

## **Yellow Fluorescence Y560 Filter Microscope Use In Brain Tumour Surgery**

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Gliomas are very common primary cerebral tumours encountered in Neurosurgical practice. Gross total resection [GTR] of these tumours have been proven beyond doubt to increase the overall and progression free survival.

Modern comprehensive treatment of gliomas consists of Surgical resection, Chemotherapy and Radiotherapy. It is difficult to differentiate tumour boundary from the normal brain Parenchyma during resection due to the infiltrating nature of the gliomas.

Many tools available to help in increasing Gross total resection like Intra op CT & MRI or USG, Navigation System, Cortical Stimulation and Fluorescence guided resection. Among all these tools, Fluorescence guided resection shown great promise because it allows intra operative visualization of tumour boundaries. Maximal tumour removal without surgery related new neurological deficits is the present concept. Many fluorescence agents like 5-ALA, Indocyanine green and Sodium fluorescein available.

Stummer et al presented promising results of ALA Trial. The ALA study confirmed a significantly higher extent of tumour removal in 5-ALA [5-Amino levulinic acid] group compared to control group [65% Vs 36%]. 6 - months progression free survival also significantly improved [41% Vs 21%]. So 5-ALA became an important tool for safe maximal resection of tumours. But due to many reasons like oral intake of the drug 3 hrs before surgery, avoiding sunlight for 48 hrs, expensive nature, we need to find an alternate.

Fluorochrome sodium Fluorescein [FL] which has been used in ophthalmic surgeries widely can be used for improved visualisation of the brain tumour tissue. Circulating FL is excluded from normal brain by Blood Brain Barrier [BBB]. If BBB disrupted for any reason like tumour or Infection, this can be very well seen under yellow filtered light [560 nm] at low doses. White light also shows fluorescence, but in higher doses only. Many studies correlates Gadolinium enhancement with BBB disruption. So this principle used in Primary or Metastatic tumours of the brain, Meningioma by FL tumour detection. Yellow 560 dye is inexpensive, available readily and very few side effects. Clinical examples of usage of this filter in Brain tumour surgery is explained in this presentation.