Intraoperative mapping of language functions: a longitudinal neurolinguistic analysis

Josef Ilmberger, Maximilian Ruge, Friedrich-Wilhelm Kreth, Josef Briegel, Hans-Juergen Reulen and Joerg-Christian Tonn

Lilith Van Biesen

Vrije Universiteit Brussel
Variables

**independent variable** = the tumor resection

**dependent variable** = aphasia (scores in pre-operative and postoperative tests)
Why?

• To reduce the frequency of post-operative deficits
• To maximise the tumor resection
• To detect prognostic factors for improved/stabilized or deteriorated language function
How? Participants

Patients

1) untreated or recurrent lesions near or within suspected language-related brain areas
2) between 15 and 70 years of age
3) fluent in speaking and understanding German
4) no severe aphasia prior to surgery
5) were not mentally disoriented
6) no risk factors for an awake craniotomy
How? Methods

- Preoperative and Postoperative Neurolinguistic Evaluation: AAT
- Patient Information and Preparatory Training
- Intraoperative Language Testing: ‘This is’ + name of object in line drawing
- Statistical Analysis for the Evaluation of Prognostic Factors
- Other
Pterional craniotomy

1. incision
2. pterion region of the skull

Intraoperative mapping of language functions: a longitudinal neurolinguistic analysis
9-1-2012 Pag.6
Results
Results

Prognostic factors for deteriorated language function

• Not able to name any such factors with certainty, but
  • Preoperative aphasia
  • Increased age (> 40 years of age)
  • Submaximal performance on naming test
Results

Extent of Resection

• Gross-total resection in 74 (48.4%) of 153 cases

• Significantly less often in patients with language-relevant areas within the tumor
Limitations & Criticism

• Insufficient congruence of fMRI and intra-operative stimatulation mapping data
• Attention to semantic classes in naming test
• Wide age range (15 to 70)
Future research

- Impact of tumor size
- Functional reorganisation
- Intra-operative mapping of different semantic classes
Thank you for listening