# Casse lesson nr.32/2025

## Awake Craniotomy in a Bilingual Patient: A Case Report

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Introduction:Awake craniotomy allows maximal safe resection of lesions located within or adjacent to eloquent cortical regions[1,3,4] . In bilingual patients, cortical representation of languages may overlap but also demonstrate distinct activation patterns. Pre-, inta-,postoperator monitoring of language and cortical mapping of eloquent area is essential to preserve cognitive and linguistic functions[1,2,3,4]. We present a bilingual patient with a cortical eloquent lesion treated through an awake craniotomy with intraoperative dual-language monitoring.

Casse presentation: A 67-year-old righthanded bilingual female, native language is Polish and second language is Albanian. She lived in Poland until the age of 27, where she completed her secondary education. For the past 40 years, she has been residing in Kosovo, with predominant spoken language Albanian.
Past medical history : Right breast ductal carcinoma in situ , treated surgically 15 years ago, without CHT, RT, or hormone therapy.
She presented with two-month history of progressive language and cognitive difficulties.

Brain MRI: Left Frontal lesion, Hipo in T1, iso/hiper on T2, with contrast enhancement. Radiologic appearance in favor of breast metacronic metastasis.(fig 1)

EON: No cranial nerve involvement, no sensory or motor deficits, and no pathological reflexes were observed.

Neurocognitive and linguistic assessment was performed in both language, with assistance of her sons, bilingual educated.

Language testing : naming 70/80 on the Boston Naming Test (BNT),
reduced phonemic fluency (4 words/min), better performance on semantic fluency (animals: 5 words/min; vegetables: 4 words/min), Writing was with semantic paraphasia in Albanian, normal in Polish.
Automatic verbal responses were normal.
In conclusion, apart semantic paraphasia's in the non-native language (Albanian), no other differences were found between the two languages.

Cognitive testing demonstrated ideomotor and constructive apraxia, executive dysfunction, dyscalculia, dysmnesia with immediate and delayed recall deficits, impairments in working and alternating memory. Semantic, episodic memory, attention, and visuospatial capacity were preserved (Bell's test, graphic fluency, geometric copying, and Ruff Figural Fluency Test were adequate). . Right-sided visuospatial neglect was detected on the Rey-Osterrieth Complex Figure Test (Cognex protocol).

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Our impression considering difficulties in our professional capacity to explore in Polish, may have influenced the cognitive assessment.

During Awaken craniotomy she was under continuous dual-language monitoring and cortical language mapping was checked .[6,9] (fig2). GTR was realized preserving her immediate pre operative linguistic and cognitive findings. (Fig 3)

Two days later, the performed with her son assistance that neurocognitive and linguistic in her native language (Polish), with her son's assistance better performance: improvement in naming (76/80 on BNT), phonemic fluency (5 words per minute), semantic fluency (animals: 7 words/min, vegetables: 8 words/min), Repetition and automatic verbal responses were normal
In Albanian, cognitive and linguistic assessment were unchanged.
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Biopsy confirmed metastatic breast invasive ductal carcinoma (G3).(Prof.Besim Latifaj,London).

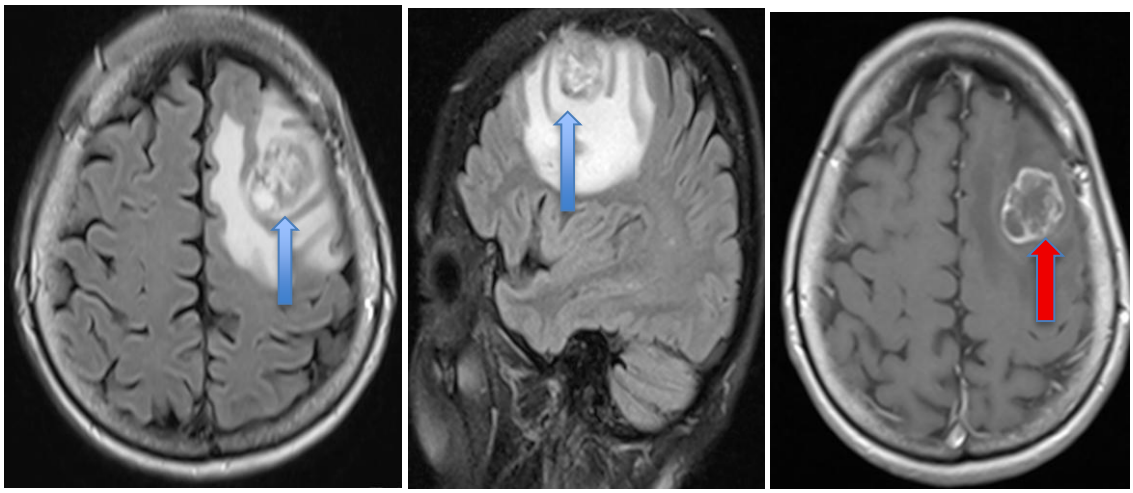

Fig 1:Brain MRI Left Frontal lesion( blue arrow) with enhancement of contrast (red arrow)

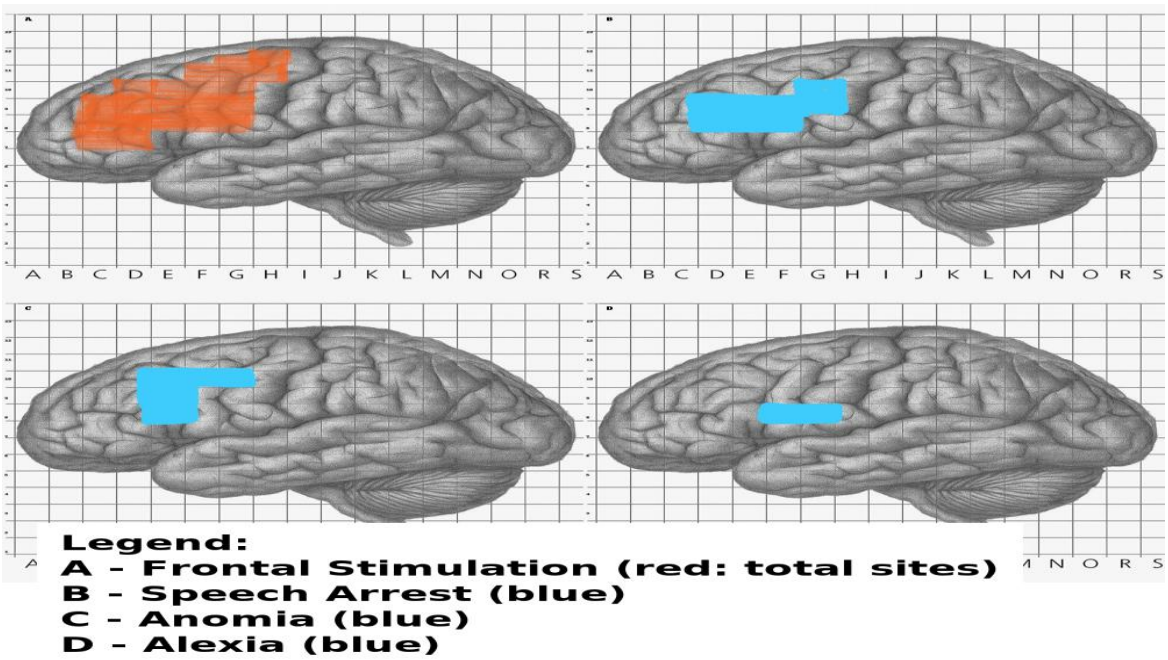


Fig 2: Figure 1. Intraoperative language mapping during awake craniotomy of the patient. Panels A–D illustrate cortical stimulation findings according to *N Engl J Med*. 2008;358:18-27

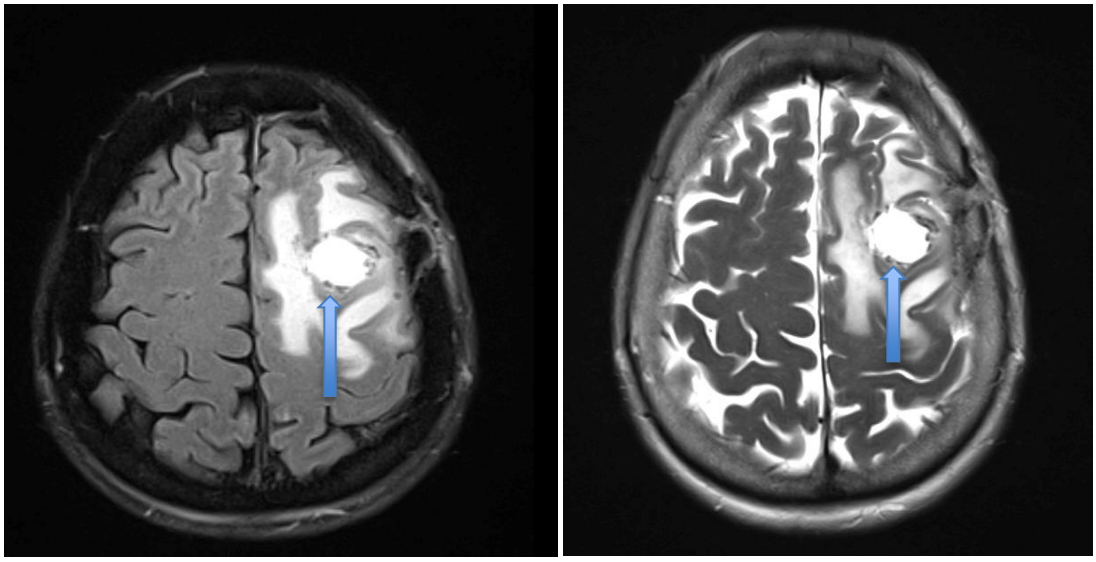

Fig 3:Post op brain MRI,GTR resection (blue arrow)

Discussion: This case show the complexities of awake craniotomy in bilingual patients with lesions affecting language-dominan dcortical regions.

In bilingual patients cortical representations of each language may be distinct, overlapping, or only partially shared according to the limited experience since now reported [4].
Intraoperative mapping strategies, with direct electrical stimulation and bi- linguistic assessment , in our patient confirmed the recommendation of Bello, that it can be achieved maximal safe resection (GTR), while preserving functional networks. The overlapping of languages showed improvement in her native language with the demonstration of stronger cortical resilience for native languages[2,3,4].
Our case further emphasizes that individualized bilingual assessment is essential, both pre- ,intra- and post operatively, to avoid overestimating deficits based on testing in a single language.

Conclusion: Awake craniotomy with intraoperative language monitoring and mapping is gold standard technique for the management of bilingual patients with lesion in eloquent cortex[1,3,4,6,7] . This approach maximizes the extent of resection while preserving language and cognitive function across languages. Bilingual patient assessment and mapping protocols are mandatory to demonstrate the importance of mother tongue language[3,4,6,7].

Key words: Bilingualism, Awake craniotomy, Language mapping, Glioma, Frontal lobe lesion, Cortical stimulation, Neurocognitive assessment, Semantic paraphasia

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