructive jaundice ()
- 165. Surgery is the main line of treatment ()

C.T SCAN ABDOMEN

URINARY SYSTEM

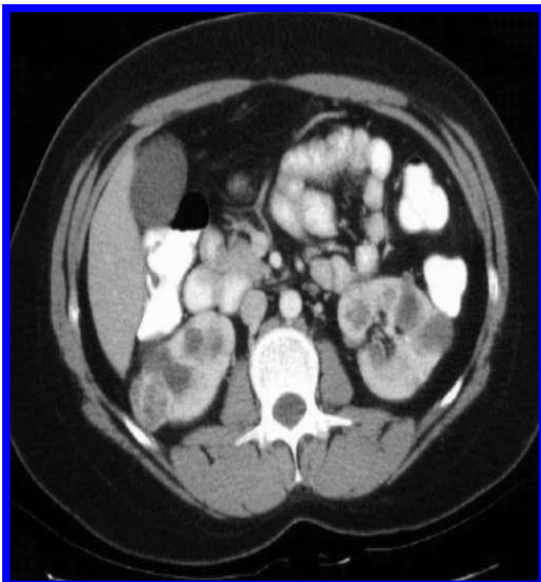
NORMAL



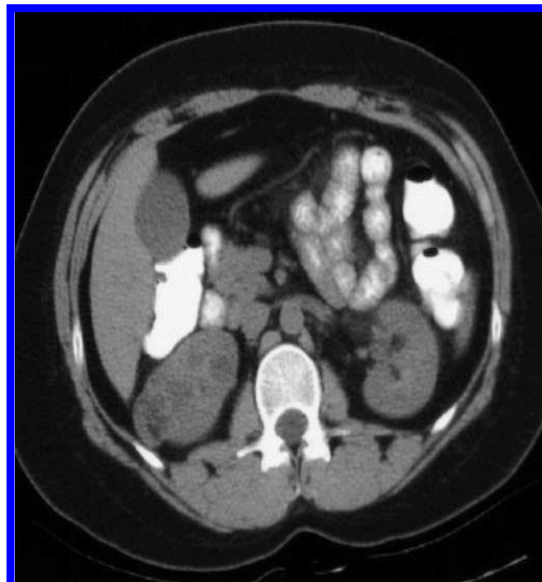
**Normal CT scan abdomen without IV contrast.
showing normal kidneys**

1. POLYCYSTIC KIDNEY

See questions page (59)



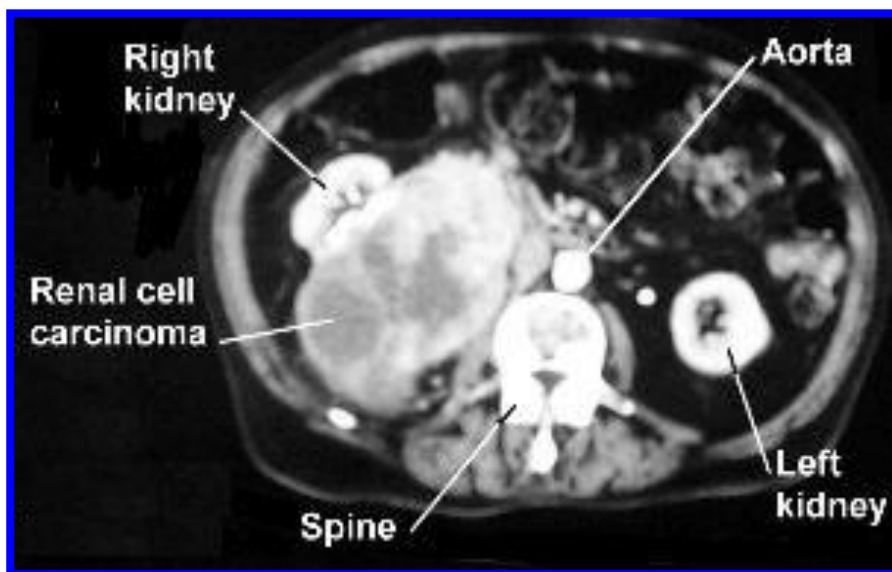
(I.V CONTRAST)



(WITHOUT I.V CONTRAST)

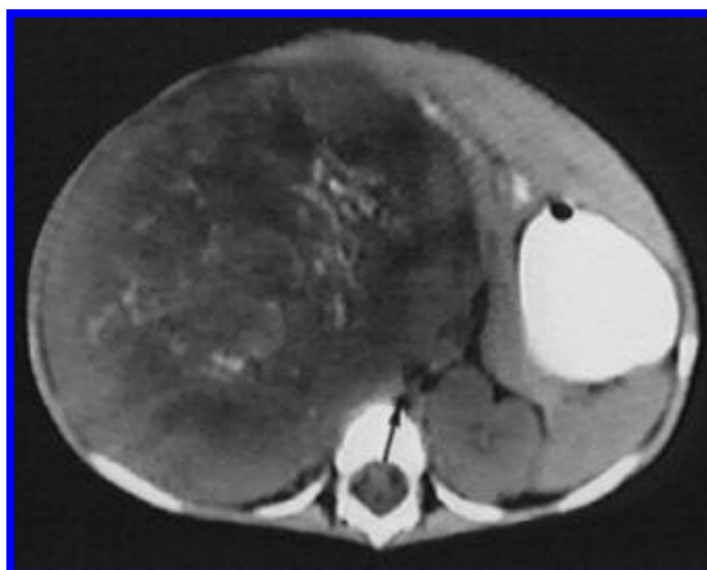
2. **HYPERNEPHROMA** (**RENAL CELL CARCINOMA**)

See questions page (68)



3. **WILM'S TUMOR** (**NEPHROBLASTOMA**)

The Rt. kidney is replaced by a huge solid mass that occupies a large part of abdomen

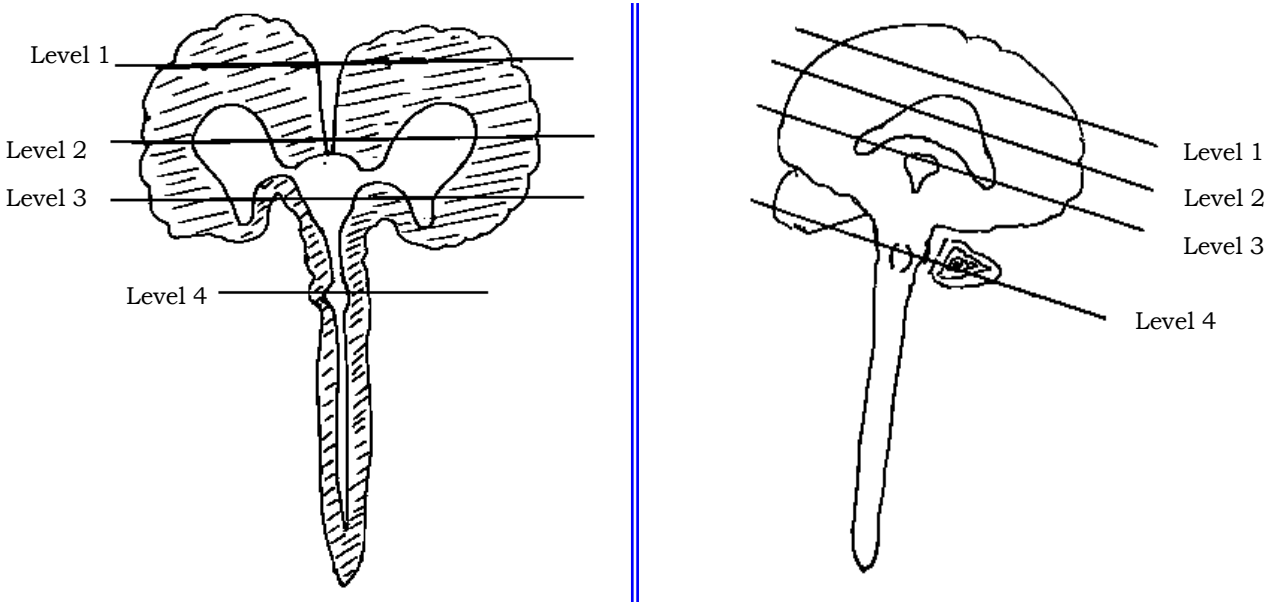


Answer by True or False

- 166. The possible diagnosis is cancer liver ()
- 167. There is another cyst related to pancreas ()
- 168. It considers the commonest lesion in adult ()
- 169. The main presentation is abdominal mass ()
- 170. Surgery is the main line of treatment if operable ()

C.T SCAN BRAIN

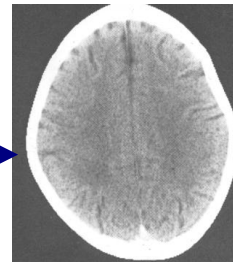
1. LEVELS OF CUTS



★ Levels of cuts : (4 Main levels)

① Level 1: (Supra-ventricular level)

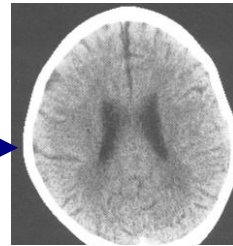
- Cerebral hemispheres.
- Sulci + Gyri.
- Falx cerebri.
- Cranial bones.



② Level 2: (Ventricular level)

Shows level of bodies of lateral ventricles

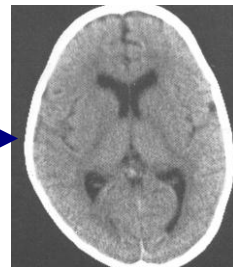
- Inter-hemispheric fissure
- Bodies of lateral ventricles



③ Level 3: (Ventricular level)

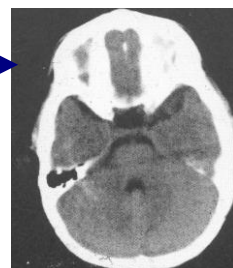
Shows level of horns of lateral ventricle

- Frontal horns of lateral ventricle
- 3rd ventricle



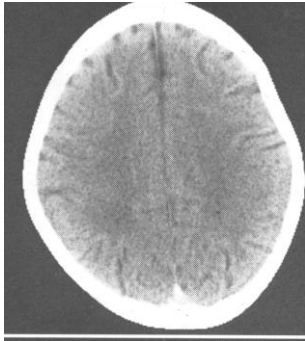
④ Level 4: (Infra-ventricular level)

- Cerebellum
- 4th ventricle

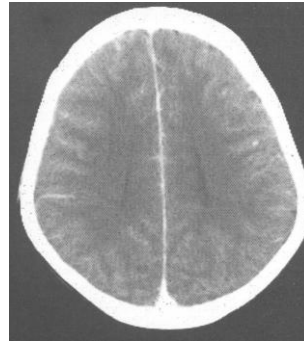


2. TYPES OF C.T

- **Plain C.T** : Grey-white interface is **less** evident
- **Contrast Enhanced C.T**: Grey-white interface is **well** evident
It is **indicated with** hypodense lesions as : 1. Brain tumor
2. Brain abscess



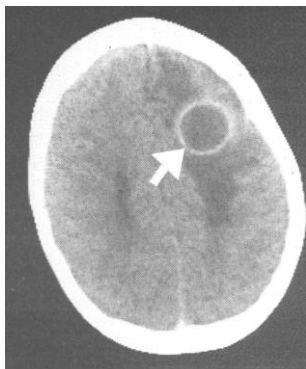
Plain C.T.



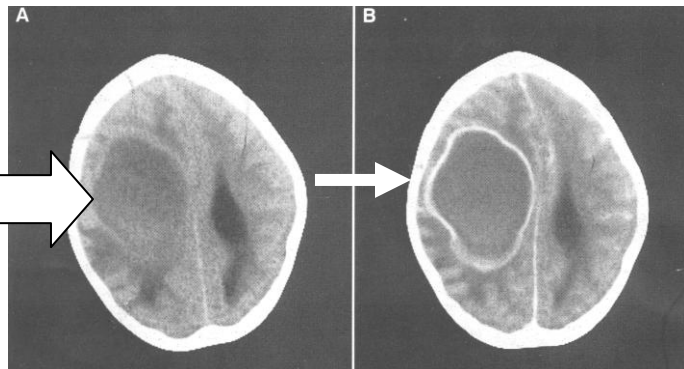
Contrast Enhanced C.T.



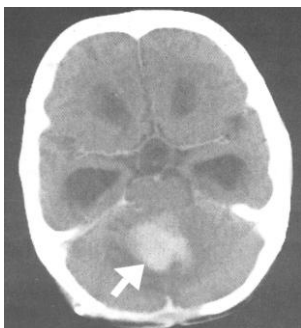
Types of Enhancement:



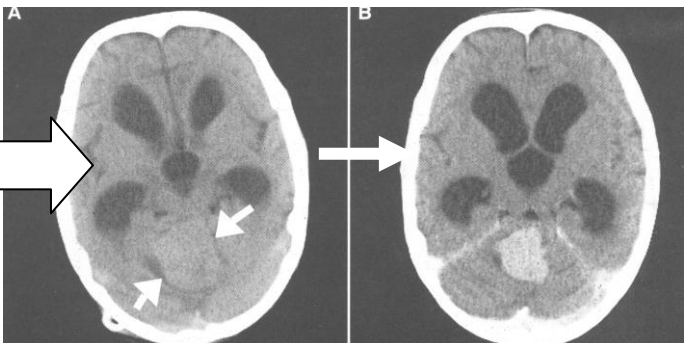
Ring Enhancement



Brain Abscess



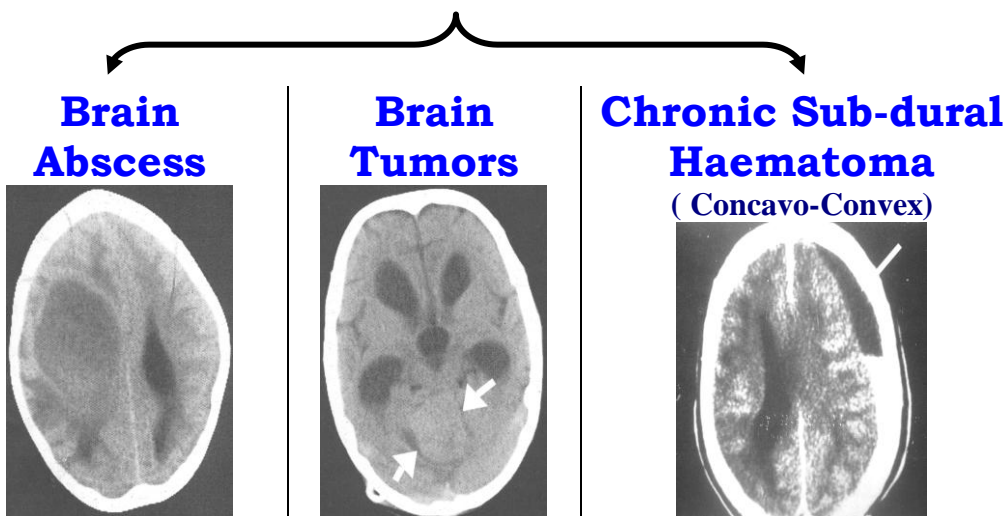
Central Enhancement



Brain Tumor

3. ABNORMAL CT FINDINGS

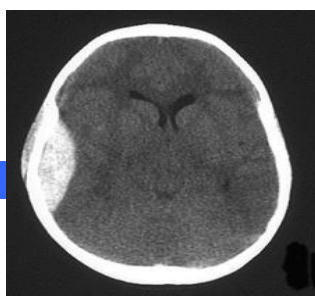
A. BRAIN TISSUE



Haematoma

Extra-dural

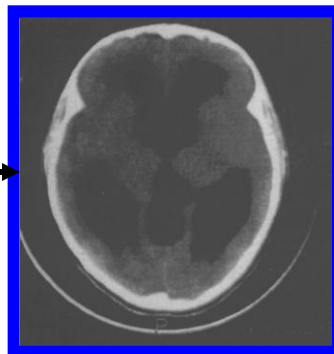
Acute Sub-dural



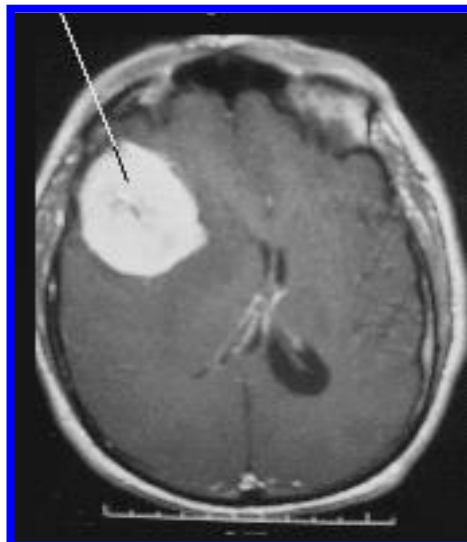
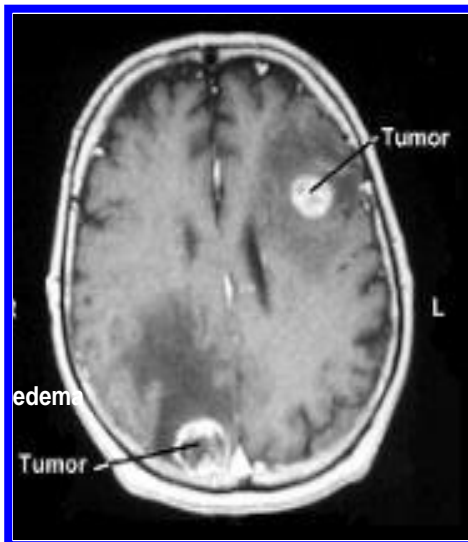
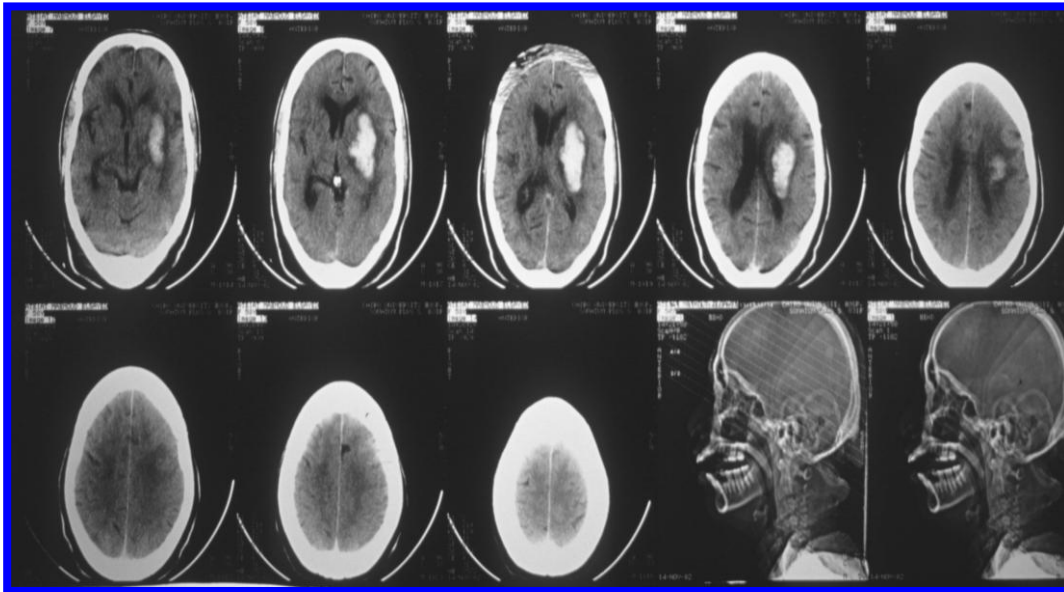
B. C.S.F SPACE

Ventricular Dilatation

As Hydrocephalus



1. BRAIN TUMOR (Enhanced C.T)



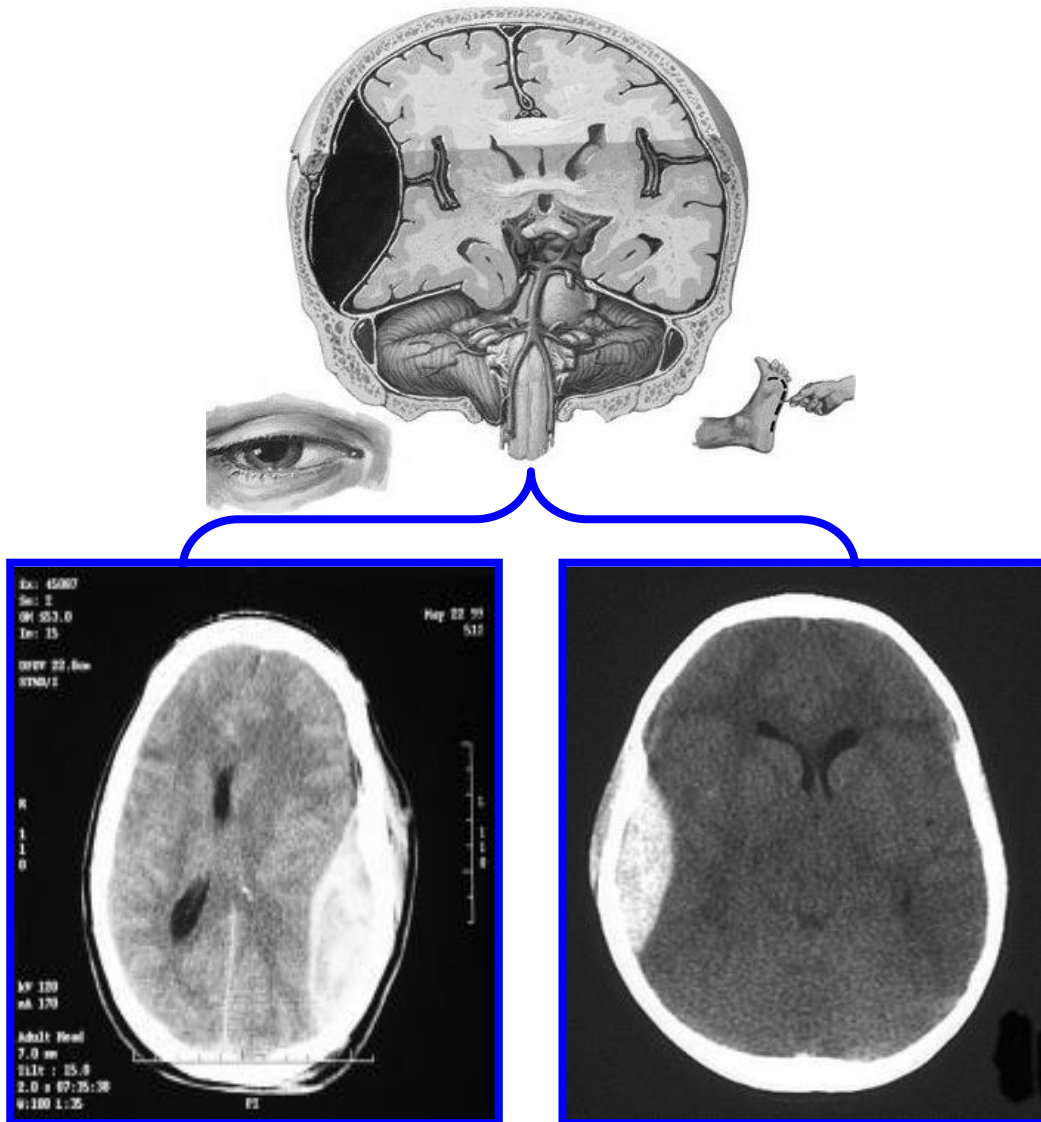
Brain metastases :
multiple & surrounded by
an oedema

Meningioma :
Notice the mass and shift
of midline structures.

Answer by True or False

- 171. There is evidence of hydrocephalus seen in this study ()
- 172. This patient presents with manifestations of increased I.C.T ()
- 173. Biopsy can confirm the diagnosis ()
- 174. Palliative treatment is the main line ()
- 175. Urgent surgery is indicated ()

2. EXTRADURAL HAEMATOMA



Biconvex white opacities on the inner side of the skull with shift of midline structures to the opposite side.

Answer by True or False

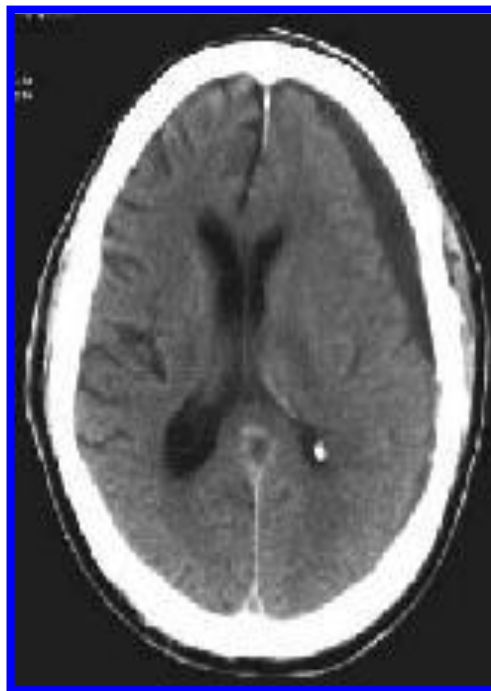
176. The Underlying cause of this condition is traumatic ()
177. Middle meningeal artery injury is the main cause ()
178. It is a common complication of fracture base of the skull ()
179. Contra lateral motor deficit is a complication ()
180. Urgent surgery is indicated ()

3. SUBDURAL HAEMATOMAS

ACUTE
SUBDURAL
HAEMATOMA



CHRONIC
SUBDURAL
HAEMATOMA



Subdural haematomas look **concavo-convex**. Notice also shift of midline structures to the opposite side. **Acute** haematomas are **white**, while **chronic** haematomas **lose their density by time**.

Answer by True or False

- 181. The Underlying cause of this condition is pathological ()
- 182. This patient presents with manifestations of increased I.C.T ()
- 183. Hydrocephalus is a common complication ()
- 184. Lumbar puncture is a useful investigation ()
- 185. Medical treatment is the principle line of treatment ()



ANSWERS

MISCELLANEOUS X-RAYS

1. True	21. <u>False</u>	41. True	61. <u>False</u>	81. True
2. <u>False</u>	22. True	42. <u>False</u>	62. <u>False</u>	82. <u>False</u>
3. True	23. True	43. True	63. True	83. <u>False</u>
4. True	24. True	44. True	64. <u>False</u>	84. <u>False</u>
5. <u>False</u>	25. True	45. True	65. True	85. True
6. True	26. True	46. <u>False</u>	66. True	86. <u>False</u>
7. True	27. True	47. True	67. True	87. True
8. True	28. True	48. <u>False</u>	68. True	88. <u>False</u>
9. True	29. True	49. True	69. <u>False</u>	89. True
10. True	30. True	50. True	70. True	90. <u>False</u>
11. <u>False</u>	31. <u>False</u>	51. <u>False</u>	71. True	91. True
12. True	32. True	52. <u>False</u>	72. <u>False</u>	92. True
13. True	33. <u>False</u>	53. <u>False</u>	73. True	93. True
14. <u>False</u>	34. <u>False</u>	54. True	74. <u>False</u>	94. True
15. True	35. True	55. <u>False</u>	75. True	95. True
16. <u>False</u>	36. True	56. True	76. True	96. True
17. True	37. True	57. <u>False</u>	77. <u>False</u>	97. True
18. True	38. <u>False</u>	58. True	78. <u>False</u>	98. True
19. True	39. <u>False</u>	59. True	79. True	99. <u>False</u>
20. True	40. True	60. True	80. True	100. <u>False</u>

101. True	121. True	141. False	161. False	181. False
102. True	122. False	142. True	162. True	182. True
103. True	123. True	143. False	163. False	183. False
104. True	124. True	144. False	164. False	184. False
105. False	125. True	145. False	165. True	185. False
106. False	126. True	146. True	166. False	
107. False	127. True	147. True	167. False	
108. False	128. True	148. True	168. False	
109. True	129. False	149. True	169. True	
110. False	130. True	150. False	170. True	
111. True	131. True	151. True	171. False	
112. True	132. False	152. True	172. True	
113. True	133. True	153. True	173. True	
114. True	134. True	154. False	174. False	
115. False	135. True	155. True	175. True	
116. True	136. True	156. False	176. True	
117. False	137. False	157. False	177. True	
118. True	138. True	158. True	178. False	
119. False	139. False	159. True	179. True	
120. True	140. False	160. True	180. True	

GOOD LUCK



تم بحمد الله

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