

# IMAGING THE ACUTE ABDOMEN- IS PLAIN RADIOGRAPHY STILL RELEVANT?

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Acute abdomen remains an important surgical cause of emergency room visits.<sup>1</sup> The cause of the symptomatic pathology may lie in any of the abdominal viscera, their peritoneal coverings, surrounding and embedded potential spaces, abdominal wall and even referred from the adjacent body cavities namely the thorax and the pelvis. While clinical evaluation is the mainstay of initial management, definitive treatment requires a specific diagnosis. The critical question is whether to surgically explore the patient or not? Strong clinical judgment in favor of exploration can not be out ruled. However non specific signs and equivocal situations demand ancillary investigations particularly in children and young infants. While laboratory results are often too generalized, radiology assumes an important role since specific radiologic signs of the underlying pathology may indicate surgery.

The choice of modality is dictated by setting, availability and local practices- the choice is usually between plain radiography, CT scanning and ultrasound examination. The combination of an erect chest x-ray and a supine abdominal x-ray imaging from the diaphragm to the hernial orifices, remains the best initial investigation.<sup>2</sup> The erect chest x-ray efficiently shows free air under the dome of diaphragm how small in quantity, apart from providing clues about referred thoracic causes e.g. by showing basal consolidation. Supine abdominal x-ray is invaluable in providing information about the diagnostic bowel gas patterns, abnormal air locations and the displaced fat lines. The left lateral decubitus is best for showing small locules of free intraperitoneal air over the liver or pelvis and for demonstrating the dilated sentinel loop of duodenum

that is the commonest radiological sign accompanying acute pancreatitis.

CT is the undoubted modality of choice for imaging trauma to abdomen. With increasing availability of CT scanning it is sometimes preferred over conventional radiology. For other acute conditions of abdomen, there is no proven superiority except in some types of closed loop obstruction

and bowel strangulation. In other types of closed loop obstructions such as the small bowel and sigmoid volvulus and intussusception, a plain x-ray allows better visualization of the altered bowel loop position.<sup>3</sup> Adhesive bowel obstruction is another condition better diagnosed on x-ray rather than on CT where it is a diagnosis of exclusion.<sup>3</sup> Maglente et al statistically proved the value of plain radiography in land mark study that showed equal accuracy of plain radiography and CT in an acute setting, both being 67%.<sup>4</sup>

The plain x-ray therefore remains the preferred initial imaging modality in an acute surgical abdomen- the plain supine abdominal x-ray being the single most helpful view multiplying accuracy when combined with the erect chest x-ray. In case of suspected strangulation of bowel or retroperitoneal pathology, CT scan is preferable. With a gasless abdomen, ultrasound is to be preferred. Their results being equivocal with suspected intermittent lead point/ adhesive sub acute bowel obstruction, the best choice is a contrast bowel study, preferably during the episode of pain. <sup>5</sup>

Plain radiography continues to be relevant due to proven efficacy, economy of cost and wide availability.<sup>5</sup> Familiarity with radiological anatomy and an understanding of the radiological signs of abnormality in a given clinical situation is all the more advantageous.

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