



Queensland
Trauma Education

TRAUMA AND THE OLDER PERSON

Minor pelvic trauma

Case discussion

Facilitator resource kit

CSDS



Clinical Skills Development Service



Queensland Trauma Education

The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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Queensland Trauma Education

Trauma and the Older Person – Minor pelvic trauma: Case discussion – Facilitator resource kit Version 1.0

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About this training resource kit

This resource kit provides healthcare workers with the knowledge to assess and manage a geriatric patient with low velocity pelvic trauma with multisystem injury found upon further imaging.

National Safety and Quality Health Service (NSQHS) Standards



Target audience

Medical and nursing clinicians.

Duration

30 minutes.

Group size

4-6 participants per group.

Learning objectives

By the end of this session the participant will be able to:

- Recognise the high incidence of low velocity trauma in elderly.
- Consider multi-factorial aetiology of presentations.
- Recognise elderly presentations may differ to younger population.
- Understand the injury pattern can be significant despite simple mechanism.
- Identify the challenges associated with clinical assessment in elderly trauma.

Facilitation guide

1. Facilitator to provide participant resource kit to participants.
2. Facilitator to use resource as pause and discuss case discussion.
3. Utilise clinical props to facilitate discussion.

Overview of pelvic trauma

Low mechanism trauma can result in significant injury profile in the geriatric population. Pelvic injuries in the older population have a significant morbidity and mortality associated with overall decreased quality of life following this presentation.^{1, 2}

30% of pelvic fractures occur following a low fall in the elderly population, which increases to 50% in the octogenarian group.³

Further reading

Pelvic ring injury in the elderly: Fragile patients with substantial mortality rates and long-term physical impairment	
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Publication	PLOS One
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Link	https://doi.org/10.1371/journal.pone.0216809
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Closed pelvic fractures: characteristics and outcomes in older patients admitted to medical and geriatric wards	
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Publication	Postgraduate Medical Journal 2000
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Link	https://doi.org/10.1136/pmj.76.900.646
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Survivorship and Severe Complications Are Worse for Octogenarians and Elderly Patients with Pelvis Fractures as Compared to Adults: Data from the National Trauma Data Bank	
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Publication	Journal of Osteoporosis 2012
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Link	https://doi.org/10.1155/2012/475739
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Case discussion

Assessment and management of geriatric patient post low velocity trauma with pelvic injury. Recognition that despite low impact trauma, significant injury profile and risk for haemorrhage from pelvic fractures.

Case study

90yo female patient is brought into the Emergency Department post fall.

Patient describes tripping on the tiles in her kitchen wearing her slippers. She recalls landing on her L hip, bumped her head but no LOC and is complaining of a painful L elbow and hand.

QAS officers assisted her onto the stretcher – she was unable to weight bear. QAS have given her 1g PO Paracetamol, applied a dressing to her L hand and transported her to the ED.

On arrival to ED her vital signs are: BP 135/90mmHg, HR 77 (irregular), RR 22, Oxygen sats 95% RA, Temp. 36.1C. Her GCS is 15/15 with no neurological deficits. She is a vague historian.

PMHx: Vague on details. QAS have provided you with her Webster pack:

- Xarelto 20mg mane
- Digoxin 187.5mcg nocte
- Atorvastatin 20mg mane
- Carbimazole 5mg mane
- Esomeprazole 20mg BD
- Ramipril 2.5mg mane
- Vitamin B12 100mcg mane
- Spironolactone 25mg mane

Question and answer guide

1. What medical conditions does the patient have that could potentially be a cause for the fall?

Atrial fibrillation - cardiac arrhythmia (Xarelto and Digoxin).

HTN - Medication mishap - combination ACEi and diuretic (Ramipril and Spironolactone).

Elderly - proprioception, balance, muscle conditioning and strength (risk factors).

2. From the presentation, what injuries on clinical examination need to be considered?

- Traumatic brain injury
- Spinal trauma
- Chest trauma
- Abdominal/pelvic trauma
- Extremity trauma

You perform an examination which reveals the following findings:

- Alert and interactive, confused to date and day.
- No motor or sensory deficits.
- Haematoma to occiput, no other facial wounds/tenderness or bruising.
- Cervical spine non tender with full ROM.
- Chest clear, nil tenderness/flail.
- HS dual, ESM to carotids, irregular pulse, well perfused.
- Abdo soft, non-tender, full bladder.
- Tender over L pubis, L leg not shortened or rotated, non-tender to palpation.
- Abrasion to L elbow, full ROM, non-tender. Skin tears to dorsum hand, no bony tenderness, well perfused and full ROM.

3. What investigations will you arranged based on this presentation?

Facilitator to discuss rationale for each investigation mentioned.

Bedside	ECG, urine/bladder scan
Laboratory	FBE, Chem20, coags, BGH
Radiological	CXR, Pelvic XR, Limb XR, CT
Special	EFAST

4. For each investigation verbalised what is the potential impact for this patient?

Facilitator to discuss each investigation identified with the indication and possible result on the patient presentation.

- CXR - osteopenic, kyphosis, nil acute traumatic injuries.
- Pelvic XR - L pubic rami #s.
- CT brain - atrophic changes, nil acute bleed.
- ECG - AF.
- Chem20 - mildly raised urea.
- VBG - borderline Hb.

5. She is unable to pass a urine sample. Her bladder scan shows 250mls. What are the options for managing this?

- Wait longer.
- PO/IV fluids and wait.
- IDC – in/out or indwelling.

6. You discuss the patient's ongoing management with the orthopaedic team who agree that her Pelvic Xray and clinical exam suggest a pubic rami fracture.

They suggest the most appropriate management is mobility and assess for discharge planning.

What are the next steps in managing this patient?

- Pain relief.
- Mobilisation.
- Admit vs discharge - home situation, pain control, mobility, other medical concerns (cause for fall).

7. On attempting mobilisation with the physio she becomes vague and distant for 30 seconds. She is helped back to bed and her vital signs are rechecked. She is now GCS 14 (confused to date/day), BP 112/80mmHg, HR 80 irregular, strong radial pulse.

What further actions should be considered to manage her presentation?

- Regular observation checks.
- Repeat ECG/Hb.
- Consider further imaging studies.
- Reattempt further mobilisation.

- 8. Her vital signs remain stable with HR 70-90 AF, BP 130/80, sats 99% RA and RR 20. She reattempts mobilisation with the physio and again becomes altered with a brief LOC on standing.**

The nurses tell you this is the 4th episode now - each time they attempt to stand the patient.

What further imaging studies will be useful to delineate the cause of this patient's symptoms?

Progress to CT imaging to exclude haemorrhage as cause for syncopal episodes with postural change. CTA of the pelvis is requested to identify if arterial injury and bleeding demonstrated by contrast extravasation.

Facilitator to use CT images to demonstrate injury pattern and active contrast extravasation indicating ongoing haemorrhage from pelvic fracture

CT report as shown in the supporting document.

- 9. What is the cause the of patients episodic LOC?**

Blood loss and orthostatic hypotension.

- 10. How is the pelvic injury now managed?**

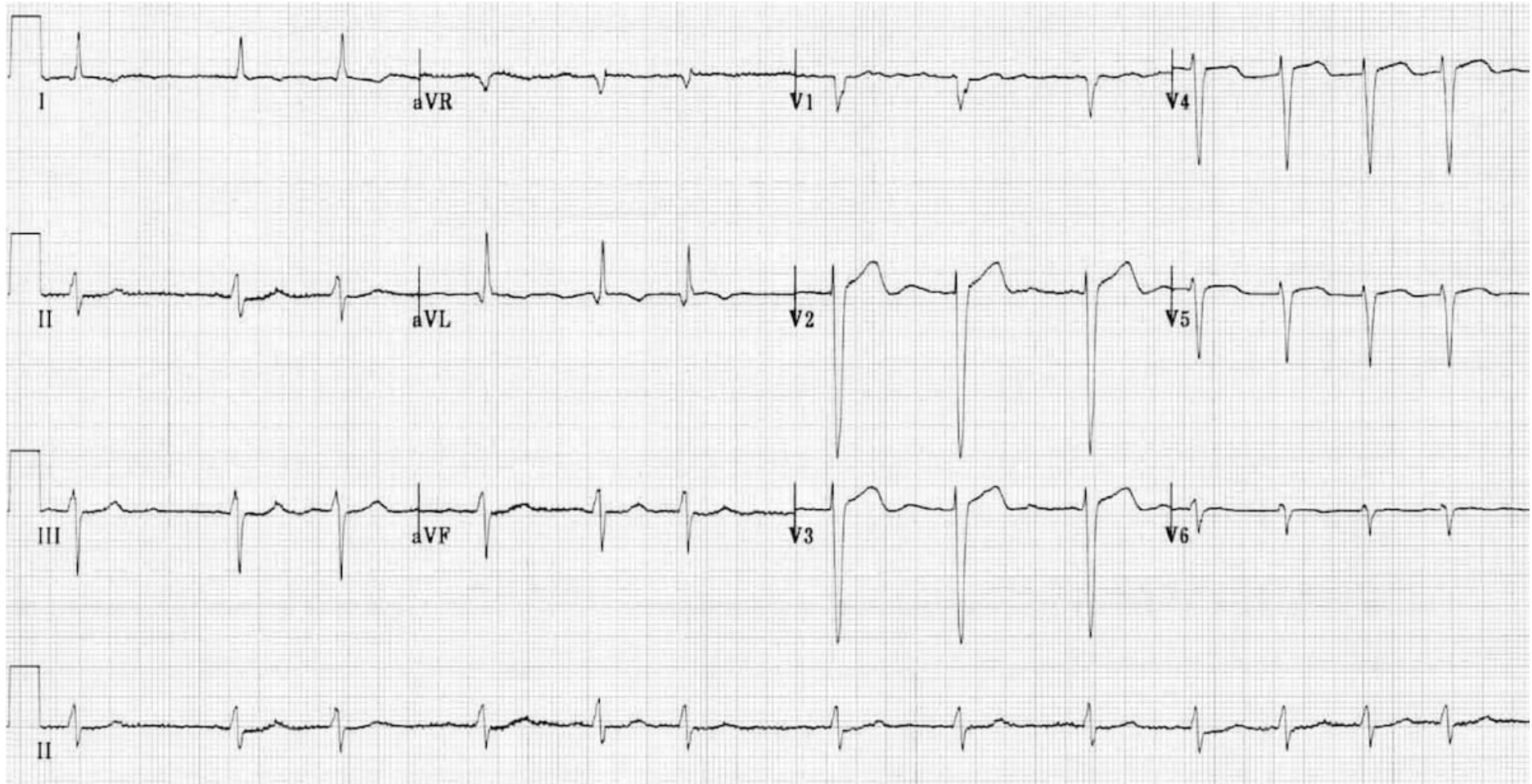
- Haemostatic resuscitation - end points: peripheral perfusion/Hb.
- Analgesia/antiemetics.
- IDC - haematoma compressing bladder.
- Consider IR if available.
- Monitor for ongoing blood loss to determine if operative management of haemorrhage is required.
- Admission to ward/HDU/ICU as required.

Supporting documents

The following supporting documents are provided for this case discussion:

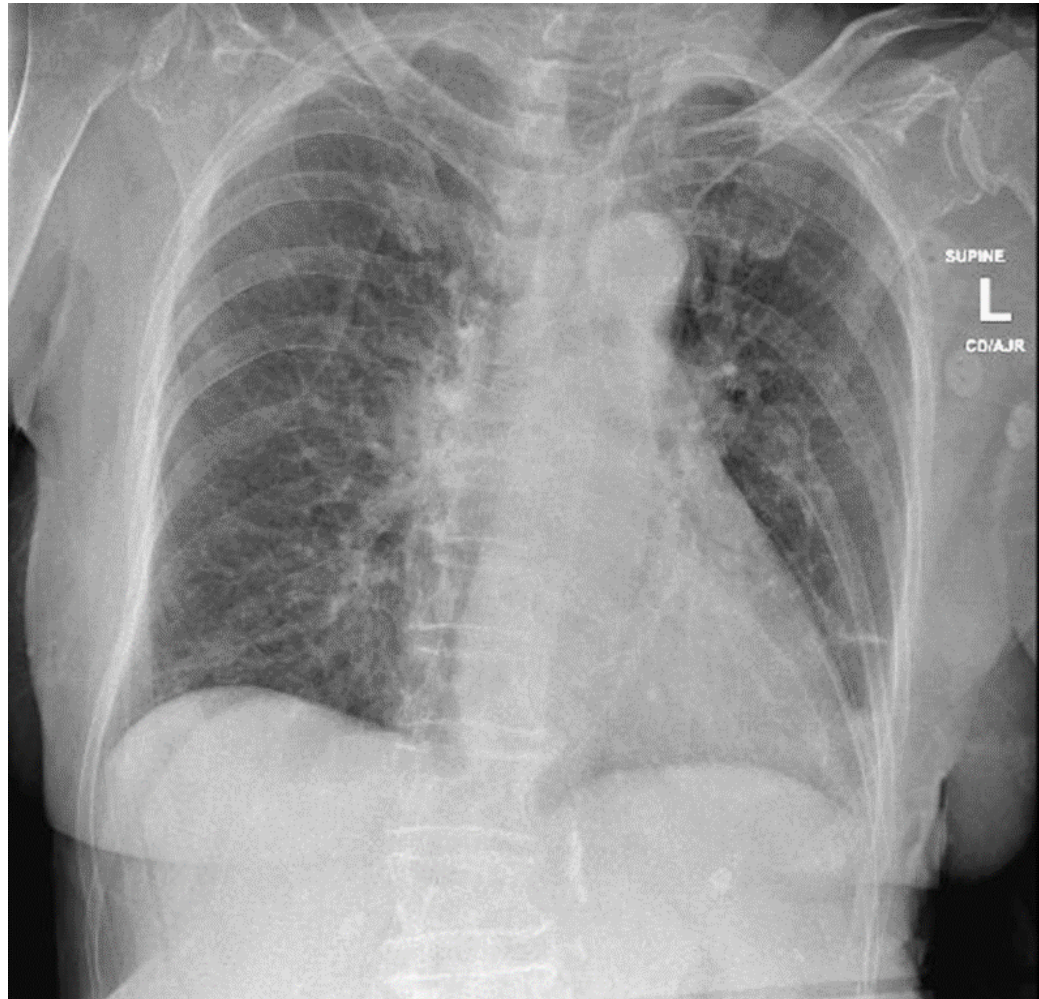
1. ECG
2. CXR and Pelvic Xray
3. CT scans – brain, chest, pelvis (including arterial), spine
4. CT report

ECG



Source: <https://litfl.com/wp-content/uploads/2018/08/ECG-Atrial-Fibrillation-3.jpg>

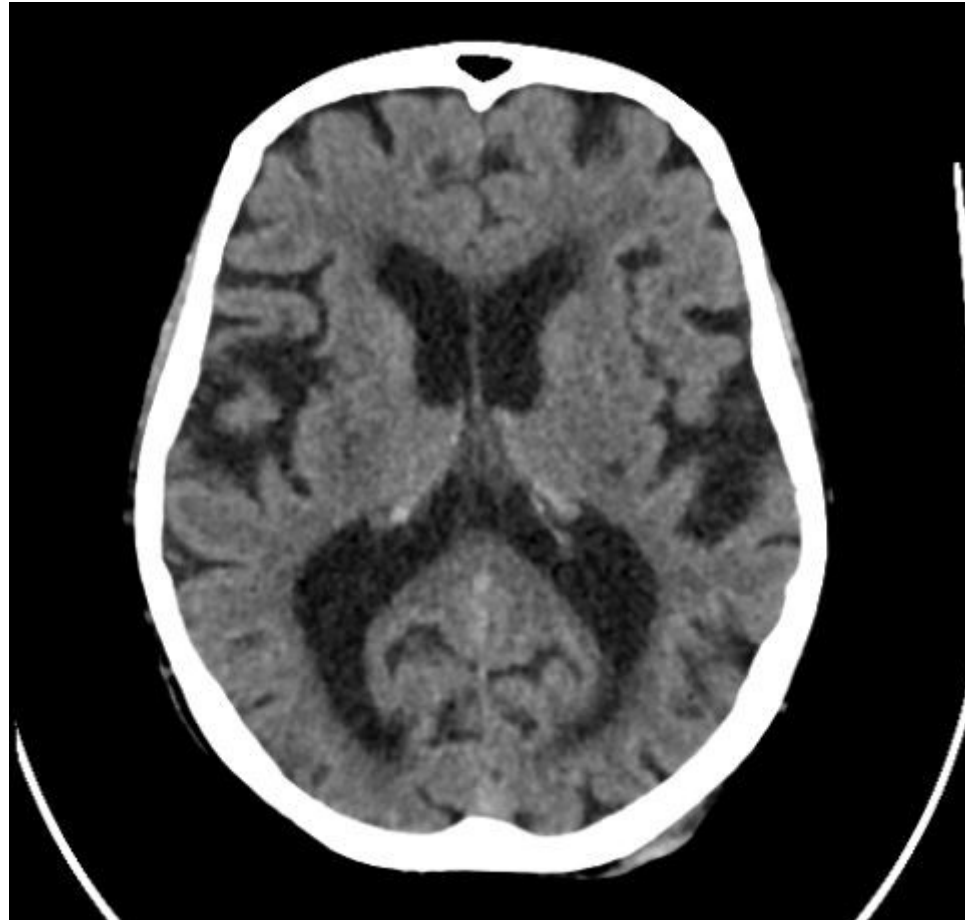
CXR



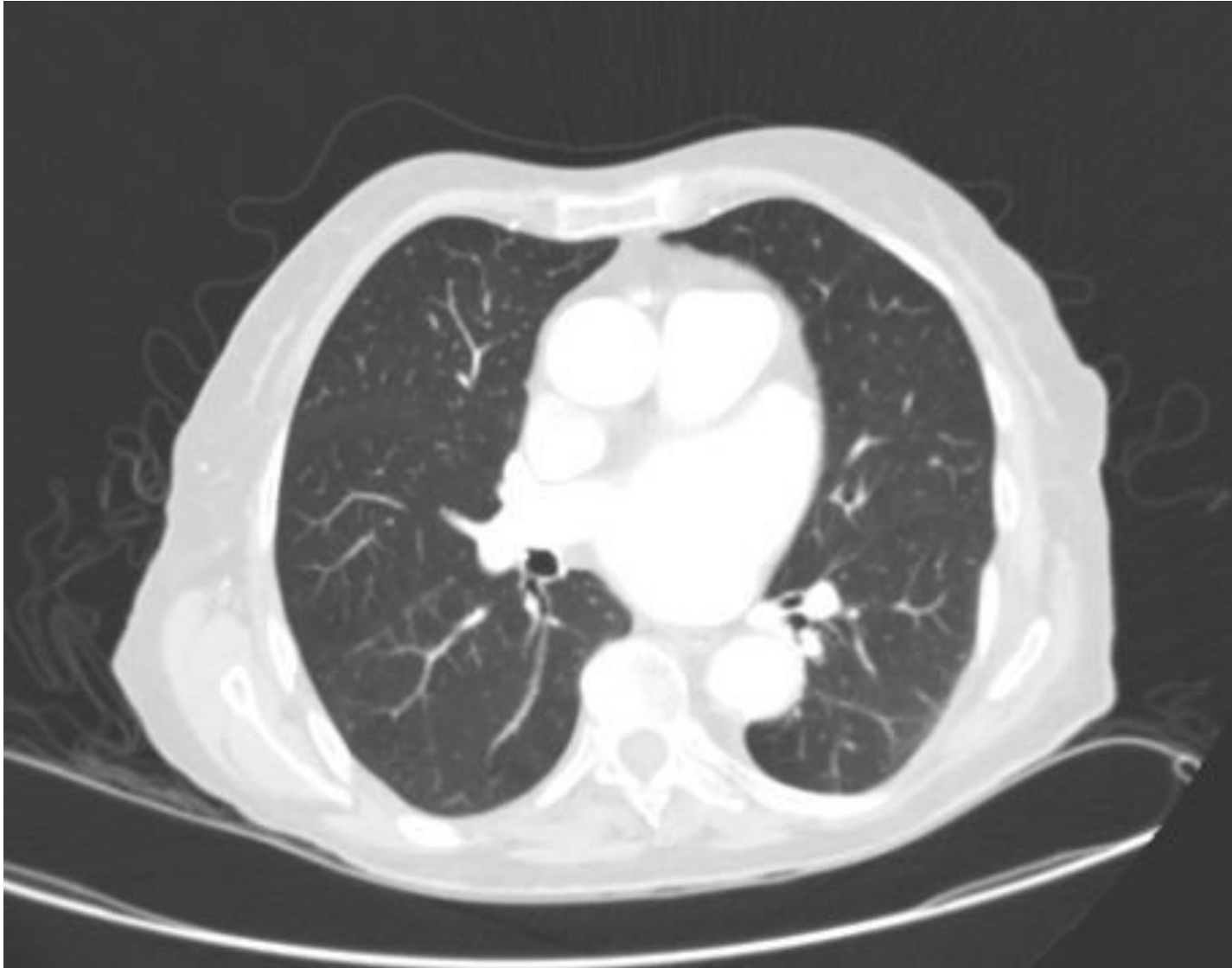
Pelvic Xray



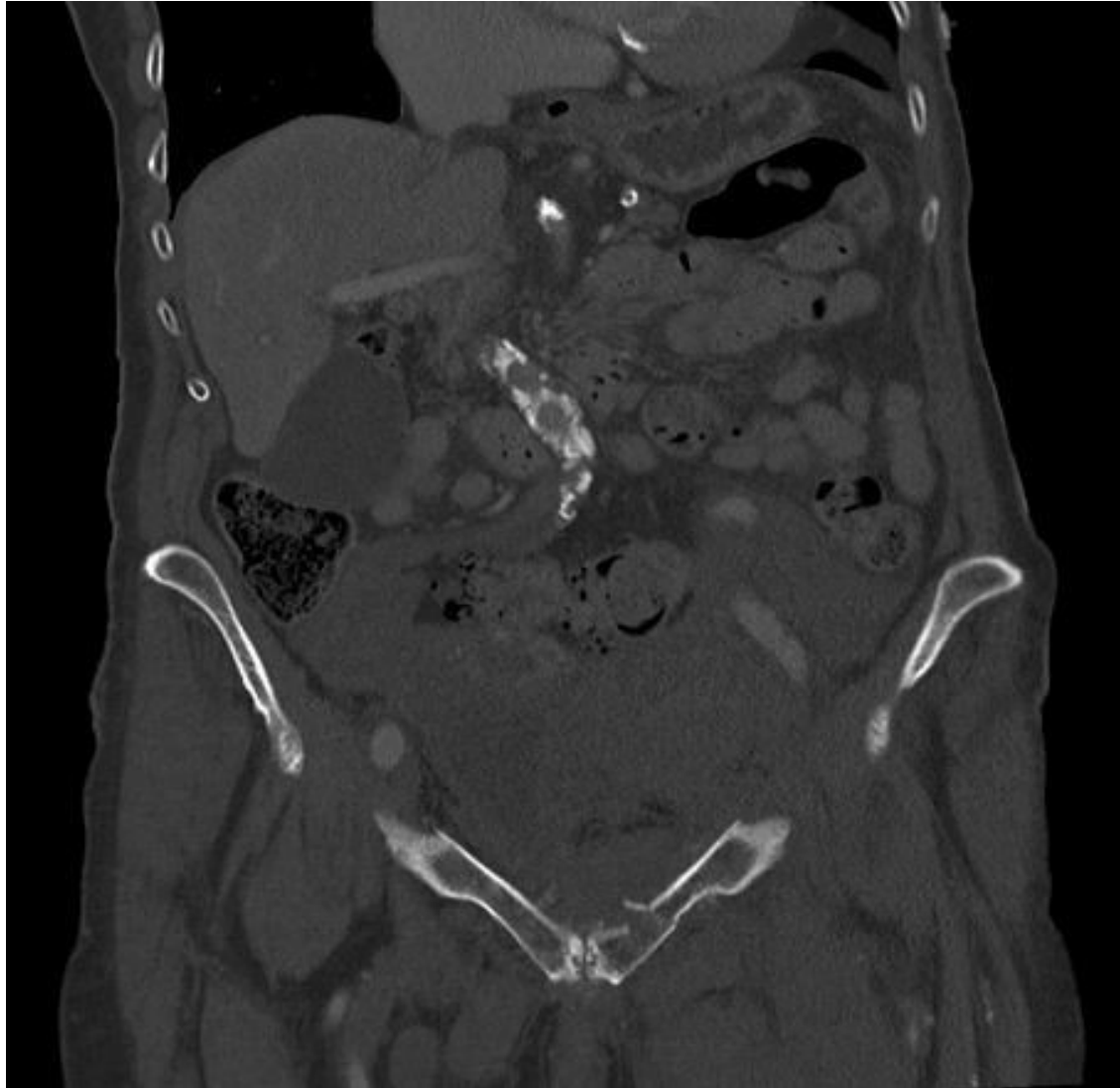
CT Brain



CT Chest



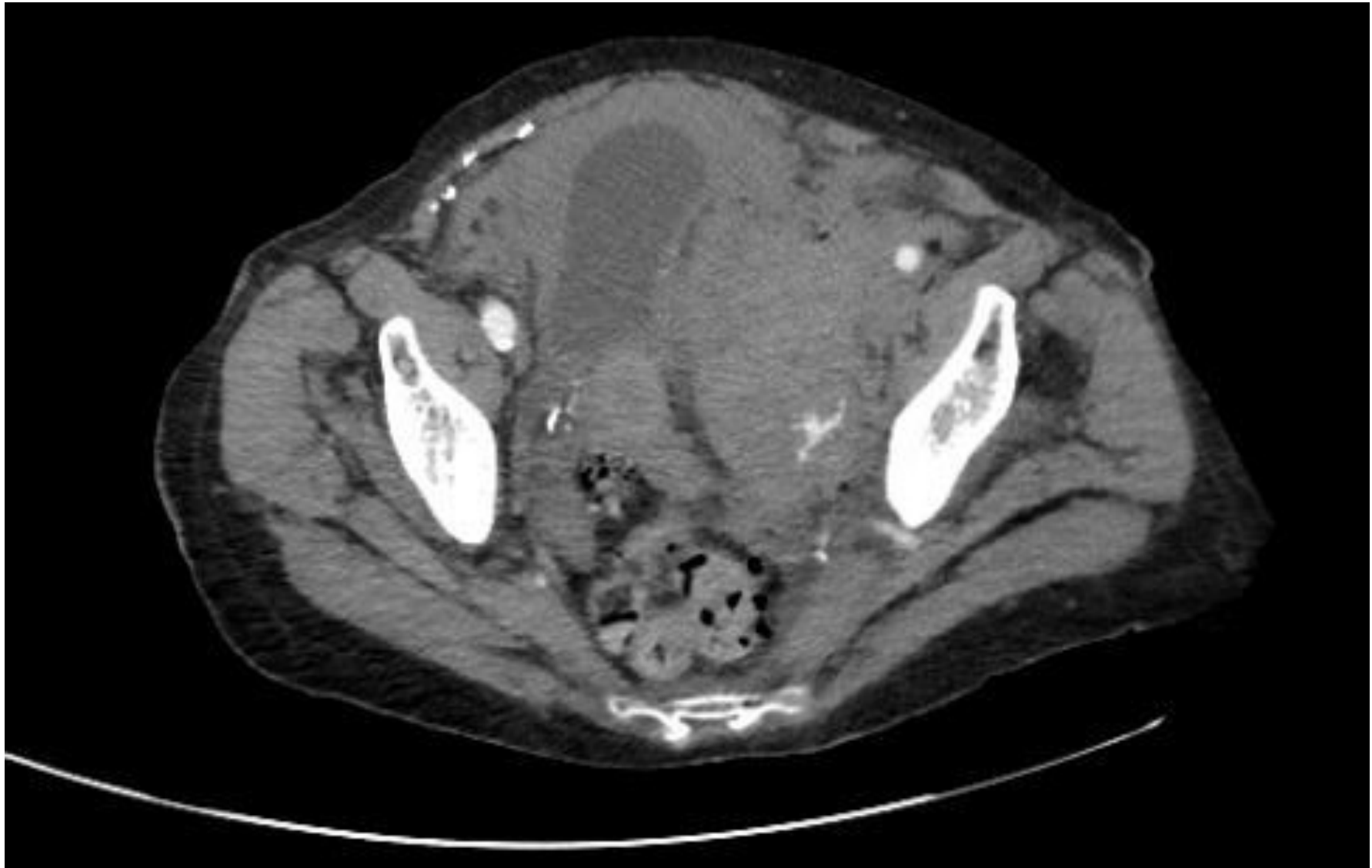
CT Pelvis (coronal)



CTA Pelvis (axial)



CT Spine (sagittal)



CT report

IMPRESSION

Head:

- No traumatic intracranial abnormality.

Chest:

- Fractures head of left 2nd and 3rd ribs.
- Left distal clavicle intra-articular fracture, without AC joint widening.
- Suspected superior manubrial fracture.
- No traumatic intrathoracic abnormality.
- Incidental 31 mm saccular thoracic aortic aneurysm, without features of rupture.

Abdomen/pelvis:

- Extensive left pubic bone fractures with moderate volume of pelvic/abdominal and left thigh haemorrhage. Multiple foci of active bleeding involving the pelvic haematoma and in the proximal medial thigh.
- No solid organ injury evident in the upper abdomen. Delayed phase imaging may be helpful to exclude bladder injury, particularly in the setting of haematuria.

Spine:

- No cervical spine fracture.
- Inferior endplate fractures of T10, likely T9 without height loss.
- Crush fracture of L3 with severe height loss and mild retropulsion.
- Left sacral fracture, non-displaced.

Acronyms and abbreviations

Term	Definition
Hb	haemoglobin
HDU	high dependency unit
ICU	intensive care unit
IR	interventional radiology
OT	operating theatre
EFAST	extended focussed abdominal sonography in trauma
Haemostatic resuscitation	balanced transfusion to provide clotting factors, red cells and volume for the acutely bleeding patient

References

1. Banierink H, Ten Duis K, de Vries R, et al. Pelvic ring injury in the elderly: Fragile patients with substantial mortality rates and long-term physical impairment. *PLoS One*. 2019;14(5):e0216809. Published 2019 May 28. <https://doi.org/10.1371/journal.pone.0216809>
1. Morris RO, Sonibare A, Green DJ, et al. Closed pelvic fractures: characteristics and outcomes in older patients admitted to medical and geriatric wards. *Postgraduate Medical Journal* 2000;76:646-650. <https://doi.org/10.1136/pmj.76.900.646>
2. Matityahu A, Elson J, Morshed S, Marmor M. Survivorship and Severe Complications Are Worse for Octogenarians and Elderly Patients with Pelvis Fractures as Compared to Adults: Data from the National Trauma Data Bank. *Journal of Osteoporosis*, vol. 2012, Article ID 475739, 10 pages, 2012. <https://doi.org/10.1155/2012/475739>

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