IN THE NAME OF GOD

Professor
Fellowship of Stereotactic Surgery
Dept. Neurosurgery, Tabriz Medical Sciences University

www.NatureWallpaper.net

Expanding field of stereotactic surgery

- I -Functional stereotactics
- II- Mass lesions stereotactics
- III- Localizing stereotactics + open surgery

I -Functional stereotactics

A. Movement disorders
B. Pain syndromes
C. Intractable epilepsy
D. Psychiatric disabling disease
E. Spasticity
F. Spinal stereotactics procedures

A .Movement Disorders

1. Parkinsonian tremor
2. Essential tremor
3. Cerebellar dyskinesia
4. Torticollis spastics

Pain syndromes

1. stereotactic lesions to alleviate pain
2. stereotactic stimulation with electrodes to achieve pain relief

II- Mass lesions Stereotactics

A. Diagnostic mass lesions stereotactics
B. Therapeutic mass lesions stereotactics

B. Therapeutic Mass Lesions stereotactics

1. Aspiration and evacuation of fluids
2. Interstitial radioisotopes application
3. Stereotactic radiosurgery
4. Coagulation / resection with stereotactics instruments
5. Intraneoplastic drug delivery with stereotactic instruments

III. Localizing Stereotactics + Open Surgery

A. Interventional stereotactics
B. Localizing stereotactics

Indications for stereotactic Intervention

- Absolute indications regarding the disease
- Relative indications regarding the disease
- Absolute indications regarding the patient
- Relative indications regarding the patient

Indications for stereotactic interventions

I. Indications for functional
II. Indications for diagnostic
III. Indication for therapeutic
IV. Indications for localizing interventions

Indications for functional stereotactic interventions

A. Movement disorders
B. Intractable pain
C. Otherwise intractable epilepsy
D. Psychiatric disease

A. Movement disorders

1. Parkinsonian tremor
2. Essential tremor
3. Cerebellar tremor
4. Post traumatic movement disorders
5. Torsion dystonia
6. Torticollis spastica
7. Hemi- dystonia

B. Intractable pain

1. Cancer pain
2. Chronic intractable pain

II.Indications for diagnostic stereotactic interventions

- Mass lesions that are deep seated
- Mass lesions that lie bilaterally (Butter fly growth)
- Mass lesions that present multiple , and vital locations
- Mass lesions that grow diffusely without true demarcations on CT
- Mass lesions that are of suspected infectious origin (herpes , AIDS)
- Mass lesions that are of suspected systemic origin (Hodgkin , Leukemia)
- Mass lesions that have invaded the skull base considerably

Indications for stereotactics biopsy in brain tumors in cases without known primary tumor elsewhere

Mass lesion number	Surgical technique	Histology
1	Removable : craniotomy not removable : biopsy if further treatment is justified	glioma lymphoma metastasis miscellaneous
≥2	Biopsies If further treatment is justified	metastasis multiple Primaries miscellaneous

Indications for stereotactic biopsy in brain tumors in cases with know primary tumor elsewhere, but without metastatic spread

Mass lesion number	Surgical technique	Histology
1	Removable : craniotomy not removable : biopsy if further treatment is justified	metastasis second tumor non neoplestic disorders miscellaneous
≥2	Biopsies: if further treatment is justified	metastasis non- neoplstic disorders miscellaneous

Indications for stereotactic diagnostic biopsy in mass lesion of the brain

A. Patients without previous history of tumor , who present a single mass lesion
B. Patients without previous history of tumor who present multiple mass lesions.
C. Patients with a know primary tumor elsewhere , who present a single mass lesion but having no signs of metastasis elsewhere in the body
D. Patients with a know primary tumor else where , present a multiple mass lesion in the brain without other metastatic spread

III. Indications for therapeutic stereotactic interventions

A. Aspiration and evacuation of fluids
B. Interstitial radioisotope application
C. Stereotactic radiosurgery

A. Evacuation of fluids

1. Cystic craniopharyngioma
2. Cystic glioma
3. Subependymal or leptomeningeal cysts
4. Colloid cyst of third ventricle
5. Brain abscess
6. Primary hematoma

IV. Indications for localizing stereotactic intervention

A. Small tumors in the white matter
B. Small subcortical arteriovenous malformations
C. Small white matter abscesses
D. Lobar and putaminal hematoms
E. Subcortical foreign bodies

Contraindicatios for stereotactic interventions

- In general
- In detail

Contraindications

In general:

- Very young patients
- Patients with skull defects
- Patients with disturbed blood clotting
- Extremely rich vascularity of the target area
- All patients who are no longer suitable condidate for surgery due to hypertension , cardiac failure or other internal disease
- Any stereotactic intervention without an up to date angiography

Contraindication

In detail:

According to the subgroups I-IV

I. Contraindications for functional stereotactic interventions

A. Movement disorders

- Chorea and athetosis

-Tardive dyskiness

-Hemiballismus (post traumatic syndrome)

-Bilateral thalamotomies (relative **Contraindications**)

B. Chronic pain syndrome

- Survival ≥ 1-2 years after surgery(de- afferentation pain (dysesthsia))
- Bilateral lesion of the C1-C2 level (high morbidity and possible induction of sleep apnea

C. Medically refractory epilepsy

D. Psychiatric disabling disease

E. Spasticity

II. Contraindications for diagnostic stereotactic interventions

A. Resectable lesions

B. Normal brain tissue

C. Intraventricular tumors

D. Lower brain stem lesion

E. Vascular lesions

F. In or near the subarachnoid space

III. Contraindications for therapeutic stereotactic interventions

A. Aspiration and evacuation of fluids

1. Cystic craniopharyngioma
2. Post traumatic hematoma
3. Interstitial irradiation of tumors
4. Stereotactic rediosurgery

IV. Contraindications for localizing and interventional stereotactic

A. Aneurysms
B. Deep seated arteriovenous molformation
C. Foreign bodies

Pitfalls in stereotactic surgery

I. Technical problems
II. Pitfalls by underlying pathology

I. Technical problems

A . The superficial targets

B . Clinical signs of increased ICP

C . Bleeding at the target site

II. Pitfalls by underlying pathology

A . Vascular lesions

B . False positive and false negative results

C. Unsuspected mass lesions

Unsuspected mass lesions

- Multiple sclerosis plaques
- Cerebral infarction
- Hematoma (ICH) may simulate a neoplasm
- Epidermoid

Mass lesion *stereotactics*

A . Diffusely growing tumors

B . Butterfly tumors

C . Multiple tumors

D . Small deep seated tumors

E . Cystic tumors

F . Brain stem tumors

G .Pineal gland tumors

H . Skull base invading tumors

www.NatureWallpaper.net