

The Role of Multislice Computed Tomography (MSCT) in the Detection of Traumatic Intra Abdominal Injury: Our Experience in Hospital Tengku Ampuan Afzan (HTAA), Kuantan, Pahang.

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Introduction

Blunt abdominal trauma can cause multiple injuries and these injuries are often difficult to be accurately evaluated via clinical assessment.

Currently, MSCT is the imaging modality of choice in assessing clinically stable patients with blunt abdominal trauma.

CT scan has high sensitivity, specificity and accuracy in the detection of the presence and extent of abdominal injuries 2,3.

CT information frequently increases diagnostic confidence of the surgeons and influence the success of nonoperative management in most patients with solid viscus injury 5.

Aim

This study assessed the role of MSCT in the detection of traumatic intra abdominal injury and correlates the findings with subsequent patient's management.

Method

This is a retrospective study. All cases of CT scan performed to rule out traumatic intra abdominal from January 2008 until December 2009 were trace from registration book. These CT scan images were retrieved and reviewed.

The study is positive in the presence of solid organ injury, bony pelvis injury and hollow organ injury. Organ injuries were graded according to AAST (American Association of Surgery and Trauma) classification.

Case notes and surgical notes were traced and correlation made with CT findings.

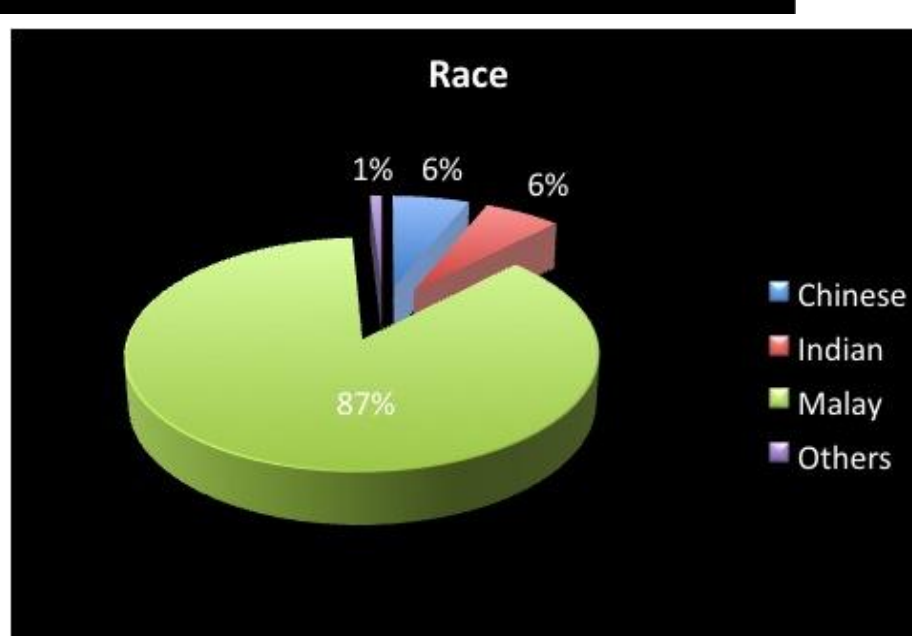
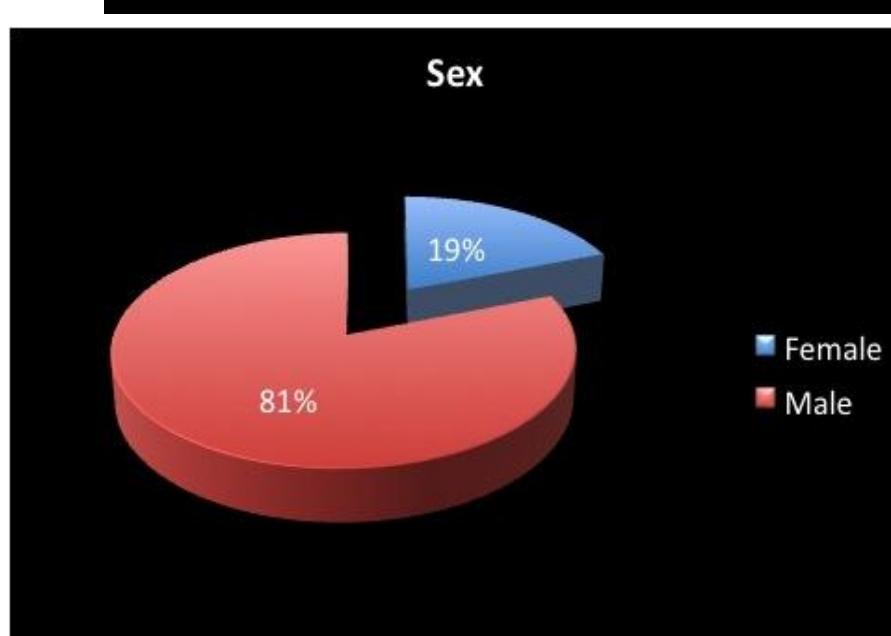
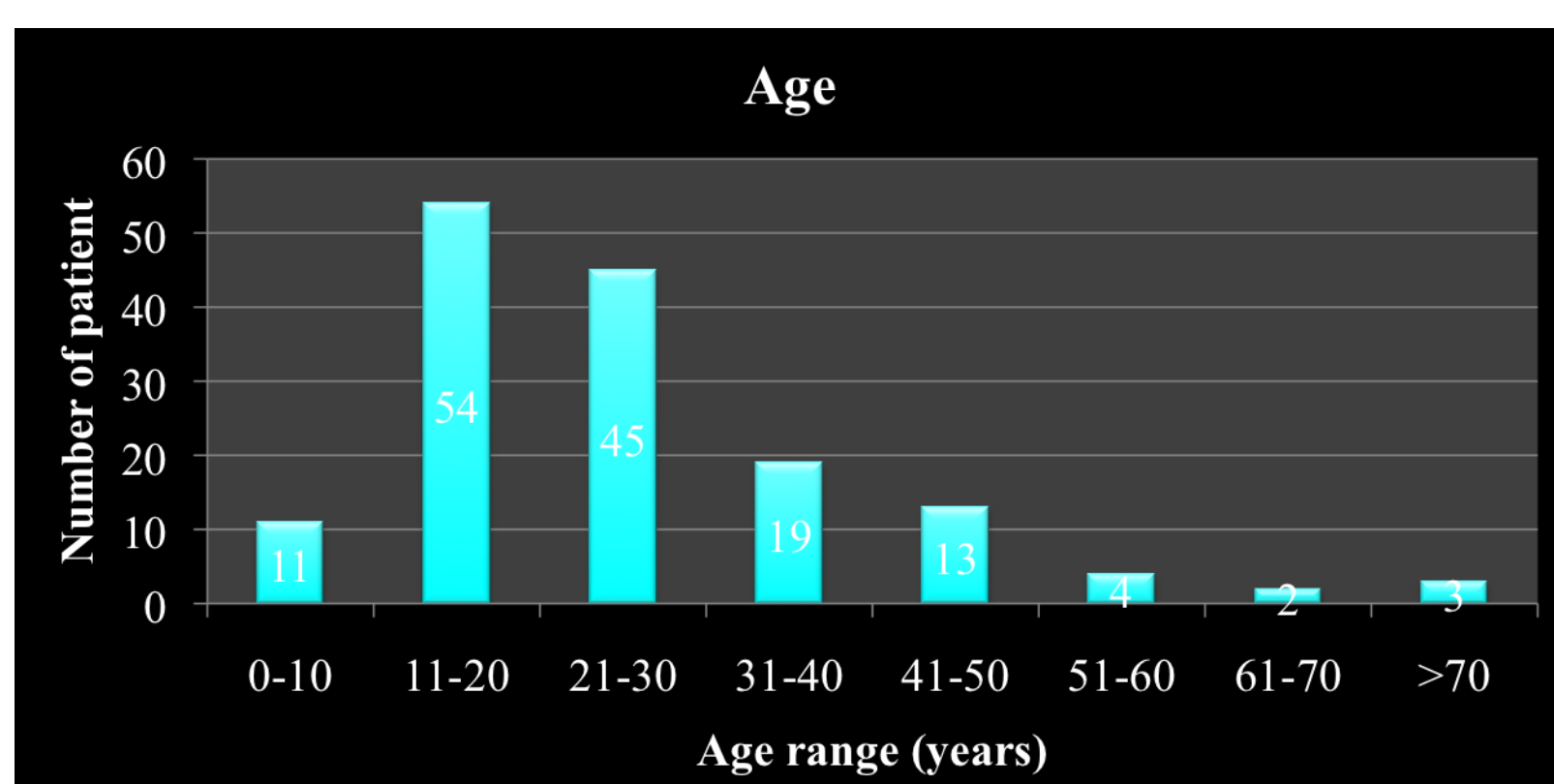
Results

A total of 151 cases were included in this study.

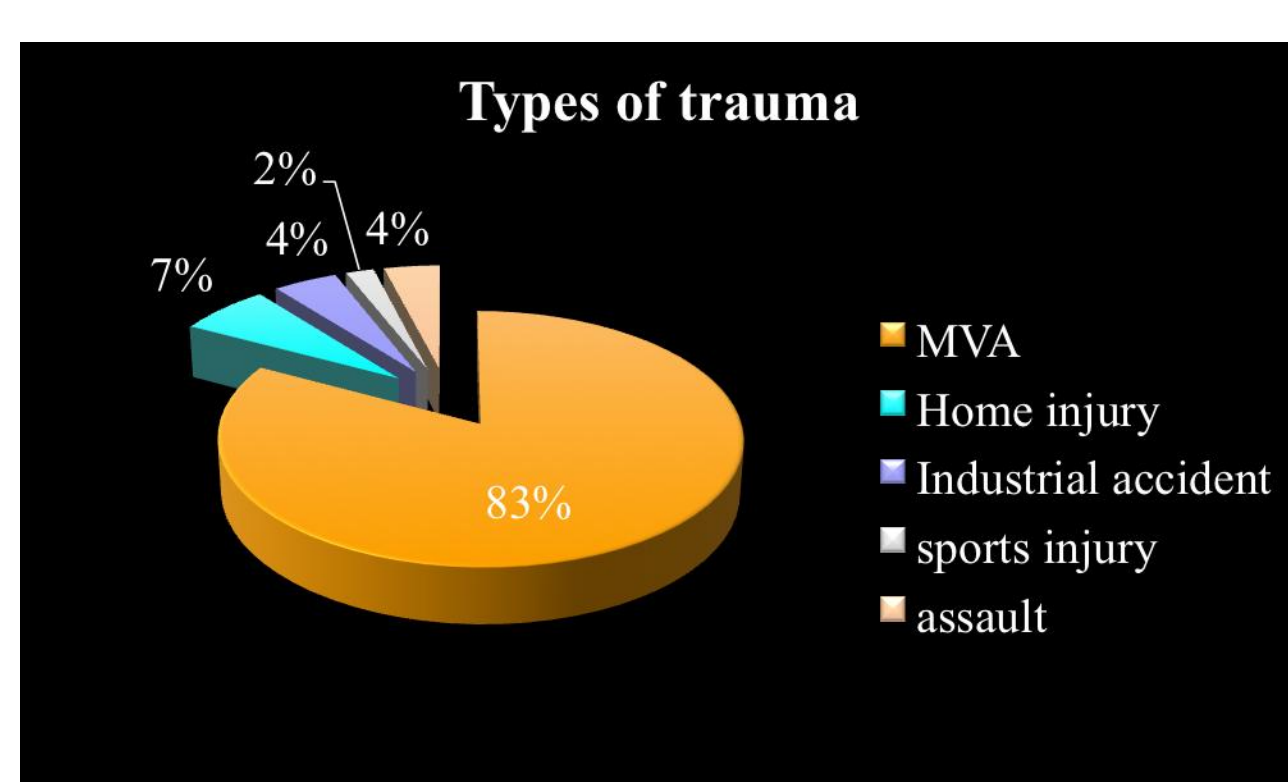
Positive CT scans were seen in 86% (n=130) of cases and negative scan in 14% (n=21) of cases.

Age ranges from 2 to 84 years, mean age of 26.4 years.

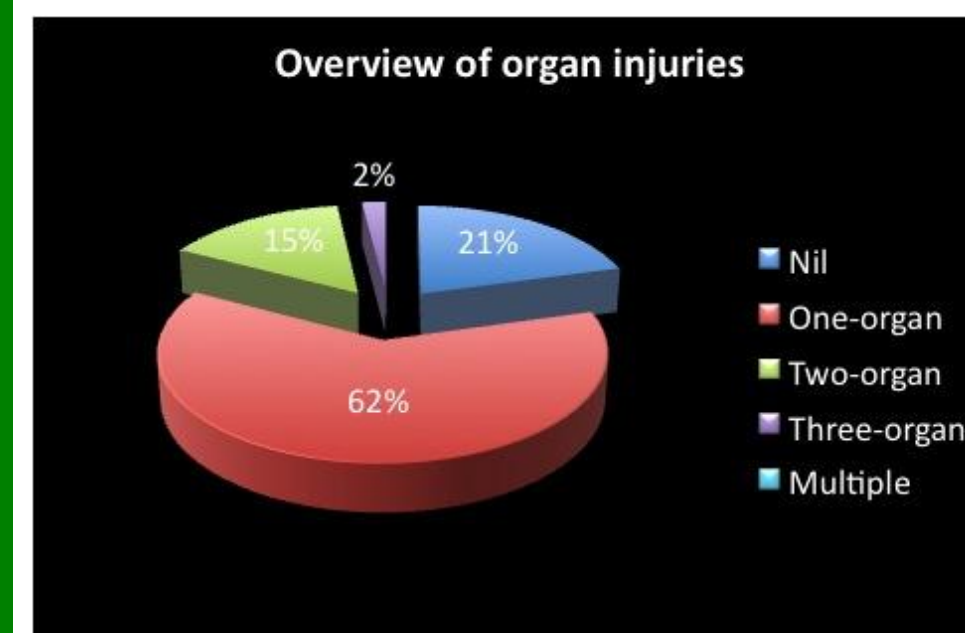
1. Demographic data



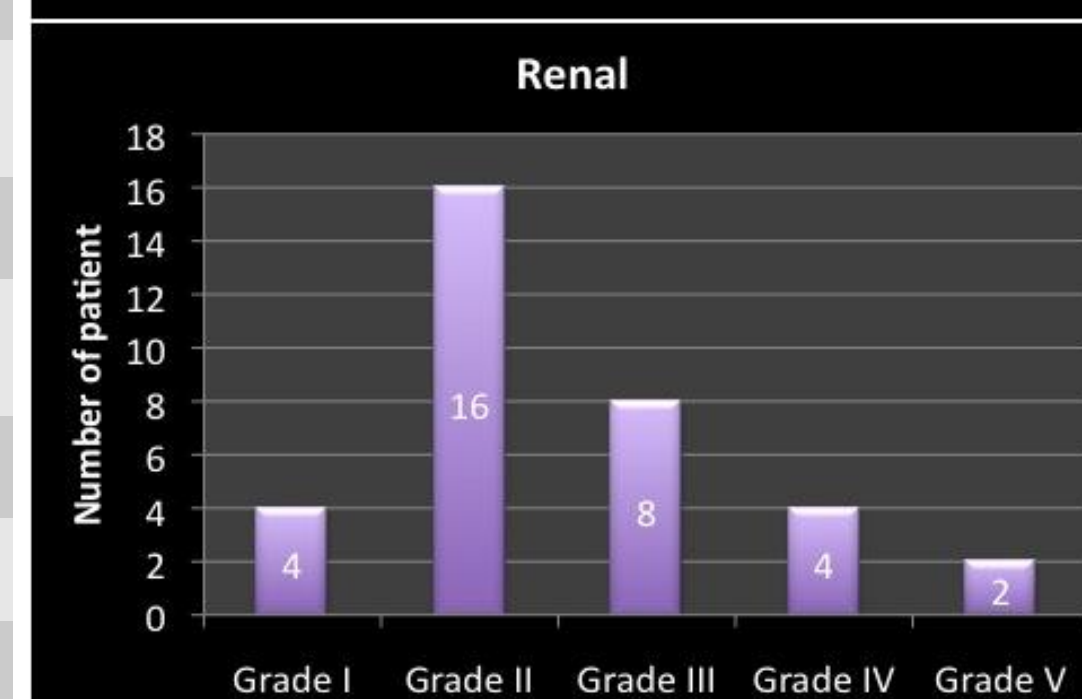
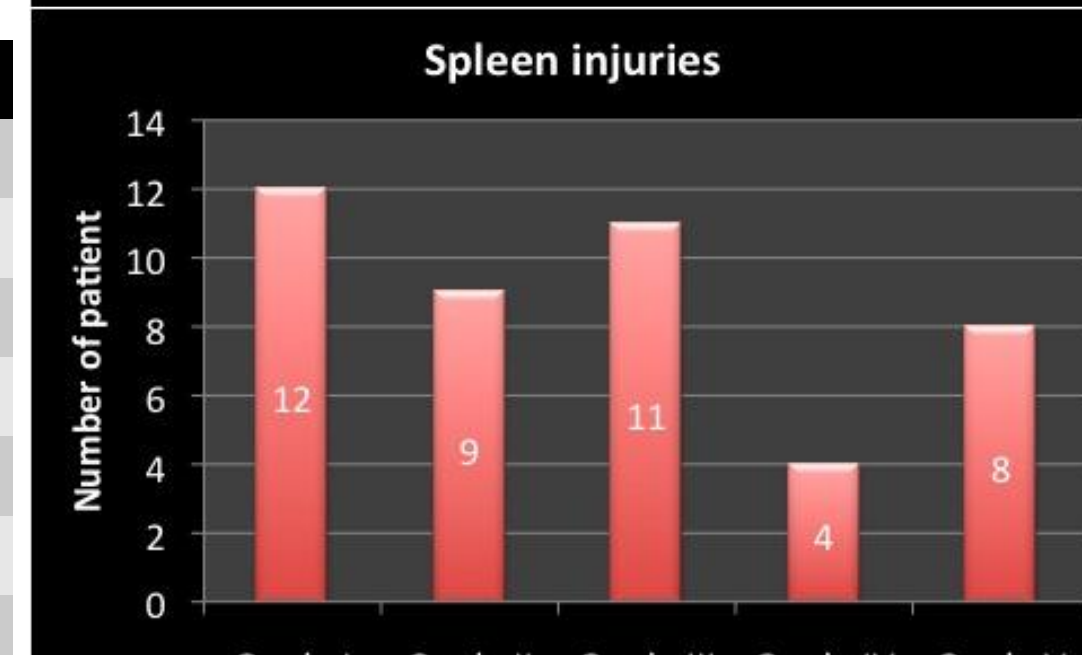
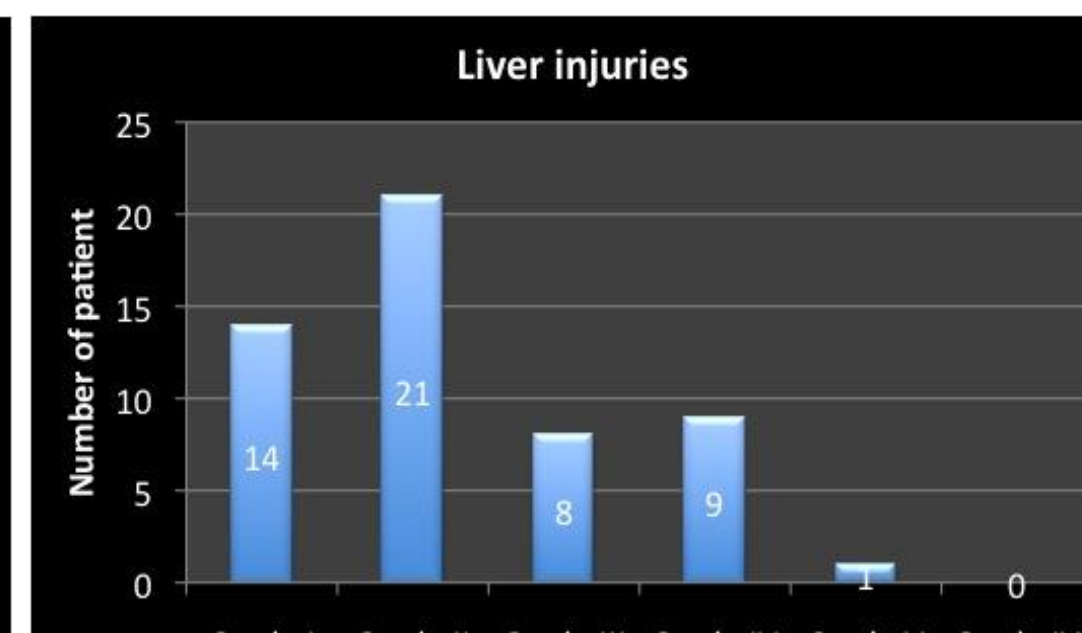
2. The trauma



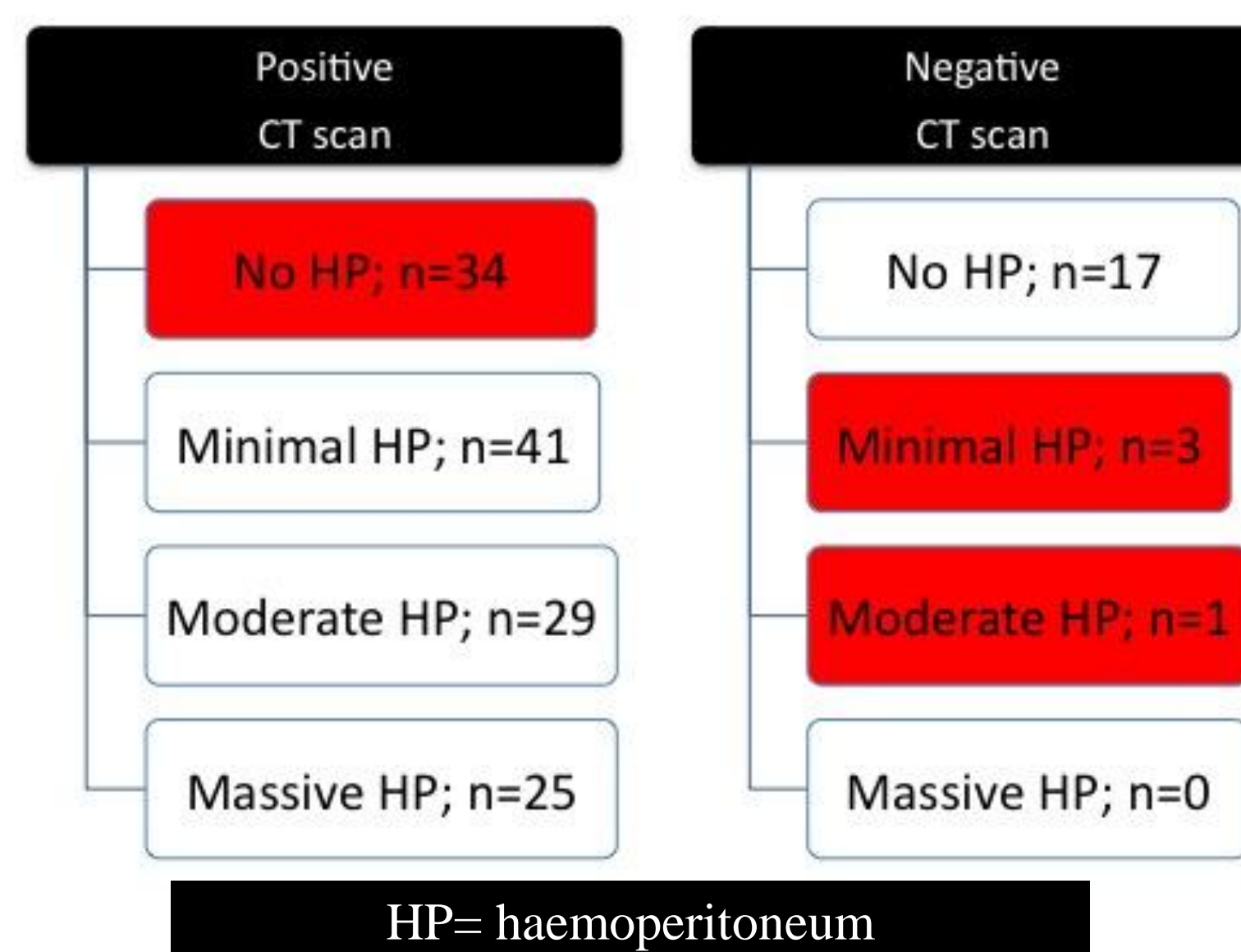
3. The injuries



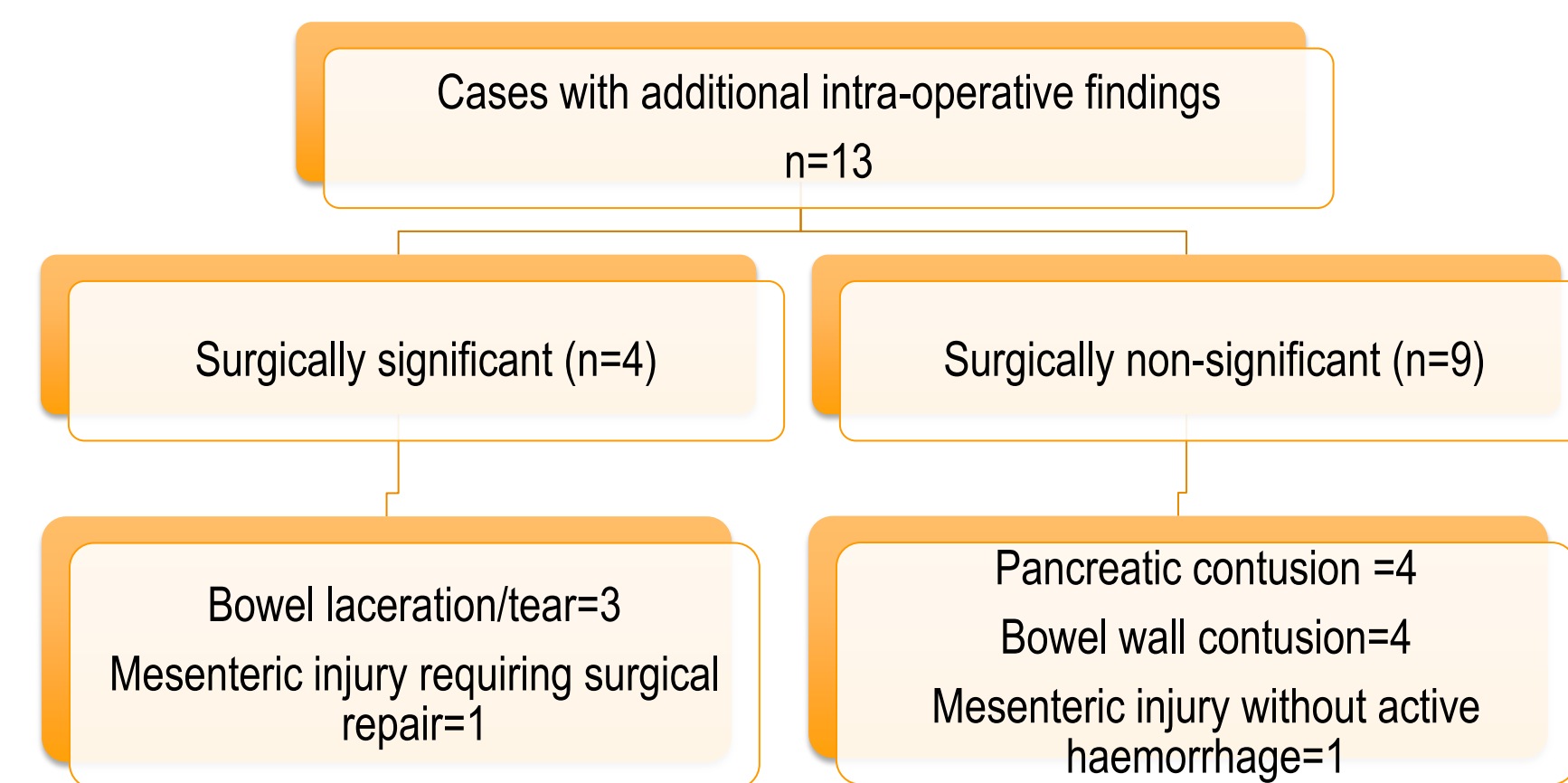
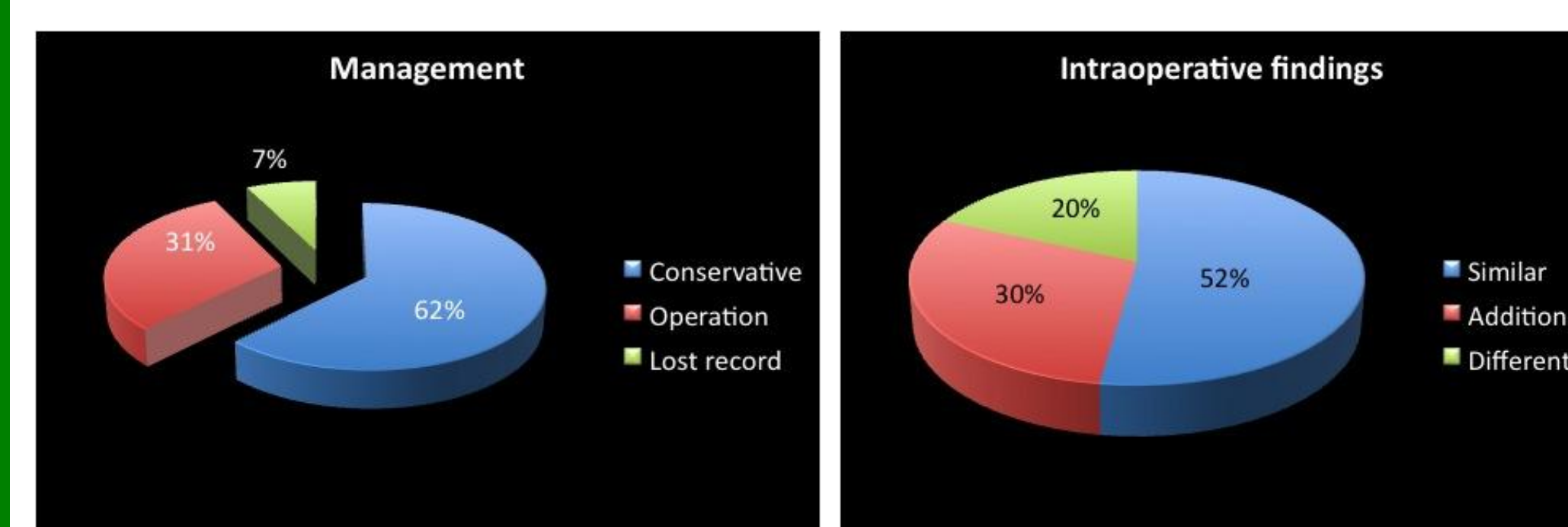
Injuries	Nu. of patients
Liver	53
Spleen	44
Pancreas	34
Kidney	5
Liver + Kidney	6
Spleen + Kidney	7
Liver + Urinary bladder	1
Liver + Spleen + Kidney	1
Hollow viscus	5
Retroperitoneal injury	34
Adrenal	5
Urinary bladder	6
Urethra	3



4. Correlation of CT findings with haemoperitoneum



5. Management and correlation with surgical findings



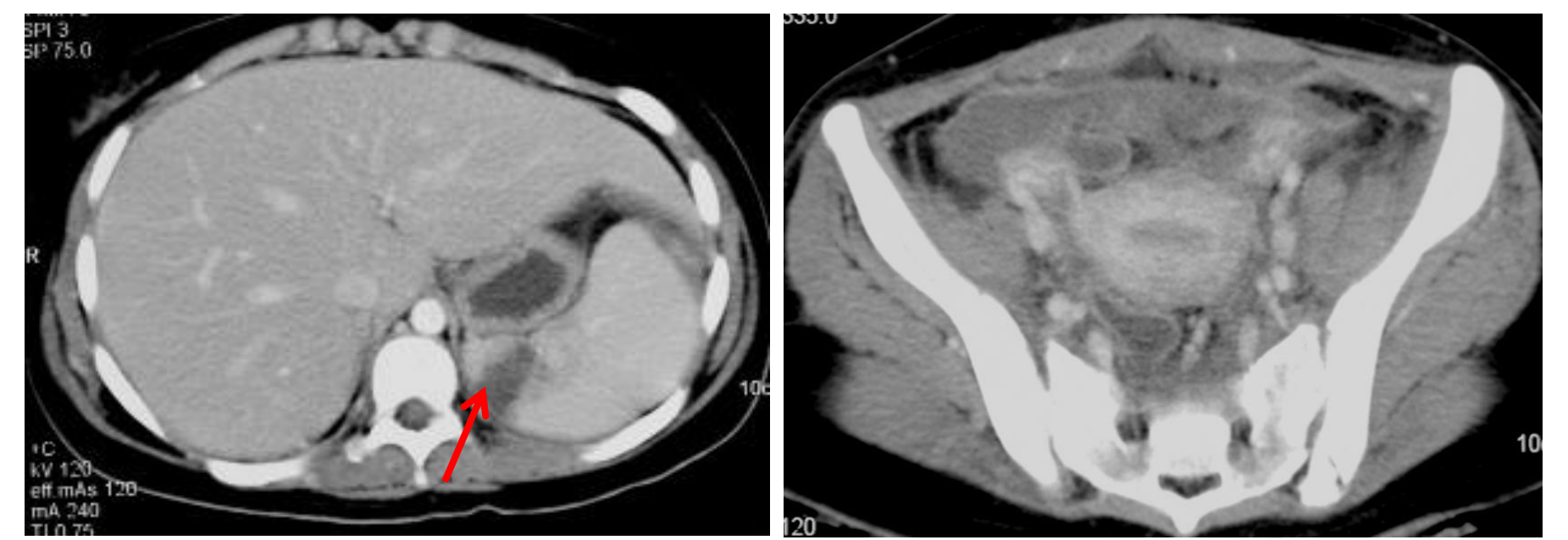
Nu	CT Findings	Operative Findings
1	Grade II spleen injury	Laceration of broad ligament and bleeding from branches of ovarian artery, no solid organ injury
2	Haemoperitoneum, no evidence of organ injury	Perforated small bowel
3	Grade IV right renal injury	Liver laceration with right retroperitoneal haematoma and contusion body of pancreas.
4	Grade III left renal injury	Mesenteric tear at multiple sites with non-viable ileum due to mesenteric injury, no retroperitoneal haematoma
5	Grade II spleen injury	Transsected duodenum, pancreatic injury and serosal tear of the colon
6	Unexplained haemoperitoneum	Spleen laceration, contusion of transverse colon, contusion of pancreatic tail and jejunum
7	Grade I spleen injury, Grade II left renal injury	Small bowel perforation, serosal tear at descending colon with minimal contamination
8	Grade II left renal injury	Bilateral moderate hydronephrosis due to filling defects at both PUJ. Bladder growth and descending colon serosal tear. HPE: eosinophilic cystitis.

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- MRTs Dept of Radiology IIUM & Radiographers Dept of Diagnostic Imaging HTAA

Example of cases

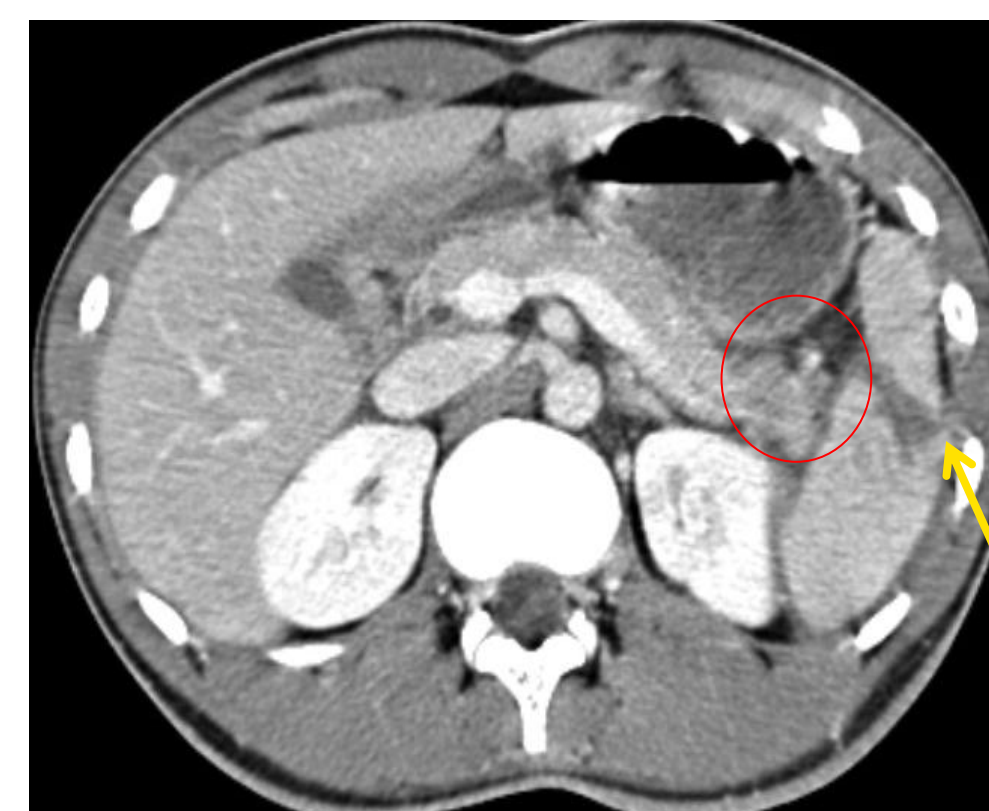
A different intra-operative findings



A 13-year old girl, MVA with fracture of right fibula and discharged home on the same day with undiagnosed intra abdominal injury. Presented 3 days later with abdominal pain.

Operative findings were bleeding from a branch of left ovarian artery, laceration of left broad ligament, lower abdominal wall contusion and minimal hemoperitoneum. Other organs (including spleen) were normal.

Undiagnosed pancreatic contusion



An 18-year old boy with MVA. CT findings of Grade II splenic injury (yellow arrow). Operative findings were Grade V spleen injury and pancreatic tail contusion. Retrospective review showed area of hypodensity at pancreatic tail (encircled).

Undiagnosed bowel and mesenteric injury



A 24-year old man with MVA. CT findings of segmental infarction of left kidney (short arrow). Operative findings were mesenteric tear at multiple site causing non-viable segment of ileum. Resection was done and this patient recovered well. Retrospective review showed small bowel wall thickening with increase contrast enhancement and mesenteric stranding (long arrow); features suggestive of bowel and mesenteric injury on CT scan.



A 26-year old man with industrial accident. CT findings of urinary bladder injury. Operative findings were urinary bladder perforation and rectosigmoid transection. Retrospective review showed discontinuity of rectosigmoid colon with extraluminal air (arrow).

Conclusion

MSCT is a useful tool in the evaluation of blunt abdominal trauma in haemodynamically stable patients especially in the detection of solid organ injuries and retroperitoneal haematoma.

Bowel and mesenteric injuries were the commonest injury missed in our series. Retrospective review of these cases revealed abnormality suggestive of bowel and mesenteric injuries in all cases.

The reliance on presence of free air which has low sensitivity but high specificity for diagnosed bowel perforation was the main reason for this.

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