Being the anatomical wiseguy by knowing your landmarks

Julian Caspers
Why landmarks ...

CT

MRI 2 days later
Surface Anatomy

- Frontal
- Parietal
- Temporal
- Occipital
- CS
- SF
- POS
- CinS
- Frontal (Limbic)
Lateral Surface
Sectional anatomy: Orientation

Radiological orientation:  
- upward view from the bottom / feet  
- you stand in front of the subject

Neurological orientation:  
- downward view from the top  
- you stand behind the subject
Different perspectives...

Radiologist

Neurosurgeon
Teaching Point: Always indicate image orientation in sectional brain images.
Sagittal sections

“M”-sign  “U”-sign
Sagittal sections

Hook-sign
Sagittal sections

precentral glioma
Transverse sections

Central region

- bracket sign
- “L“ or “T“ sign
- omega or handknob sign
- thin postcentral gyrus sign
(Pars) Bracket sign

Cingulate sulcus

pars marginalis
“L“ or “T“ sign

- “L“-sign: SFG merges with PreCG in form of an L
- “T“-sign: SFS intersects PreCS in a T-junction
Omega sign

"Knob of the hand" → hand motor area

Formed like an inverted Ω
Omega sign... or epsilon sign

„Knob of the hand“
→ hand motor area

Formed like an inverted $\Omega$
ca. 80%
or
Formed like a horizontal $\varepsilon$
ca. 10%

10% variants
Thin postcentral gyrus
Central region

- bracket sign
- “L” or “T” sign
- omega or handknob sign
- thin postcentral gyrus sign
Central region: Cerebral mass
Intraparietal sulcus

- from 3 to 5 and 7 to 9 clock-positions
- merges with postCS
Intraparietal sulcus

- can be separated
Broken letter M sign
AC-PC line
VAC line ...

... separates SMA from pre-SMA

Kim J-H et al., NeuroImage 2010, CC BY-NC-ND 3.0
AC-PC line
VPC line …

… indicates posterior insular border (in 95 %)
Teaching points

- always indicate image orientation in sectional brain images
- consider slice inclination when analysing sectional images
- identify SF, CS and POS for lobar segregation
- M-sign, U-sign and hook-sign identify IFG, pre-CS and CS in sagittal sections
- bracket-sign, L- / T-sign, knob-of-the-hand and thin-postCG-sign identify CS in transverse sections
- VAC separates SMA and pre-SMA; VPC indicates posterior insular border
Thank you for your attention!