Review

Incidental Findings on Abdominal X-Rays—Worry, Watch, or Leave Alone?

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Posted Date: 16 April 2026

doi: 10.20944/preprints202604.1211.v1

Keywords: abdominal x-ray; incidental findings; calcifications; pseudo-pneumoperitoneum; radiographic interpretation

 doi:10.20944/preprints202604.1211.v1

Review

Incidental Findings on Abdominal X-Rays—Worry, Watch, or Leave Alone?

A Practical Guide for Clinicians and Radiologists

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Abstract

Abdominal radiographs remain a widely used first-line investigation for both acute and chronic abdominal conditions. In routine clinical practice, they often reveal findings unrelated to the patient's presenting complaint. While many of these are benign or reflect normal anatomical variation, they can sometimes resemble significant disease and lead to unnecessary investigations, patient anxiety, and added healthcare costs. This review presents a practical approach to interpreting such incidental findings, using a simple classification based on their radiographic appearance. These include calcifications, gas patterns, soft tissue and organ-related findings, as well as foreign bodies and procedure-related materials. Common examples, such as phleboliths, costal cartilage calcifications, gallstones, and vascular calcifications, are discussed, along with important mimics, such as pseudopneumoperitoneum. Normal variants, including Riedel's lobe, renal anomalies, and bowel malposition, are also described. Attention is given to recognising typical imaging appearances and avoiding common sources of error in interpretation. The continued importance of abdominal radiography in settings with limited access to advanced imaging is also acknowledged. Selected radiographic examples are included to support pattern recognition and day-to-day clinical application. A clear, structured approach allows incidental findings to be interpreted with greater confidence and guides appropriate clinical decisions. This reduces unnecessary imaging, limits patient anxiety, and supports more effective and focused patient care.

Keywords: abdominal x-ray; incidental findings; calcifications; pseudo-pneumoperitoneum; radiographic interpretation

1. Introduction

Incidental findings are unexpected observations detected during imaging that are unrelated to the primary clinical indication for the investigation. These findings are not explained by the patient's current symptoms. Abdominal x-ray (AXR) remains a valuable first-line investigation for evaluating acute and chronic abdominal and genitourinary conditions, especially in emergency settings and when advanced imaging is not readily available. These X-rays often show incidental findings that can mimic serious pathologies, which cause unnecessary anxiety. Also, misinterpretation of these findings can lead to further invasive investigations and interventions, causing unnecessary financial burdens.

The interpretation of incidental findings on abdominal radiographs presents a common diagnostic challenge. Benign entities such as phleboliths may resemble ureteric stones, and costal cartilage calcifications may be mistaken for gallbladder calculi [1,2]. Likewise, normal anatomical variants or physiological gas patterns may mimic serious intra-abdominal pathology. According to

 doi:10.20944/preprints202604.1211.v1

Choi SY et al., incidental findings were identified in approximately 25% of patients presenting to the emergency department [3].

This review outlines a practical approach to classifying and interpreting incidental findings on abdominal radiographs. It focuses on distinguishing normal variants from clinically important abnormalities.

1.1. Classification of Incidental Findings on Abdominal Radiographs

Incidental findings on abdominal radiographs are varied and arise from multiple anatomical structures. A simple classification based on radiographic appearance of abdominal structures, foreign bodies, surgical densities and medical devices. Recently, Arkoudis et al. proposed the I-RADS classification for incidentalomas based on CT and MRI, highlighting the value of standardised imaging frameworks [4]. However, plain radiographic findings are not addressed in such systems. This is particularly relevant in resource-limited settings, where abdominal X-rays are often the first or only available imaging modality. Therefore, a practical, radiograph-based classification provides a useful framework for guiding interpretation. This helps avoid unnecessary investigations, reducing radiation exposure to patients and overall healthcare costs (Table 1).

Table 1. Classification of incidental findings on abdominal radiographs.

1. Soft tissue, visceral and vascular calcifications
•Soft tissue calcifications (e.g., costochondral cartilage, lymph nodes)
• Visceral calcifications (e.g., hepatic, pancreas, gallbladder)
• Vascular calcifications (e.g., aortic, splenic vessels, phleboliths)
2. Gas patterns
• Pseudo-pneumoperitoneum (e.g., Chilaiditi sign)
• Non-pathological Pneumoperitoneum
3. Organ-related findings
• Organ contour and size variations (e.g., Hepatomegaly and Riedel's Lobe)
• Organ location variations. (e.g., Renal position and fusion anomalies)
4. Foreign bodies, surgical densities and medical devices
• Ingested foreign bodies (e.g., coins, dental materials, certain medications)
• Surgery-related material (e.g., surgical clips, sutures, staples)
• Medical devices (e.g., stents, catheters, IUCD)

1.2. Soft Tissue, Visceral and Vascular Calcifications

Soft-tissue, visceral, and vascular calcifications are commonly encountered as incidental findings on abdominal X-rays. These calcifications may be due to a wide range of benign or pathological conditions. Therefore, careful assessment of their location, pattern, and morphology is essential to differentiate clinically insignificant findings from those requiring further assessment.

1.2.1. Soft Tissue calcifications

Costochondral Cartilage Calcifications

Calcification of the costal cartilages is an age-related process with recognised gender-specific patterns. It is usually not appreciable on radiographs before the third decade and becomes more prominent with advancing age. In males, calcification typically occurs along the peripheral margins of the cartilage, whereas in females, it is more often a central pattern of calcification [5]. Early, or

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premature calcification, may be associated with underlying endocrine or metabolic disorders [2]. On abdominal radiographs, particularly when involving the lower ribs, costal cartilage calcification may project over the right upper quadrant and mimic gallbladder calculi or hepatic granulomas (Figure 1).

1.1.2. Peritoneal and Nodal Calcifications

Calcified mesenteric lymph nodes are a well-recognised incidental finding on abdominal X-rays. They usually reflect healed granulomatous infections, most commonly tuberculosis or histoplasmosis. On radiographs, they appear as small, well-defined, clustered calcifications in the mesentery. In asymptomatic patients, they are of no clinical concern and do not require further evaluation. However, an irregular appearance or associated soft-tissue changes should prompt further imaging [6].

Peritoneal calcification is less common and has several causes. It is most often seen in patients with a history of peritoneal dialysis, prior peritonitis, or ovarian malignancy (Figure 2). In neonates, it may be seen in meconium peritonitis, where calcifications are usually widespread and characteristic [6,7].

1.1.3. Subcutaneous, Muscle, and Soft Tissue Calcifications

Soft-tissue calcifications are common incidental findings on abdominal radiographs and arise from subcutaneous tissues, muscles, fascia, or connective tissue. They are often nonspecific and may reflect a local response to injury or an underlying systemic process. Most are dystrophic in nature, occurring in damaged or degenerated tissues, and account for approximately 95–98% of cases [8].

On radiographs, they appear as nodular, linear, or irregular radiopaque densities. Subcutaneous calcifications are commonly related to trauma, inflammation, injection sites, or connective tissue diseases. Muscle calcification may occur after infection, such as a healed psoas abscess or trauma, including myositis ossificans and calcified haematoma. Fascial calcifications typically show a linear or sheet-like pattern and are often associated with chronic inflammatory conditions.

Metabolic causes, including chronic kidney disease and hyperparathyroidism, may produce more diffuse calcifications. Typical appearances are generally benign and require no further evaluation [8,9].

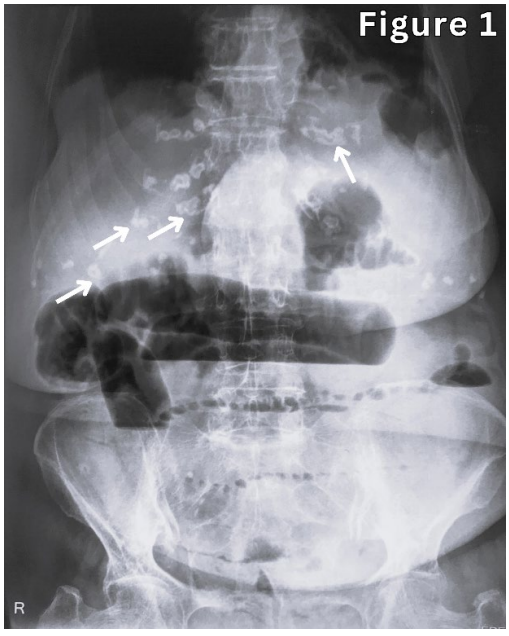

Figure 1. An 86-year-old female with extensive costochondral calcification mimicking pathological calcification.

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Figure 2. A patient with end-stage renal disease and a history of repeated peritoneal dialysis shows widespread peritoneal calcifications, likely related to the underlying renal failure and dialysis**.** Case courtesy of Zach Drew, Radiopaedia.org, rID: 69188.

1.2. Visceral Calcifications

1.2.1. Hepatic Calcifications

Hepatic calcifications are identified as incidental findings on abdominal radiographs and are most often benign. The most common cause is healed granulomatous disease, particularly following prior infections such as tuberculosis or fungal infections, appearing as multiple small punctate calcifications scattered in the right hypochondrial region [9,10]. Parasitic infections, such as echinococcosis, may also contribute (Figure 3). Less commonly, calcifications may be seen in benign lesions such as haemangiomas or cysts.

Malignancy should be considered when calcifications are irregular or coarse, or when associated with a mass, particularly in metastatic disease or hepatocellular carcinoma. Calcification following trans arterial chemoembolisation (TACE) may result from tumour necrosis, lipiodol deposition, or a combination of both. This should be recognised as a post-treatment change rather than active disease [10]. On abdominal X-ray (AXR), these changes typically appear as dense, irregular or amorphous radiopaque opacities projected over the hepatic region, sometimes showing a homogeneous or patchy distribution conforming to the treated lesion.

1.2.2. Splenic Calcifications

Splenic calcifications are encountered as incidental findings on AXR. The most frequent cause is healed granulomatous infection, particularly tuberculosis or histoplasmosis [11] (Figure 3). Rarely, they may be seen in systemic lupus erythematosus, where they appear as multiple small, punctate calcifications projected over the left upper quadrant [12]. These calcifcations are typically uniform, less than 1 cm in size, and, when numerous, characteristic [11].

Other causes include prior infarction, trauma-related pseudocysts, parasitic infections such as echinococcosis, and benign vascular lesions like haemangiomas, which may show curvilinear or speckled calcifications. Diffuse coarse calcification in a shrunken spleen suggests autosplenectomy, particularly in sickle cell disease. Peripheral rim calcification may indicate cysts or splenic artery aneurysm, the latter often appearing as a curvilinear or “eggshell” calcified structure on AXR [9,11].

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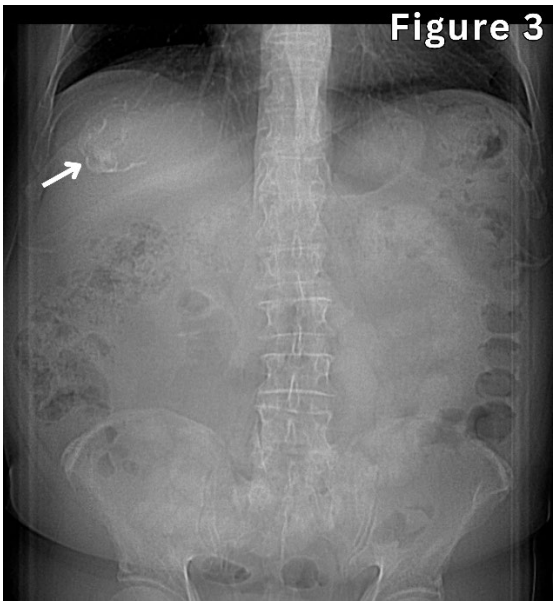

Figure 3. A 60-year-old male with a history of Echinococcus granulosus infestation.AXR shows a calcified hepatic hydatid. Case courtesy of Roberto Schubert, Radiopaedia.org, rID: 18907.

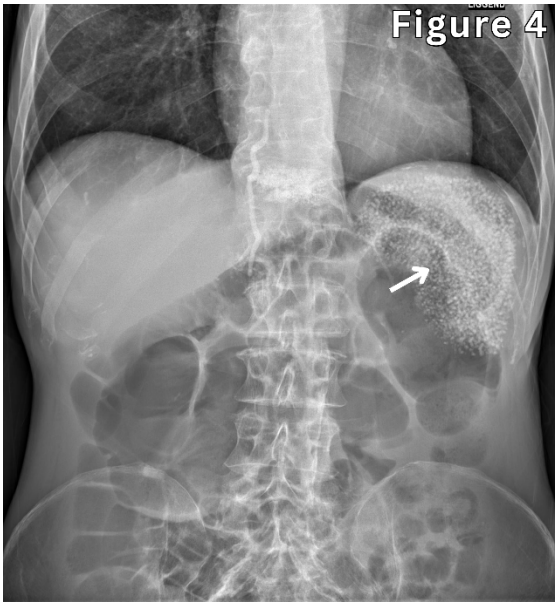

Figure 4. A 70-year-old male presents with non-specific dyspnoea without abdominal complaints. AXR shows multiple micronodular calcifications as an incidental finding. Differential diagnoses included silicosis or tuberculosis. Case courtesy of Simon Vanden Berghe, Radiopaedia.org, rID: 50695.

1.2.3. Renal, Ureteric, and Bladder Calcifications

Renal, ureteric, and bladder calcifications are commonly visible and represent the commonest calcific abnormalities detected in the urinary tract on AXR (Figure 5). Renal calculi may appear as small, discrete radio-opacities or as large staghorn calculi filling the renal pelvis [13] (Figure 6). Nephrocalcinosis presents as diffuse parenchymal calcification. [13,14] Chronic renal tuberculosis may lead to irregular, amorphous calcification, sometimes resulting in a non-functioning autonephrectomised kidney.

Ureteric stones are seen along the expected course of the ureter, often near the tips of the transverse processes, and may present during acute episodes or as incidental findings. Bladder stones are typically moderate to large, rounded, and located within the pelvis, often associated with urinary stasis, such as prostatic enlargement [13].

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Bladder wall calcification appears as linear or curvilinear densities, classically seen in schistosomiasis. Approximately 10–20% of urinary calculi are radiolucent and may not be visible on AXR, most commonly uric acid stones, followed by cystine and certain drug-related calculi [15].

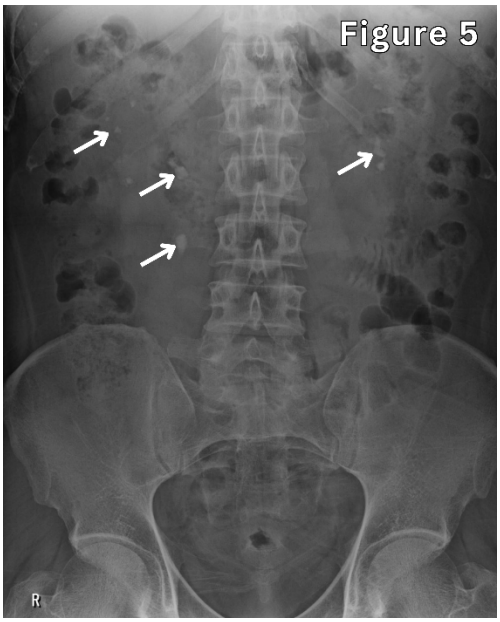

Figure 4. A- 45 -years old male with urolithiasis. The image shows multiple renal calculi of varying sizes in both renal areas.

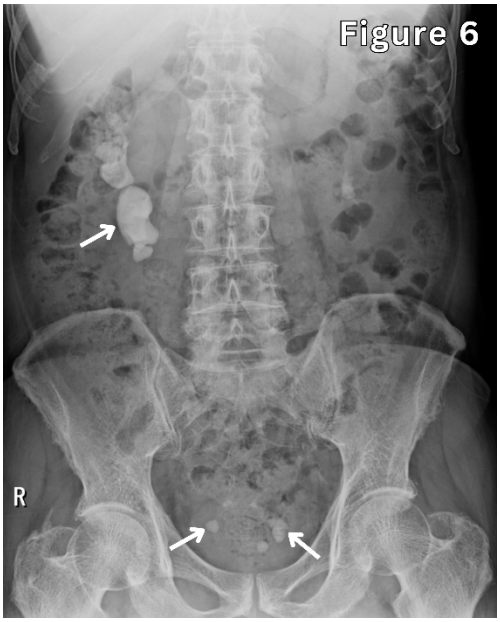

Figure 5. A- 49 -years old male with urolithiasis. The image shows a large branching type calculus in the right renal area and multiple moderate size calculi in the bladder.

1.2.4. Pancreatic Calcifications

Pancreatic calcifications are commonly seen in chronic pancreatitis and usually indicate long-standing disease. On AXR, they appear as multiple, irregular or "beaded" radiopaque densities in the epigastric or mid-abdominal region, typically at the level of L1–L2, following the course of the pancreas across the spine (Figure 7). These calcifications represent intraductal or parenchymal deposits and are a strong indicator of irreversible pancreatic damage [16].

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Early radiographic detection is limited by its small size and is obscured by overlying bowel shadows. Parenchymal calcifications are visible in only about 30–50% of cases, usually in advanced stages [9,17]. The most common cause is alcoholic chronic pancreatitis, although other causes include tropical pancreatitis, hereditary conditions, and, rarely, cystic fibrosis or tumours. Care must be taken to differentiate these from overlying vascular or visceral calcifications [16,17].

1.2.5. Gallbladder Calcifications

Gallbladder calcifications are infrequently detected on AXR, as only about 10–15% of gallstones contain sufficient calcium to be radiopaque [17]. When visible, gallstones appear as rounded or faceted radiopaque densities in the right upper quadrant. Their detection rate is influenced by size, location, image quality, and patient body habitus (Figure 8).

In complicated gallbladder disease, AXR may occasionally demonstrate some additional features. A characteristic finding is a thin, curvilinear rim of calcification outlining the gallbladder in the right upper abdomen, known as a porcelain gallbladder [18]. Rarely, gas may be seen within the gallbladder wall or lumen on AXR, appearing as irregular lucencies, as in emphysematous cholecystitis, even in the absence of gallstones [19]. Plain radiography has limited sensitivity for both gallstones and complicated gallbladder disease; ultrasound or CT is often required when clinically indicated.

Figure 7. A 41-year-old male patient with diagnosed chronic pancreatitis and recurrent epigastric pain. The image shows multiple small calcifications in the region of the pancreatic head.

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Figure 8. A 40-year-old female with recurrent right hypochondrial pain and dyspeptic symptoms. The image demonstrates multiple gallbladder calculi of varying sizes, with a well-defined gallbladder outline.

1.2.6. Calcified Bowel Loops

Bowel wall calcification is an uncommon finding on abdominal X-ray and usually indicates chronic or significant underlying disease. On AXR, it appears as linear, curvilinear, or ring-like radiopaque densities outlining segments of bowel. These patterns may reflect mural or submucosal calcification [9,20].

Common causes include chronic ischaemia, particularly phlebosclerotic colitis with associated vascular calcification, infections such as tuberculosis or schistosomiasis, and mucin-producing tumours, where calcification may be punctate or amorphous [20,21]. Metabolic conditions, including chronic renal failure, may also contribute.

Recent contrast examinations should be considered, as retained barium may mimic bowel wall calcification.

1.2.7. Uterine and Ovarian Calcifications

Uterine and ovarian calcifications are commonly seen as incidental findings on abdominal X-rays and are usually benign. The most frequent cause is calcified uterine leiomyoma, the commonest tumour of the female pelvis, with an overall prevalence ranging widely from 3.3% to 77% depending on age and population [9,22]. On AXR, calcified fibroids appear as well-defined pelvic masses with coarse, mottled, or characteristic “popcorn” calcification, especially in postmenopausal women.

Ovarian calcifications are less common. Mature cystic teratomas may show dense, irregular calcifications that sometimes resemble teeth or osseous fragments. Malignant ovarian tumours may demonstrate fine, punctate calcifications [23,24].

1.2.8. Calcified Seminal Vesicles

Bowel wall calcification is an uncommon finding on abdominal X-ray and usually indicates chronic or significant underlying disease. On AXR, it appears as linear, curvilinear, or ring-like radiopaque densities outlining segments of bowel. These patterns may reflect mural or submucosal calcification [9,20].

Common causes include chronic ischaemia, particularly phlebosclerotic colitis with associated vascular calcification, infections such as tuberculosis or schistosomiasis, and mucin-producing

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tumours, where calcification may be punctate or amorphous [20,21]. Metabolic conditions, including chronic renal failure, may also contribute to the cause. Bowel wall calcification.

Recent contrast examinations should be considered, as retained barium may mimic bowel wall calcification.

Figure 9. A 51-year-old female with incidentally detected bilateral pelvic calcified densities on abdominal X-ray. Subsequent contrast-enhanced CT of the pelvis confirmed calcified ovarian lesions.

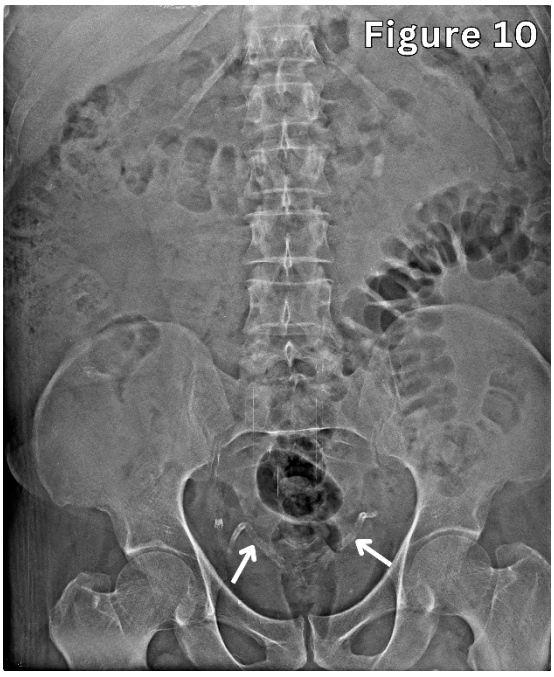

Figure 10. A 55-year-old male with diabetes and left flank pain. Abdominal X-ray shows incidental bilateral seminal vesicle calcification.Case courtesy of Ammar Haouimi, Radiopaedia.org, rID: 189467.

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1.3. Vascular Calcifications

Vascular calcification is defined as the deposition of calcium salts within blood vessels and is a common incidental finding on abdominal X-rays. On AXR, it appears as linear or curvilinear radiopaque densities following the expected course of vessels. These calcifications are most often associated with ageing, atherosclerosis, chronic kidney disease, and diabetes mellitus.

These findings are usually asymptomatic but may be associated with a higher risk of cardiovascular disease and vascular complications, including aneurysm. The extent and distribution of calcification may indicate the need for further imaging and clinical evaluation.

1.3.1. Aortic and Iliac Vessel Calcifications

Aortic and iliac vessel calcifications are commonly seen on abdominal X-rays as linear or curvilinear radiopaque densities outlining the course of the abdominal aorta and iliac arteries. They are often best appreciated on lateral lumbar spine views, where the anterior and posterior aortic walls may be clearly defined [26] (Figure 11).

In some cases, marked or focal calcification may outline a dilated segment of the aorta, raising suspicion of an abdominal aortic aneurysm. The pattern and extent of calcification provide useful clues to underlying vascular pathology [26].

1.3.2. Splenic Artery Calcifications

Splenic artery calcification is a recognised incidental finding on abdominal X-ray, especially in elderly and diabetic patients. On AXR, it appears as a tortuous, curvilinear radiopaque structure in the left upper quadrant, following the course of the splenic artery towards the splenic hilum. This characteristic appearance is sometimes described as the “Chinese dragon” sign [27].

It usually represents calcification of the arterial wall, producing a smooth, curvilinear outline of the vessel. This calcification has limited clinical significance. However, it may occasionally be associated with splenic artery aneurysms.

1.3.3. Venous Calcifications- Phleboliths

Phleboliths are common venous calcifications seen on abdominal X-rays, with a prevalence of approximately 38–48% in adults. [1] On AXR, they appear as small, rounded pelvic radiopacities, often showing a central lucency (Figure 12). They are usually located in the lower pelvis and may be multiple [1]. They are clinically insignificant in most cases but are important in symptomatic urological patients, as they can mimic ureteric calculi. Recognition of their typical appearance and location helps avoid misdiagnosis and unnecessary intervention [1].

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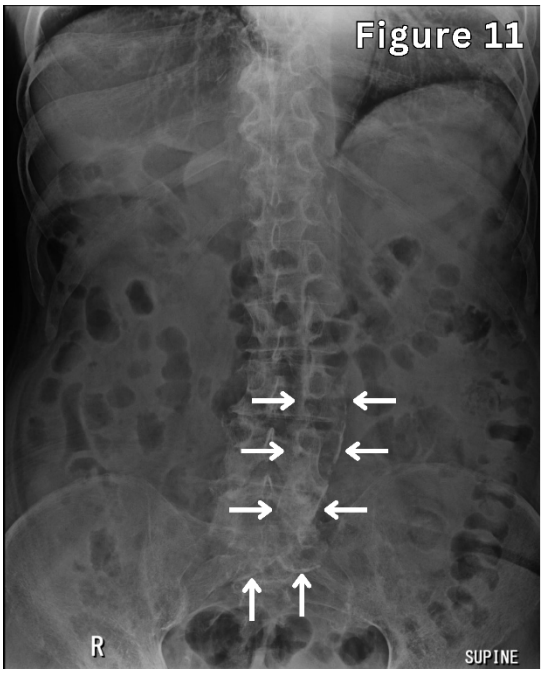

Figure 11. A 79-year-old patient with diabetes, ischaemic heart disease, and peripheral vascular disease demonstrating dense aortoiliac calcification on abdominal X-ray. Note: The aortic bifurcation is low-lying, likely age-related.

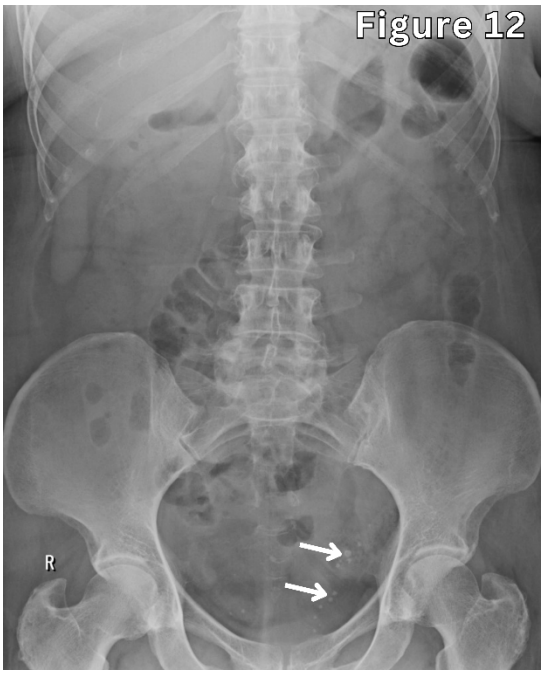

Figure 12. A 35-year-old female with left-sided abdominal pain demonstrating multiple pelvic phleboliths on abdominal X-ray, which may mimic ureteric calculi.

2. Gas Patterns That Mimic Disease

2.1. Pseudo-Pneumoperitoneum

Pseudo-pneumoperitoneum refers to radiographic appearances on abdominal X-rays that simulate free intraperitoneal air without true perforation. Recognising these mimics is essential to avoid misdiagnosis and unnecessary surgical intervention.

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2.1.1. Chilaiditi Sign and Syndrome

The Chilaiditi sign refers to the interposition of bowel, usually large bowel and rarely small bowel, between the liver and the diaphragm. This may show apparent subdiaphragmatic air on abdominal X-ray [28]. On AXR, the presence of haustral markings helps identify bowel loops and distinguish them from true pneumoperitoneum (Figure 13).

It is a rare finding, with a reported prevalence of approximately 0.02–0.2% and is more common in older males [28]. When symptomatic, it is termed Chilaiditi syndrome and may present with abdominal pain or discomfort. Most cases are benign and managed conservatively.

2.1.2. Gas-Filled Stomach or Bowel Loop Under the Left Hemidiaphragm

Gas-filled stomach or adjacent bowel loops may be seen beneath the left hemidiaphragm on abdominal X-ray. The gastric air bubble typically appears as an ovoid lucency under the left hemidiaphragm, separated from the lung by a thick gastric wall. In contrast, free intraperitoneal air forms a thin crescent beneath the diaphragm without internal soft tissue markings. Occasionally, a gas-filled stomach or distended bowel loops in the left hypochondrial region may mimic free air (Figure 14). Recognition of the normal patterns and internal folds is important to avoid misdiagnosis [24].

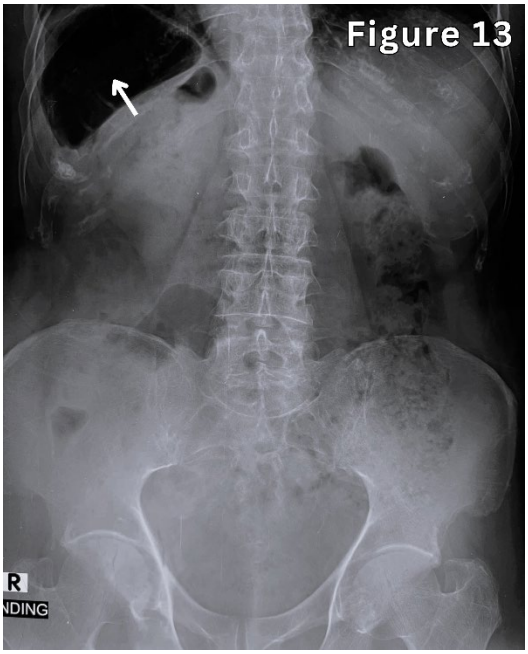

Figure 13. A 40-year-old male with abdominal distension and constipation. Abdominal X-ray shows interposition of a colonic loop between the right hemidiaphragm and liver, consistent with the Chilaiditi sign. *Note:* Haustral markings are clearly seen within the lucency.

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Figure 14. A 35-year-old male with abdominal pain. Abdominal X-ray shows a prominent gas-filled gastric fundus, which may mimic free air under the diaphragm.

2.2. Non-Pathological Pneumoperitoneum

2.2.1. Postoperative Pneumoperitoneum

Postoperative pneumoperitoneum is a common finding on abdominal X-ray following abdominal surgery. On AXR, it appears as a free subdiaphragmatic lucency, similar to pneumoperitoneum, but represents retained air rather than perforation [29].

It is observed in a significant proportion of patients after surgery and usually resolves within a week. Most cases are benign and require no treatment. Clinical correlation is essential, as increasing or persistent air with symptoms may indicate post-surgical complications such as perforation or anastomotic leak [29].

3. Soft Tissue and Organ-Related Findings

Soft-tissue and organ-related findings on abdominal X-rays are often subtle and are detected incidentally during routine evaluation. Careful assessment of organ outlines, position, and soft tissue planes can provide important clues to underlying anatomical variations or pathology.

3.1. Organ Contour and Size Variations

3.1.1. Hepatomegaly and Riedel's Lobe

On abdominal X-ray, the liver appears as a soft-tissue density in the right upper quadrant, often outlined by adjacent bowel gas. Hepatomegaly may be suggested by downward extension of the liver shadow with displacement of bowel loops inferiorly and medially.

Riedel's lobe is a tongue-like inferior projection of the right hepatic lobe, which may extend to the level of the iliac crest (Figure 15). The left lobe shadow appears normal, and the bowel loops are usually not significantly displaced. This appearance may mimic hepatomegaly on AXR [30]. Its reported incidence ranges from 3.3% to 31% [30]. Recognition is important to avoid misdiagnosis as a hepatic mass.

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3.1.2. Splenomegaly

On AXR, splenomegaly appears as a soft tissue mass in the left upper quadrant with medial and inferior displacement of bowel loops. It may be detected incidentally in asymptomatic patients. This may indicate underlying haematological or portal venous disease requiring further evaluation [24].

3.1.3. Distended Urinary Bladder

A distended urinary bladder may be seen on abdominal X-ray as a well-defined, rounded or ovoid soft tissue density in the pelvis, displacing adjacent bowel loops superiorly and laterally (Figure 16). The inferior margin may be outlined by pelvic fat planes. It is often detected incidentally, especially in patients with features of urinary retention.

Recognition of an overdistended urinary bladder is important, as it may indicate bladder outlet obstruction, neurogenic bladder, or acute retention. Early identification can guide clinical assessment and therefore prevent complications, such as urinary infection or renal impairment, caused by backflow.

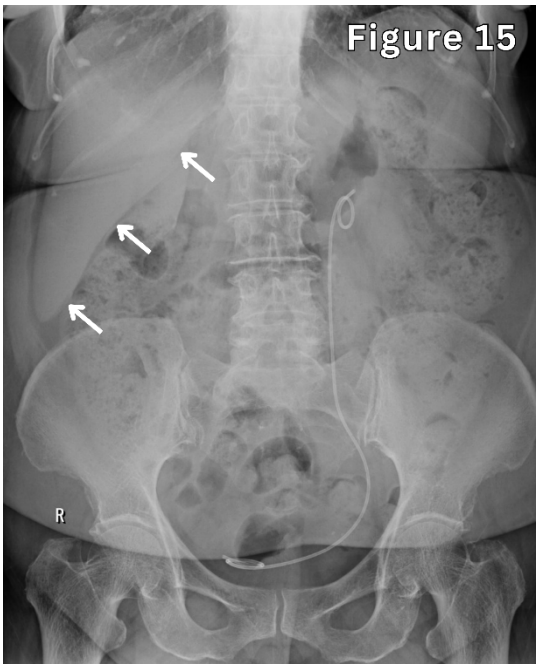

Figure 15. A 45-year-old female with urolithiasis. Abdominal X-ray shows an incidentally detected tongue-like inferior projection of the right lobe of the liver, suggestive of Riedel's lobe. *Note:* A left-sided ureteric stent is in situ.

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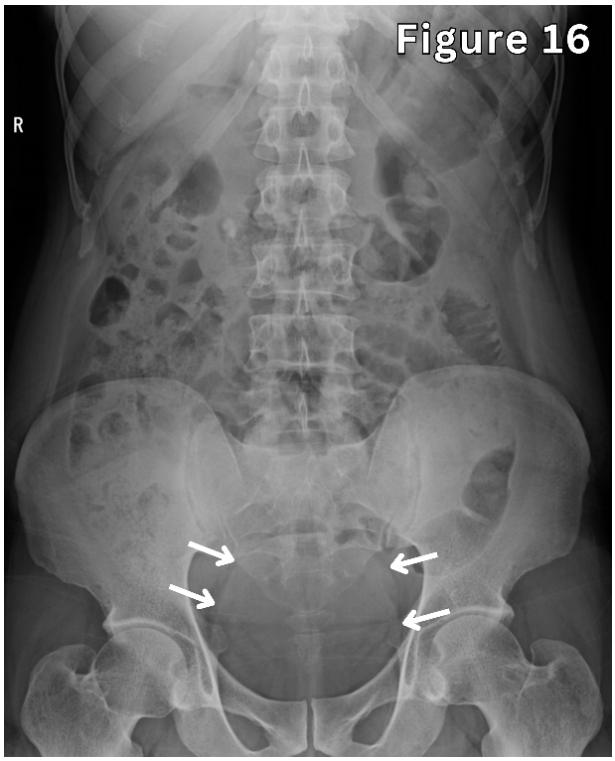

Figure 16. A 52-year-old patient with a history of bladder outlet obstruction. Abdominal X-ray shows a distended urinary bladder, likely due to chronic retention.

3.1. Organ Location Variations

3.2.1. Renal Position and Fusion Anomalies

Horseshoe kidney and ectopic kidney may be identified on abdominal X-ray by altered renal position and abnormal soft tissue shadows. A horseshoe kidney lies lower than normal, with a midline soft tissue band across the lumbar spine and medial displacement of bowel loops. An ectopic kidney may appear as a pelvic or an unusually positioned abdominal soft-tissue density.

These findings are often incidental. Recognition is important, as they may be associated with urinary obstruction, infection, or calculi, and may influence further imaging and clinical management.

3.2.2. Malposition of Bowel Loops

Variation in bowel position is a common incidental finding on abdominal X-ray. Redundant transverse or sigmoid colon may appear as elongated, overlapping gas-filled loops extending across the abdomen or pelvis. A mobile caecum may be displaced from its usual right lower quadrant position, sometimes lying centrally or in the upper abdomen.

These findings are usually benign anatomical variants. However, redundancy and abnormal mobility may predispose to volvulus or intermittent obstruction. Recognition of these patterns on AXR is important to avoid pathological misinterpretation.

4. Foreign Bodies, Surgical Densities and Medical Devices

Foreign bodies and iatrogenic materials are commonly encountered incidental findings on abdominal X-rays. Recognition of these structures is important, as they often provide valuable clues to prior surgical procedures or underlying medical conditions. Correct identification helps avoid misinterpretation as pathological calcifications or abnormal masses.

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4.1. Ingested Foreign Bodies

Ingested foreign bodies may appear as isolated dense radiopaque objects within the gastrointestinal lumen. Common examples include coins, bones, or dental materials. Certain medications, such as iron and potassium chloride, and some sustained-release tablets, may also appear radiopaque [24] (Figure 17). Most are incidental and pass spontaneously; however, sharp or impacted objects may require further evaluation due to the risk of obstruction or perforation.

4.2. Surgical Clips, Sutures, Staples

Surgical materials such as clips, sutures, and staples are frequently seen as linear or metallic densities on AXR [24] (Figure 18). They are usually located in predictable anatomical regions based on prior surgeries. Recognition is important as it may provide insight into previous operative interventions.

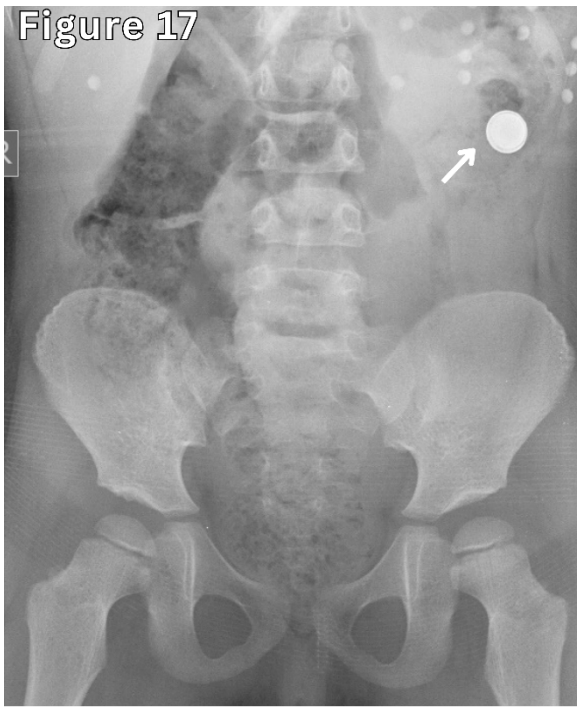

Figure 17. A 5-year-old female with suspected ingestion of a button battery. The patient was asymptomatic at presentation. Abdominal X-ray shows a button battery in the left hypochondrial region, demonstrating the characteristic double-ring sign. Case courtesy of Fadi Ali, Radiopaedia.org, rID: 86282.

 doi:10.20944/preprints202604.1211.v1

Figure 18. A 62-year-old patient. Abdominal X-ray shows multiple midline lower abdominal surgical staples with dilated large and small bowel loops. These findings suggest prior abdominal surgery, with possible postoperative ileus or bowel obstruction. *Note:* The dotted arrow indicates a nasogastric (NG) tube.

4.3. Medical Devices

Medical devices are commonly visualised on abdominal X-rays as well-defined radiopaque structures. These include ureteric stents, urinary catheters, and intrauterine contraceptive devices [24] (Figures 19-22). Their identification may confirm the expected position or reveal displacement. Most are incidental findings but may guide clinical management if complications are suspected.

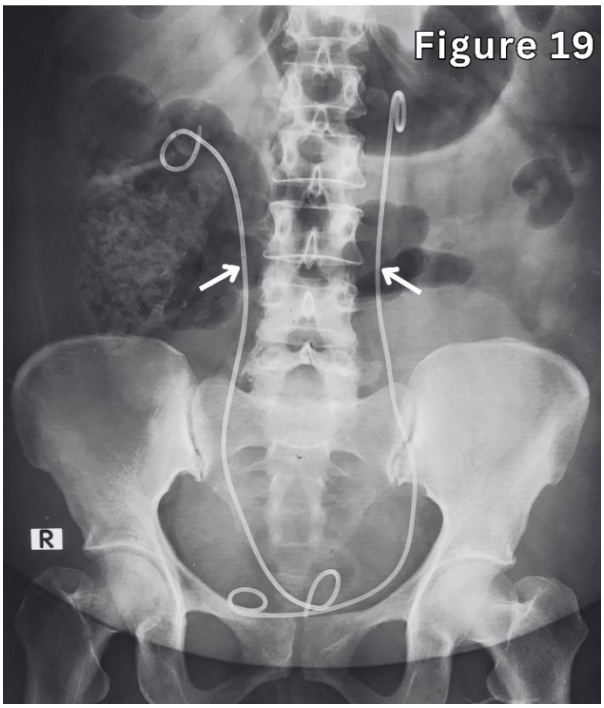

Figure 19. A 39-year-old male with bilateral urolithiasis. Abdominal X-ray shows bilateral ureteric stents in situ.

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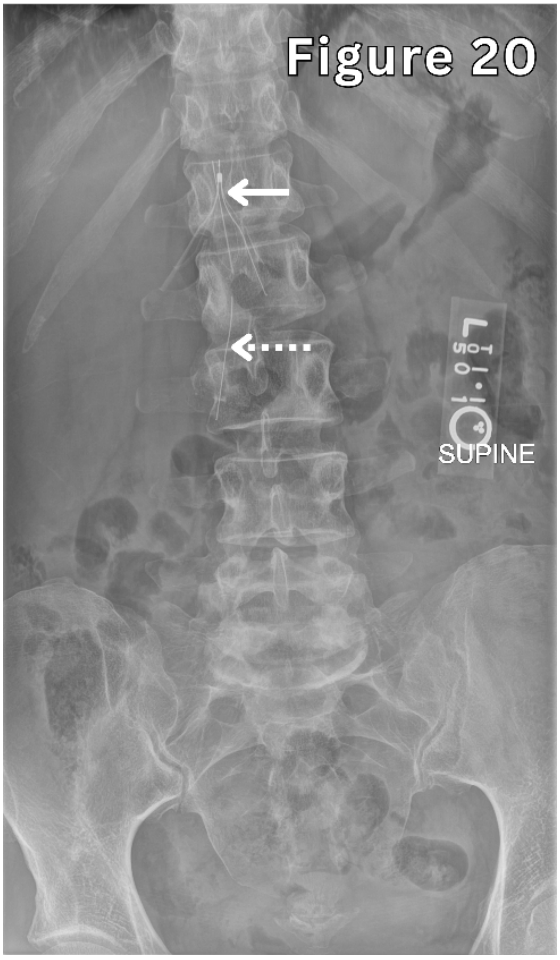

Figure 20. A 50-year-old female with a history of recurrent deep vein thrombosis (DVT) and prior placement of a Gunther Tulip inferior vena cava (IVC) filter (white arrow). Abdominal X-ray shows the IVC filter, with one fractured strut that has migrated inferiorly (dotted arrow).

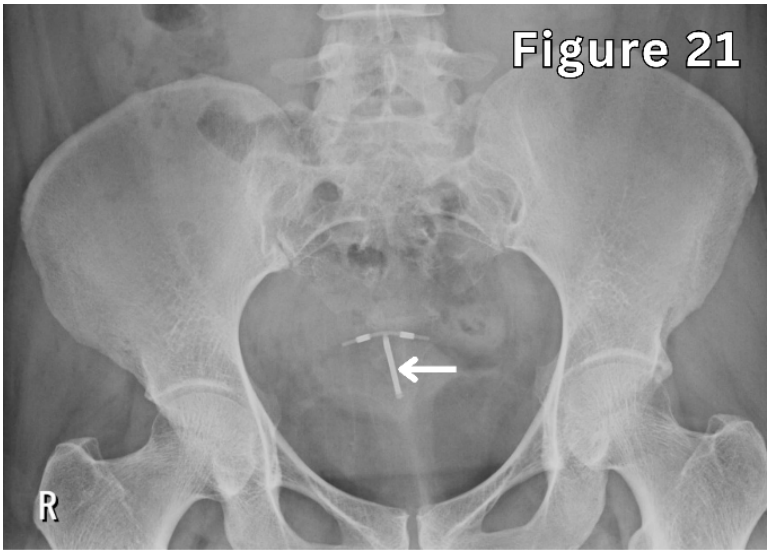

Figure 21. Pelvic X-ray showing an intrauterine contraceptive device (copper T-loop) in normal position.

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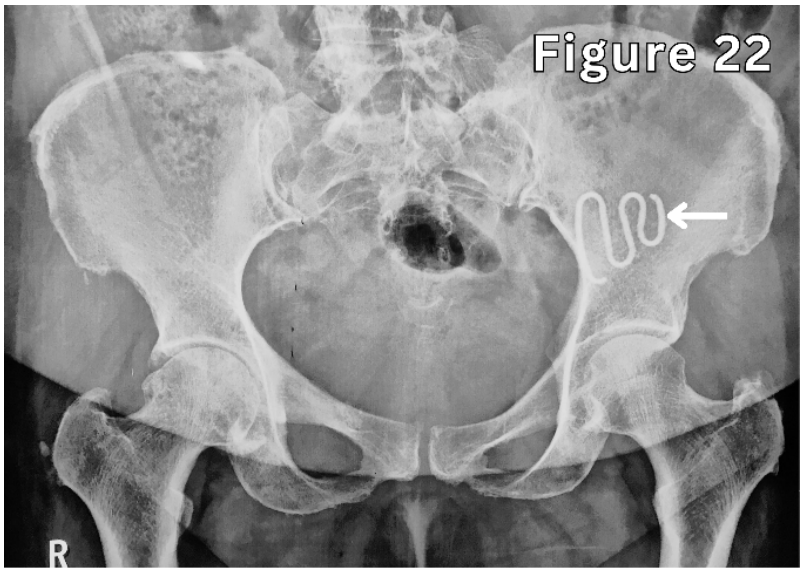

Figure 22. Pelvic X-ray showing a displaced intrauterine contraceptive device (Lippes loop), with migration from the uterus to the left side of the pelvis.

5. Conclusions

Abdominal radiographs are still commonly recommended as a first-line investigation in many abdominal conditions in many emergency and non-emergency settings. Incidental findings are frequently encountered which are unrelated to the primary clinical presentation. Some of these can resemble significant pathology and lead to confusion if not interpreted carefully. A simple, structured approach helps distinguish normal variants from clinically important abnormalities. Recognising familiar patterns can prevent unnecessary investigations, reduce patient anxiety, and support better clinical decision-making.

Author Contributions: SRS formulated the concept, designed the review, conducted the literature review and wrote the manuscript. HGSK conducted the literature review and wrote the manuscript. All authors reviewed the manuscript.

Funding: None declared.

Institutional Review Board Statement: Ethical approval was not considered, as our work is a narrative review. However, we have intentionally removed identifying information from the radiology images. Image credits are provided for figures 2, 3, 4, 10, 17, and 20.

Data Availability Statement: Acquired DICOM medical images during the current review are available from the corresponding author upon reasonable request. Subject-identifying information was removed from the radiology images.

Conflicts of Interest: The authors declare that they have no competing interests.

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