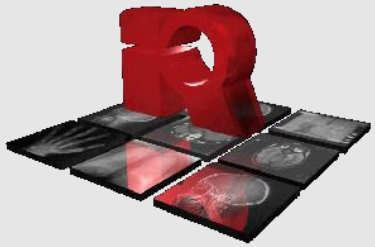
Artefakte bei digitalen Bildempfängern

Arbeitsgemeinschaft der Deutschen Röntgengesellschaft

Physik und Technik
in der bildgebenden Diagnostik



15. Fortbildungsseminar der APT, Kassel

Rainer Eßeling, Institut für Klinische Radiologie, UKM

Digitale Detektoren

- Speicherfolienradiographie (DLR, CR)

  (BaSrFBr:Eu + Laserabtastung, Photomultiplier)

- Digitale Flachdetektoren (direkt)

  (Se + a-Si Kondensatormatrix)

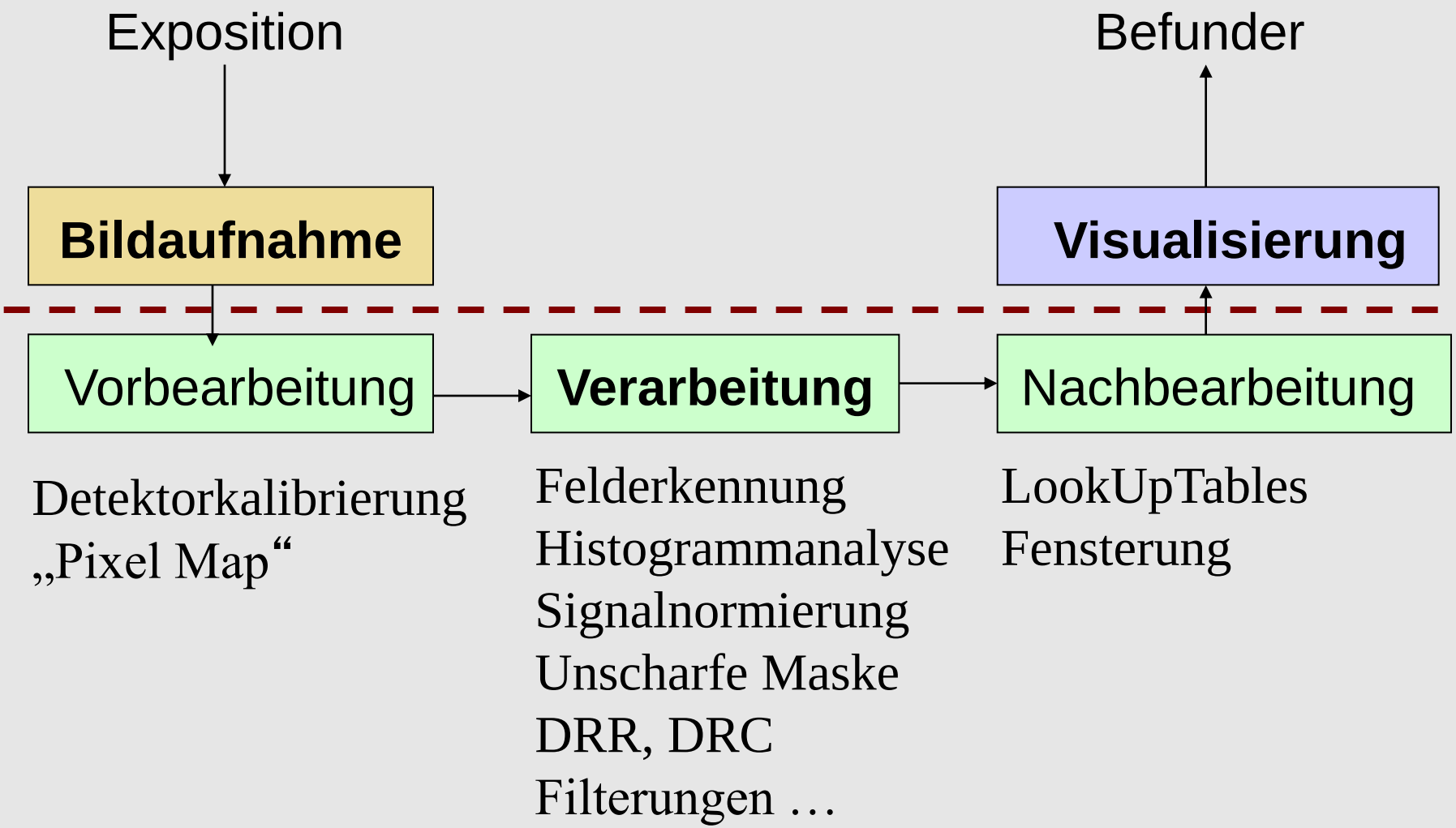
- Digitale Flachdetektoren (indirekt)

  (Gd_2O_2S, CsJ:Tl u.a. + a-Si TFT-Auslesematrix)

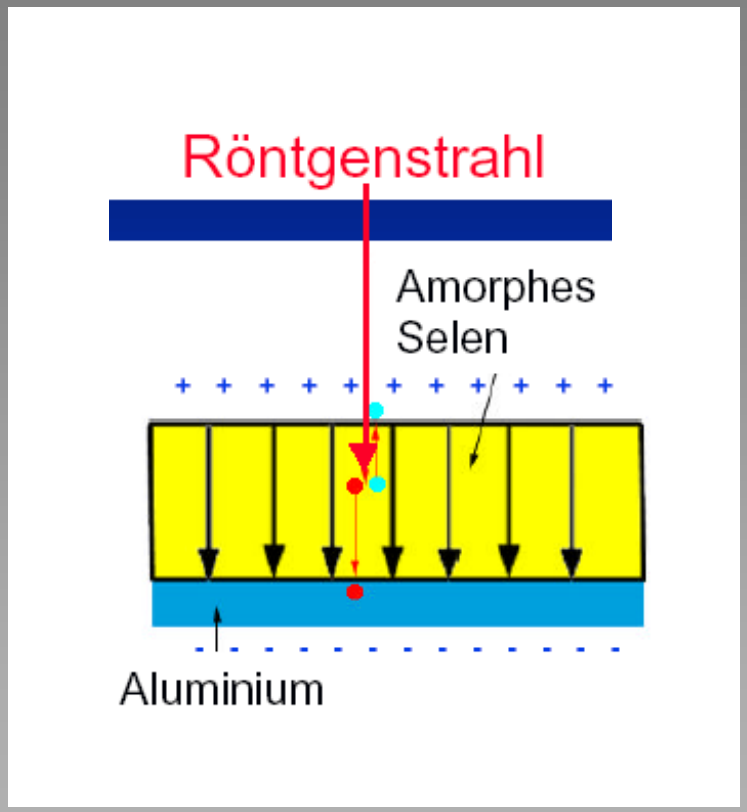
- Digitale Bildverstärker

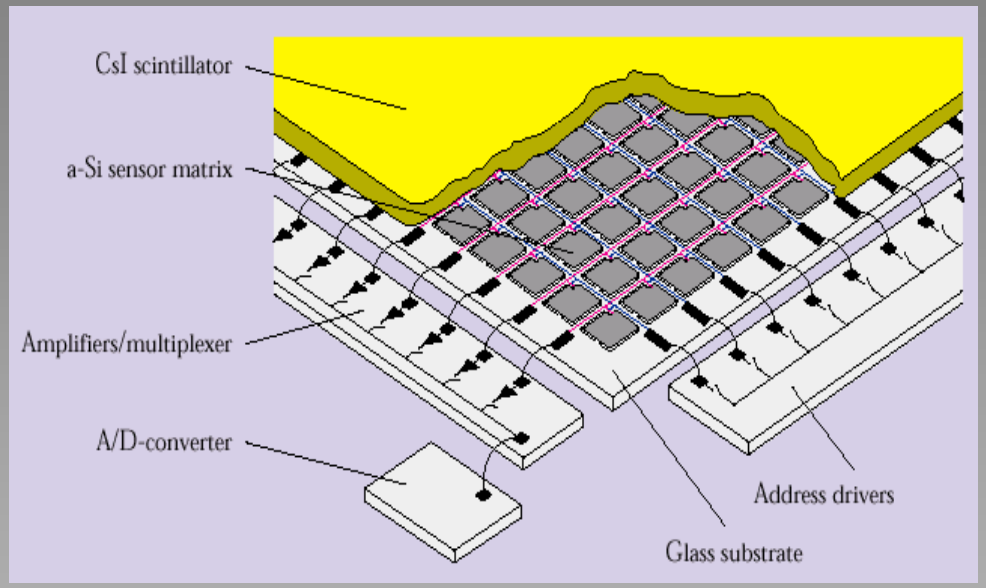
  (Gd_2O_2S,CsJ + CCD)

Die Bildgebungskette

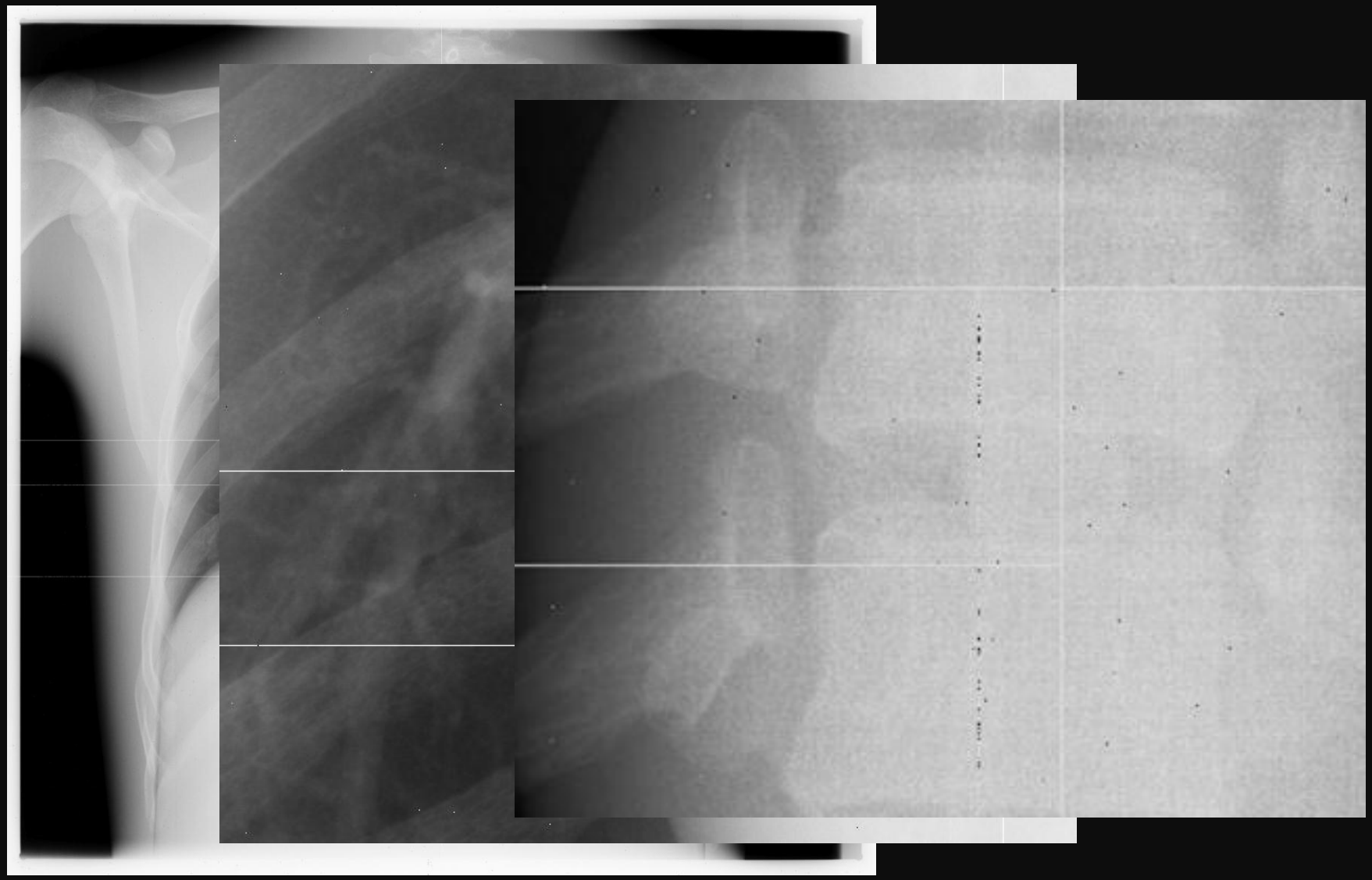


Digitaler Flächendetektor



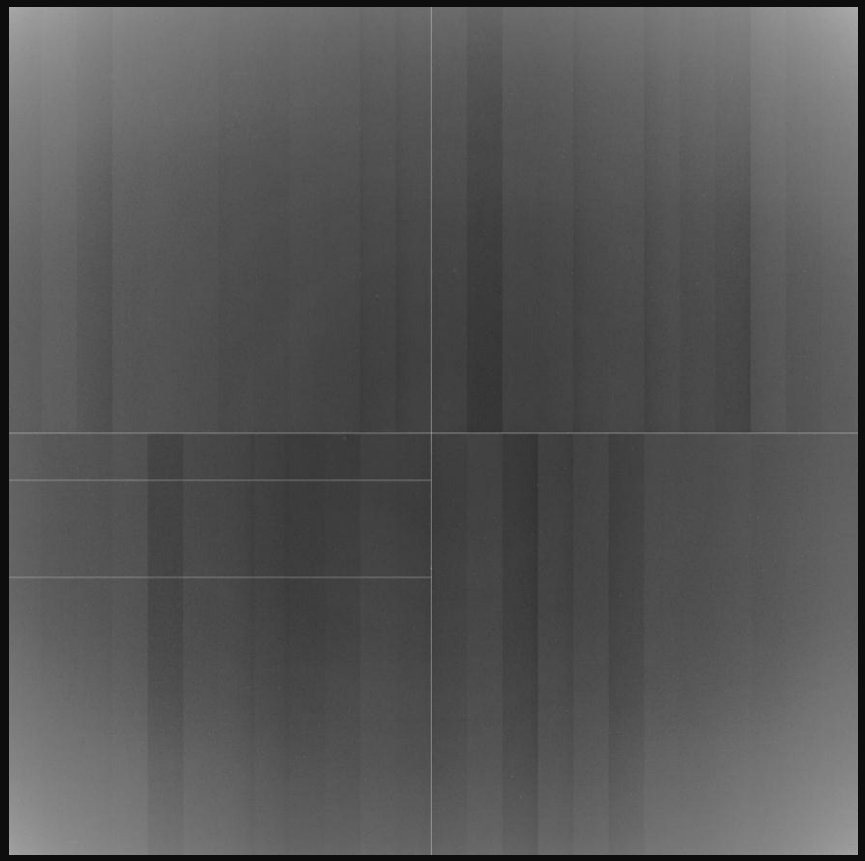


„Detektorartefakte“

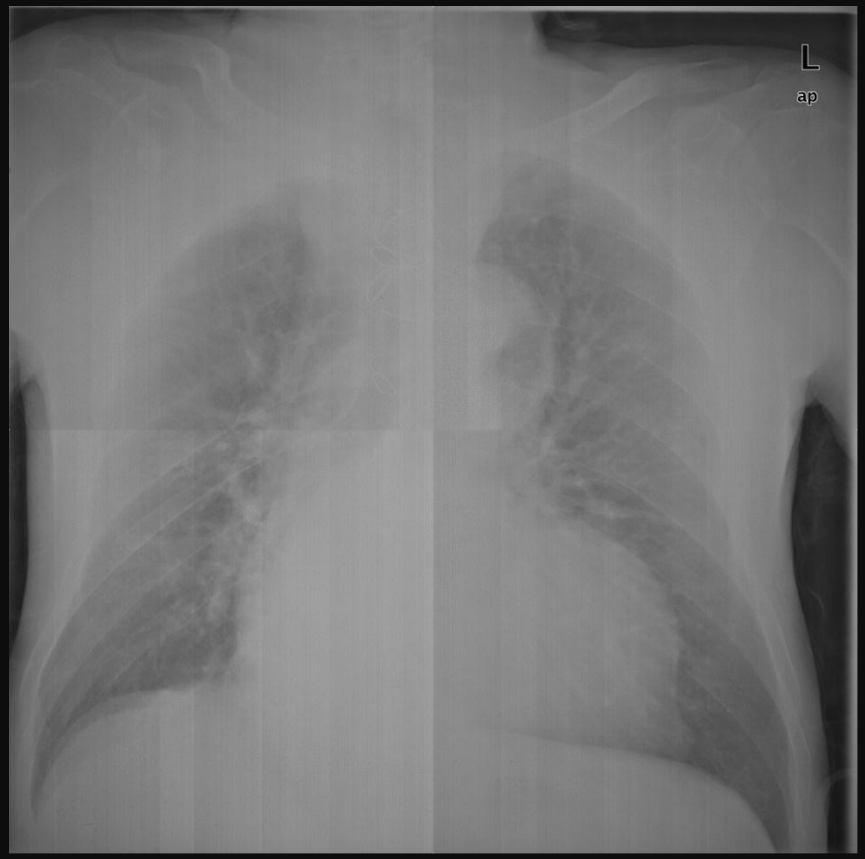


Digitaler Flächendetektor

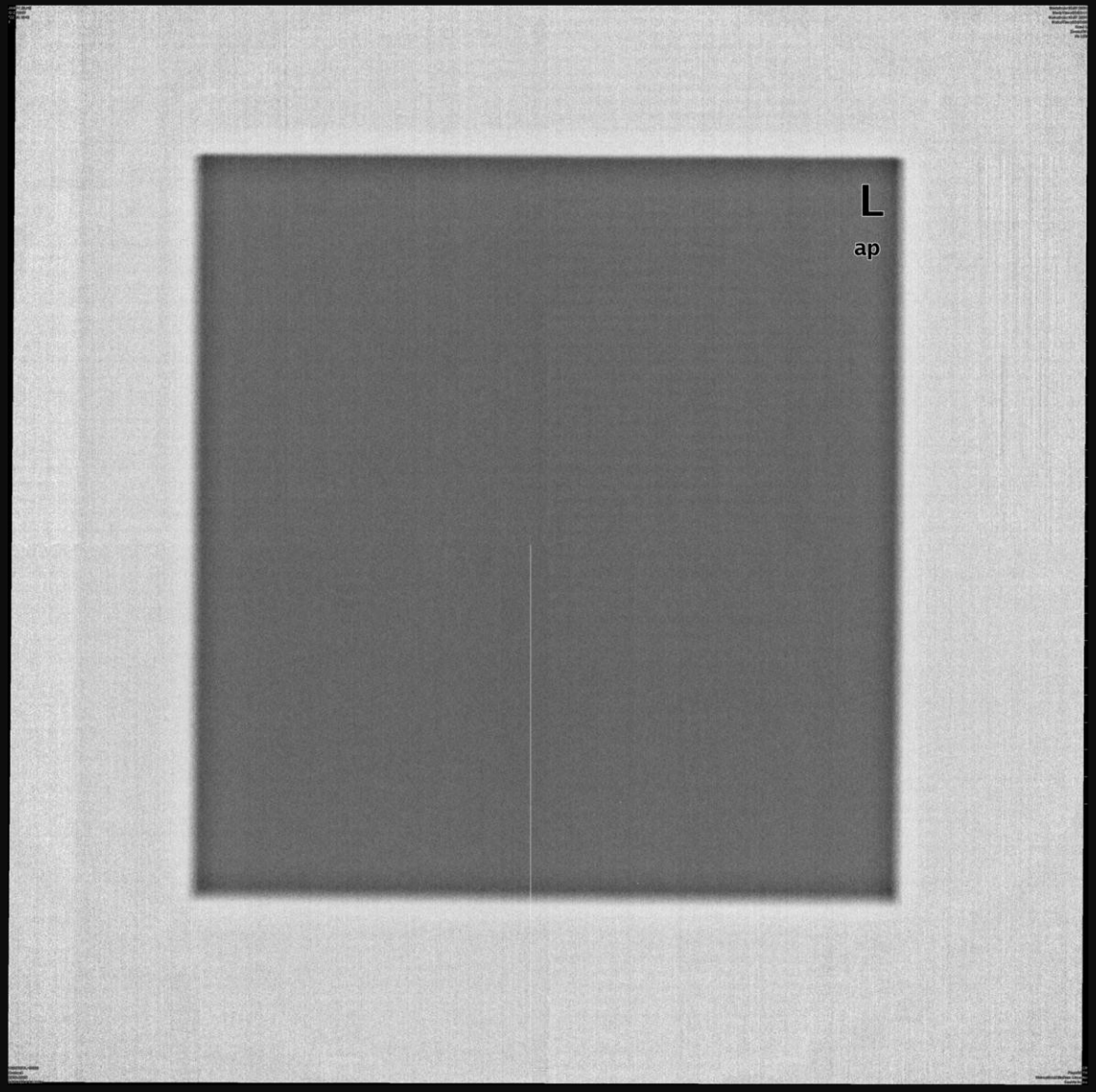
Ohne „Gain calibration“



unkorrigiertes Bild

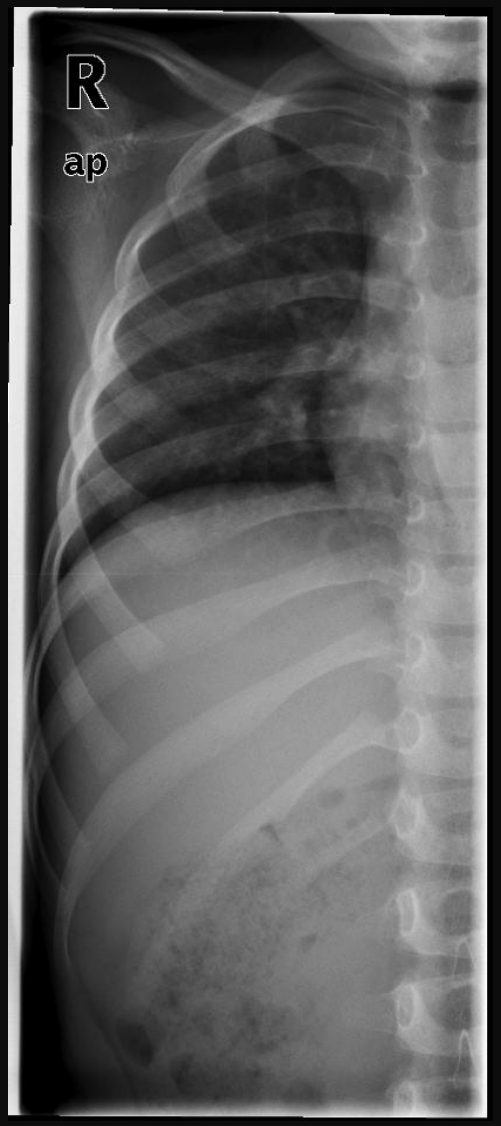


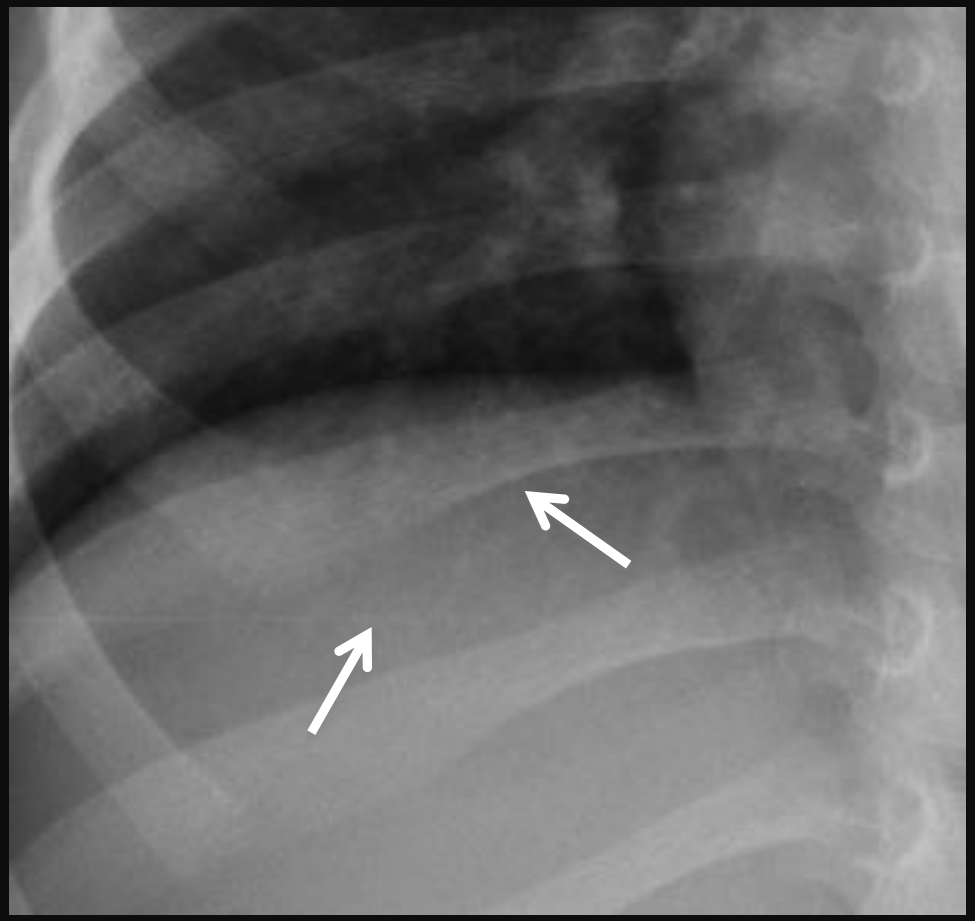
Linienartefakt



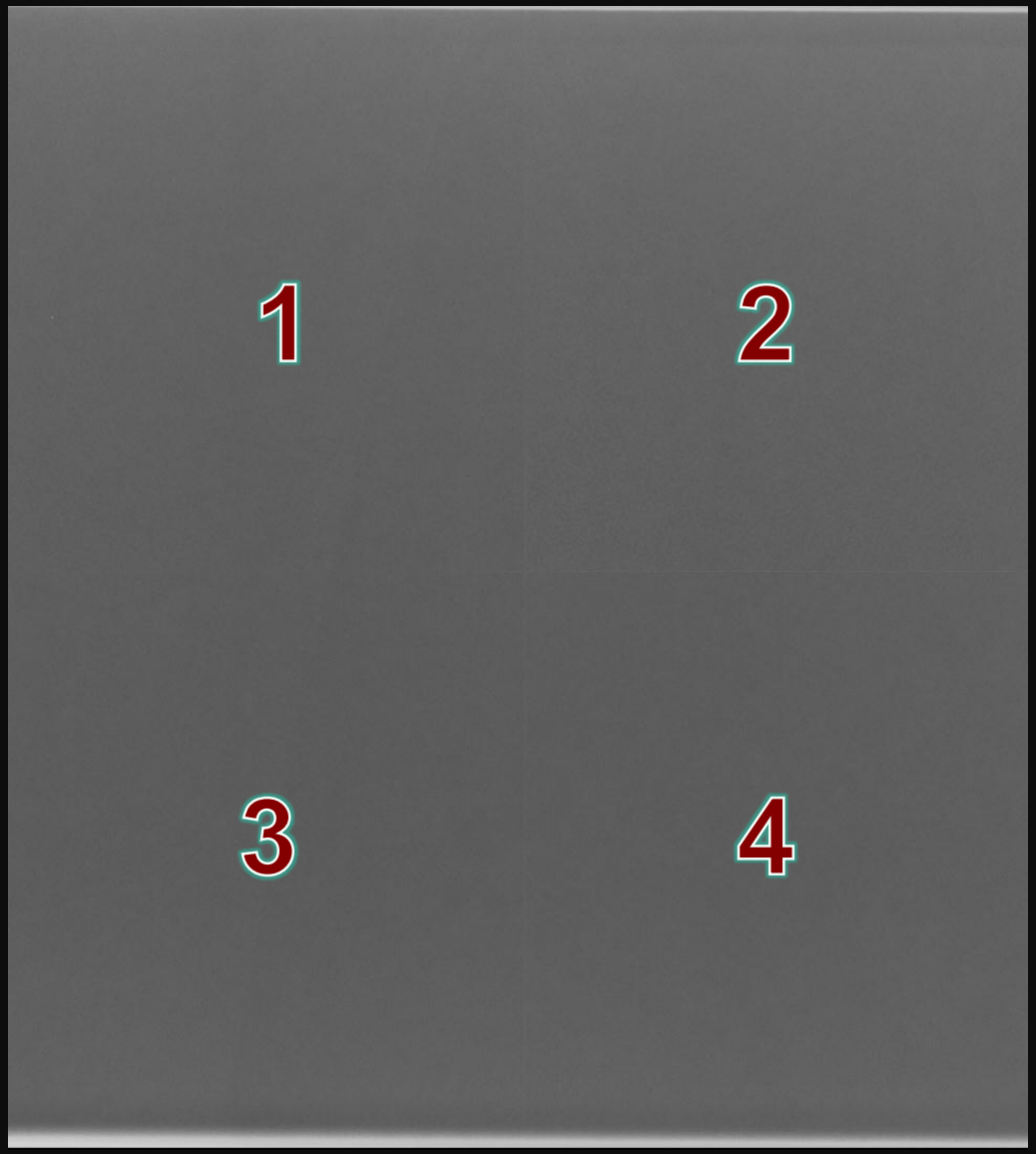
Linienartefakt

Quadrantenview

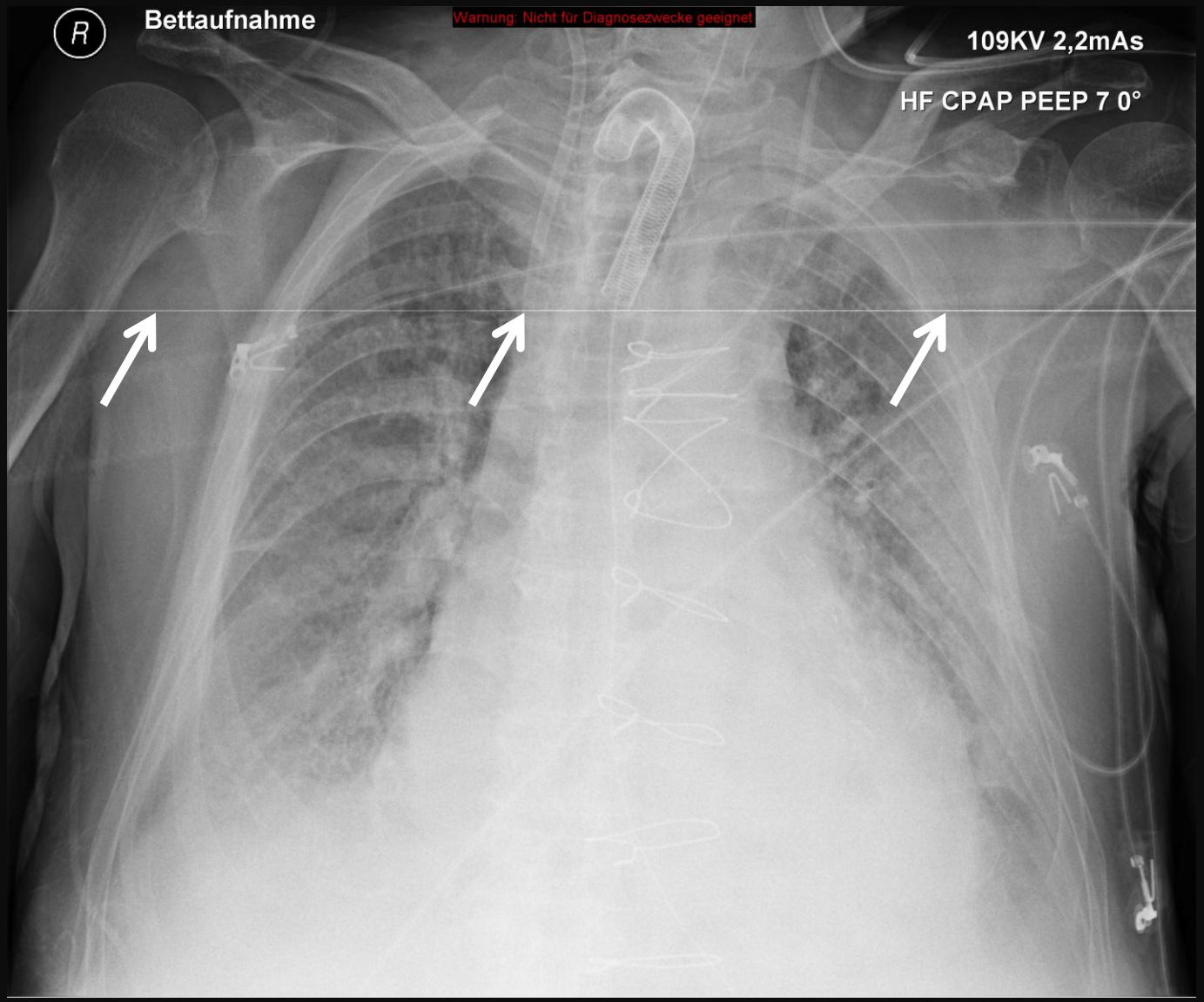




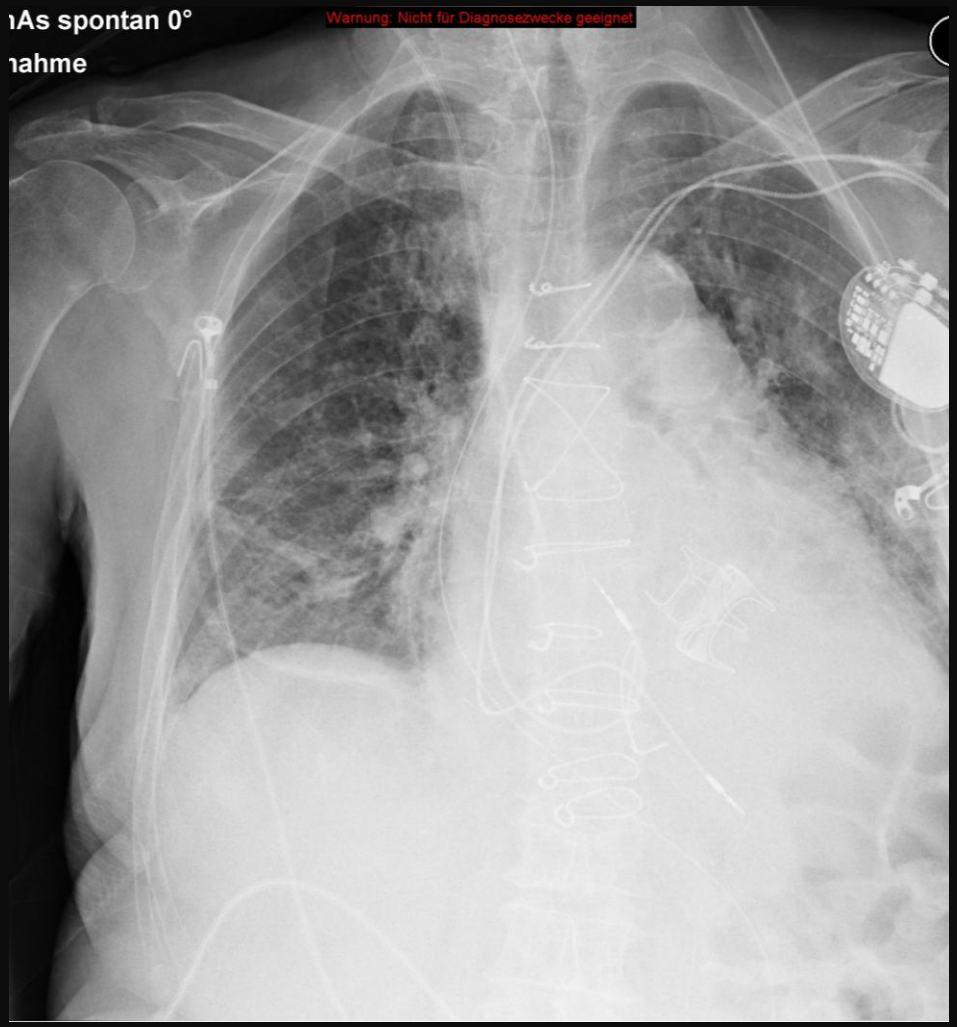
Quadrantenview



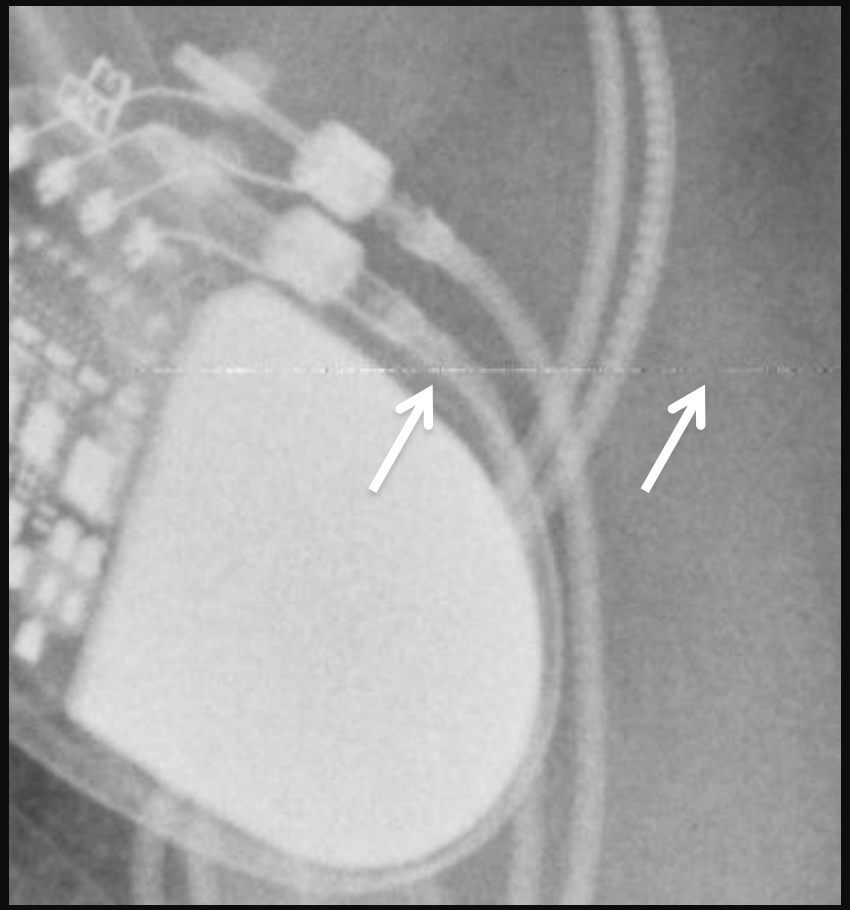
Linienartefakt DRX



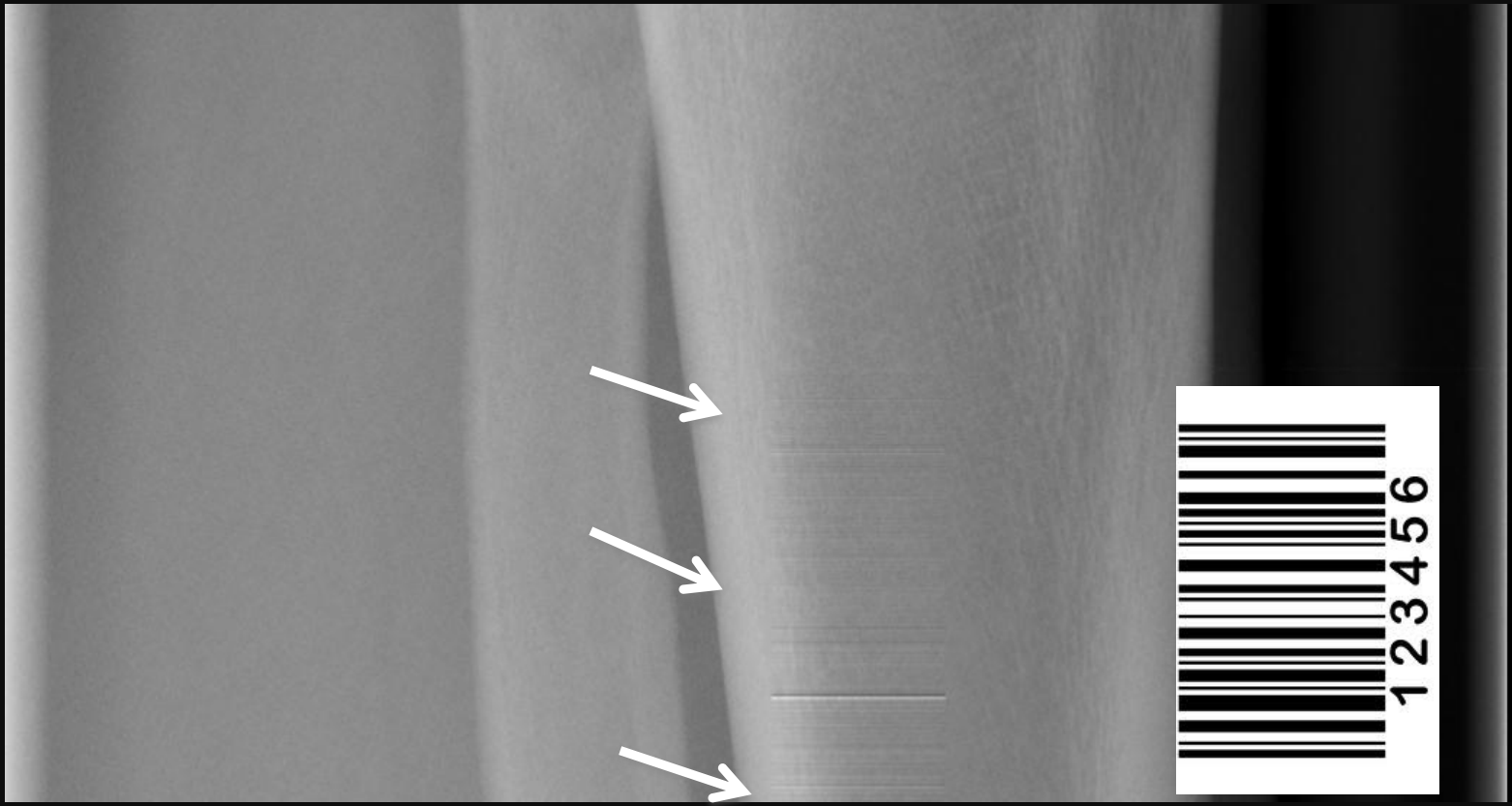
Zeilenartefakt



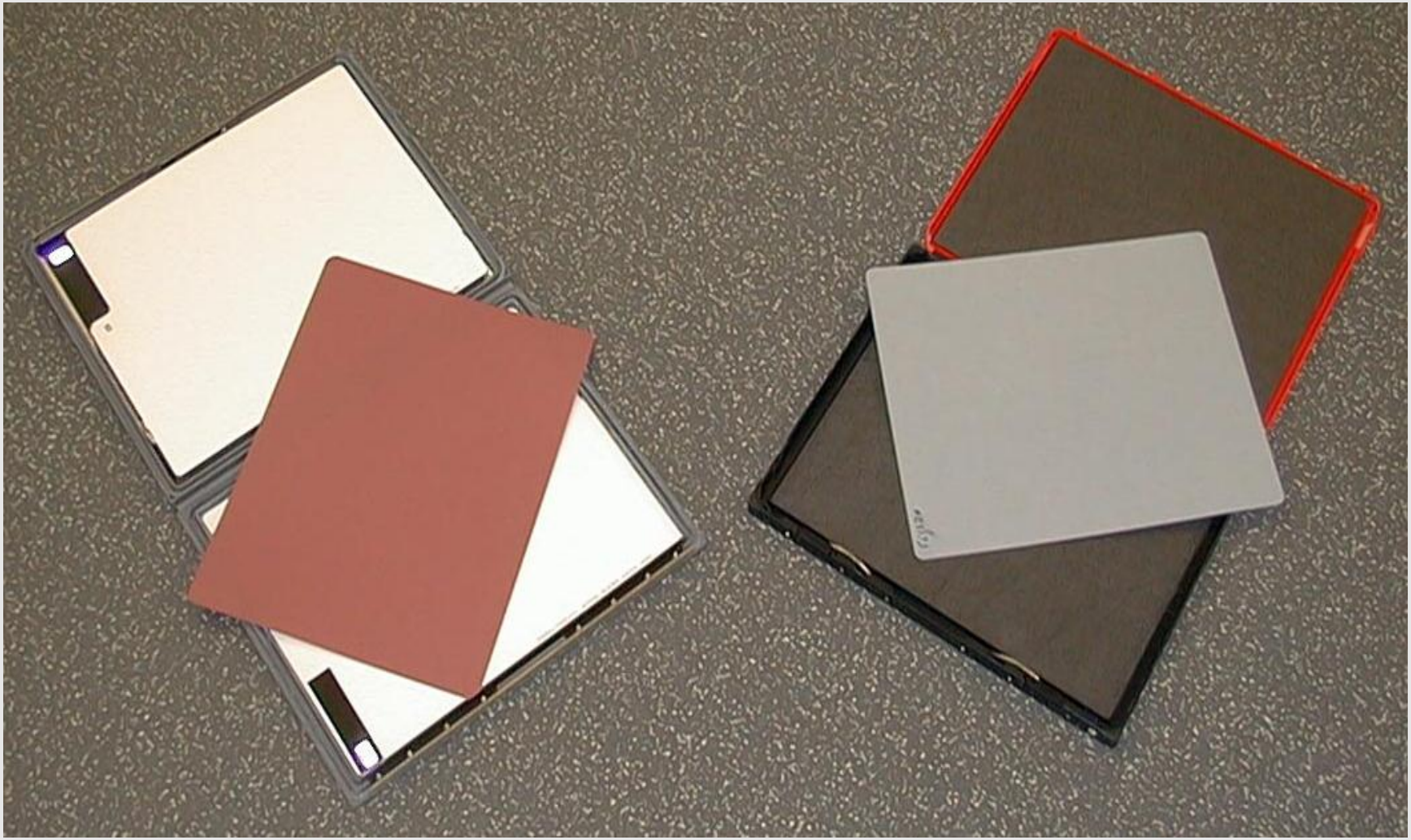
Nach Kalibration



Barcode Effekt

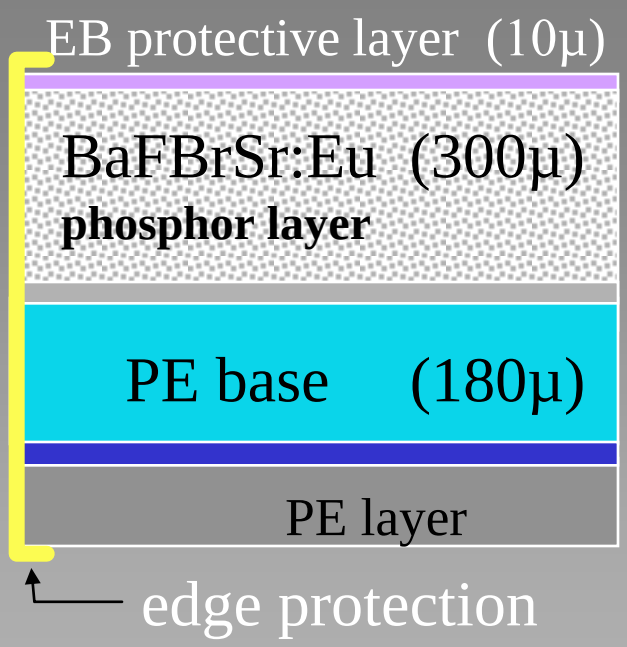


Film vs. Speicherfolie

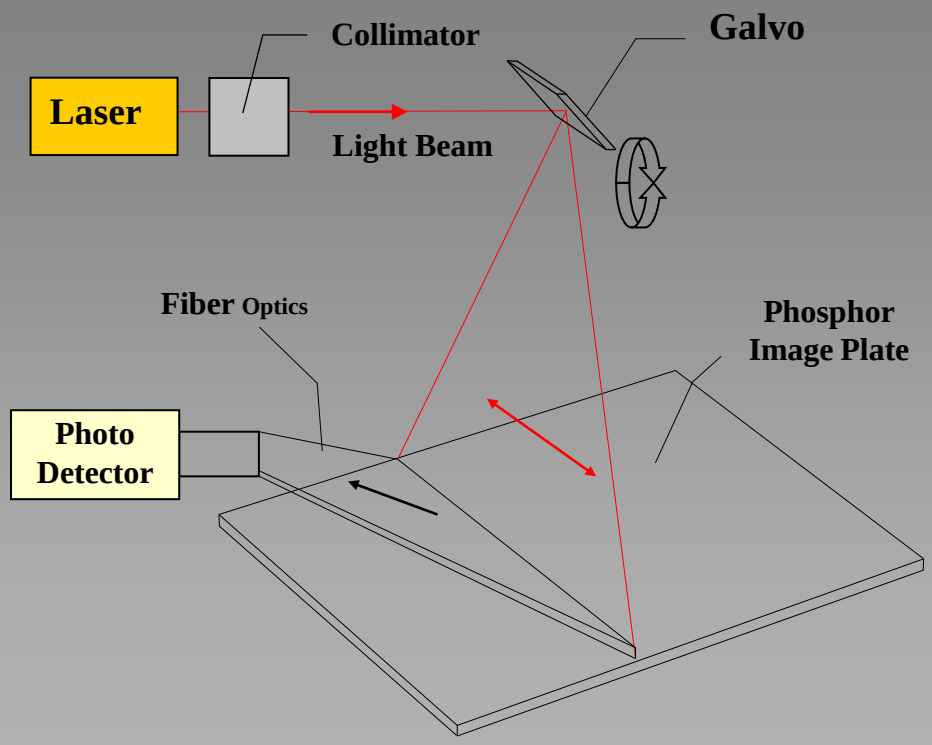


Film vs. Speicherfolie

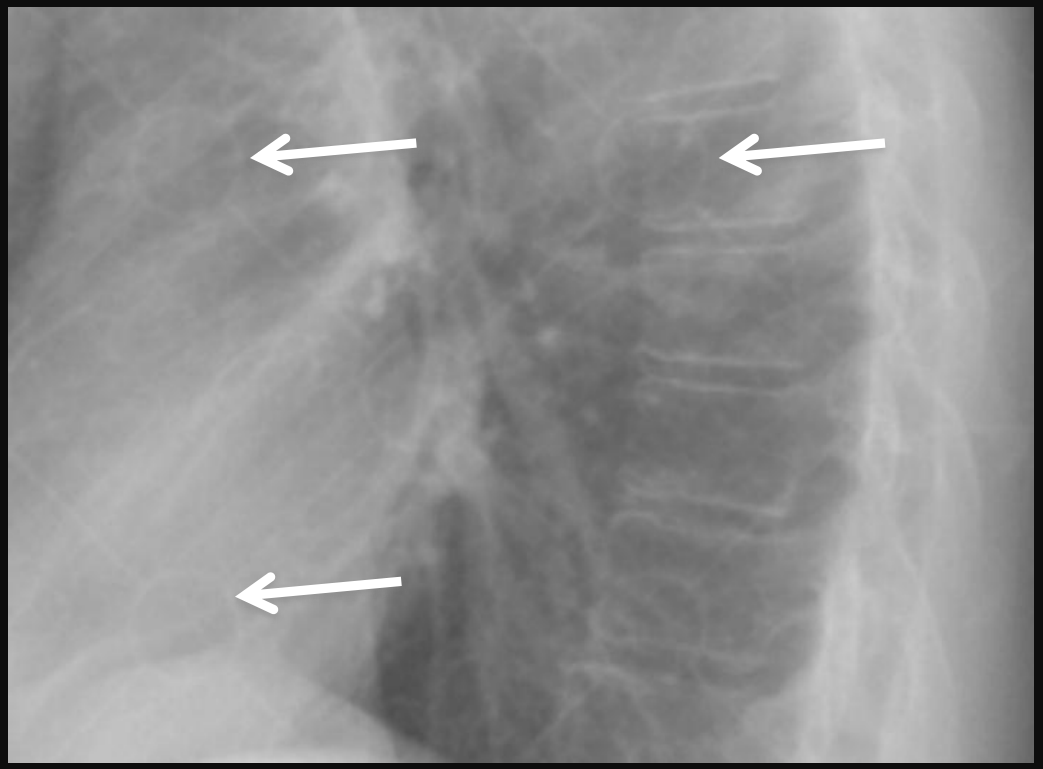
CR-Folie



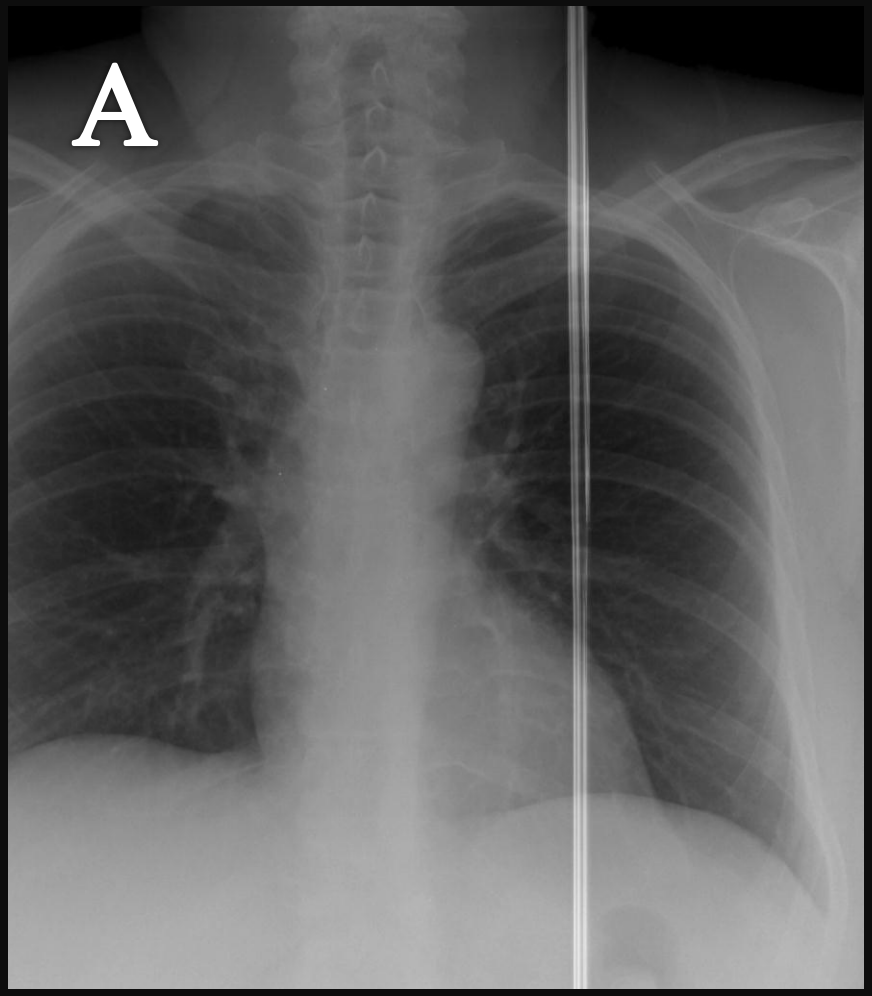
CR-Scanner: „Flying-Spot“

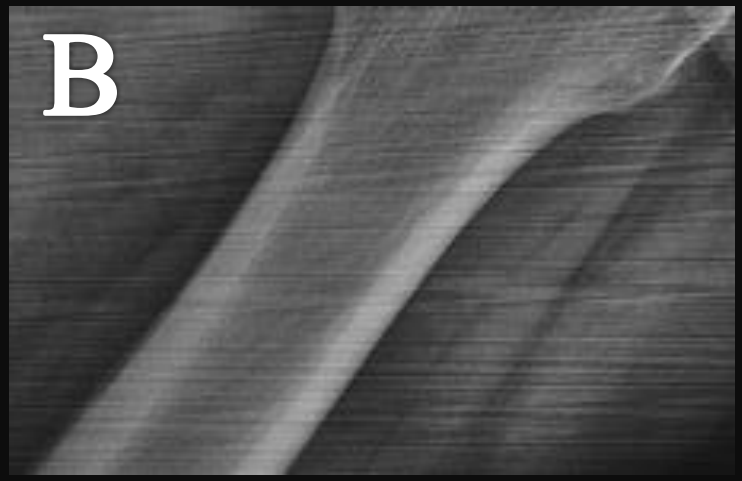


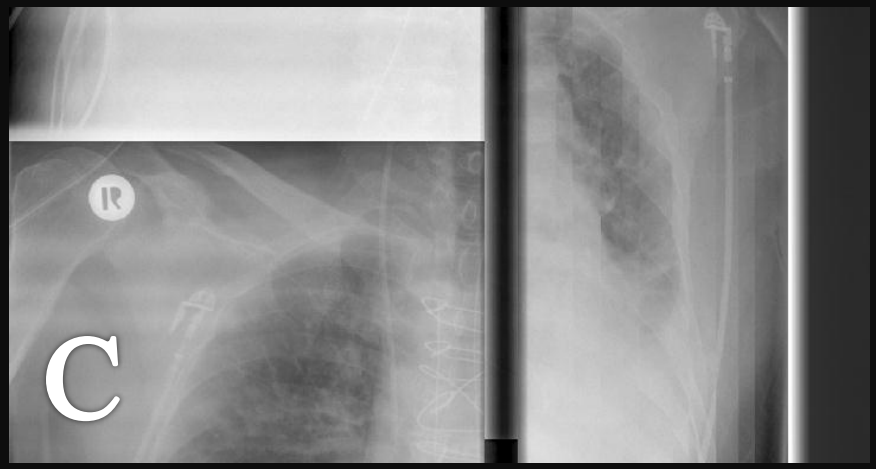
Folien/Kassettenartefakte



Digitalisierung „CR“

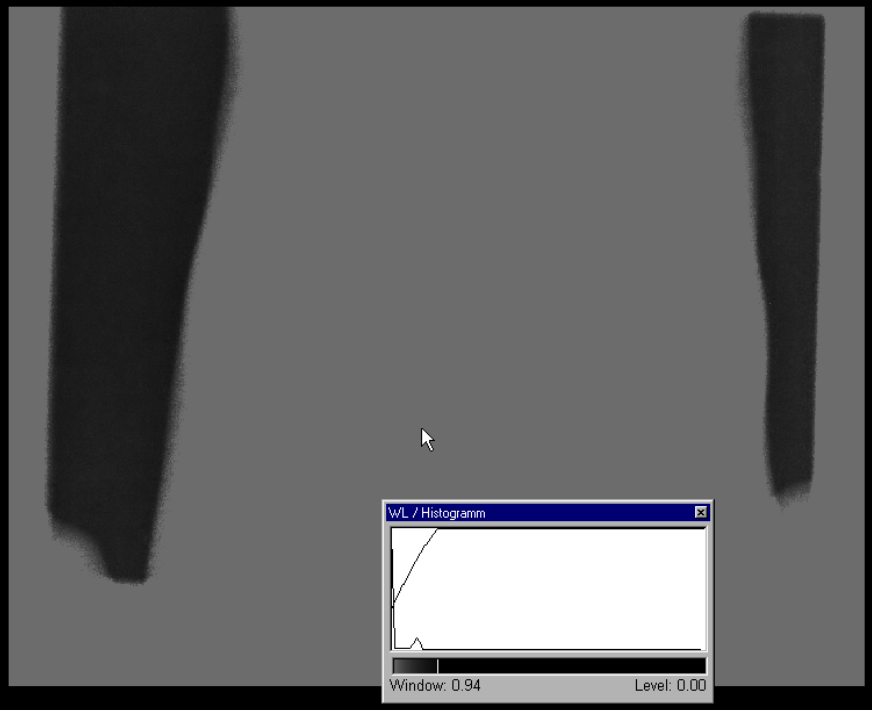






Folien/Kassettenartefakte

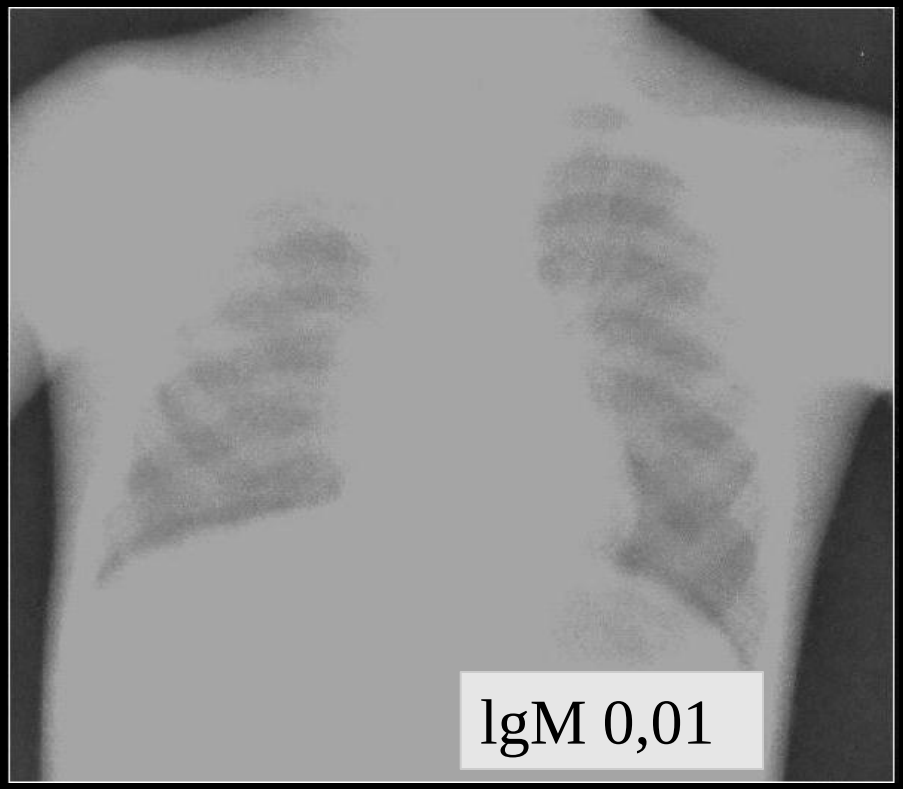
Unzureichende Löschung



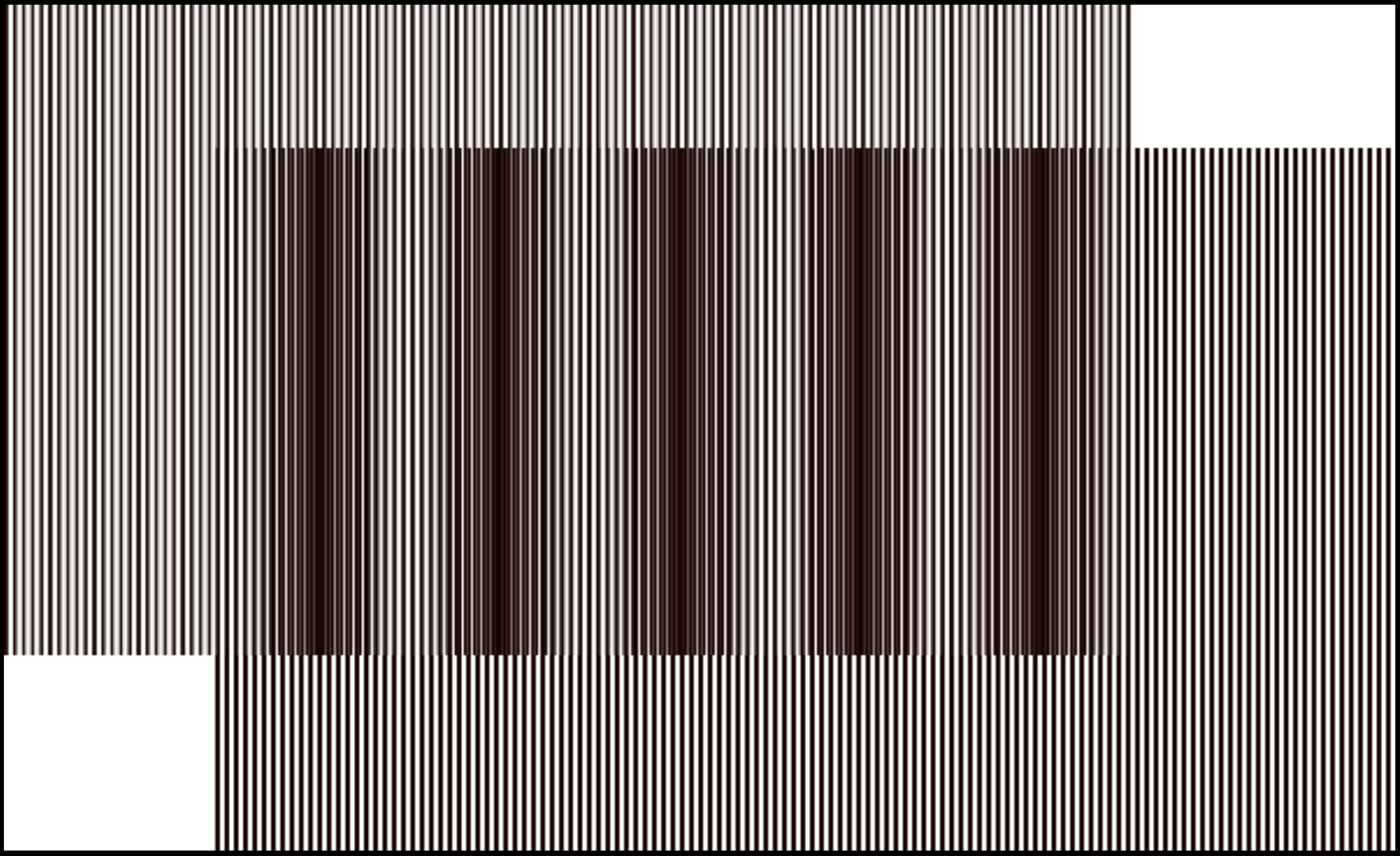
Folie falsch herum

Cesar LJ, Schueler BA et al. Mayo Clinic

„Dosisartefakt“



Alias Effekt



Alias Effekt

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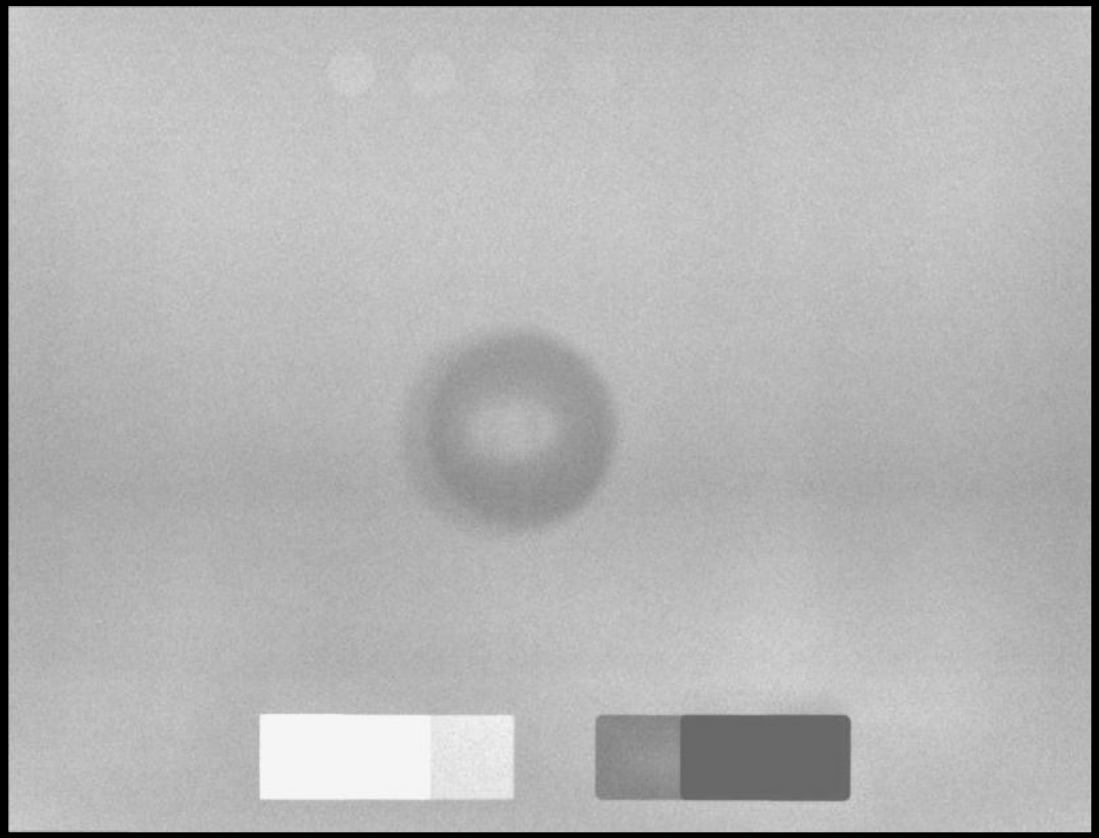
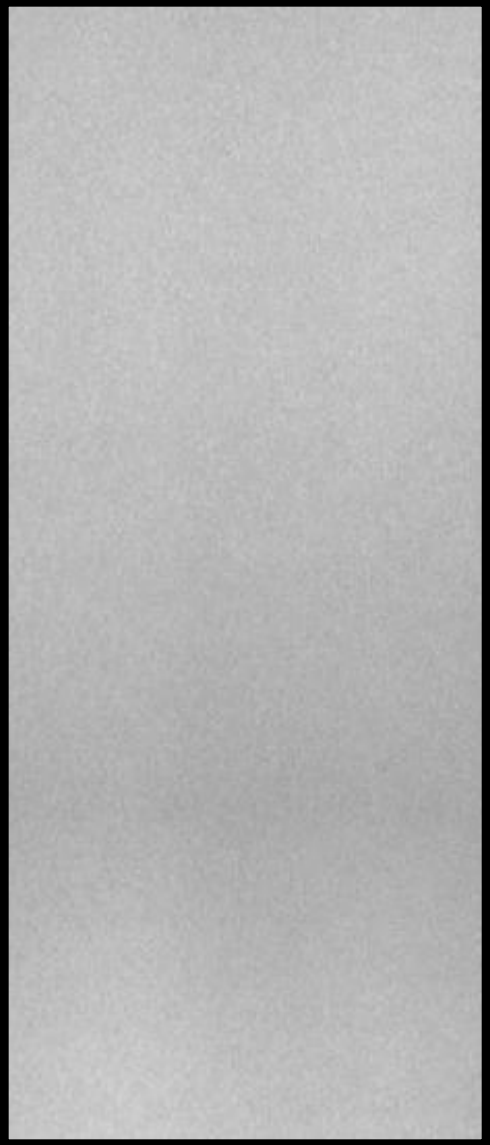
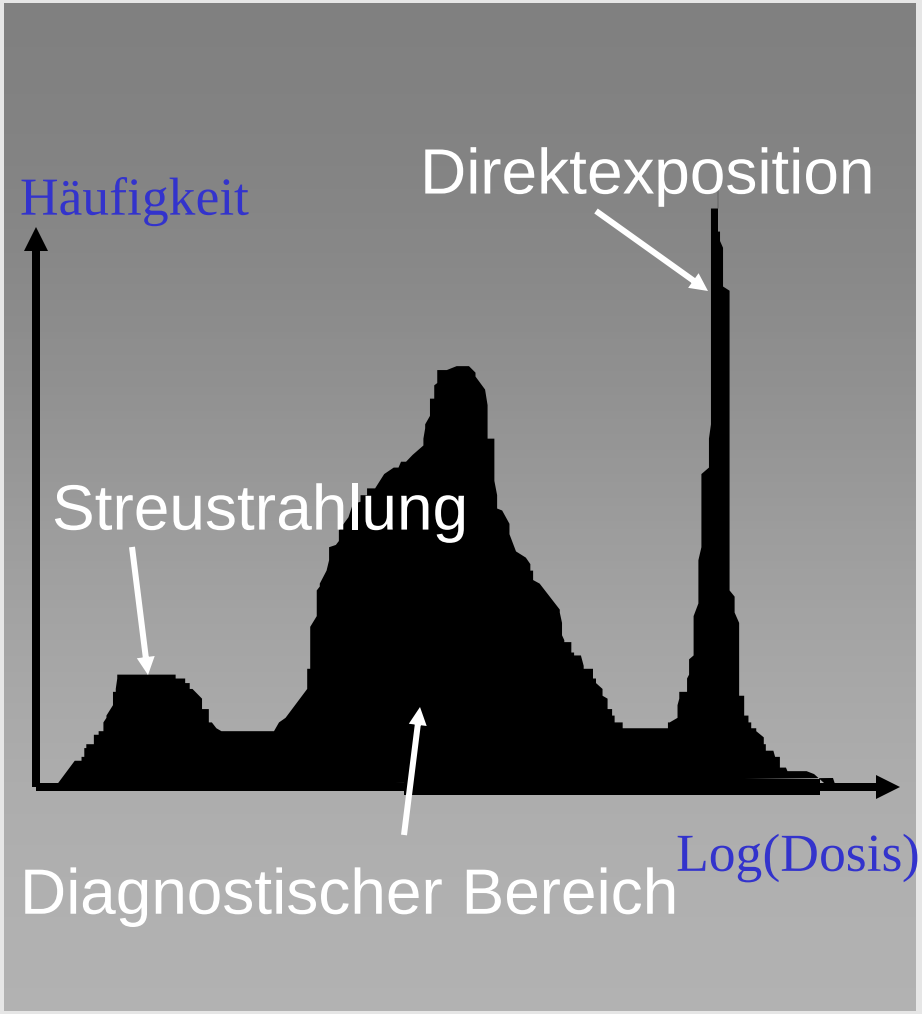




Prozessierung

❖ Histogrammanalyse



1. Belichtungsfeld und Umfang
2. Histogrammanalyse

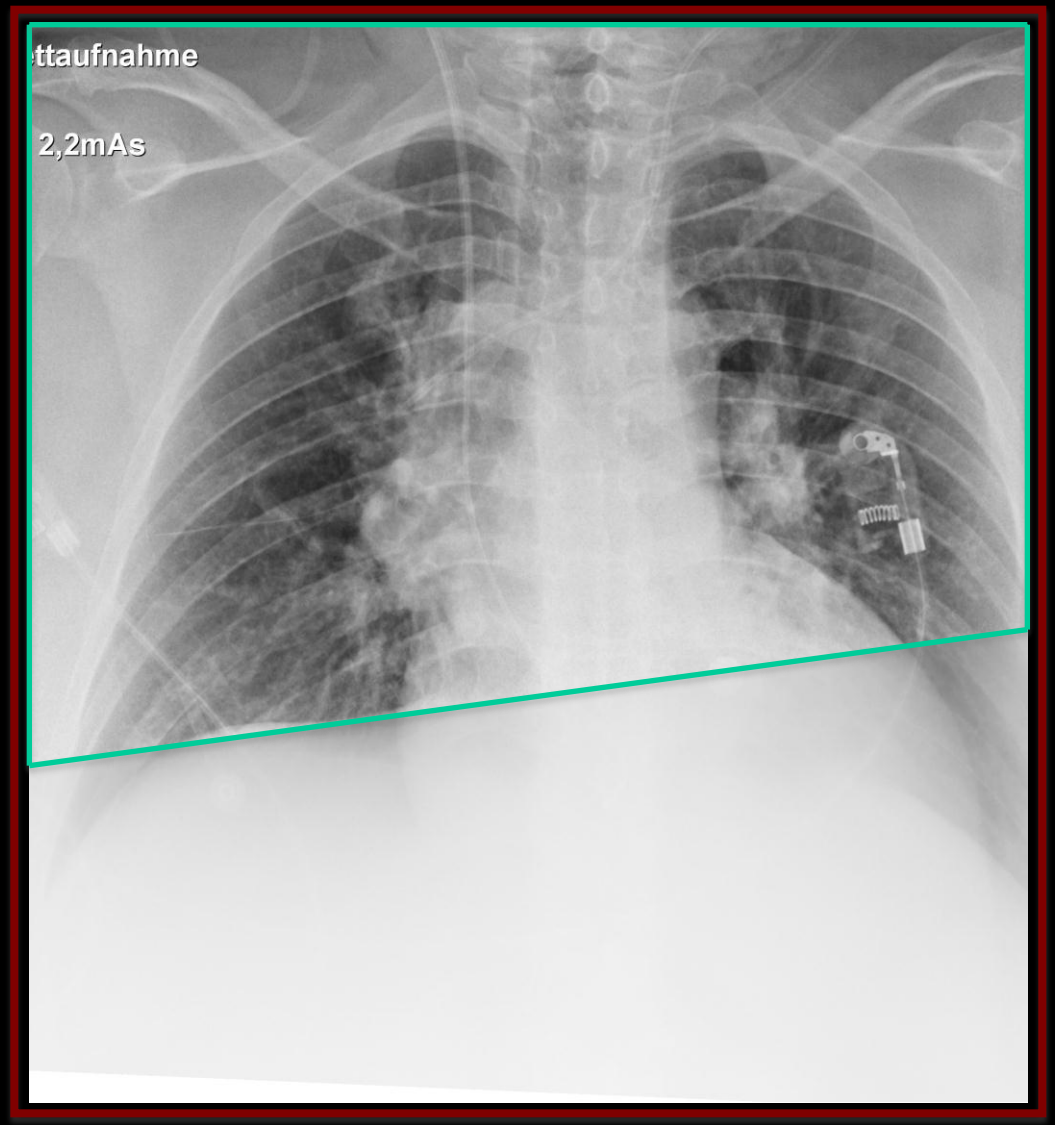
   (Direktexposition, Streustrahlung)
3. Reskalieren der Daten
4. Anpassen der Gradation

   (linear – S-förmig)

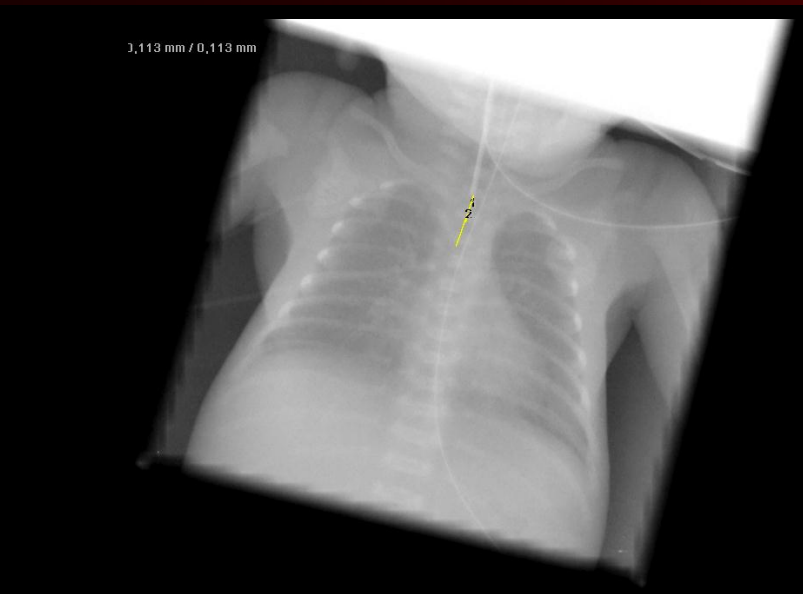
↓

Optimierung von
Kontrast und Helligkeit

„Milchglas Artefakt“



Kollimierungsfehler



Päd. AP

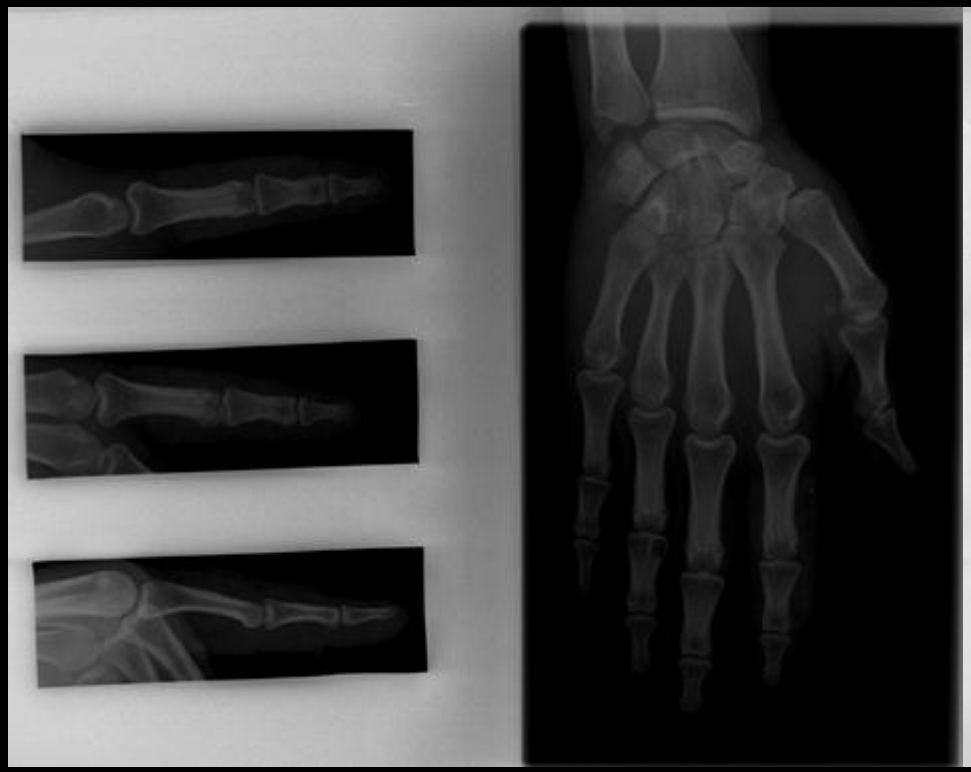
F

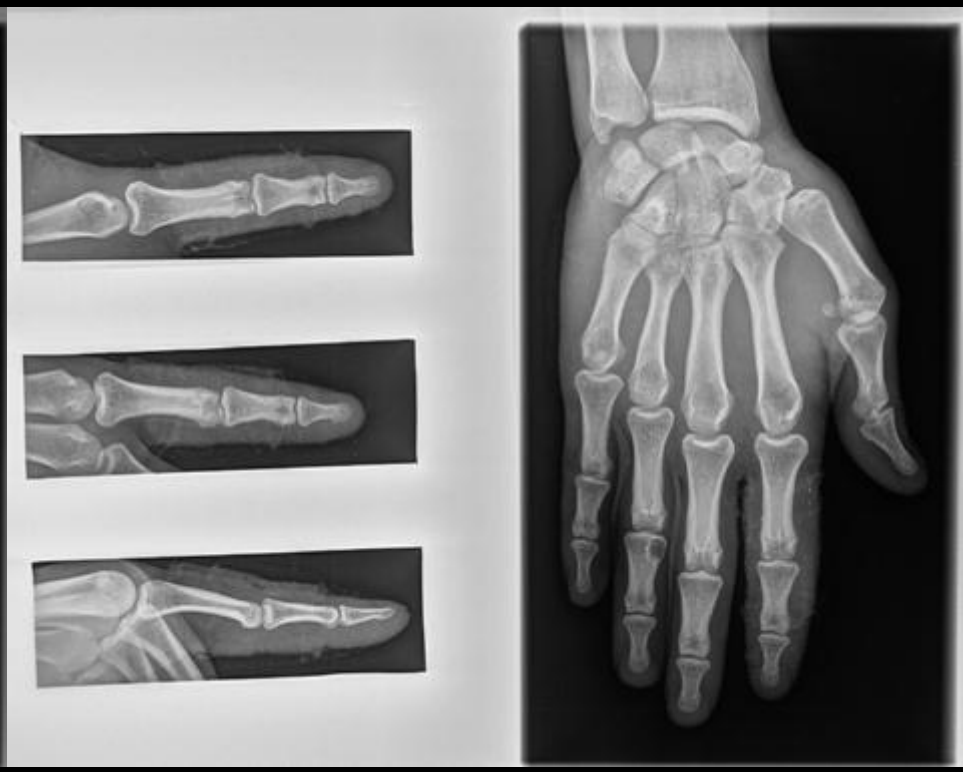
5 cm

F

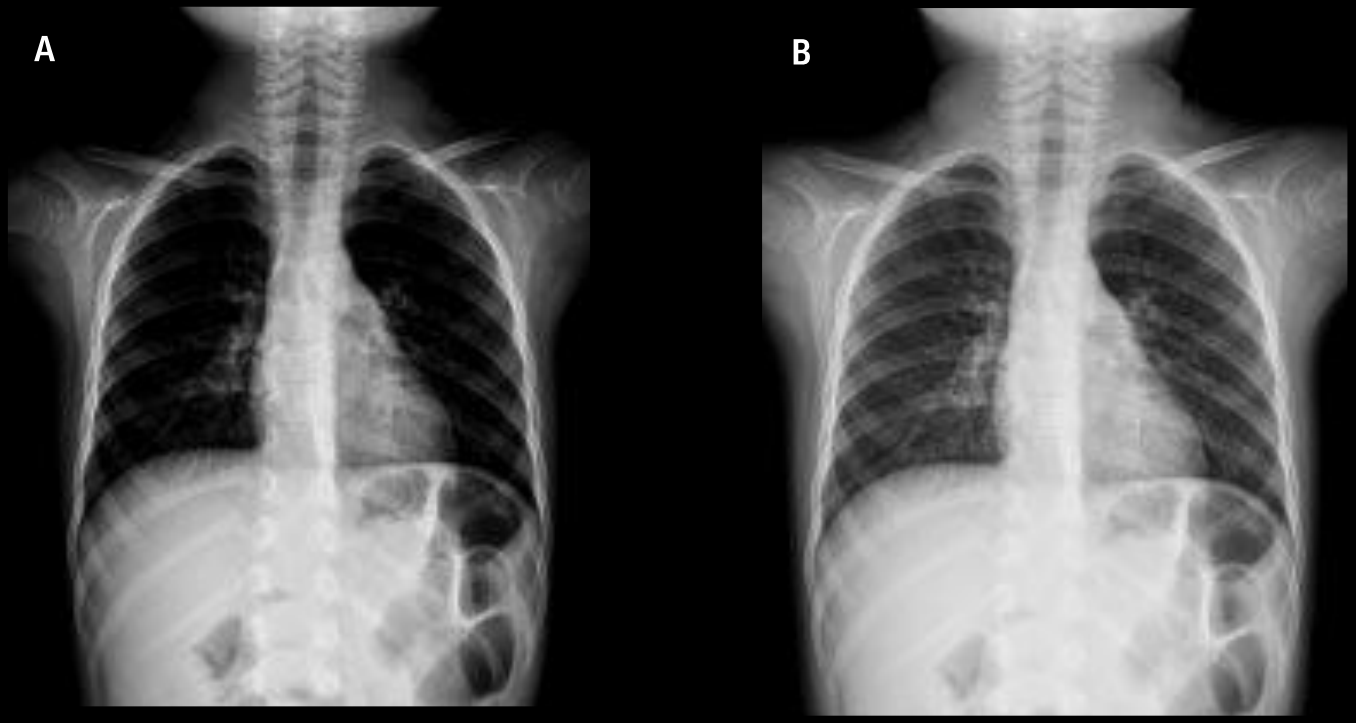
Kollimierungsfehler

Musica 1/2





Prozessierung

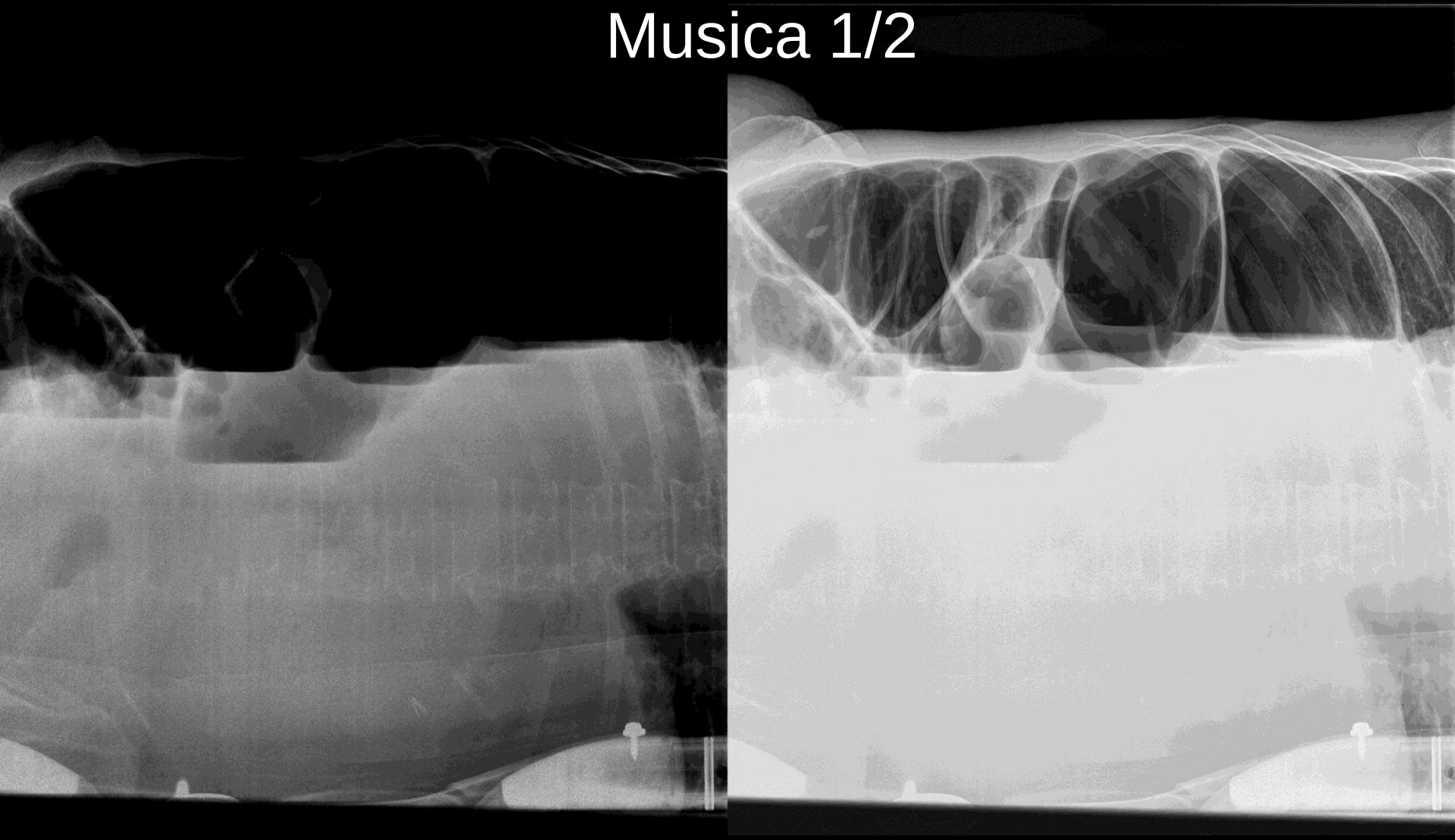


Achtung: Prozessparameter richtig wählen

Cesar LJ, Schueler BA et al. Mayo Clinic

Prozessierung

Musica 1/2

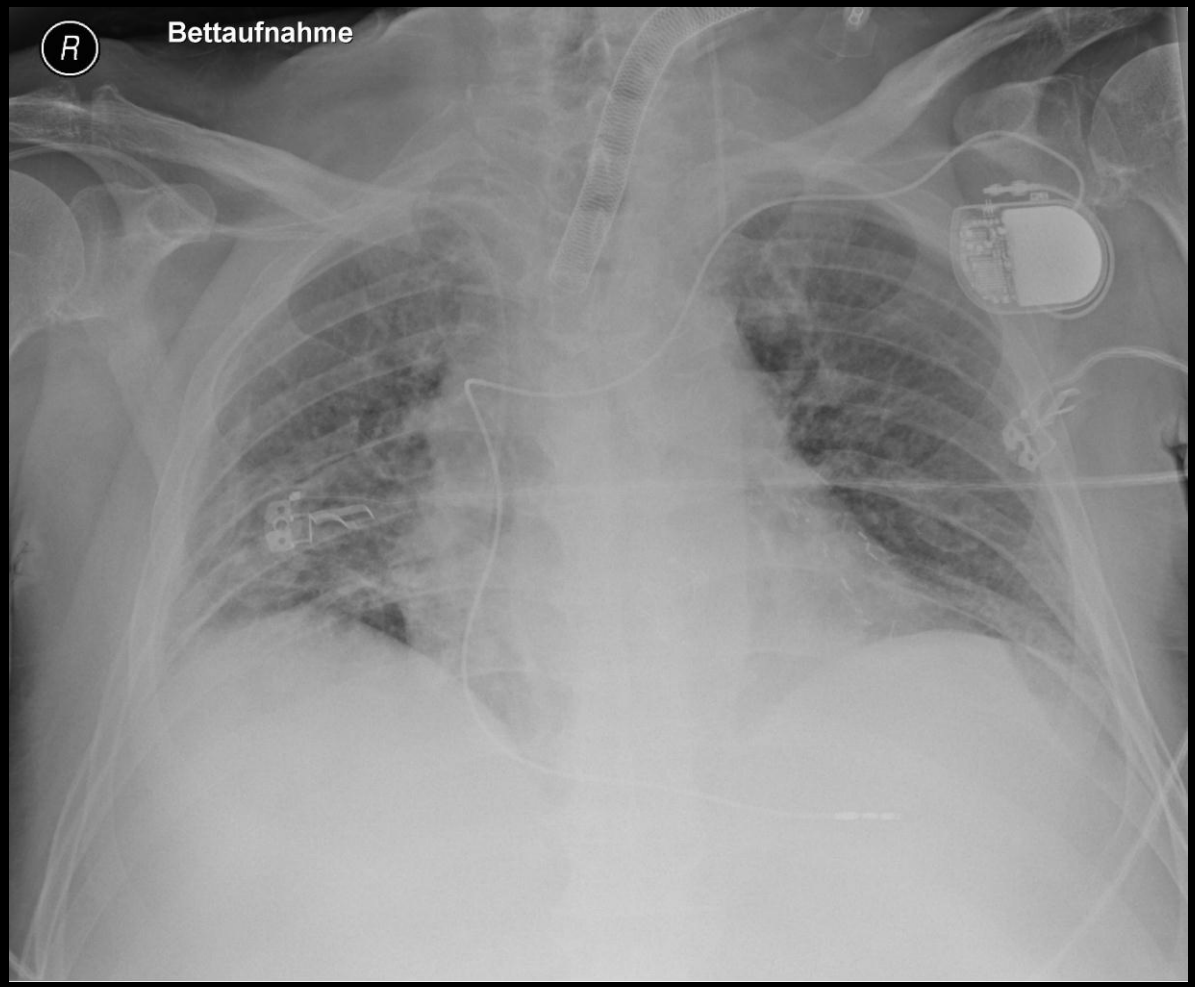


Prozessierung

Musica 1/2

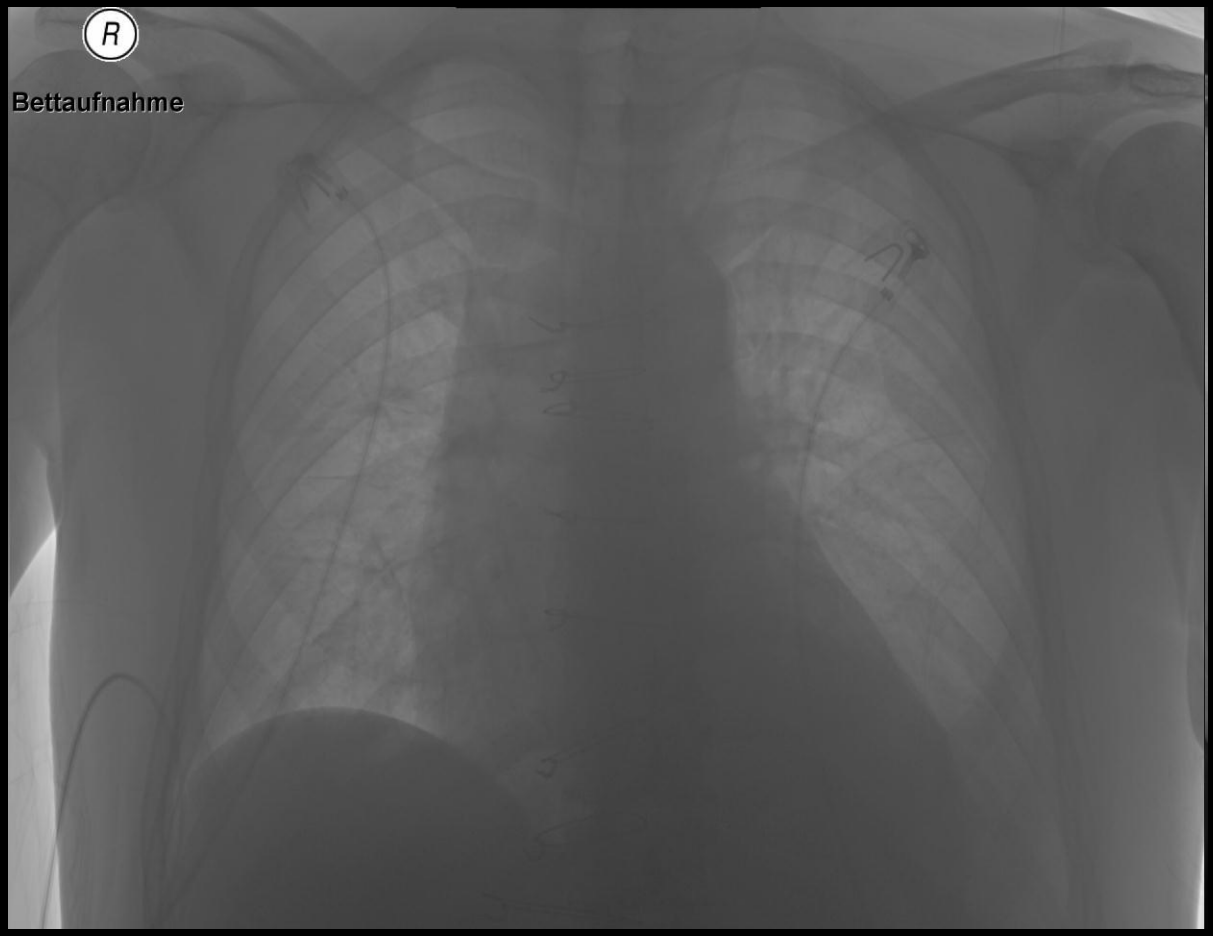
Prozessierung

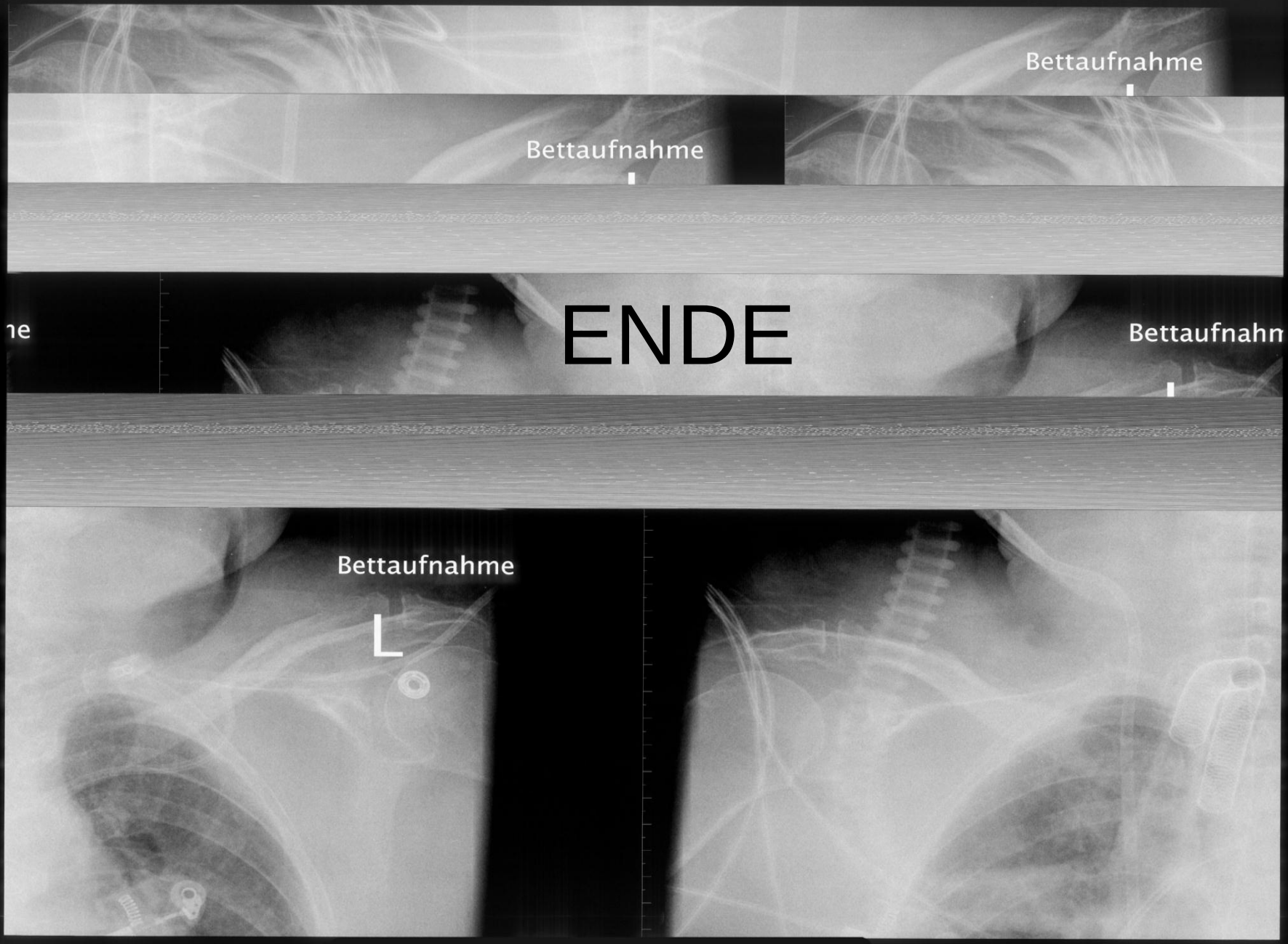
Mobile Digitale Detektoren



Visualisierung

Mobile Digitale Detektoren




Bettaufnahme
Bettaufnahme
ne
ENDE
Bettaufnahm
Bettaufnahme
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AGFA