

Imaging Protocols for Stereotactic Navigation

Quick reference for CT and MRI · cranial, stereotactic, ENT and spine

PARAMETERS BY APPLICATION

APPLICATION	PREFERRED	MAXIMUM	FIELD OF VIEW	MUST INCLUDE
Cranial tumor, biopsy, shunt	≤ 1 mm	3 mm	up to 25 cm	Mandible through vertex, air gap above head, all fiducials, ears, maxillary teeth, nose. Nose must be the most anterior point.
Stereotactic / DBS	≤ 1 mm	3 mm	28–32 cm	AC/PC structures, target region, entry region (frameless), and the frame itself on the registration scan.
ENT sinus, skull base, pituitary	≤ 1 mm	2 mm	up to 25 cm	Top of head, skull base and nose. Air gap around head if the scan will be merged.
Spine	≤ 1 mm	2 mm	up to 18 cm	Every vertebra of interest including spinous and transverse processes , plus half a vertebra above and below.

Aim for 1 mm or less. Maximum is a limit, not a target — a 3 mm study registers and navigates, but reconstructions are coarse and accuracy degrades with every millimeter.

APPLIES TO EVERY NAVIGATION SCAN

SLICES

Contiguous — spacing must equal thickness. No gap, no overlap.
Constant thickness throughout.

MATRIX

256 × 256 or 512 × 512, square pixels. Axial preferred; MR may be reformatted to axial.

CT — DO NOT

No gantry tilt. Standard soft tissue algorithm. Helical acceptable at 1:1 pitch — check reconstructions for artifact.

MR — DO NOT

No oblique slices. Scan along the axial plane.

- Contrast may be given before scanning if the case calls for it.
- Remove any mask or head covering before the patient goes in.
- Use the smallest field of view that still covers the region of interest.

WHY SCANS GET REJECTED

1. A gap between slices — spacing set larger than thickness
2. Gantry tilt on a CT — not recoverable, requires a rescan
3. A 3 mm ENT or spine scan — acceptable for cranial, rejected by both
4. Cropped anatomy — the nose on cranial, transverse processes on spine, the frame on stereotactic
5. Slice thickness varying through the series
6. Oblique slices on MR