SINGLE VS MULTIFRACTION STEREOTACTIC RADIOSURGERY FOR ARTERIOVENOUS MALFORMATION

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Background :

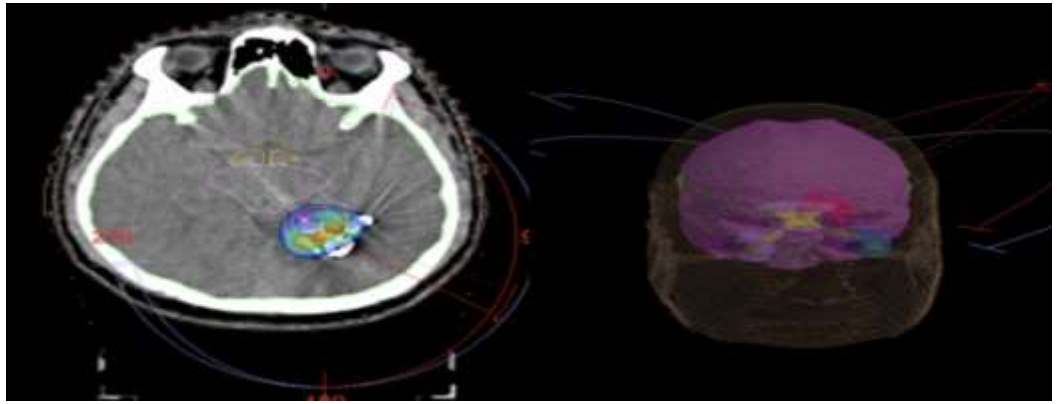
•Stereotactic radiosurgery (SRS) is a well established treatment modality for Arteriovenous malformations (AVM).

•Radiobiologically, Arteriovenous malformation behaves like an late reacting tissue

Which implicates the higher dose per fraction will achieve better obliteration of nidus.

• In our study we have compared obliteration rates of single (SRS) and multifraction stereotactic

Radiosurgery (fSRS) for intracranial AVM.



Materials and methods :

•We retrospectively compared 23 patients who received single fraction SRS

and 22 patients with multifraction SRS (No of fractions – 3) for intracranial AVM from 2020 to 2025.

•Median dose prescribed was 21 Gy (21-24Gy) and 18 Gy (14-18Gy) in fSRS and SRS group respectively.

•Median volume of nidus was 5.35 cc (1.1-8cc) and 20 cc (16-44cc) in SRS and fSRS group respectively.

•Obliteration rates were calculated for SRS and fSRS group and compared.

•We analyzed volume of Brain receiving 12 Gy (V_{12Gy}) in SRS group

•and dose received by 20 cc of Brain (D_{20CC})

in fSRS group and its correlation with volume of nidus

Results :

•The median follow up was 36 months (6-48 months).

•The obliteration rates in single fraction SRS group at 12, 36 and 48 months were 62%, 85.2% and 100 % respectively.

•The obliteration rates in fSRS group at 12, 36 and 48 months were 40.7%, 65.3% and 80.1% respectively. The obliteration rates at 12, 36 and 48 months were significantly better in SRS group compared to fSRS group (p-value -0.008, <0.0001 and 0.01 respectively).

•The V_{12Gy} and D_{20cc} were significantly higher with high volume of nidus in SRS group (p-value – 0.02) and fSRS group (p-value – 0.001) respectively.

Conclusion :

•We conclude that single fraction has better obliteration rate Compared to multifraction SRS.

•For large sized AVM, volume staged SRS might be better to Achieve complete obliteration of nidus with minimal radiation Induced Brain necrosis.