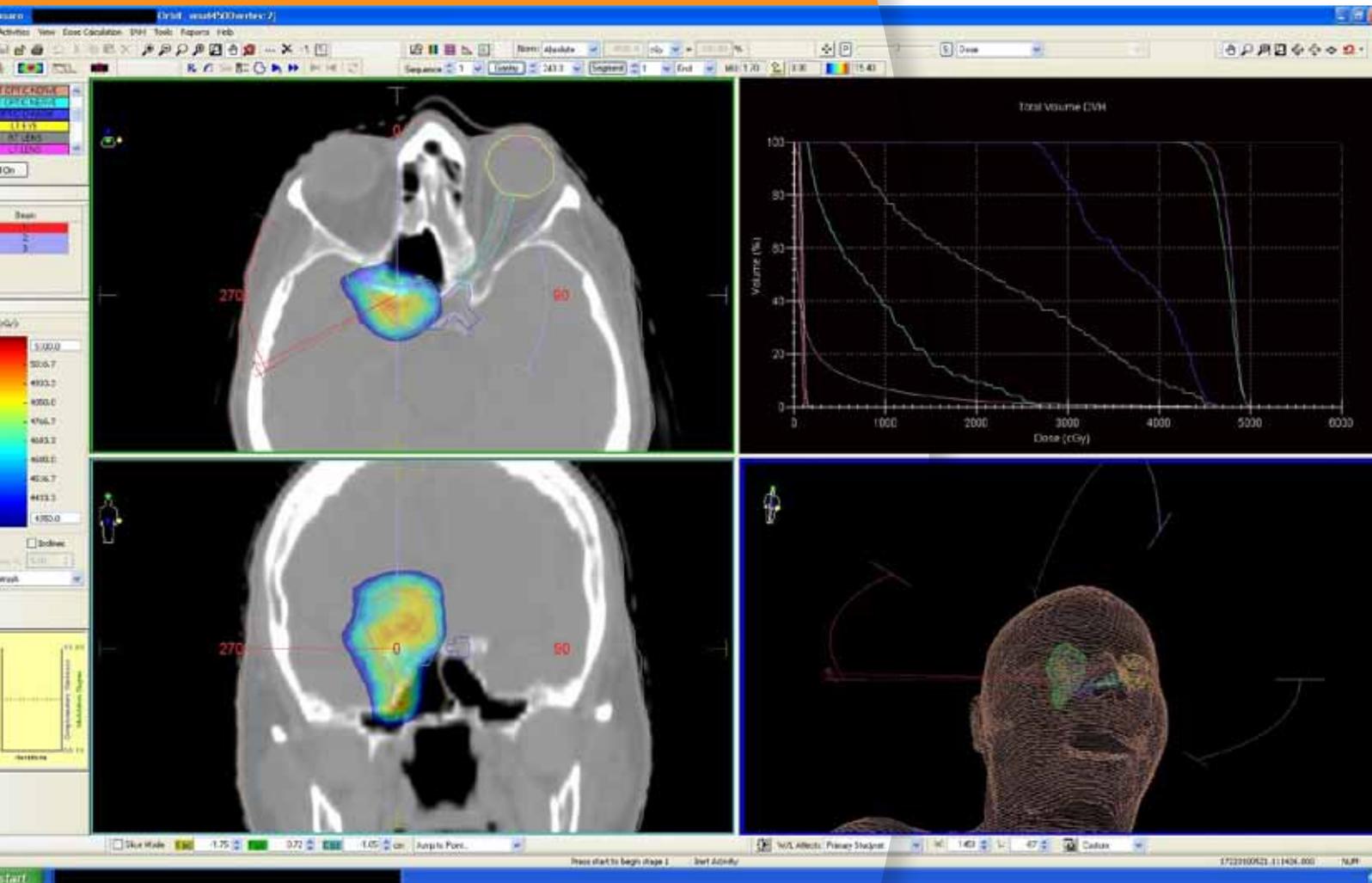# Three arc VMAT for sphenoidal meningioma planned using Monaco® with VMAT

Institution
1st Line Oncology, Florida USA

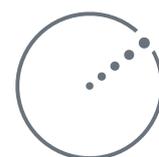**Patient**
80 year old woman

Diagnosis
Sphenoidal meningioma

Plan
Three non-coplanar partial Monaco with VMAT arcs
54gy in 30 fractions

ELEKTA

The way you're treated makes all the difference.

Three arc VMAT for a sphenoidal meningioma planned using Monaco® with VMAT

Patient history and diagnosis

An 80 year old Cuban woman presented in 2005 with an episode of disorientation while driving. At the time she had an MRI and was diagnosed with a meningioma growing close to the optic chiasm. At this time the patient was reluctant to have surgery due to social reasons; she was the sole care-giver for a bed-bound husband with Alzheimer's disease and did not want to receive any treatment that would leave her incapacitated for any period of time.

Since then a neuro-opthalmologist has followed the patient and in the last year noticed that the tumor has increased in size by 25%. The window of opportunity for surgery was past but the optic chiasm was now pushed laterally and the optic nerve encased by the tumor. The patient was also experiencing pressure headaches and the neuro-opthalmologist felt that some intervention was required as the patient was a hair's breadth away from having optical issues.

Due to the size and location of the tumor it was determined that this patient was not a candidate for Leksell Gamma Knife® or Cyberknife® radiosurgery. It was decided that the only option available to reduce tumor size and preserve the patient's sight was to treat with VMAT.
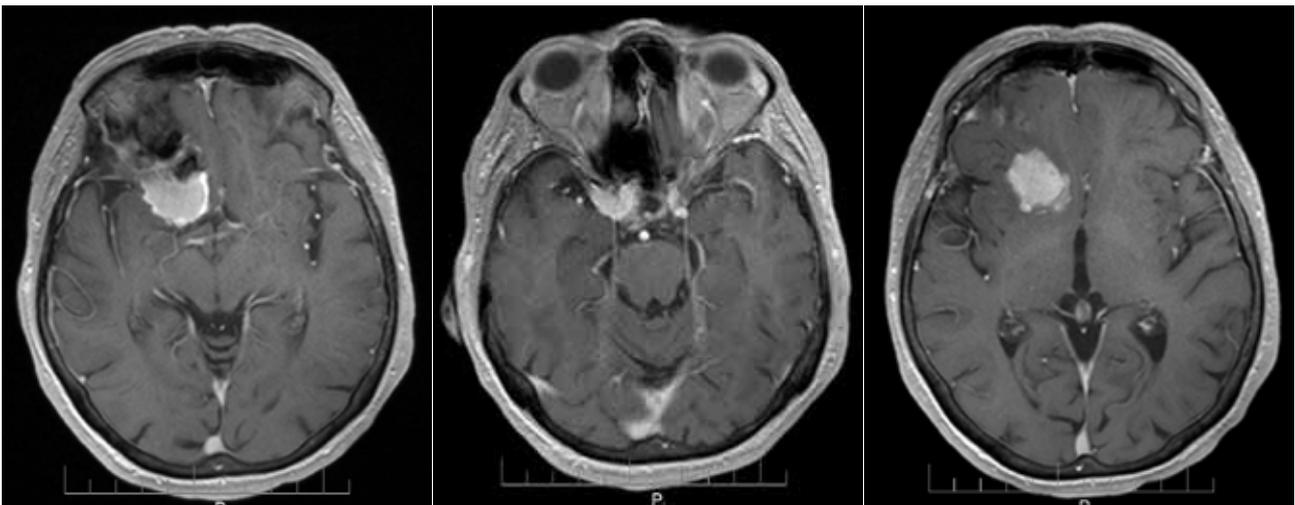

Figure 1. T1 weighted MR axial images

VMAT treatment planning

The contours were drawn on MRI/CT fused images and the patient was planned to receive three non-coplanar partial VMAT arcs using Monaco® with VMAT. A plan was created to deliver 54gy in 30 fractions to the PTV. At this dose level the patient would have a 3% chance of blindness.
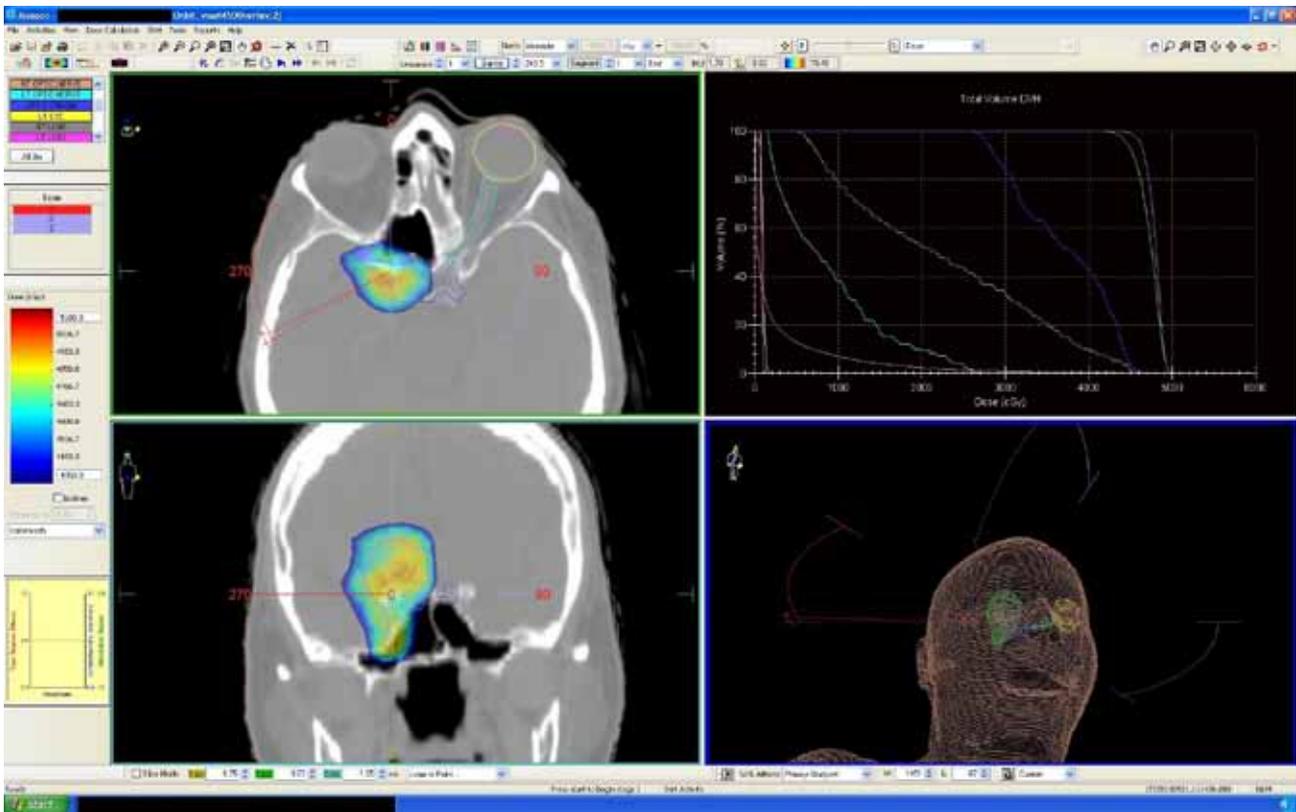
Figure 2: Axial and coronal view of dose distribution, DVH and 3d view of arcs

Figure 3: Prescription showing cost functions and reference doses

Figure 4: DVH statistics

VMAT treatment

The patient was positioned supine and immobilized using an Aquaplast® headframe with mouthbite and thermoplastic mask. The treatment was delivered on Elekta Synergy® and verified daily using VolumeView™ 3D imaging.

Collimator	Couch	No. of segments	MU/fx
0.0	0.0	16	76.50
0.0	0.0	14	89.40
0.0	90.0	28	149.10
	Total	58	315.00

Table 1.

Patient set-up time	2min 16sec
VolumeView™ imaging	1min 17sec
Image registration	2min 11sec
Delivery time	2min 30sec
Total time	11min 35sec

Table 2

Outcome and follow-up
At the time of writing the patient had not yet completed treatment. She is coping well and is not experiencing any notable side effects.