Giant anterior cranial base meningioma: operative considerations and outcome

Dr. Rakesh Ranjan,
MS, MCh, DNB (Neurosurgery)
Pune
Introduction

• Tumor equivalent diameter more than 4.5 cm
• Arise from
  • Cribiform plate
  • Orbital roof
  • Planum sphenoidale
  • Anterior clinoid process
  • Tuberculum sellae
Introduction

• Difficult to operate due to proximity to
  • Optic nerve and tract
  • Internal carotid and anterior cerebral arteries
  • Perforators
  • Cavernous sinus
Operative considerations

• Decision for surgery
  – Should be 1st line of treatment in all cases
  
  Unless

Patient is medically unfit to undergo procedure.

Endoscopic transnasal approach

Endoscopic endonasal versus open transcranial resection of anterior midline skull base meningiomas.

Komotar RJ, Starke RM, Raper DM, Anand VK, Schwartz TH.
Department of Neurological Surgery, Memorial Sloan-Kettering Cancer Center, New York, New York, USA.
Operative considerations

• Pre-operative preparation
• Angioembolization
Operative considerations

• Craniotomy
  – Bifrontal
    • transbasal
  – Unilateral
    • Fronto temporal
    • pterional
Operative considerations

- Ligation and division of superior sagittal sinus
- Opening of sylvian fissure
Operative considerations

• Surgical principles:
  – Tumor debulking
  – Coagulation of the feeding arteries
  – Dissection of the capsule from surrounding structures

• Ultrasonic aspirator
• Sharp dissection
• Minimal brain retraction
Operative considerations

• Preventing neural and vascular injury
  – Sharp arachnoid dissection and meticulous care of anatomical pathways

  • Frameless stereotaxy (Neuronavigation)
  • Doppler ultrasound
Operative considerations

• Achieving complete excision

• Closure
  – Repair of dural defect
  – Reconstruction of cranial base
Our experience

• 5 patients
• 3 males and 2 females

• Presenting features
  – Headache
  – Seizures
  – Diminished vision
  – Motor deficit
Our experience

Tumor size
• Diameter range
• mean
• Tumor location
• Vessel involvement
• ACA and branches
• MCA and branches
• Optic nerve
• Cavernous sinus
Outcome

• A complete resection should be attempted in all cases

  Except

  – Cavernous sinus involvement
  – Dense adherence of the tumor to optic nerve or Vascular structures.
Outcome

• Gross total excision in 100% cases
• No new neurological deficit
• CSF rhinorrhea- 1 patient
• Anosmia – 3 patient
Conclusion

• Challenging tumors

• Complete microsurgical excision should be the aim in all patients.

• Can achieve long term control and survival.

• New technological advancement can aid but donot replace micro neurosurgical skills.