PRINCIPLES OF ENDOSCOPIC MANAGEMENT OF NASAL AND SKULL BASE TUMORS: A New Frontier

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ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

CONCEPTS IN TREATMENT

Prior Experience Of the Surgeon
- External Approaches to Tumor Resection
- Endoscopic Sinusitis Surgery
- Extended Endoscopic Intranasal Surgery
- Endoscopic Intranasal Tumor Surgery

Nasal/Skull Base Tumors Characteristics
- Tumor Histology and Biology
- Tumor Location and Adjacent Structures
- Tumor Size
- Prior Treatment and Vascularity

A Graduated Approach to Treatment & Repair
- Lateral Nasal Wall, Septum
- Pterygopalatine Fossa
- Skull Base
External Approaches to Tumor Resection

Maxillectomy, **Infratemporal Fossa, CF Resection**

Prior Experience Of the Surgeon – Developing a Skill Set

**Endoscopic Sinusitis Surgery**
- Ethmoidectomy, Antrostomy, Sphenoidotomy,
- Frontal Sinusotomy (types 1-2), Mucoceles

**Extended Endoscopic Intranasal Surgery**
- Orbital/optic Nerve Decompression, CSF
- Rhinorrhea and Dural Repair, DCR
- Frontal Sinusotomy (type 3, Lothrop)

**Endoscopic Intranasal Tumor Surgery**
- Resection Small Nasal Tumors
- Medial Maxillectomy
- Resection Large Nasal Tumors
- Resection Pterygopalatine Fossa Tumors
- Resection Skull Base and Pituitary/Clival Tumors
**ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS**

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**ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS**

Nasal/Skull Base Tumors Imaging

Computed Tomography
- Best for bone – skull base, orbital wall, optic canal, bone remodeling

Magnetic Resonance Imaging
- Best for soft tissue – brain, dura, tumors, opacified sinus, orbit

PET/CT
- Best for evaluation of regional, metastatic and recurrent disease

Angiography
- Best for evaluation of blood supply, adjacent vascular structures and pre-op embolization
ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

Nasal/Skull Base Tumors Imaging
Computer Assisted Image Guidance and Staging

Computed Assisted Image Guided (CAIG) Surgery
• Best for – anterior and middle cranial fossa biopsy when site, borders or location questionable wall, optic canal, bone remodeling

CAIG Staging Biopsy
• Best for - defining margins of tumor prior to resection

ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

Nasal/Skull Base Tumors Characteristics

Tumor Histology and Biology
Resectability – Benign > Malignant
Circumscribed > Invasive

Tumor Location and Adjacent Structures
Tumor Size
Prior Treatment and Vascularity
**ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS**

**Nasal/Skull Base Tumors Characteristics**

**Tumor Histology and Biology**

**Tumor Location and Adjacent Structures**

*Resectability* – Nasal septum > lateral wall > extra-conal
medial orbit > sphenoid sinus/ medial aspect optic nerve >
pterygopalatine fossa > extradural cribiform plate & frontal
bone > dura > intradural > brain

**Tumor Size**

Prior Treatment

**Prior Treatment**

**Prior Treatment**

**Tumor Size**

*Resectability* – small and observable margins > large and ill-defined margins. *However* -

**Prior Treatment and Vascularity**
ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

Nasal/Skull Base Tumors Characteristics

Tumor Histology and Biology
Tumor Location and Adjacent Structures

Tumor Size
- Resectability – small and observable margins > large and ill-defined margins. However -

Prior Treatment and Vascularity

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Tumor Histology and Biology
Tumor Location and Adjacent Structures

Tumor Size
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Prior Treatment and Vascularity

(dura) tumor

skull base
ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

A Graduated Approach to Treatment and Repair

Lateral Nasal Wall, Septum
Pterygopalatine Fossa
Skull Base – Extradural v Intradural

increasing complexity
frontal sinus

frontal bone
4 resect
5 repair

ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

A Graduated Approach to Treatment and Repair

Lateral Nasal Wall, Septum
Pterygopalatine Fossa
Skull Base – Extradural v Intradural
• Two Surgeons-Four Handed Technique
ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

A Graduated Approach to Treatment and Repair

Lateral Nasal Wall, Septum
Pterygopalatine Fossa
Skull Base – Extradural v Intradural
• Two Surgeons-Four Handed Technique
• Pituitary and Clival Surgery- selecting an approach

Spencer, 1999

ENDOSCOPIC MANAGEMENT OF NASAL/SKULL BASE TUMORS

A Graduated Approach to Treatment and Repair

Lateral Nasal Wall, Septum
Pterygopalatine Fossa
Skull Base – Extradural v Intradural
• Two Surgeons-Four Handed Technique
• Pituitary and Clival Surgery- reconstruction
• Anterior Skull Base - reconstruction

Fortes, 2007

Kassam, 2008
External vs. Endoscopic Approaches

61 y/o female with right periorbital pain
- CT/MRI/PET-CT – tumor confined to ethmoid/skull base without dural invasion
- low grade adenoCA
- loss of smell

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A Graduated Approach to Treatment & Repair
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- Skull Base (requires a surgical team)