Criteria for a Good Radiographic View

- Odontoid process, axis and atlas are clearly visible through the open mouth, occiput does not obscure the odontoid, atlantoaxial and atlanto-occipital articulations are clearly defined
- Cervical vertebrae 3–7 clearly visualized, superior and inferior vertebral plates linear
**Imaging Technique**

Image receiver (e.g., film): size 13 × 18 cm (5 × 7") (odontoid) and 18 × 24 cm (8 × 10") (cervical spine), portrait

Image receiver dosage (sensitivity class): ≤ 5 µGy (SC 400)

SID: 115 cm (40") or 150 cm (60")

Bucky: yes (r 12 [8])

Focal spot size: small (focal spot nominal value: ≤ 1.3)

Exposure: 65–75 kV, automatic, center cell

**Patient Preparation**

- Remove dentures, glasses
- Remove jewelry (necklace, earrings, hairpins)
- Open clothes (buttons, zipper)

**Positioning**

- Supine position
  - Atlas and odontoid process, AP
  - Head flexed until upper teeth (occlusal plane) and occipital bone are superimposed (head elevated 15° with sponge wedge)
  - Mouth wide open

- Cervical spine, AP
  - Head reclined so that the line of the mental symphysis—lower border of the occipital bone (imaginary line: corner of the mouth—auditory meatus) is perpendicular to the horizontal plane of the film
  - Mouth closed
  - Gonads shielded (lead apron)

**Alignment**

- Atlas and odontoid process of the axis, AP
  - Projection: ventrodorsal, perpendicular to the film
  - Central ray in midline at the level of the corners of the mouth

- Cervical spine, AP
  - Projection: 10–15° craniocaudad
  - Central ray directed to the sternal notch and middle of the cassette
  - Centering and collimation, side identification
Criteria for a Good Radiographic View

- Complete and symmetrical view of the pelvis that includes hip joints, trochanters, and iliac wings (1)
- Lateral cortex of the major trochanters on both sides well delineated (2)

Imaging Technique

Image receiver (e.g., film): size $35 \times 43$ cm ($14 \times 17$”), landscape
Image receiver dosage (sensitivity class): $\leq 5$ µGy (SC 400)
SID: 115 cm (40”)
Bucky: yes (under the table, r 12 [8])
Focal spot size: large (focal spot nominal value: $\leq 1.3$)
Exposure: 75–90 kV, automatic, both outer or all three photocells

Patient Preparation

- Remove all clothes except undergarments, remove shoes

Positioning

Standing
- Patient stands with the back to the cassette stand, arms are hanging down
- Legs straight, feet slightly turned in (great toes touch, heels about 4 cm apart)
- Adjust any difference in leg length and note on the film
- Compression band across the abdomen (caution: abdominal aortic aneurysm)

Recumbent
- Supine position, legs rotated inward, both knees at the same level (if patient has difficulty straightening one knee, support the opposite side with a sponge pad)
- Upper cassette border 4 cm above pelvic crest
- Gonads shielded for males

Alignment
- Projection: AP, perpendicular to the film
- Central ray directed to the middle of the cassette
- Centering, collimation, side identification
- Breath held after expiration

Variations

Lower pelvic view
- Upper border of the cassette at the level of anterior superior iliac spine, otherwise as above

Pelvis, Pennal I technique
- Projection: craniocaudad 40°
- Central ray at the level of the anterior superior iliac spine, directed to the middle of the cassette

Pelvis, Pennal II technique
- Projection: caudocephalad 40°
- Central ray 4 cm below the upper border of the symphysis, directed to the middle of the cassette

Pelvis, Martius technique
- Position: patient leans in a semisitting/semirecumbent position on the examination table and supports herself with both hands at the sides, with back hollowed; cushion support can be provided
- Radiographic measuring rod should be held transversely over both thighs
- Projection: ventrodorsal, perpendicular to the film
- Central ray: on the mid-symphysis and middle of the cassette

Pelvis, Guttmann technique
- Position: strict right lateral decubitus, hip and knee joints bent
- Radiography scale at the median level between the gluteal fold
- Projection: lateral, perpendicular to the film
- Central ray: 2 FB under the pelvic crest, 3 FB anterior to the line of the spinous process
- Exposure: 115 kV
Criteria for a Good Radiographic View

Mediolateral oblique:
- The pectoral muscle should appear as a triangle (with an angle of about 20°) (1)
- The pectoral muscle extends to the level of the nipple (the posterior nipple line can be used for guidance—an imaginary line connecting the nipple and the anterior edge of the pectoral muscle) (2)
- Nipple tangential outside the breast tissue
- Inframammary fold shown spread out (3)
- The distance from the nipple to the pectoral muscle on the pectoral–nipple line (PNL; a vertical line connecting the edge of the pectoral muscle and the nipple [4]) should vary not more than ± 1.5 cm from the distance on the PNL in the craniocaudal image
Criteria for a Good Radiographic View

Cranio-caudal
- Pectoral muscle should be crescent-shaped at the edge of the image (5)
- Retroglandular fatty tissue should be well displayed
- Medial fold displayed (6)
- Nipple tangential outside the breast tissue
- Entire breast (including medial) displayed
- The distance from the nipple to the pectoral muscle on the pectoral–nipple line (PNL; a vertical line connecting the edge of the pectoral muscle and the nipple [4]) should vary not more than ± 1.5 cm from the distance on the PNL in the mediolateral image.
Slice boundaries for CT of the neck

**Patient Preparation**
- Fasting for 3 h (due to contrast administration)
- Remove dentures
- Laboratory values (creatinine, baseline thyroid-stimulating hormone), allergy history, inquiry regarding renal and thyroid function, medication history

**Materials**
Contrast administration is needed if soft tissues in the neck are being investigated.
- 1 indwelling or butterfly catheter (16- or 18-gauge)
- Injector with 100 mL contrast (approximately 300 mg iodine/mL)
- Pressure dressing, swabs, skin disinfectant, adhesive bandages

**Positioning**
- Supine, neck slightly stretched out
- Arms along the sides of the body, shoulders should be pulled down if appropriate (e.g., with aids: holding a rope that passes round the feet will pull the wrists downward)
- Head immobilized

**Parameters**

**Spiral CT**
- Scan range start: adjust the base of the skull (e.g., hard palate–back of the head) to the issue being investigated (e.g., floor of the mouth or thyroid gland)
- Scan range end: e.g., aortic arch (adjust to issue being investigated)
- Breathing: breath held, no swallowing
- Digital scout view: lateral (256 mm) or AP (256 mm or 512 mm)
- Scanning unit tilt: 0–20°
- Magnification: floor of the mouth or neck should fill the image as much as possible
- Scan direction: caudocranial
- Documentation, soft-tissue window:
  - WL: 40–60 HU
  - WW: 200–400 HU
- Reconstruction: Soft-tissue filter (core), bone filter if appropriate (e.g., when investigating fractures or tumor)
MRI of the Pelvis

**Patient Preparation**
- Patient should visit the rest room before the examination
- Patient should be given information about the procedure and should be offered ear protection (e.g., ear plugs)
- All clothes except underwear should be removed
- Any metal items should be removed (hearing aids, hairpins, piercing, etc.)
- Depending on the issue being investigated, the patient should drink one bag of oral contrast (e.g., Abdoscan) 1 h before the examination
- An indwelling catheter may be placed

**Positioning**
- Supine, body array coil or body coil, cushions placed under the legs

**Sequences**
- Scout: sagittal and transverse (three levels if possible)
  1. **Transverse sequence:**
     - T2, possibly fat-saturated (example: tse TR 2500–4500, TE 100–130)
     - Slice thickness: 8 mm
     - Interslice interval: 1–1.3
     - Phase-encoding direction: AP
     - Saturation: (a) transverse (parallel) over the slices for vascular saturation; (b) ventral, coronal (perpendicular to the slices) over the abdominal fatty tissue

Transverse pelvis, sequence 1
2. **Transverse sequence:**
   - T1 (example: se TR: 450–600, TE 12–25)
   - Slice thickness: 8 mm
   - Interslice interval: 1.3
   - Phase-encoding direction: AP
   - Saturation: (a) ventral, coronal (perpendicular to the slices) over the abdominal fatty tissue; (b) transverse over the slices for vascular saturation

3. **Coronal sequence:**
   - T2 (example: tse TR 2500–4500, TE 100–130)
   - Slice thickness: 5–6 mm
   - Interslice interval: 1.3
   - Phase-encoding direction: HF
   - Saturation: transverse over the slices for vascular saturation

Possible 4th transverse sequence: T1 as in sequence 2, but after contrast administration (Gd-DTPA)

**Tips & Tricks**
- Intravenous Buscopan can be administered to reduce bowel motility
- An “abdominal bandage” can be applied to limit respiratory excursions