

SCaLPEL Erasmus+ Neurosurgical cases

2nd meeting

professor Miroslav Vukic, MD, PhD
Sergej Marasanov MD



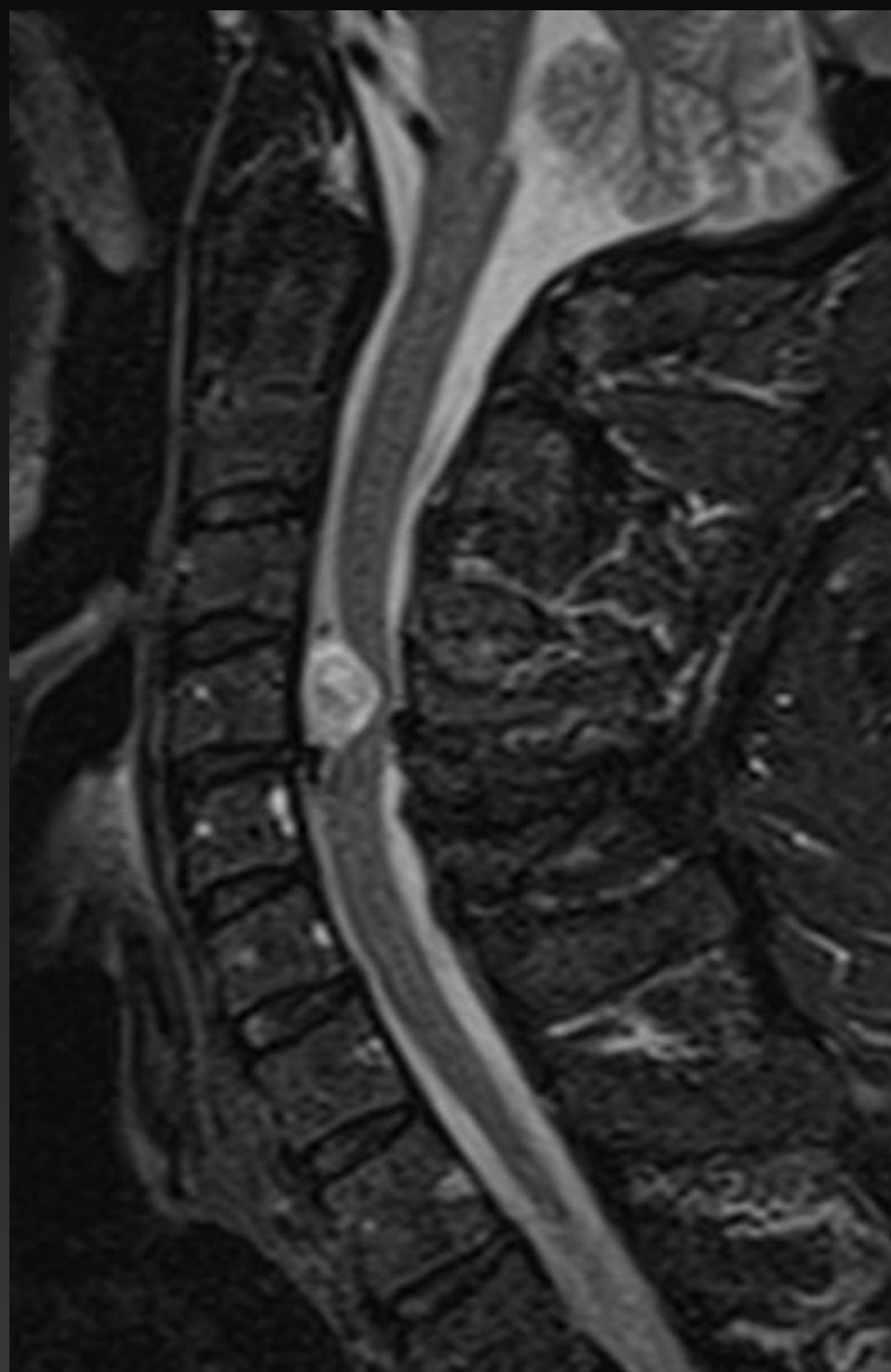
Co-funded by
the European Union



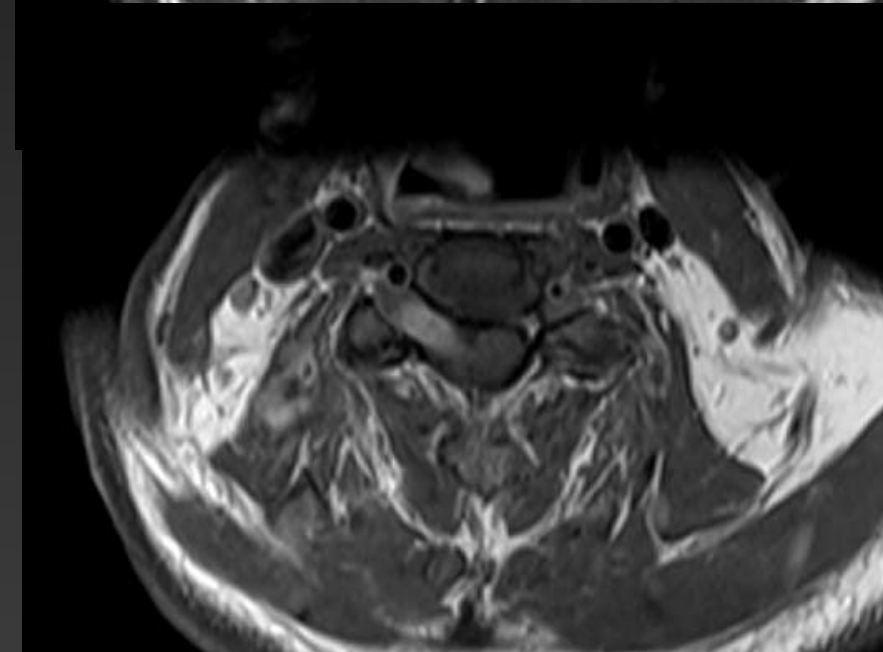
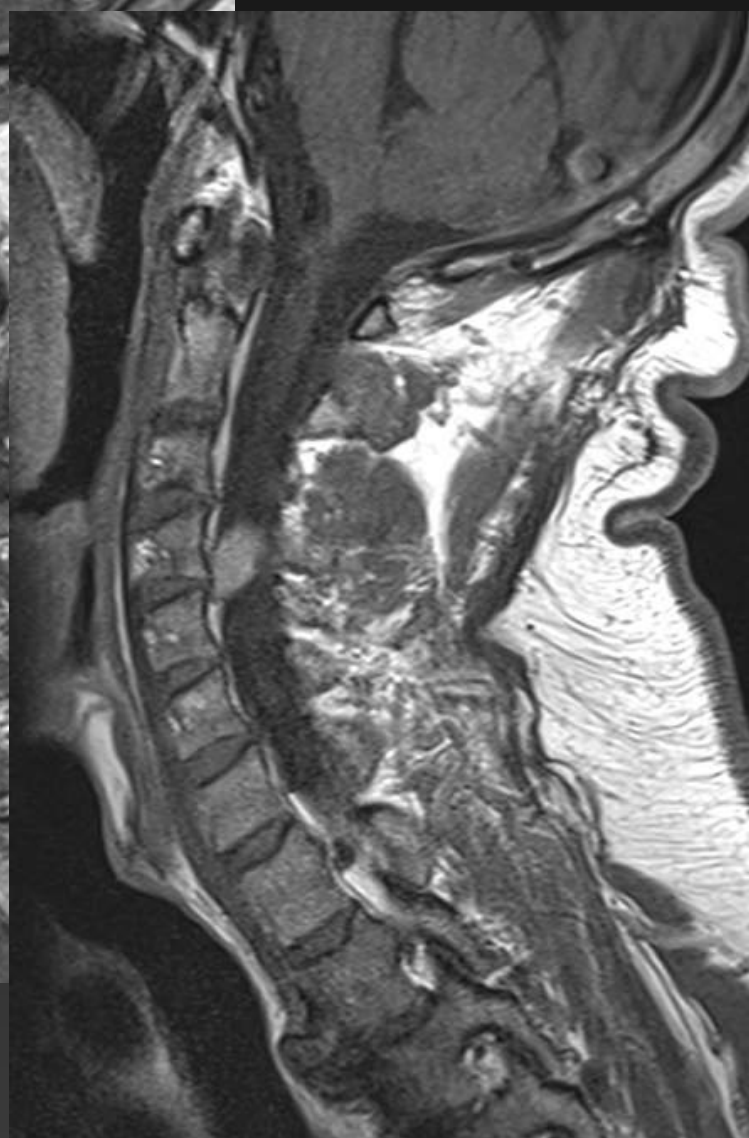
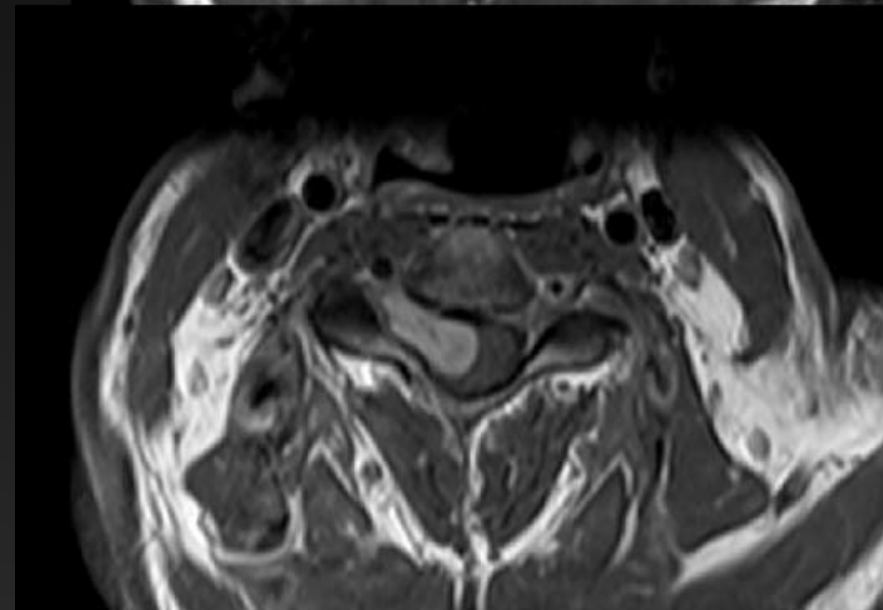
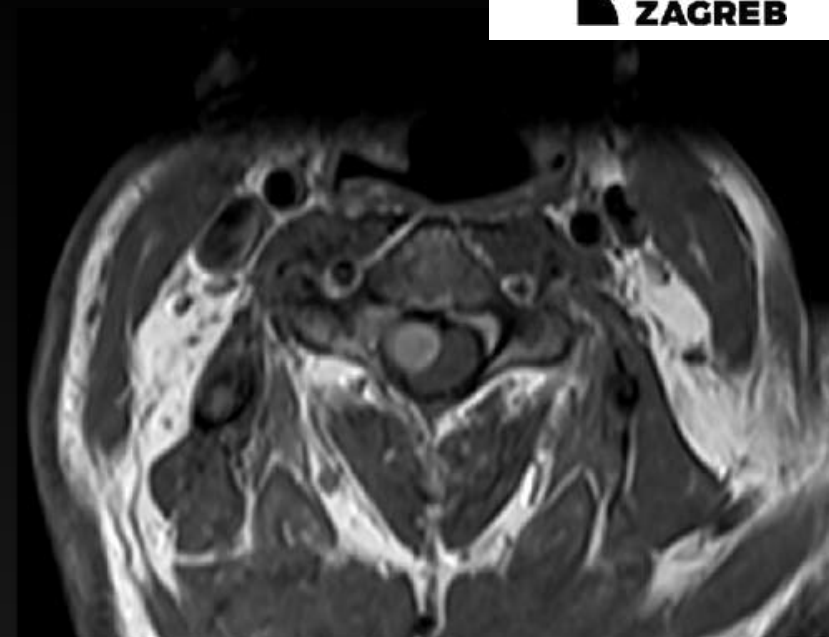
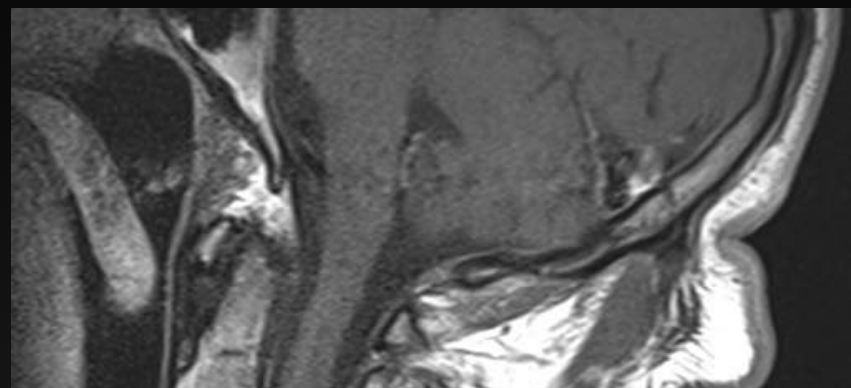
Case 1

- 62 y.o. male
- Medical history
 - HA, diabetes type II, chronic gastritis
- several months of aggravation of neck pain, irradiation in right shoulder
- tingling in right arm
- examination - no neuro deficit

Case 1



Case 1

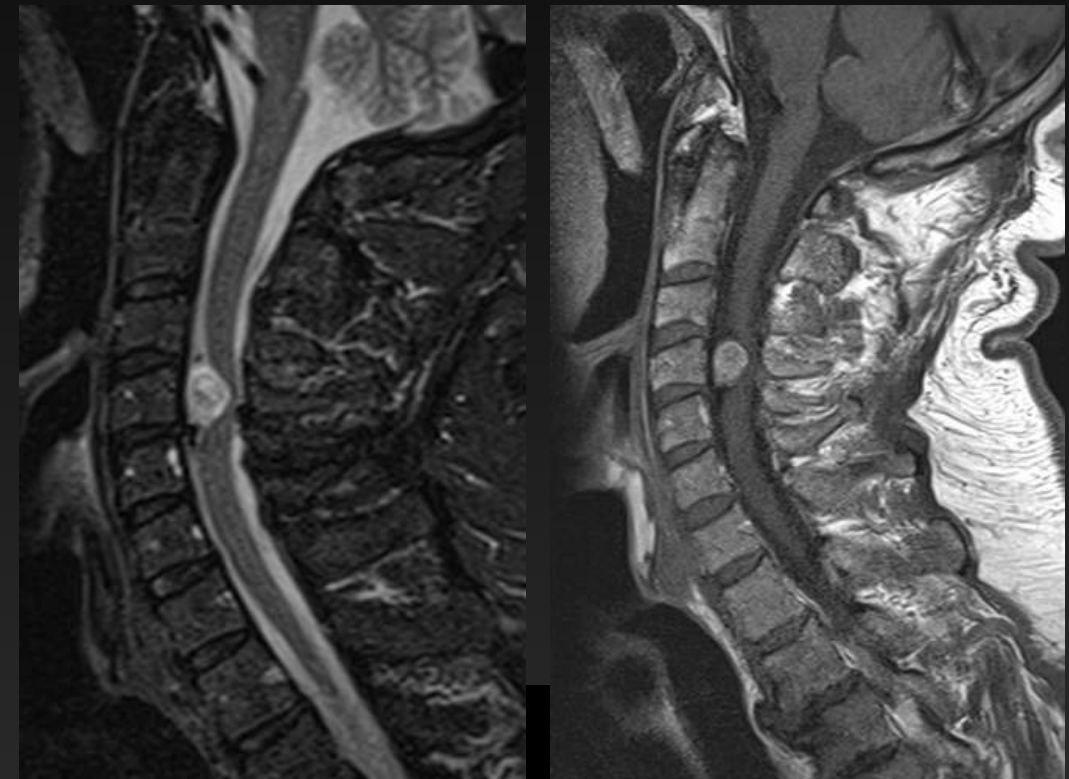


Treatment ?

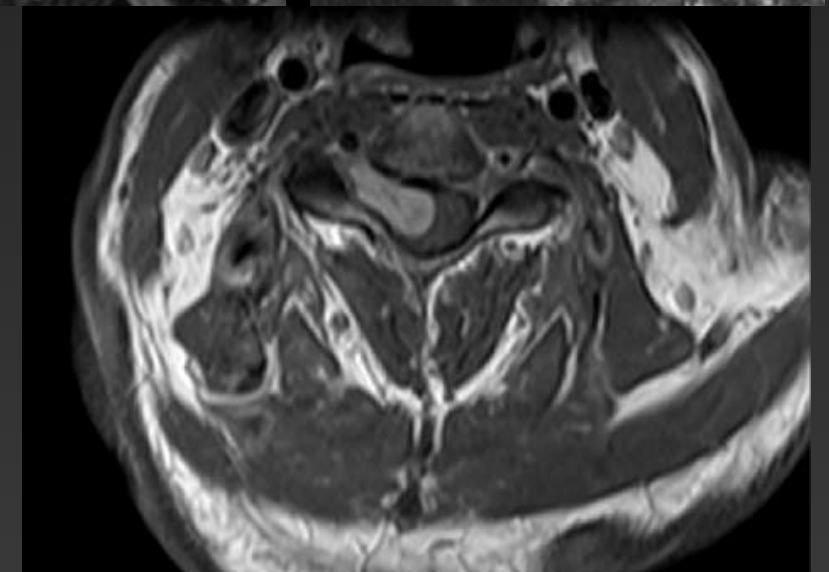
Preop workup ?

Preop workup ?

- X-ray, oblique, flexion-extension?
- CT scan ?
- EMG ?
- imaging of the neuroaxis ?
- ... ?

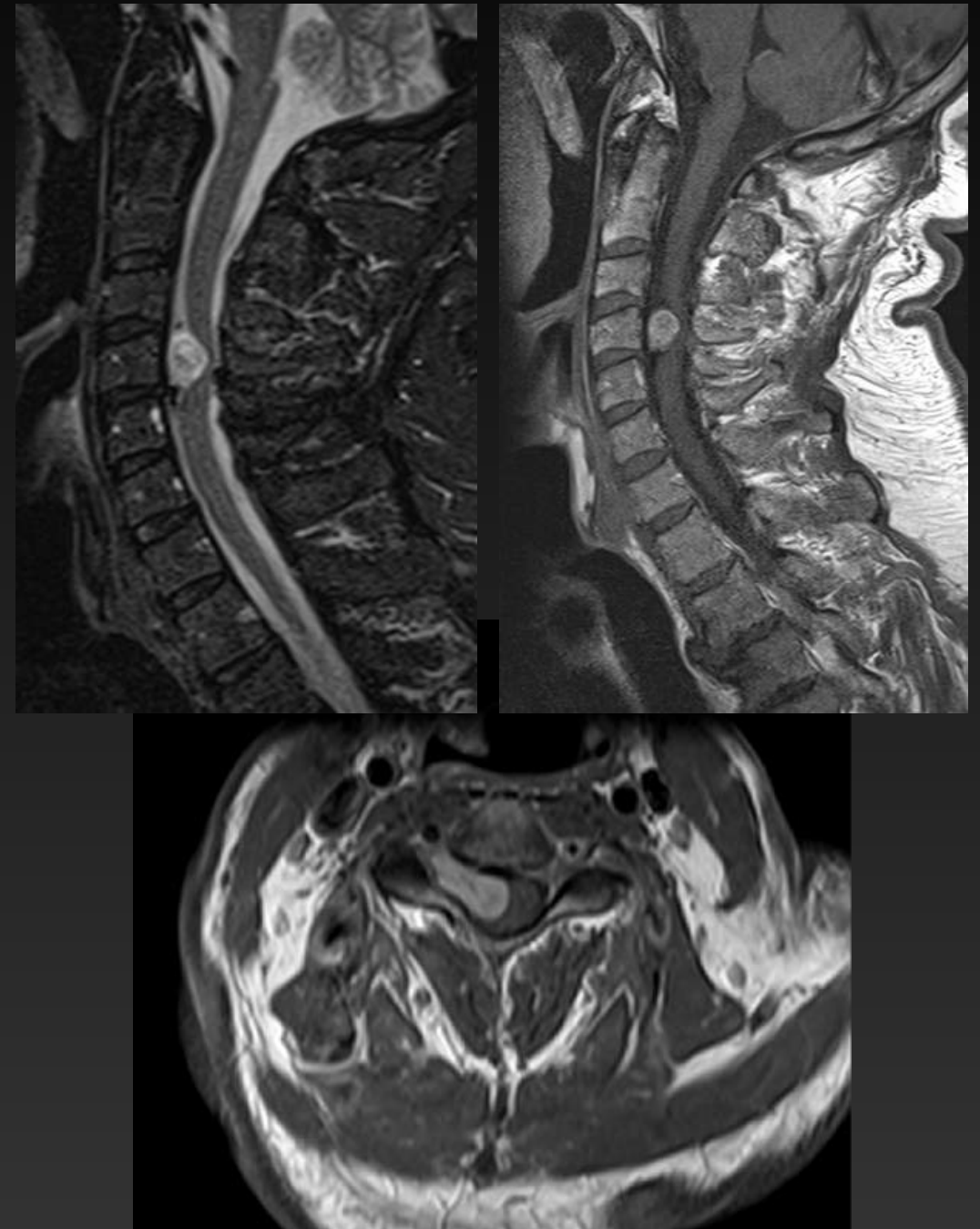


- which nerve root (function) is at risk ?



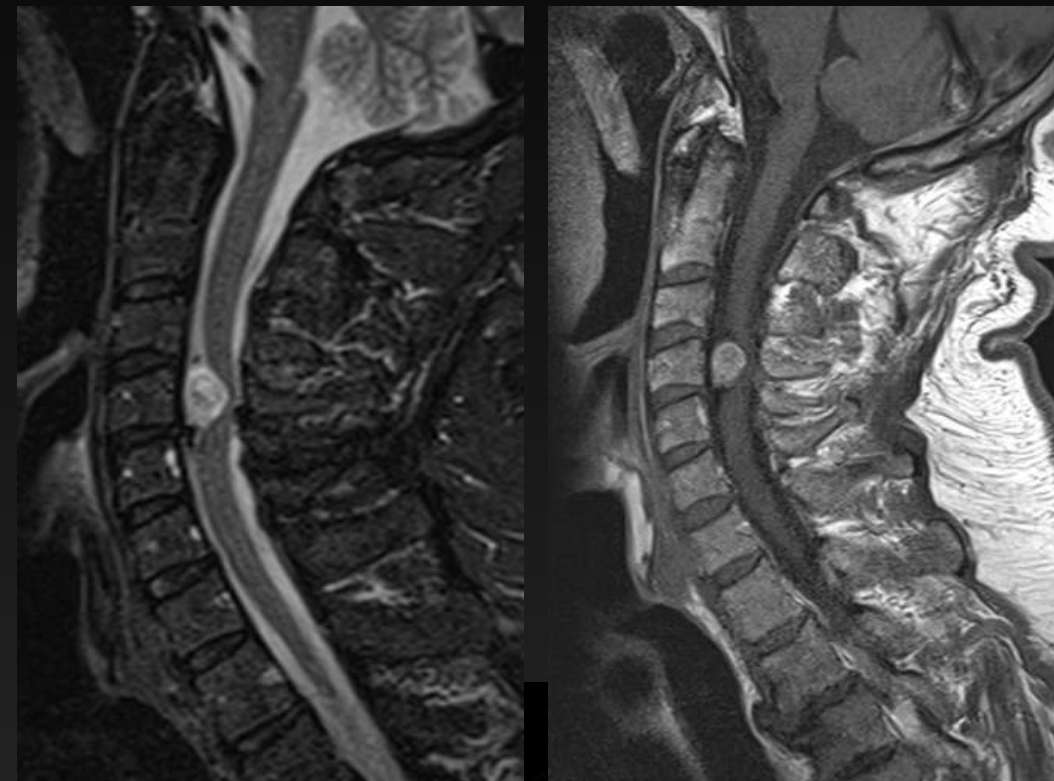
Approach ?

- anterior vs posterior
- what about radio surgery ?



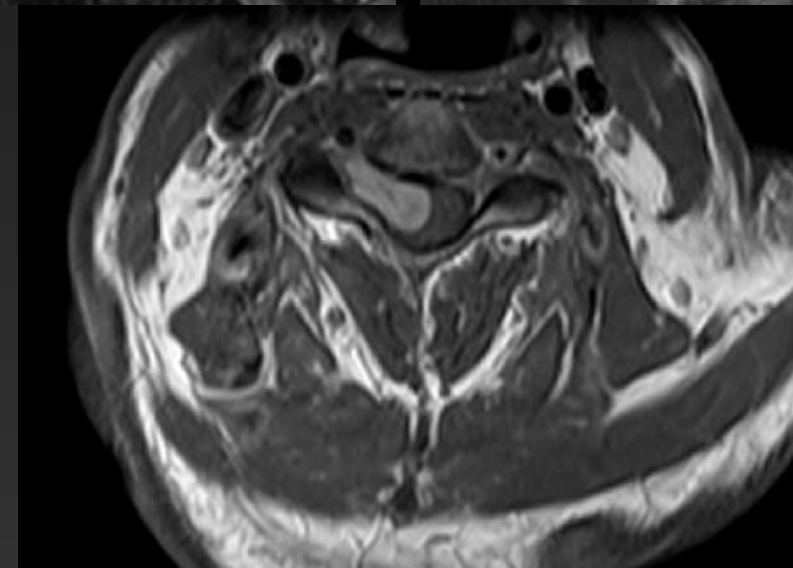
Approach ?

- anterior vs posterior
- what about radio surgery ?

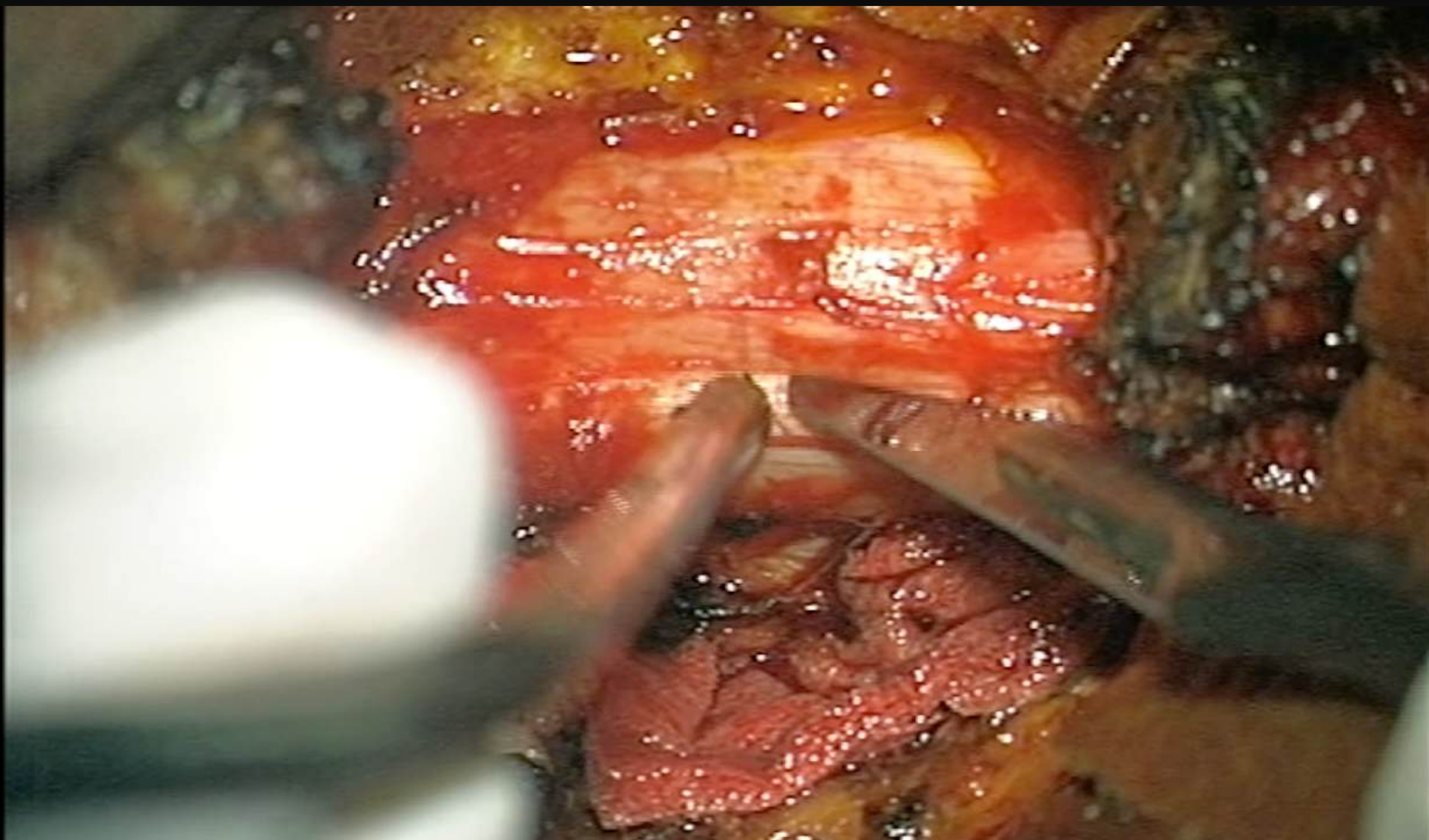


Intraop requirements ?

- MEP, SSEP ?
- US, CUSA ?



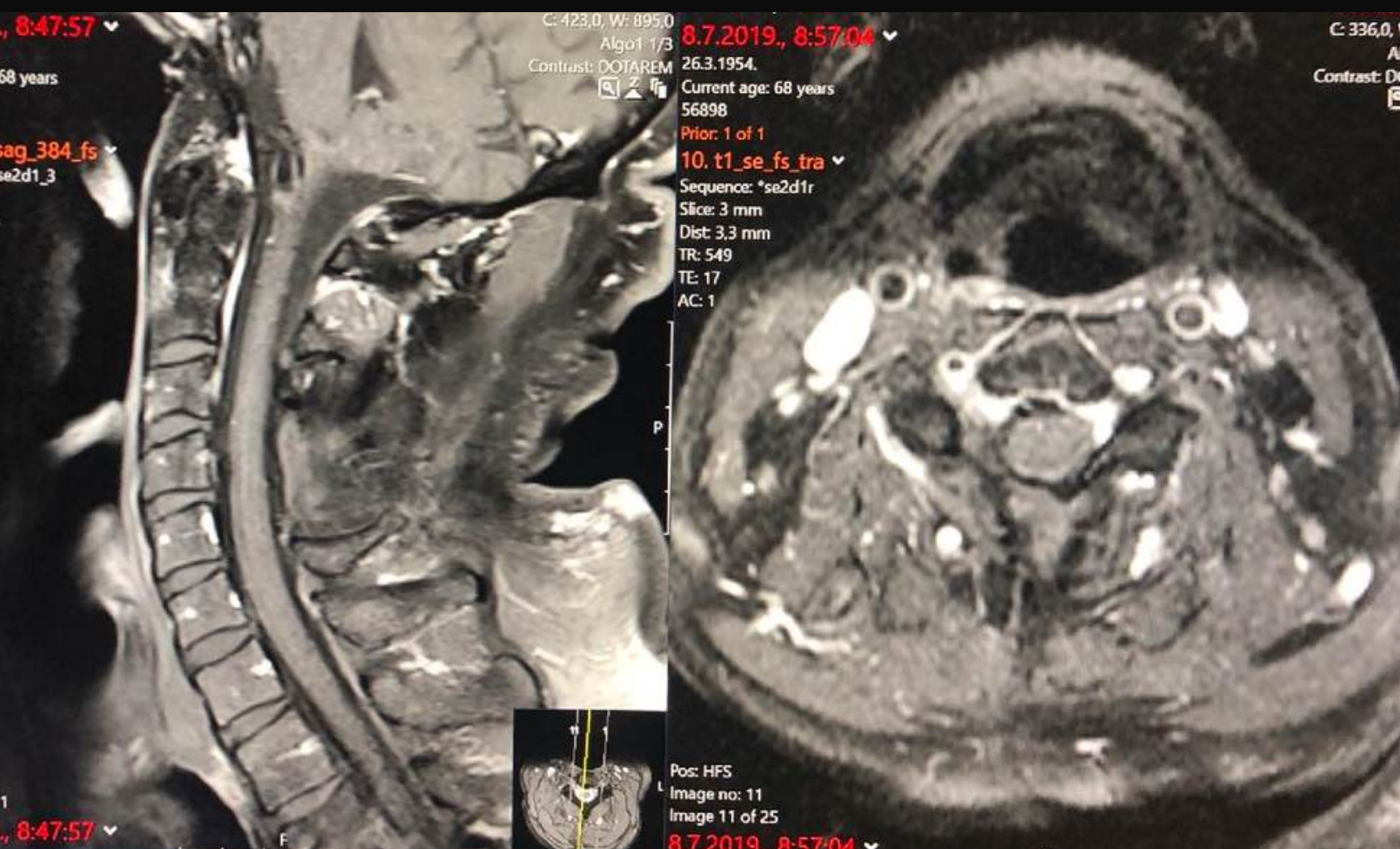
Case 1



Pathology

- Schwannoma GI

Postoperative follow-up



3 yrs postop.

follow-up MRI



Postoperative follow-up

18.6.2021., 12:29:54 ▾

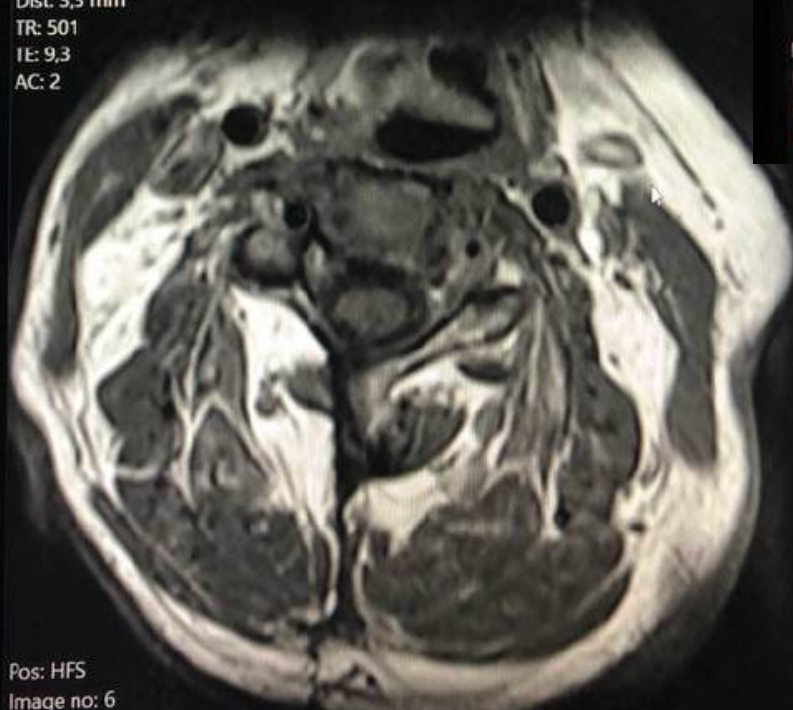
26.3.1954.
Current age: 68 years
56898

7. t2_tse_TRA_rst_384 ZA MEDULU ▾

Sequence: *tseR2d1rr19
Slice: 3 mm
Dist: 3,6 mm
TR: 5920
TE: 90
AC: 2



Dist: 3,3 mm
TR: 501
TE: 9,3
AC: 2



Pos: HFS
Image no: 6

18.6.2021., 12:13:46 ▾

26.3.1954.
Current age: 68 years
56898

2. t2_tse_sag_rst_384 ▾

Sequence: *tseR2d1rr19
Slice: 3 mm
Dist: 3,6 mm
TR: 3453
TE: 90
AC: 2



Pos: HFS
Image no: 7
Image 8 of 14

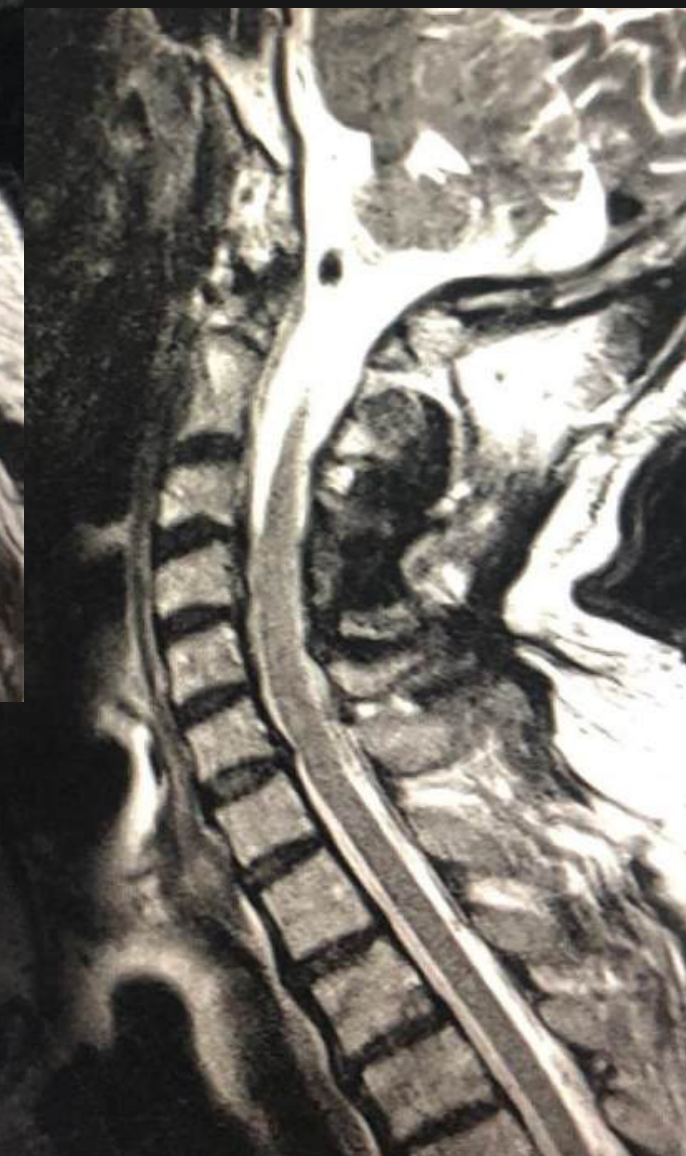
18.6.2021., 12:13:46 ▾

Pos: HFS
Image no: 5
Image 10 of 14

18.6.2021., 12:13:46 ▾

5 yrs postop.

follow-up MRI





CASE 2

Case 2

- 34 y.o. female
- Medical history : healthy
- every day headaches, during one year
- reduced acuity and blurred vision with left eye

Case 2

10.2017., 10:44:16 ▾

1.1983.

ent age: 38 years

604

: 2 of 2

t1_mpr_tra_p2_iso ▾

ience: *tfl3d1

: 1 mm

930

,57

100

1



:16 ▾

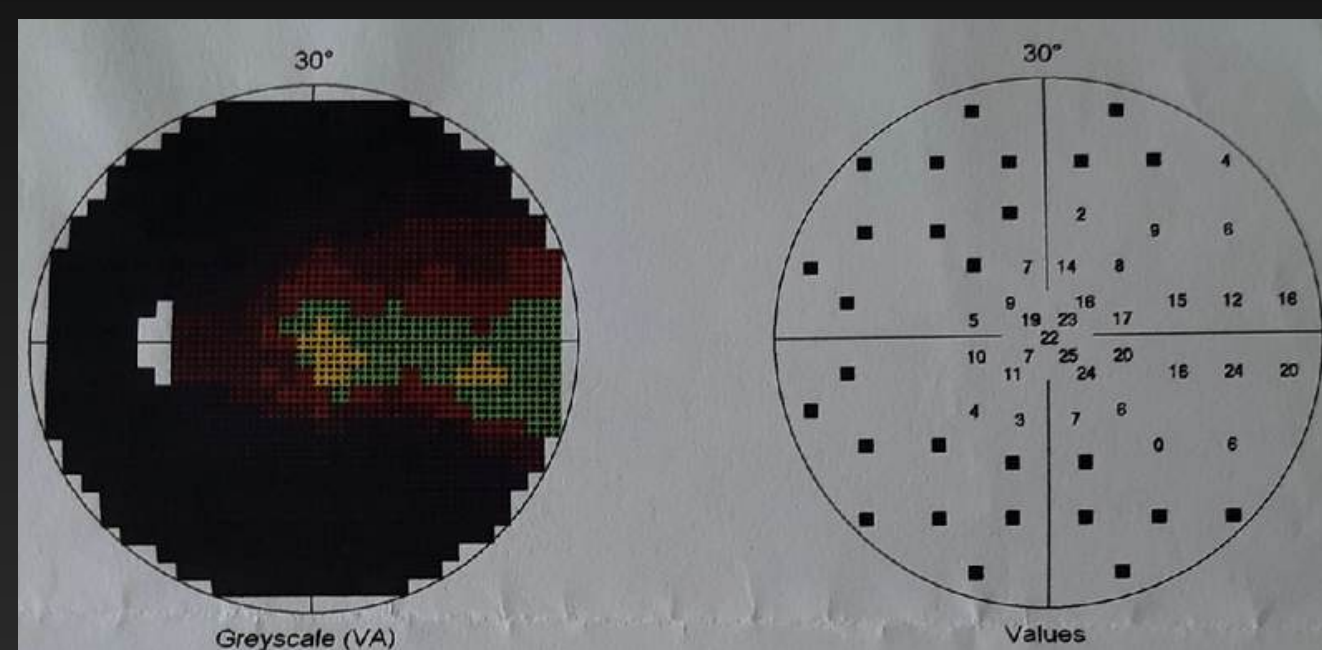
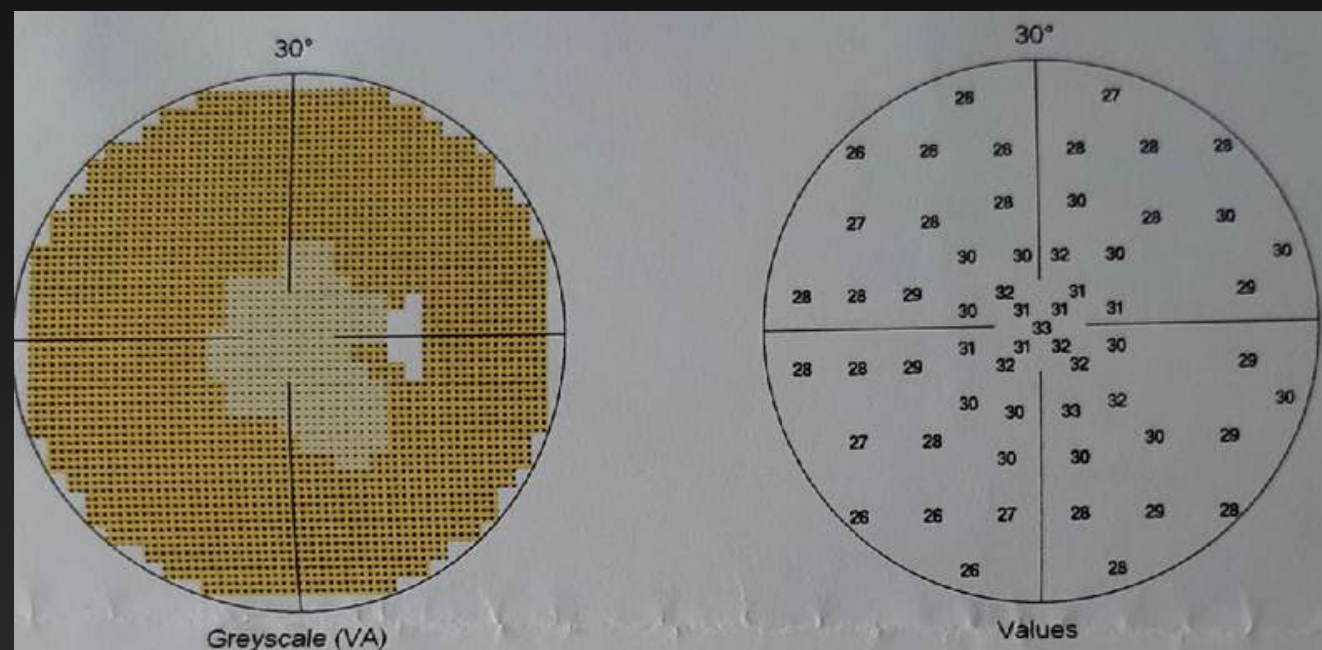
▾



Case 2

RIGHT EYE

LEFT EYE



Dec, 2017

Case 2

13.10.2017., 10:44:16 ▾

11.11.1983.
Current age: 38 years
200504

Prior: 2 of 2

15. t1_mpr_tra_p2_iso ▾

Sequence: *tfl3d1

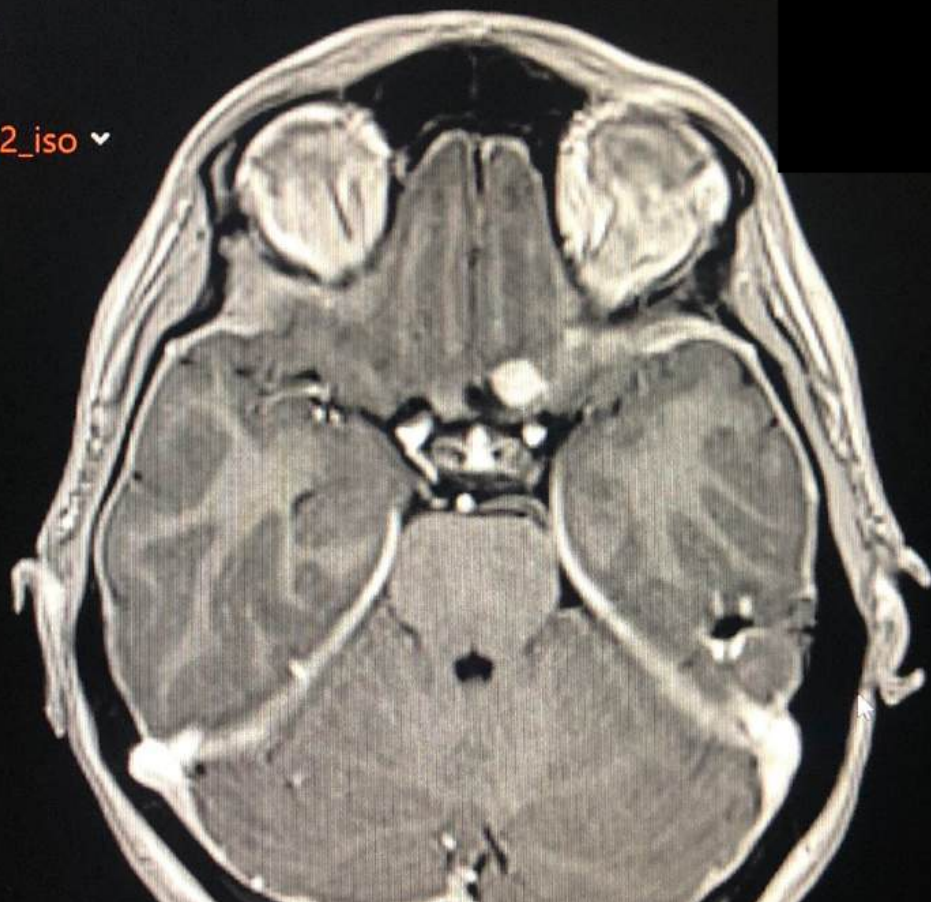
Slice: 1 mm

TR: 1930

TE: 3,57

TI: 1100

AC: 1



13.10.2017., 9:56:56 ▾

11.11.1983.
Current age: 38 years
200504

Prior: 2 of 2

3. t2_tse_tra_448 ▾

Sequence: *tse2d1_16

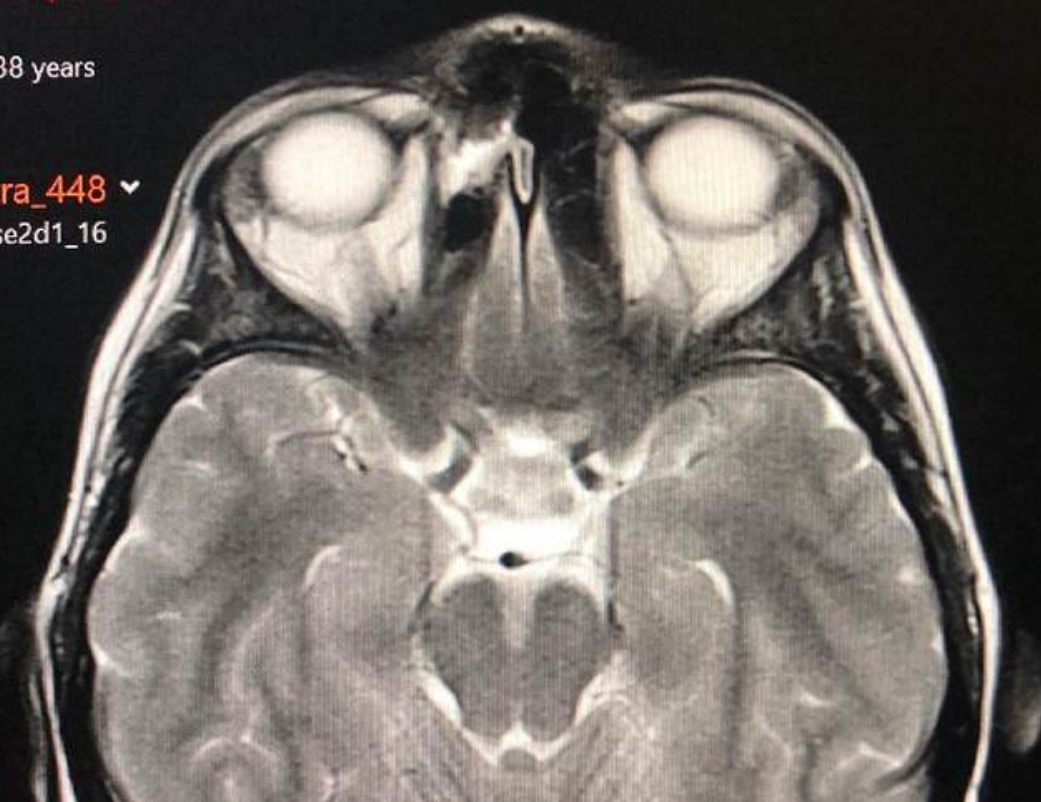
Slice: 5 mm

Dist: 6 mm

TR: 4550

TE: 93

AC: 1

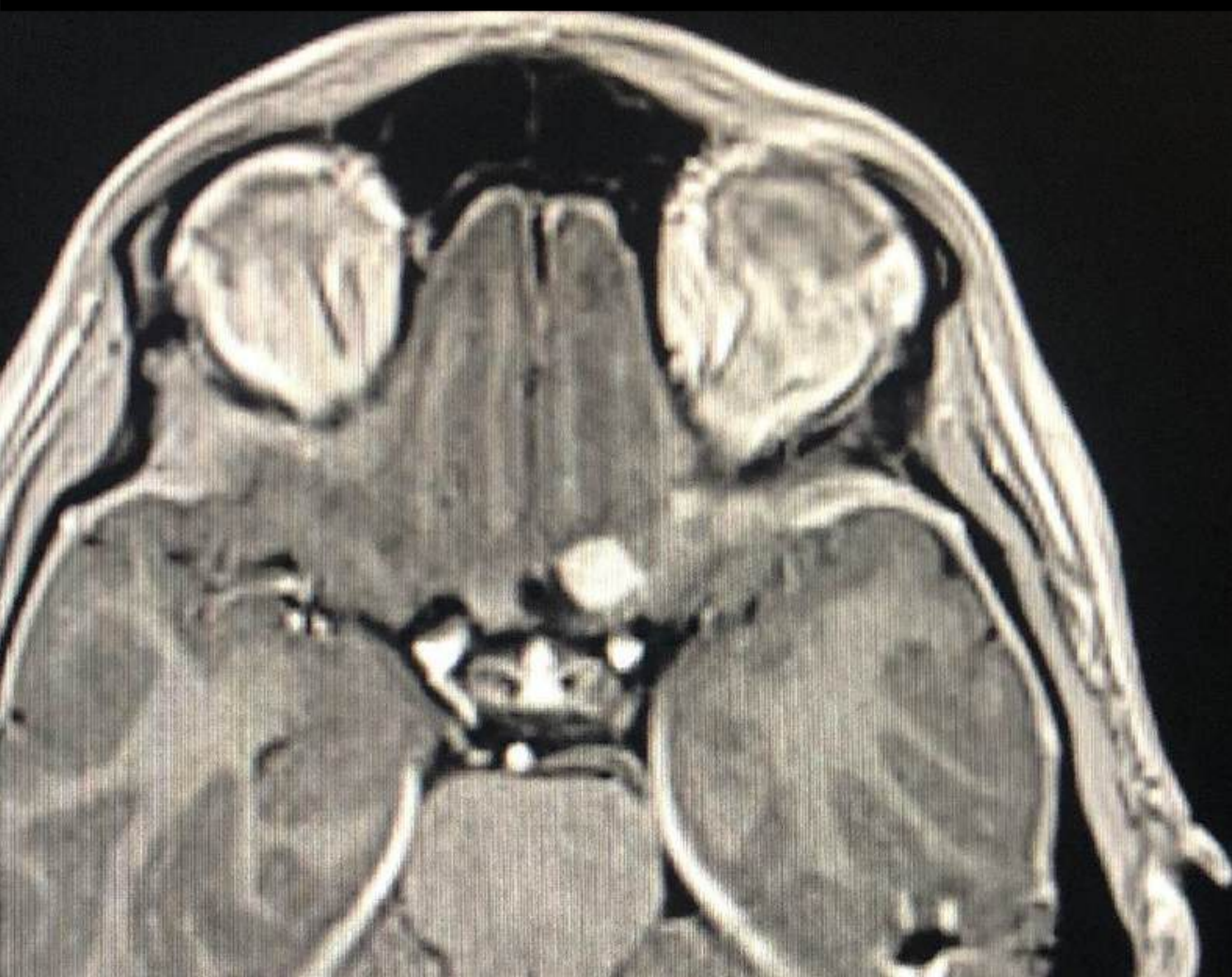


What next ?

Management options ?

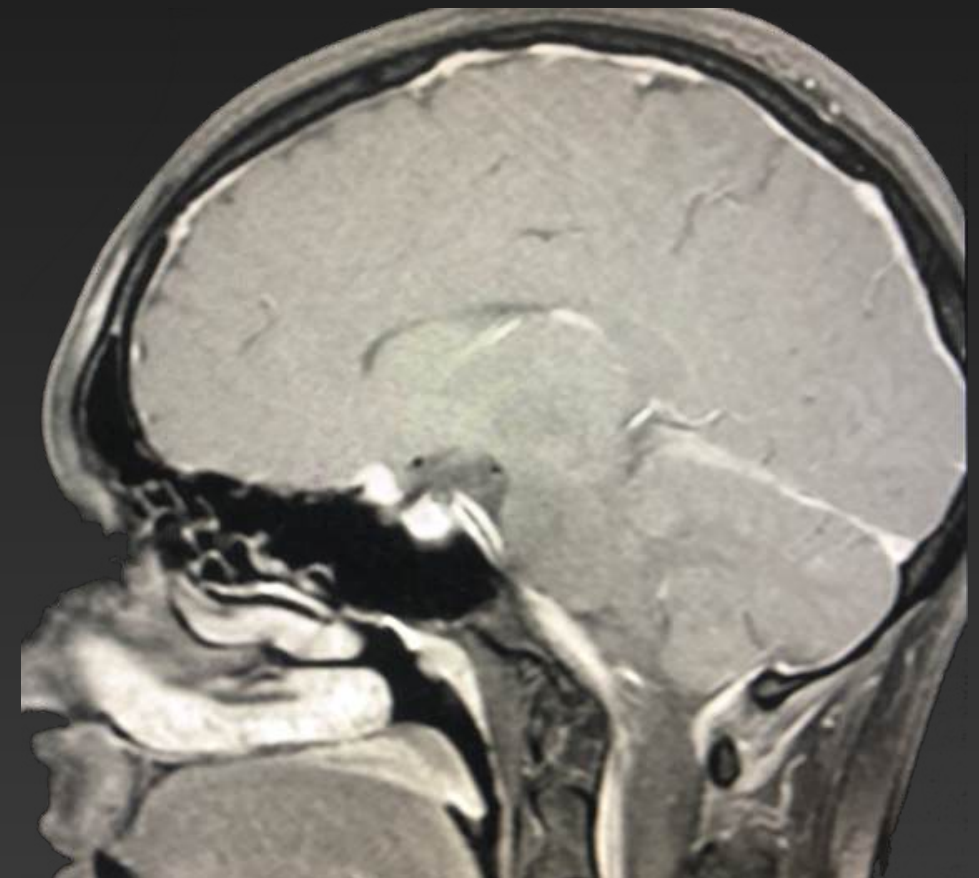
What next ?

Management options ?



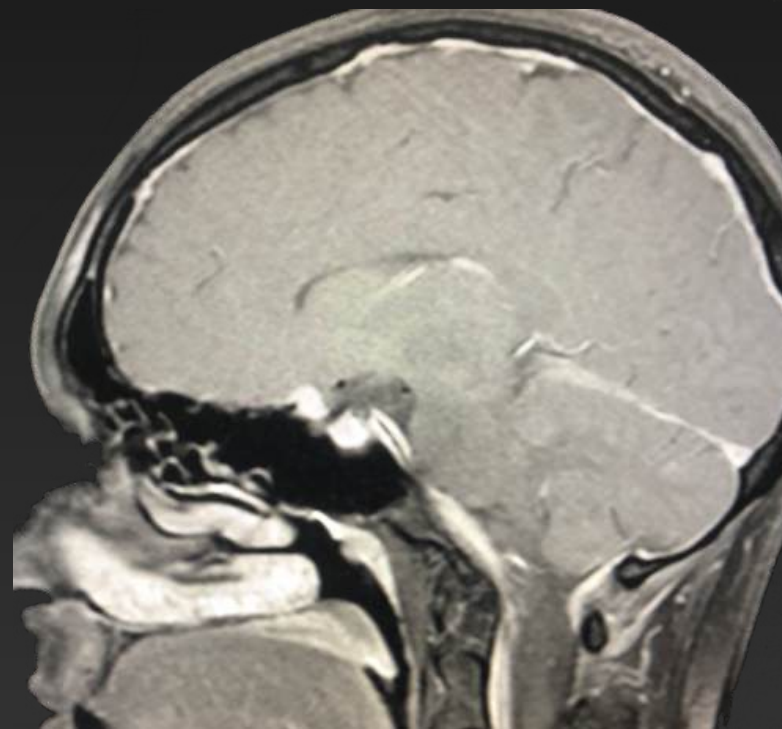
Preop workup ?

- psychology assessment ?
- endocrinology ?
- further radiology (DSA..)?



Approach ?

- Craniotomy ?
 - pterional
 - LSO
 - eyebrow keyhole
- Which side ?
- Endonasal / transsphenoidal ?



Microsurgery

- preoperative ELD
- left eyebrow keyhole, subfrontal approach

Pathology

- Meningioma G1

14.5.2018., 11:20:48 ▾

11.11.1983.

Current age: 38 years

200504

Prior: 1 of 2

10. t1_mpr_tra_p2_iso ▾

Sequence: *tfl3d1

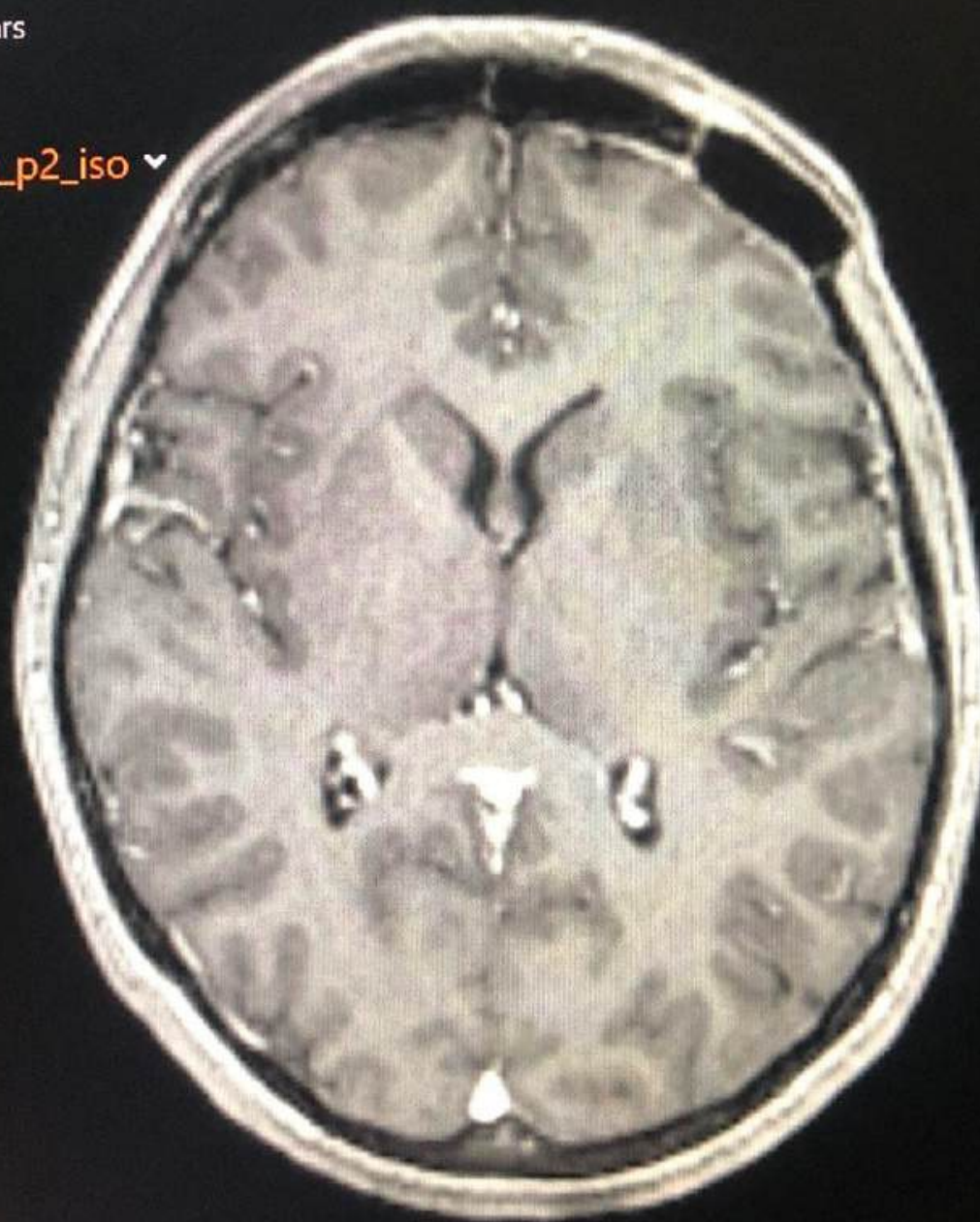
Slice: 1 mm

TR: 1910

TE: 3,53

Tl: 1100

AC: 1



3 months
postop.

10. t1_mpr_tra_p2_iso ▾

Sequence: *tfl3d1

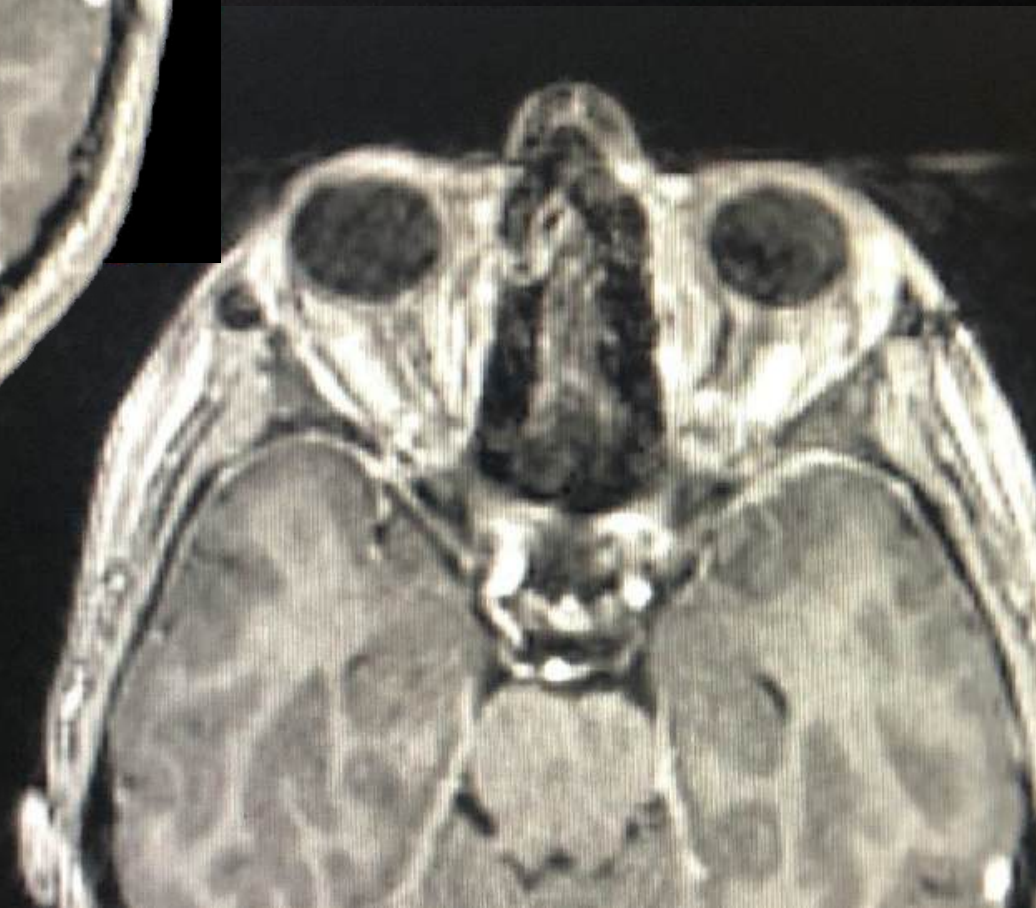
Slice: 1 mm

TR: 1910

TE: 3,53

Ti: 1100

AC: 1



**3 months
postop.**

14.5.2018., 11:24:48 ▾

11.11.1983.

Current age: 38 years

200504

Prior: 1 of 2

11. t1_se_cor ▾

Sequence: *se2d1

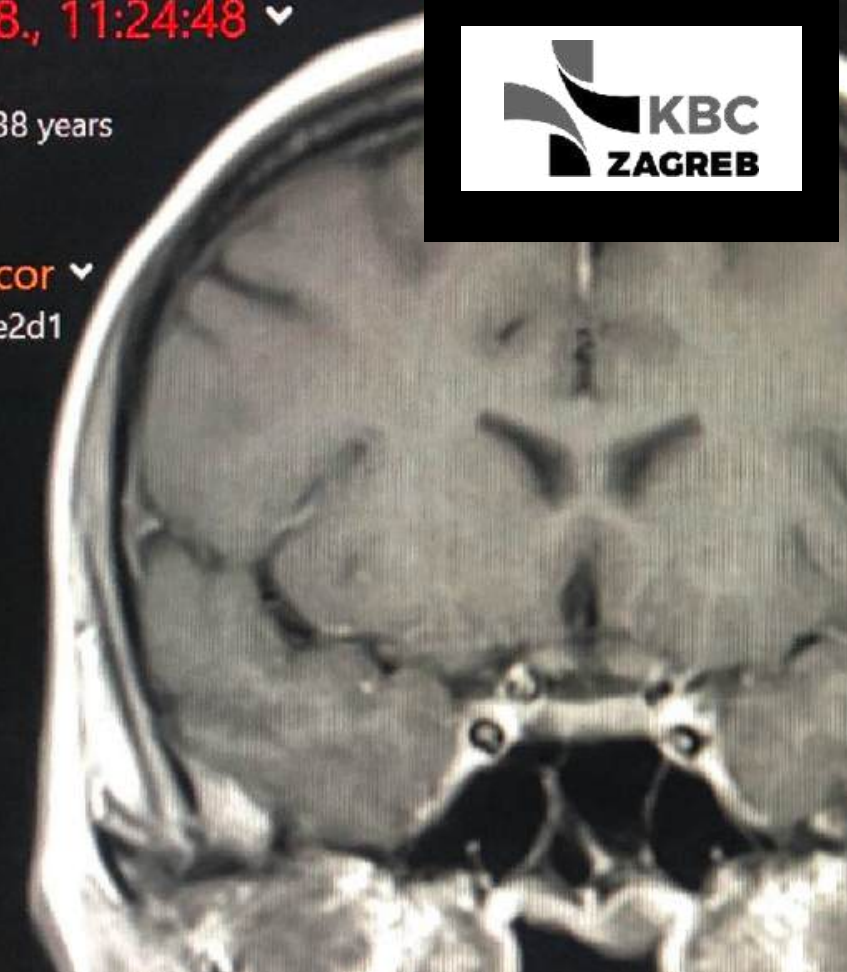
Slice: 5 mm

Dist: 6,5 mm

TR: 550

TE: 8,7

AC: 1



14.5.2018., 11:24:48 ▾

11.11.1983.

Current age: 38 years

200504

Prior: 1 of 2

11. t1_se_cor ▾

Sequence: *se2d1

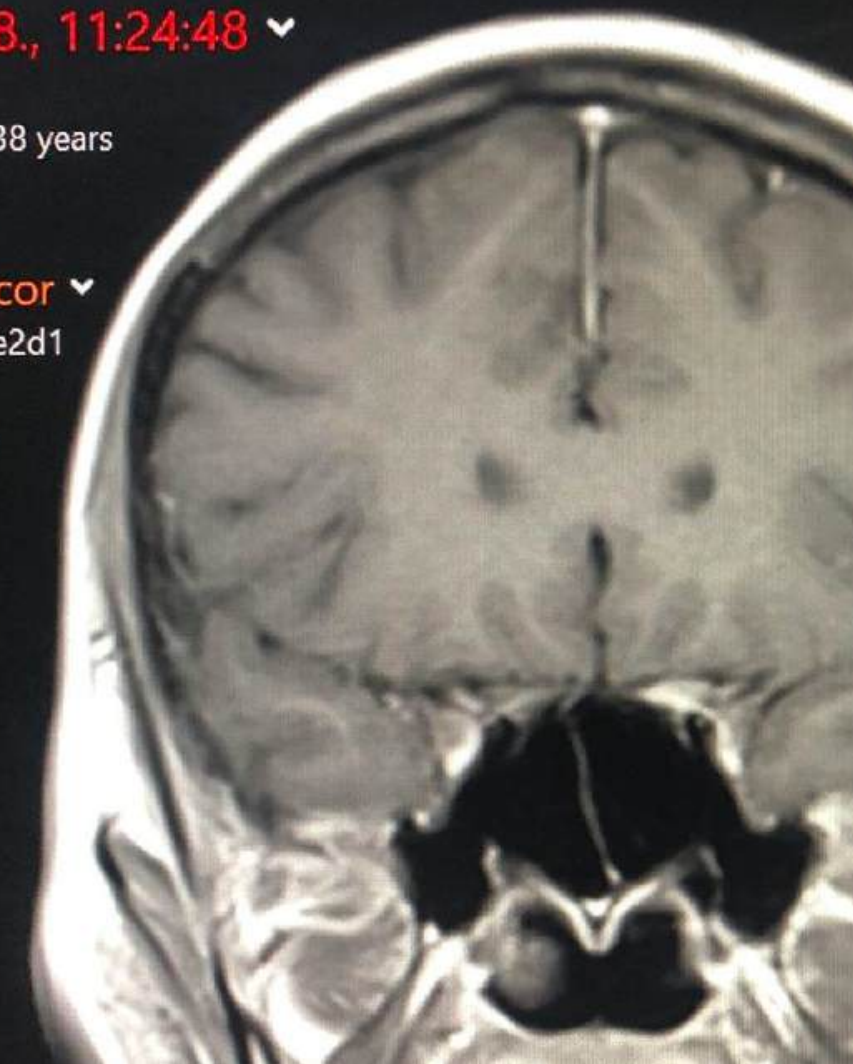
Slice: 5 mm

Dist: 6,5 mm

TR: 550

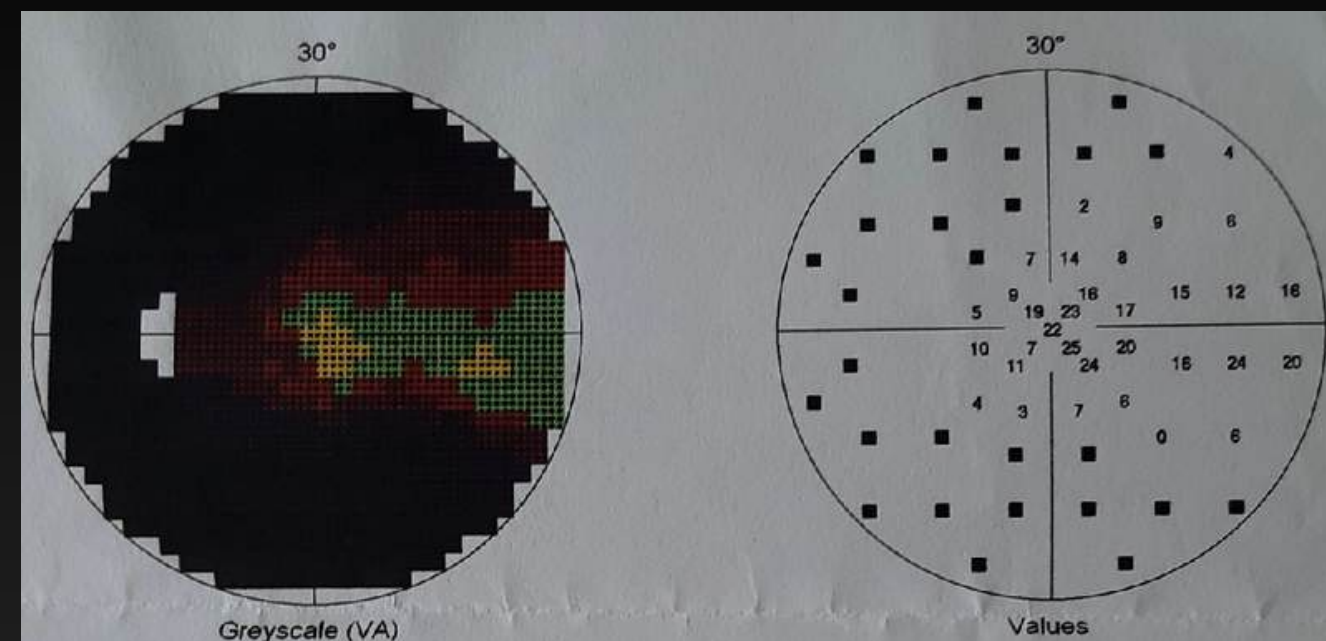
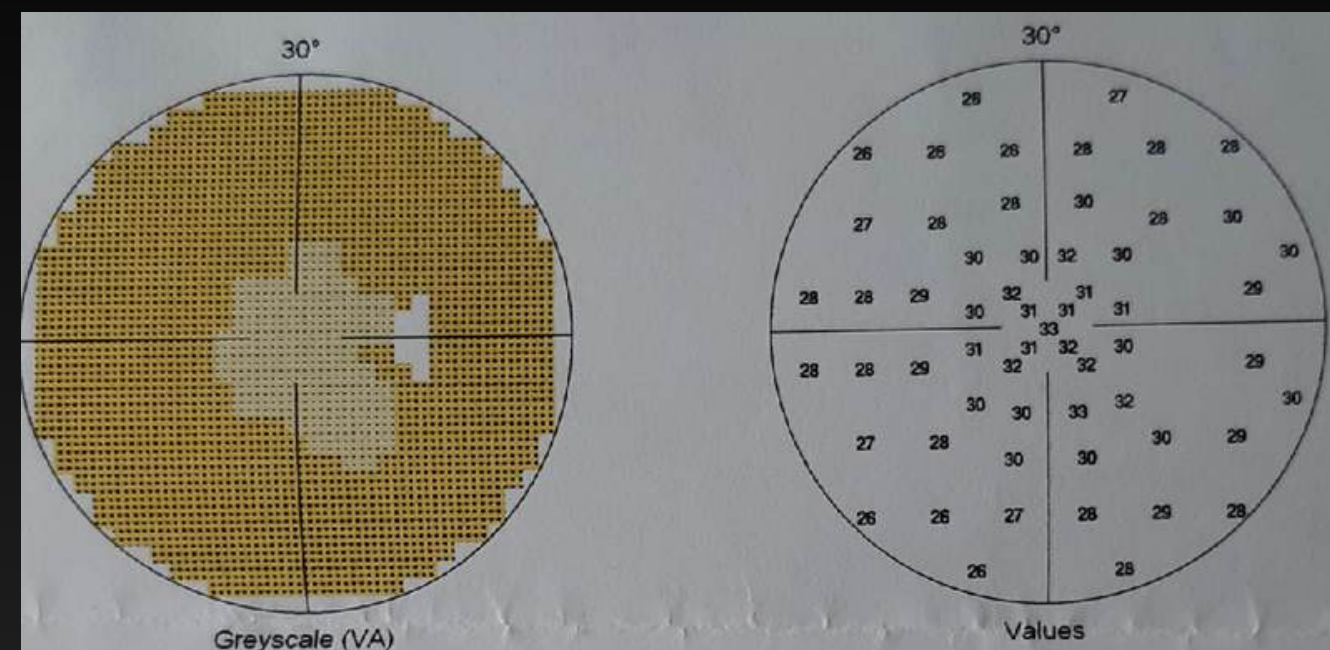
TE: 8,7

AC: 1

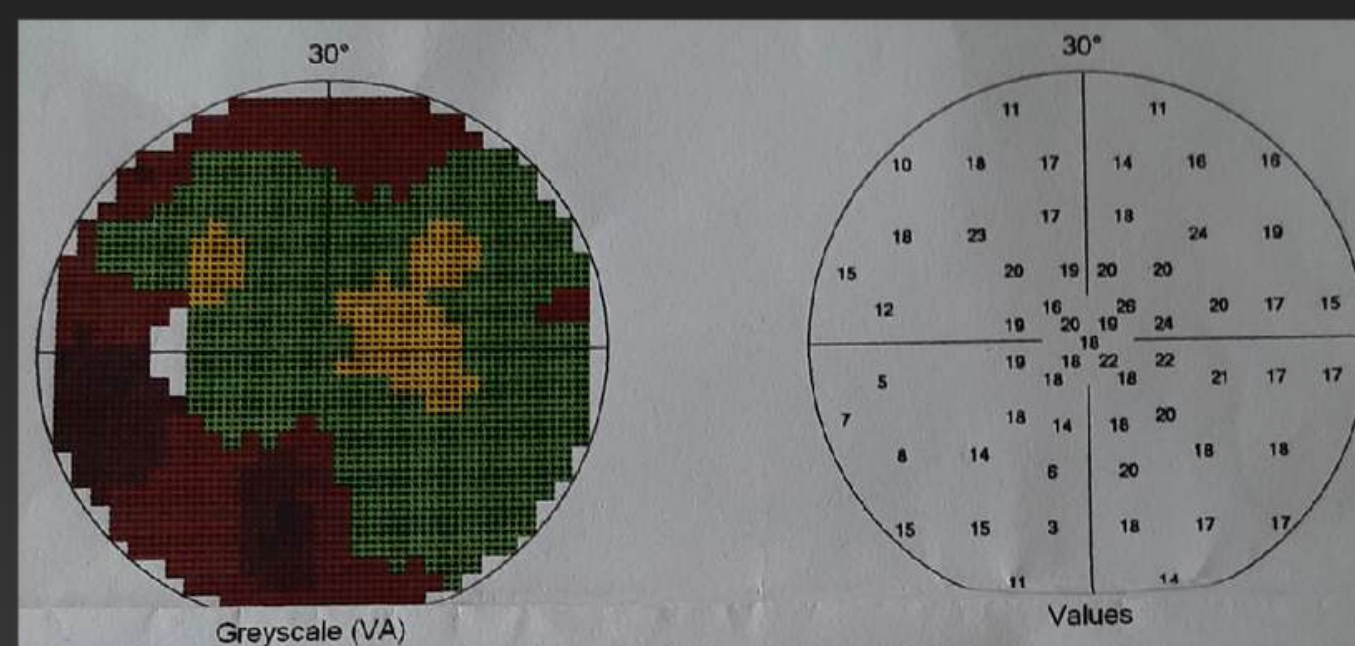
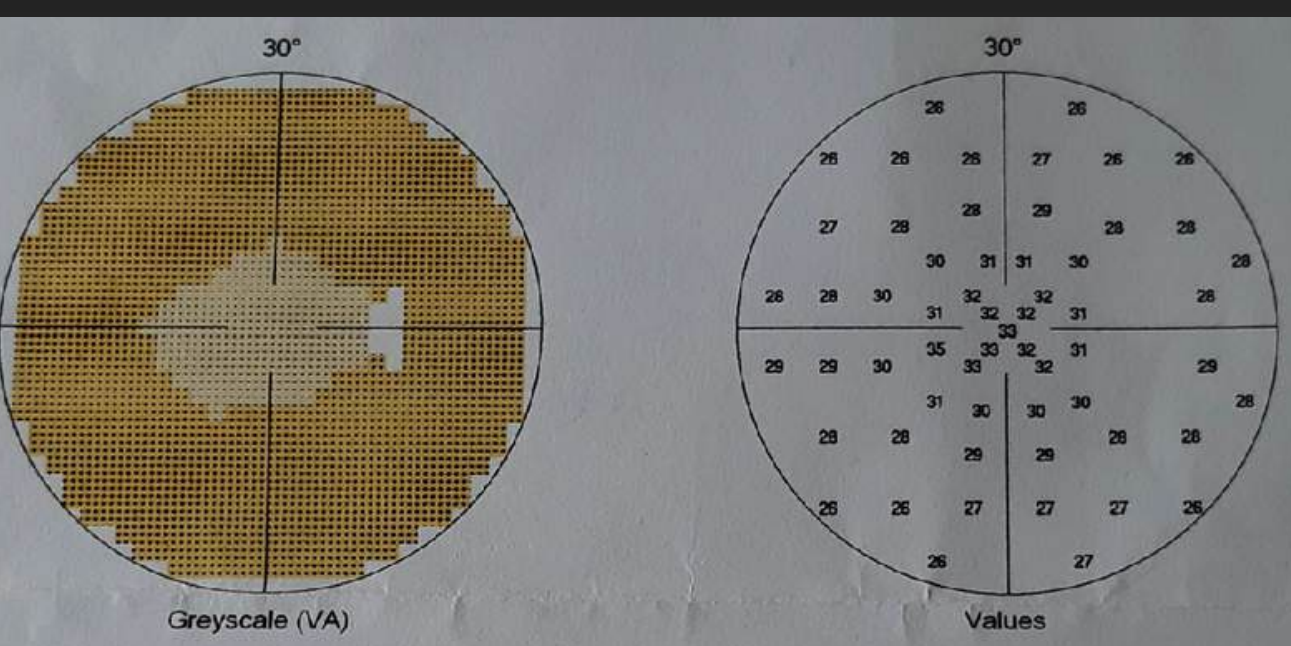


RIGHT EYE

LEFT EYE



preoperative, Dec 2017



3 months postop, May 2018

Postoperative follow-up

18 months postop.

6.9.2019., 9:52:58 ▾

11.11.1983.

Current age: 38 years

200504

Prior: 1 of 3

9. t1_mpr_tra_p2_iso ▾

Sequence: *tfl3d1

Slice: 1 mm

TR: 1930

TE: 3,57

TI: 1100

AC: 1



6.9.2019., 9:52:58 ▾

11.11.1983.

Current age: 38 years

200504

Prior: 1 of 3

9. t1_mpr_tra_p2_iso ▾

Sequence: *tfl3d1

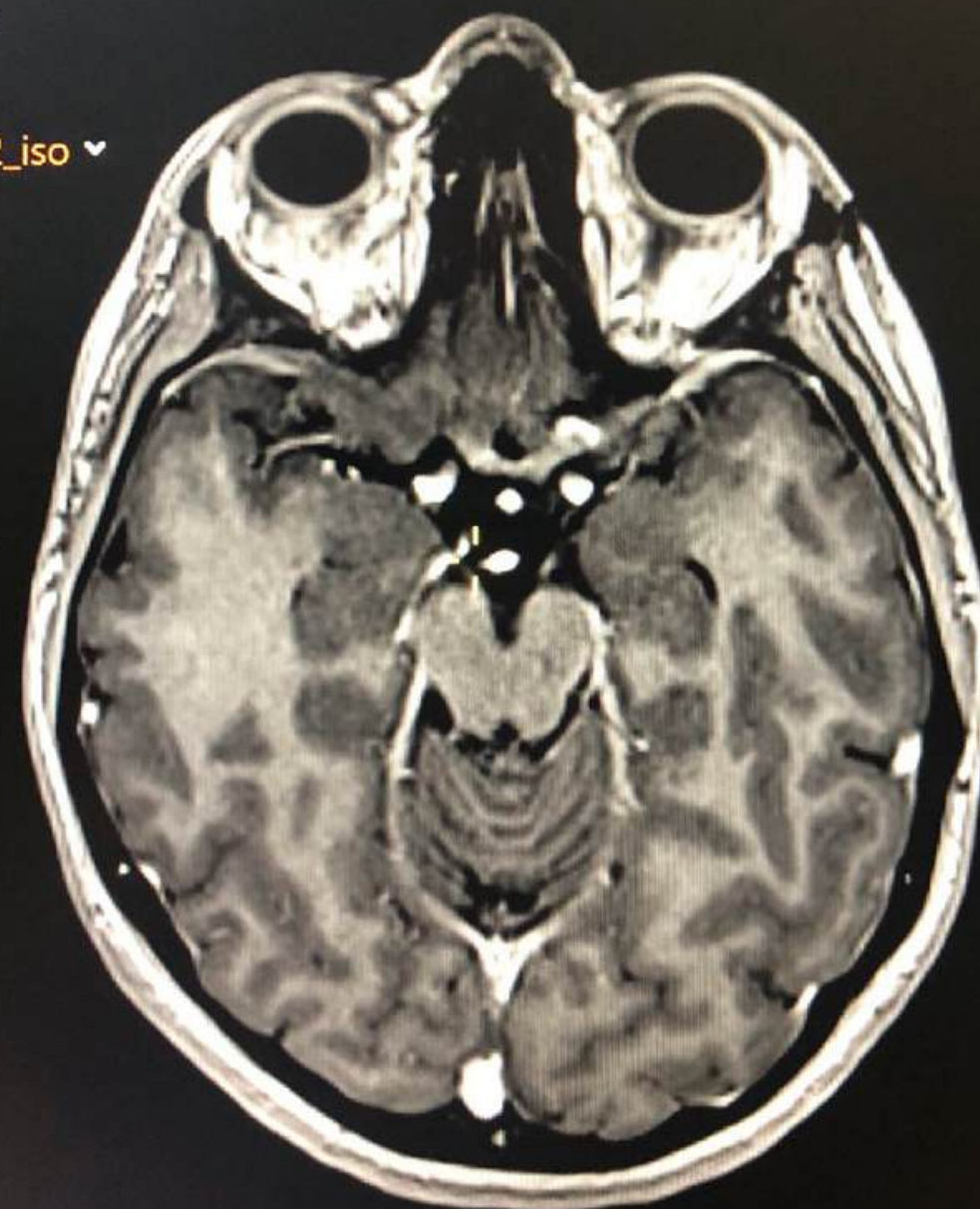
Slice: 1 mm

TR: 1930

TE: 3,57

TI: 1100

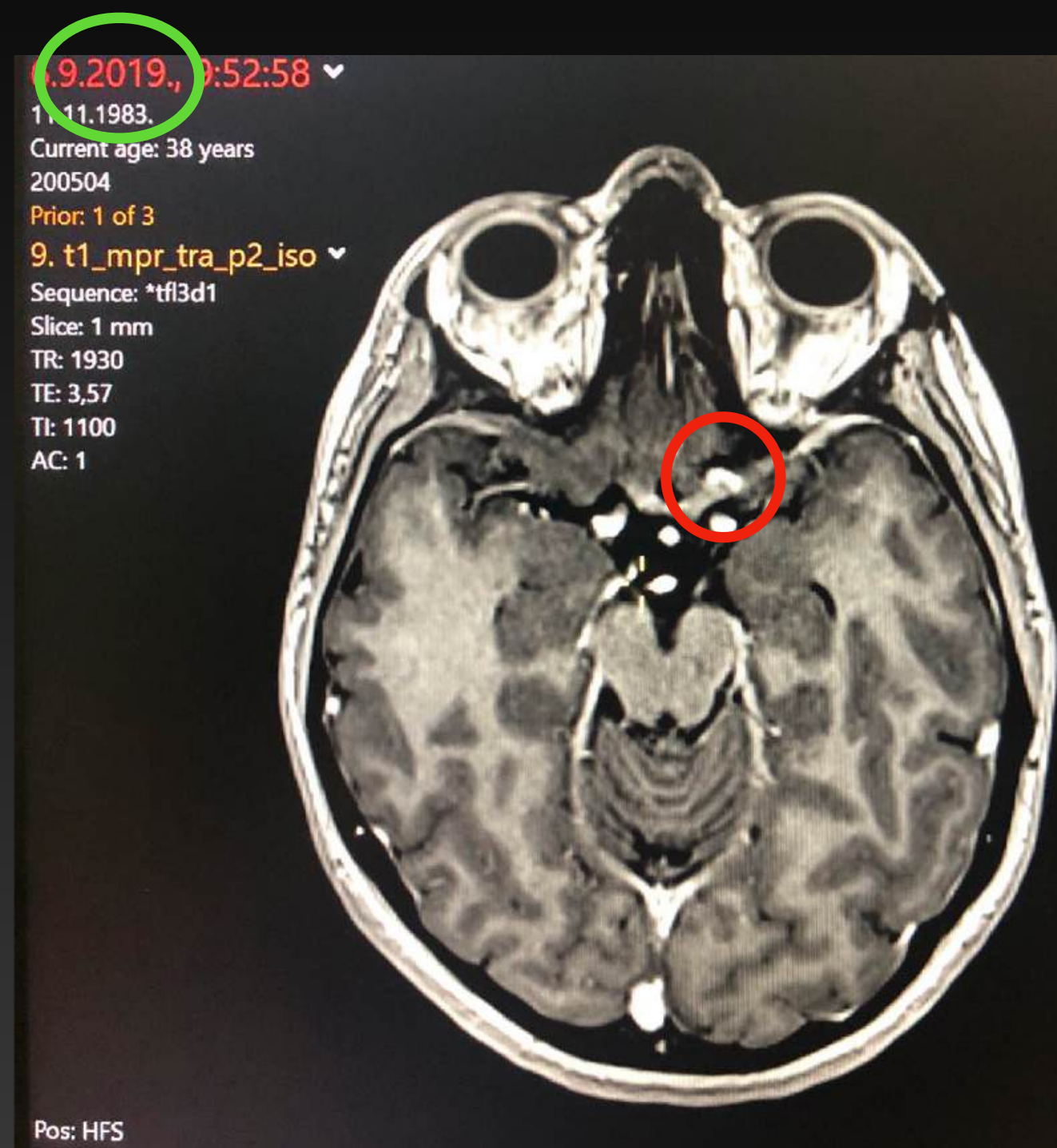
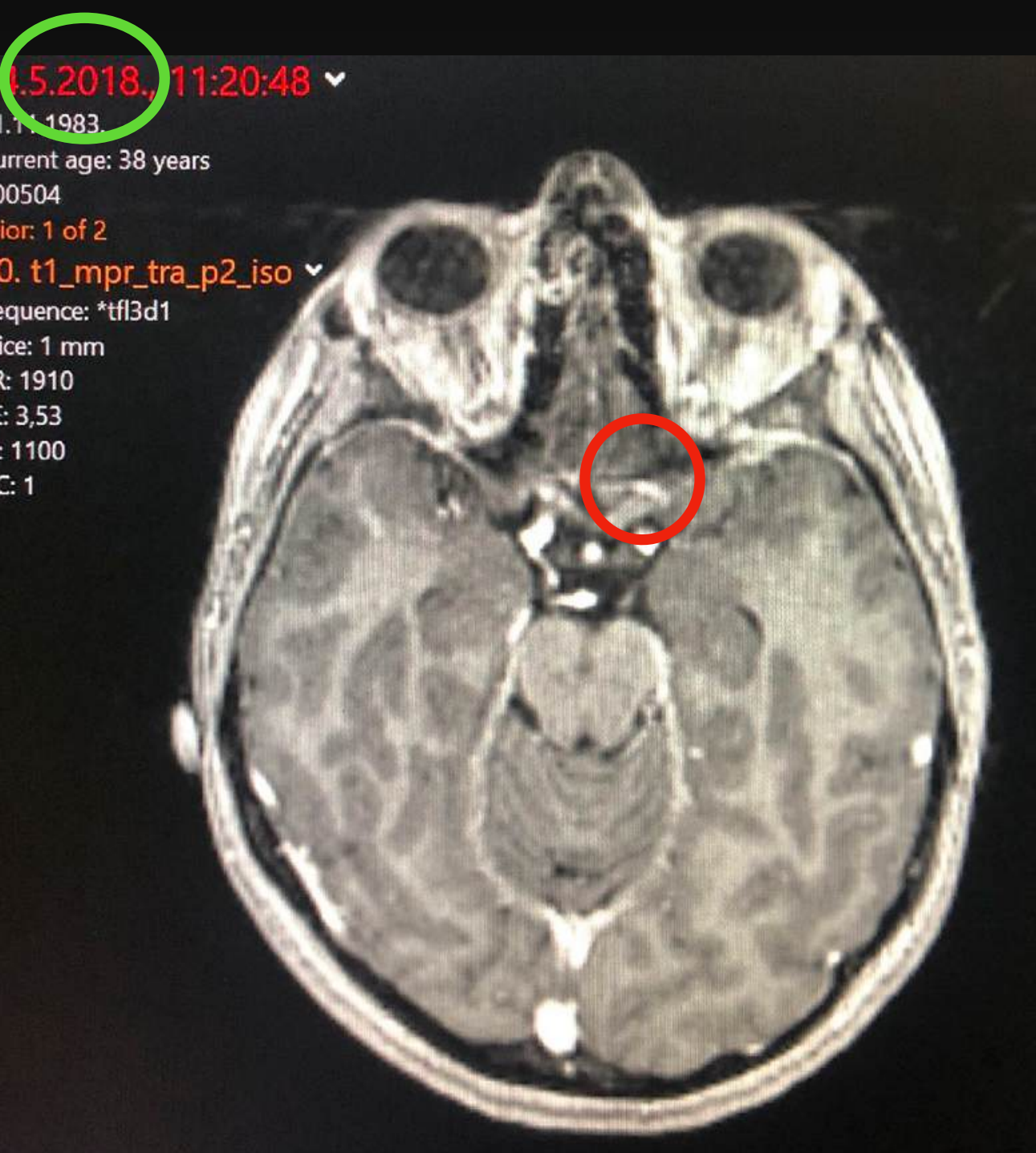
AC: 1



Pos: HFS

Postoperative follow-up

18 months postop.



1,5 T ; radiology: no certainty of tumour recurrence / progression

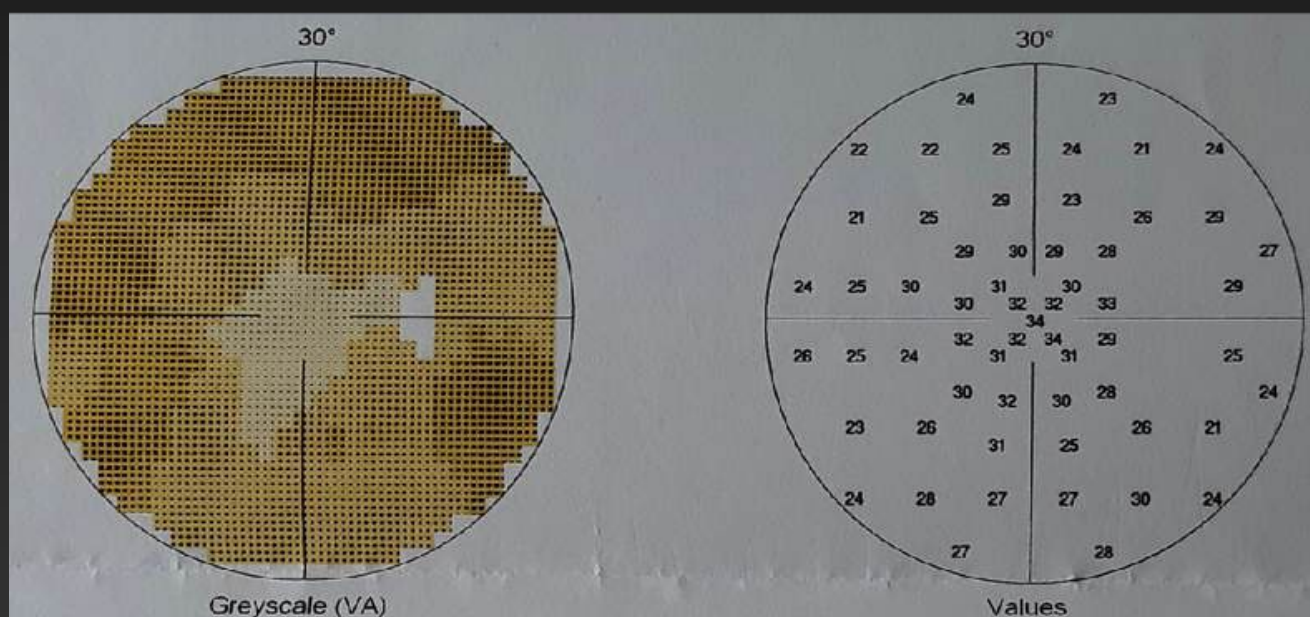
Postoperative follow-up

- during pregnancy rapid deterioration of vision on left eye
- did not seek immediate medical attention

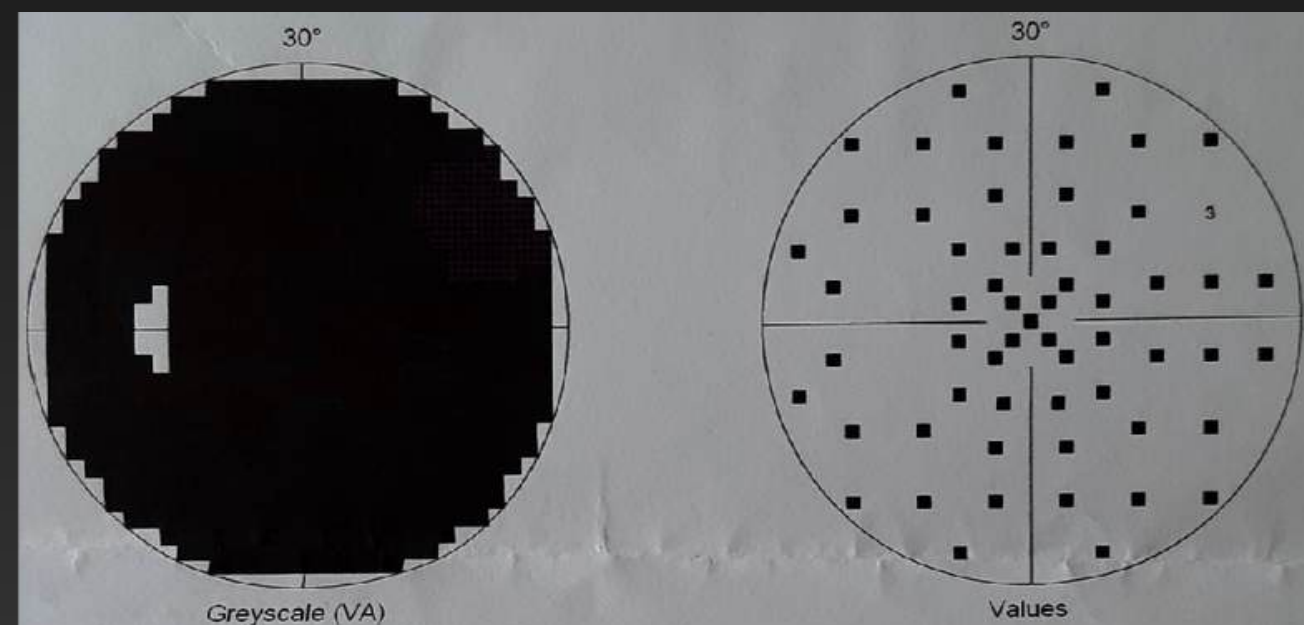
Postoperative follow-up

- during pregnancy rapid deterioration of vision on left eye
- did not seek immediate medical attention

RIGHT EYE



LEFT EYE



22 months postop, Dec 2019



Funded by
the European Union



Postoperative follow-up

3 yrs postop.

21.1.2021., 9:13:20 ▾

11.11.1983.
Current age: 38 years
M-85216
17. t1_fl2d_tra FS ▾
Sequence: *fl2d1
Slice: 3 mm
Dist: 3,9 mm
TR: 749
TE: 2,48
AC: 2



Current age: 38 years
M-85216

18. t1_fl2d_cor FS ▾

Sequence: *fl2d1

4 mm
5,2 mm
42
48



21.1.2021., 9:19:30 ▾

11.11.1983.
Current age: 38 years
M-85216

18. t1_fl2d_cor FS ▾

Sequence: *fl2d1

Slice: 4 mm
Dist: 5,2 mm
TR: 642
TE: 2,48
AC: 2



Postoperative follow-up

3 yrs postop.

21.1.2021., 9:24:47

11.11.1983.

Current age: 38 years

M-825216

19. ci3d_tra_iso

Sequence: *ci3d1

Slice: 0,6 mm

TR: 8,17

TE: 3,76

AC: 1



15.3.2021., 9:33:35

11.11.1983.

Current age: 38 years

M-825216

Prior: 1 of 1

7. t1_mprage_tra_1mm +CE

Sequence: *t13d1_16

Slice: 1 mm

TR: 2100

TE: 2,7

TI: 1010

AC: 1



Pos: HFS

What next ?

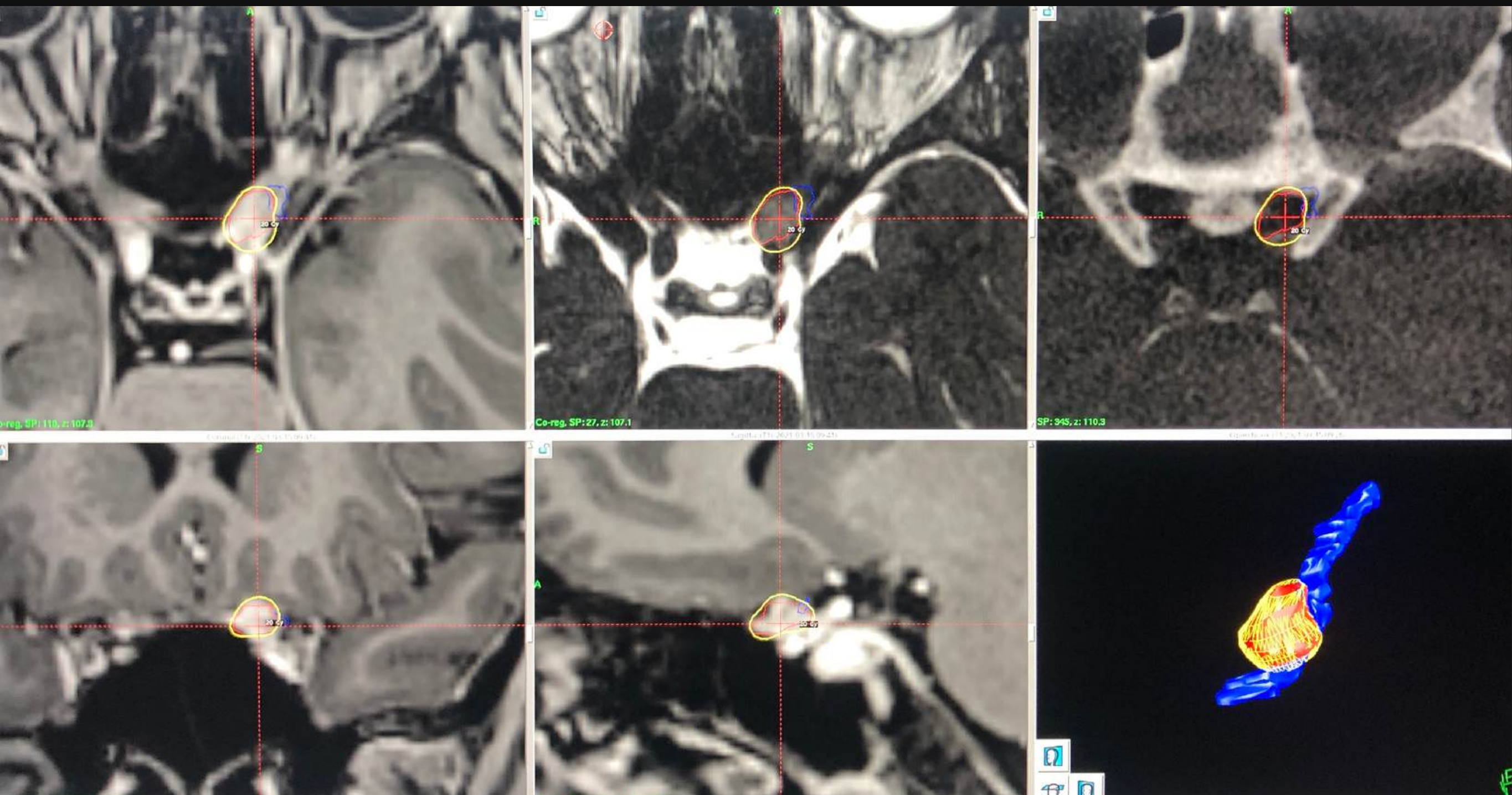
Management options ?

Treatment ?

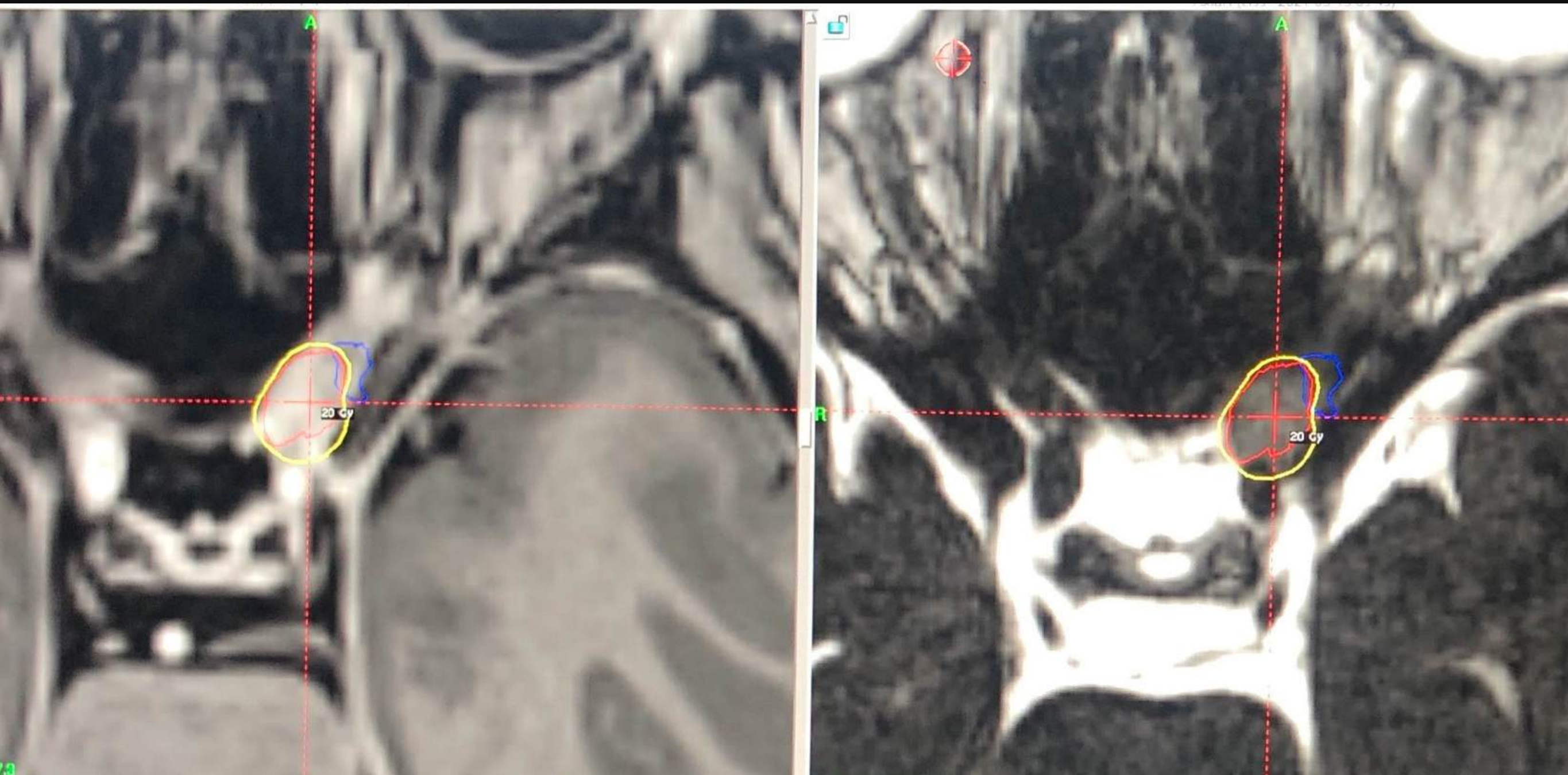
Hypofractionated radiosurgery



Hypofractionated radiosurgery

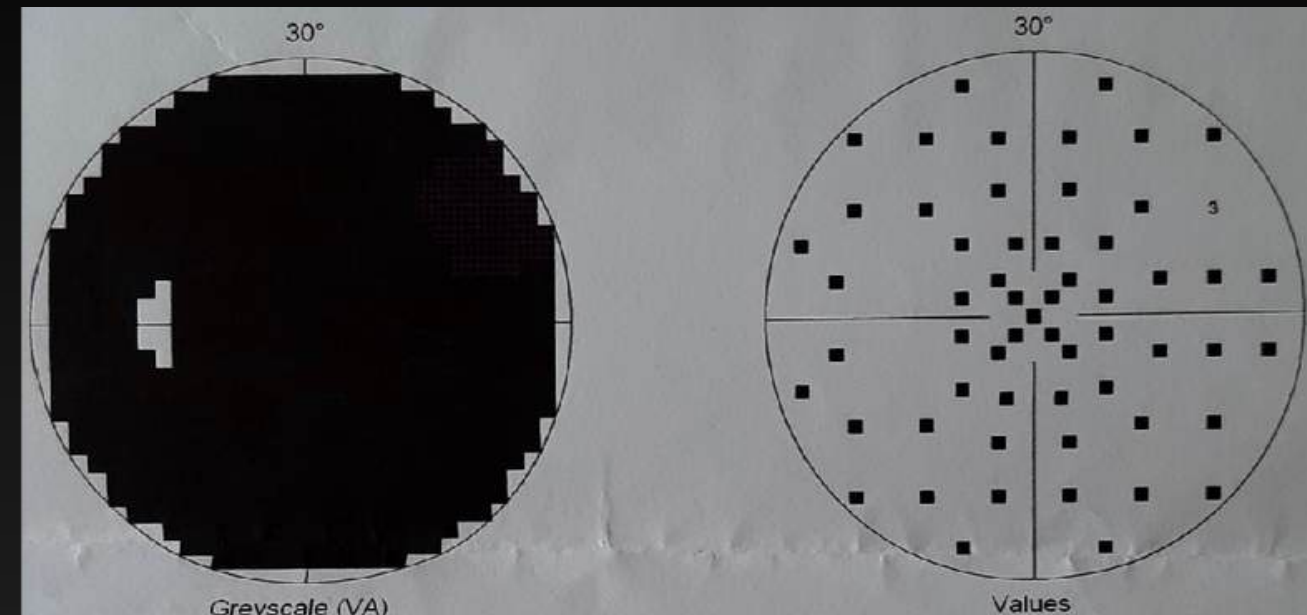
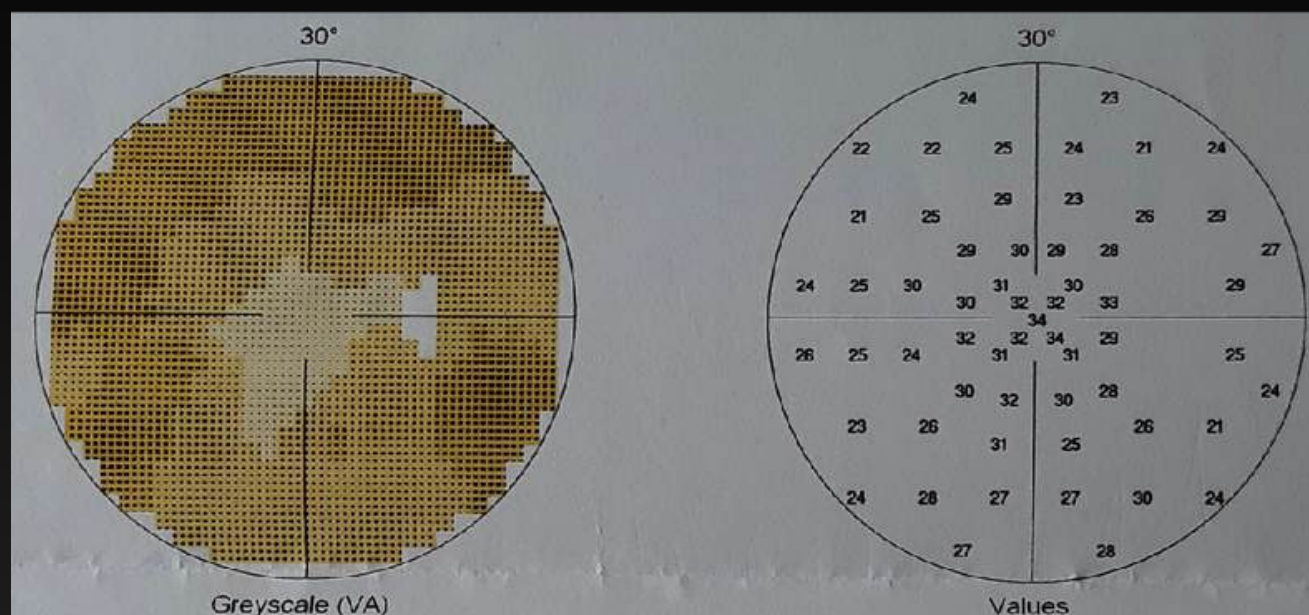


Hypofractionated radiosurgery

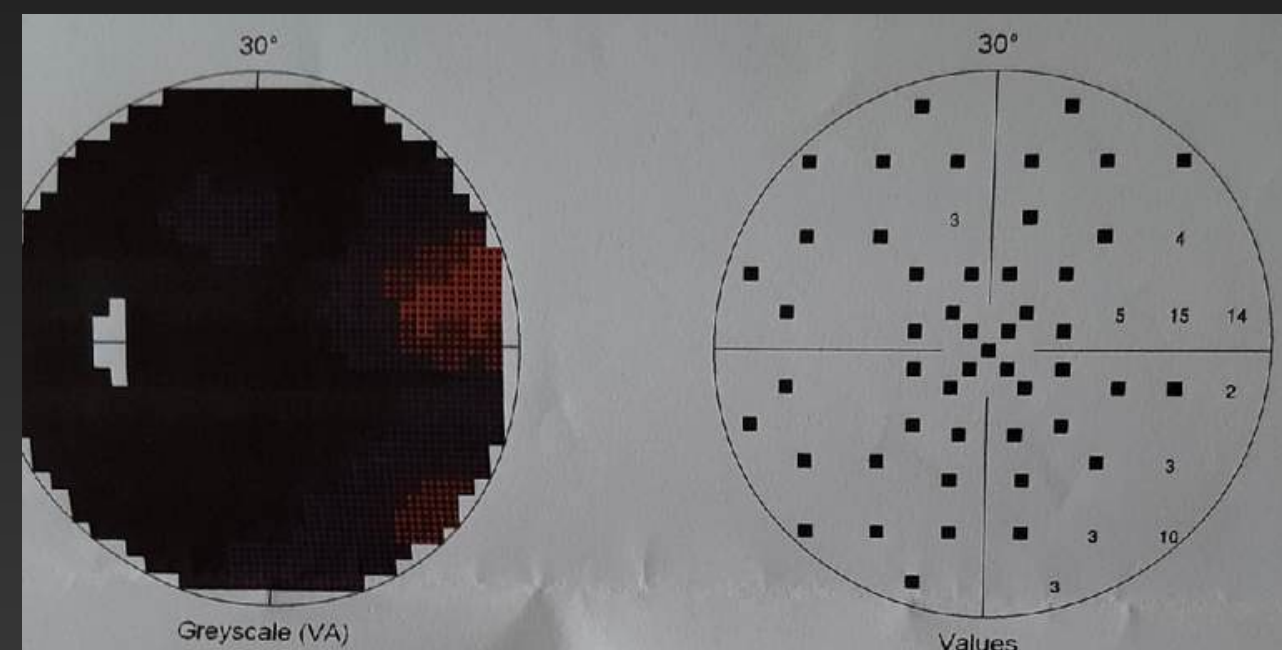
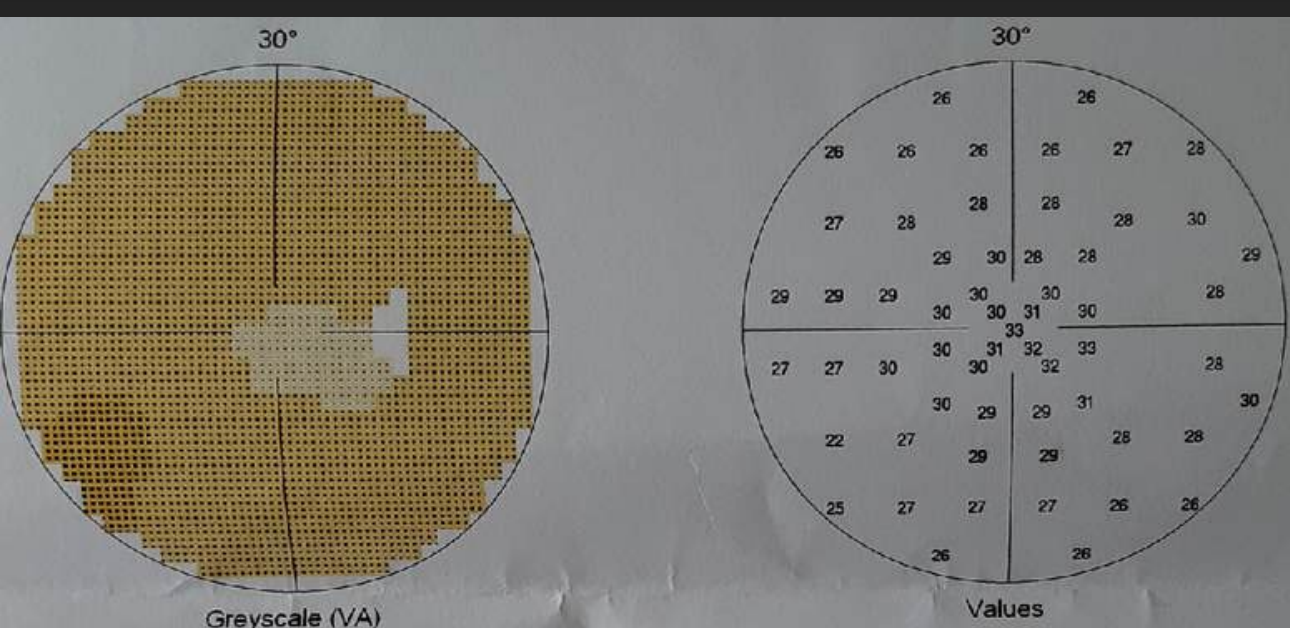


RIGHT EYE

LEFT EYE



22 months postop, Dec 2019



6 months post GKRS, Sep 2021

Postradiosurgical follow-up

15.3.2021., 9:33:35 ▾

11.11.1983.

Current age: 38 years

M-825216

Prior: 1 of 1

7. t1_mprage_tra_1mm +CE ▾

Sequence: *tfl3d1_16

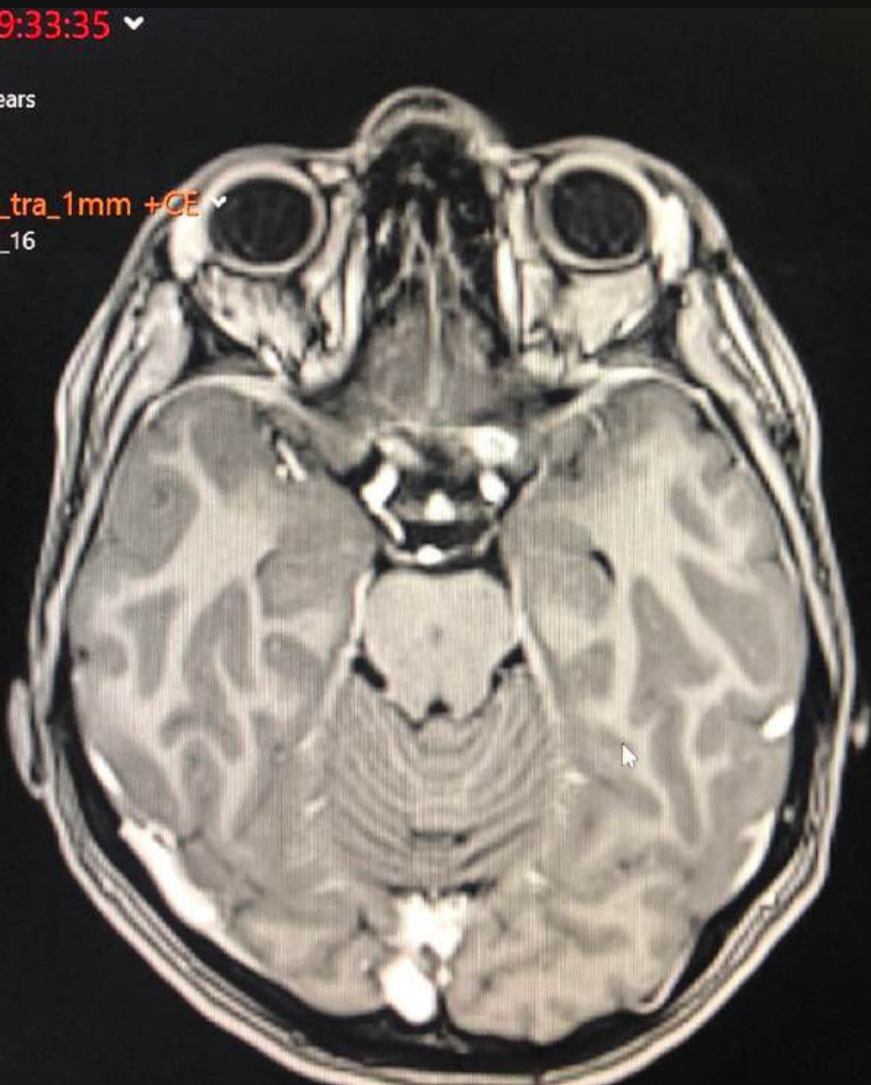
Slice: 1 mm

TR: 2100

TE: 2,7

TI: 1010

AC: 1



Pos: HFS

13.7.2021., 10:49:00 ▾

11.11.1983.

Current age: 38 years

200504

13. t1_vibe_fs_tra ▾

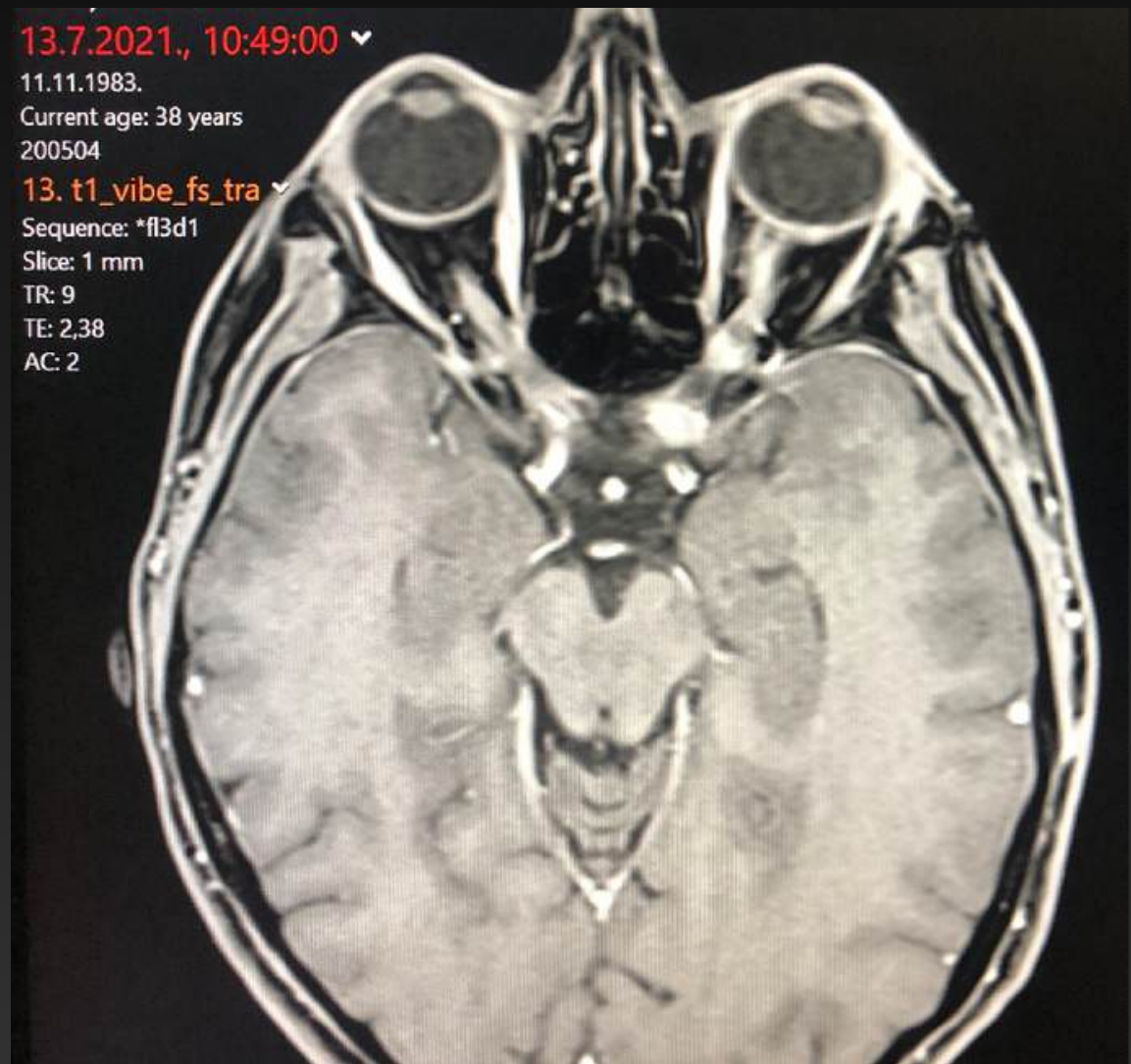
Sequence: *fl3d1

Slice: 1 mm

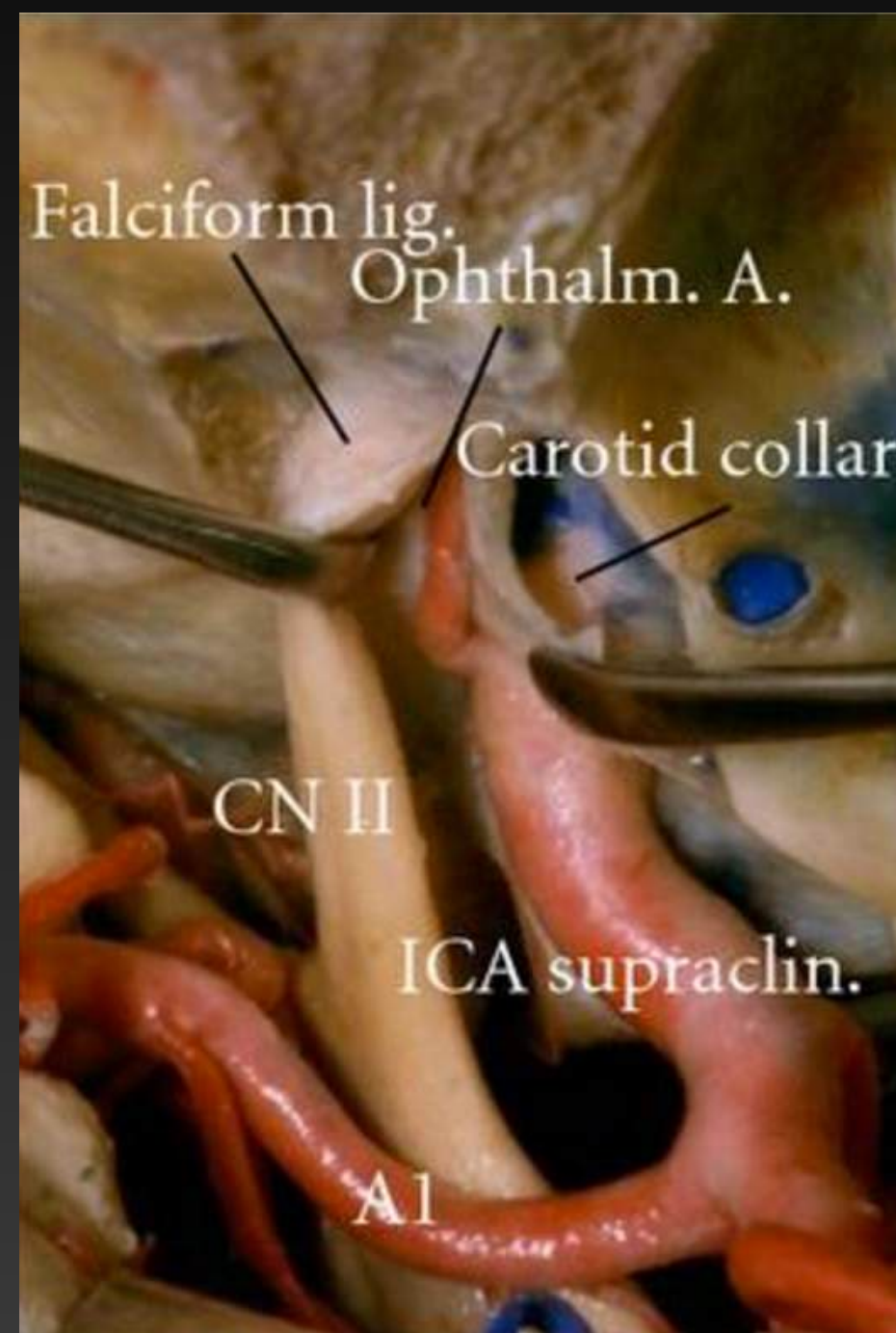
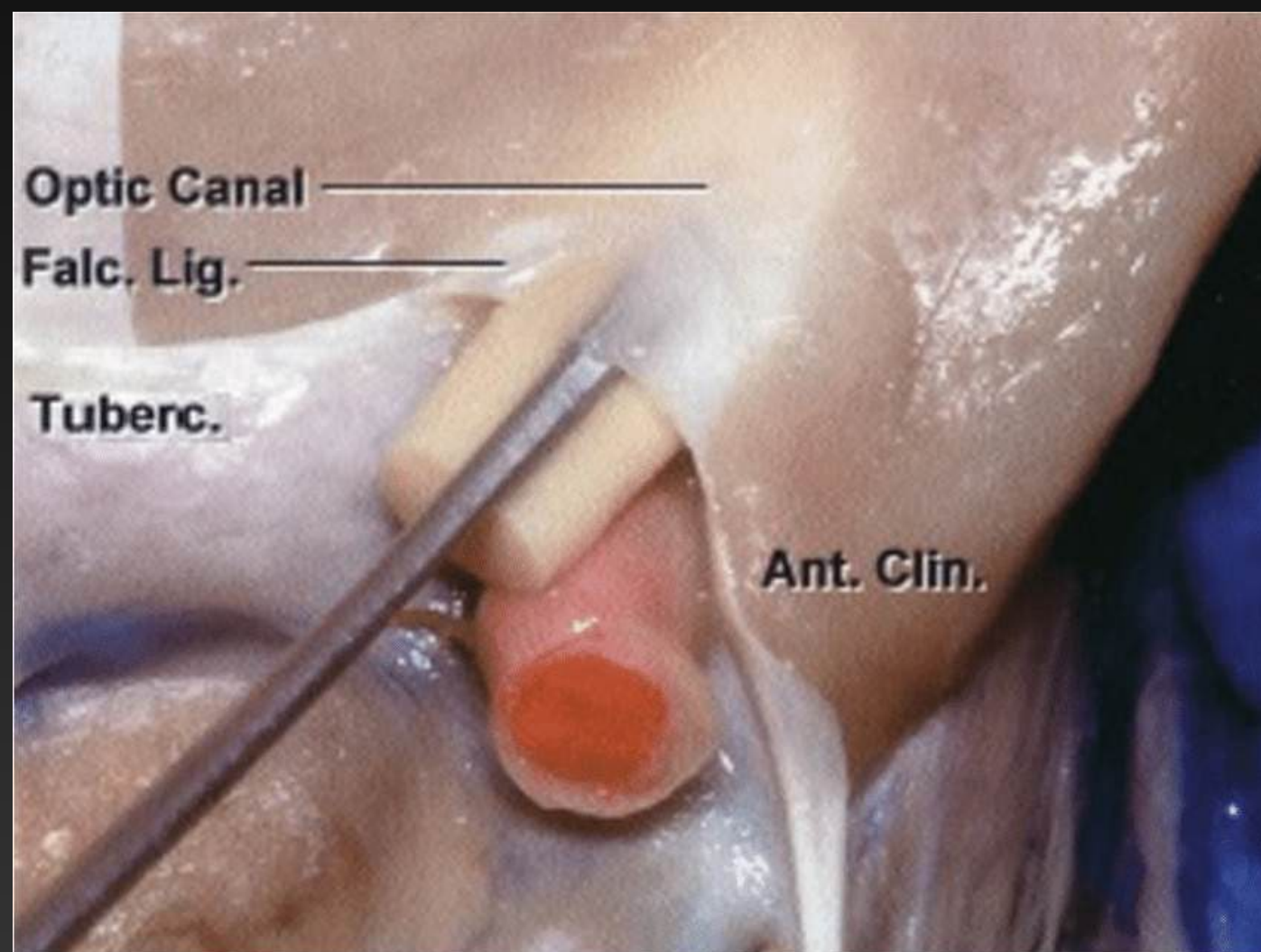
TR: 9

TE: 2,38

AC: 2



Tumor recurrence ?



Tumor recurrence ?

- unroofing of optic canal (not just falciform ligament transection..)
- side of approach
- follow - up with 3T
- ...



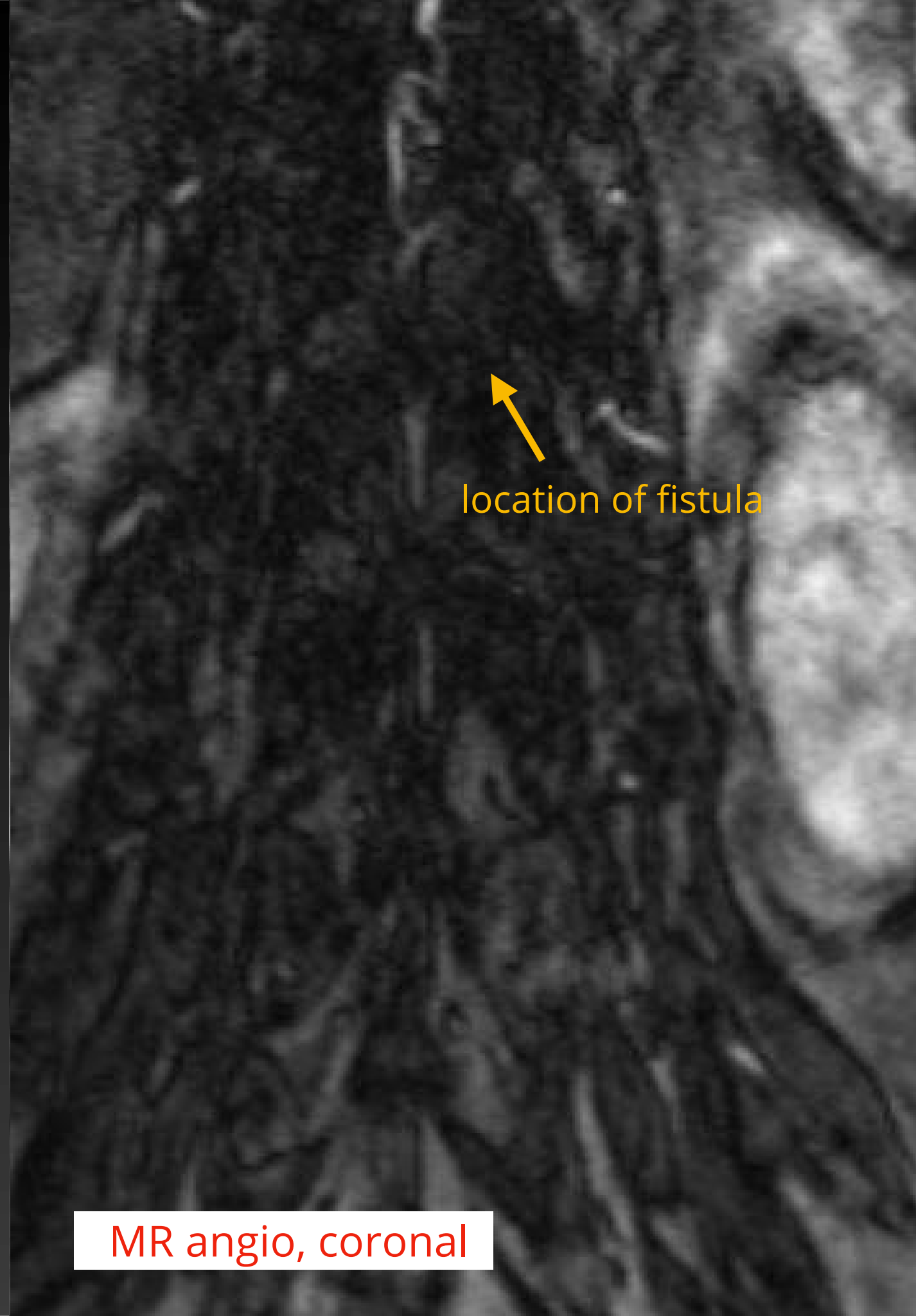
CASE 3

Case 3

- 71 y.o. female
- Medical history : HA, diagnosed with breast carcinoma 4 years ago, treated surgically, and postop chemo/radiotherapy
- in August 2012 developed progressive back pain followed by paresthesiae in feet and weakness in calf muscles, occasional obstipation
- after 6 months progressive gait weakness, started using a crutch for walking
- shortly after development of urinary incontinence

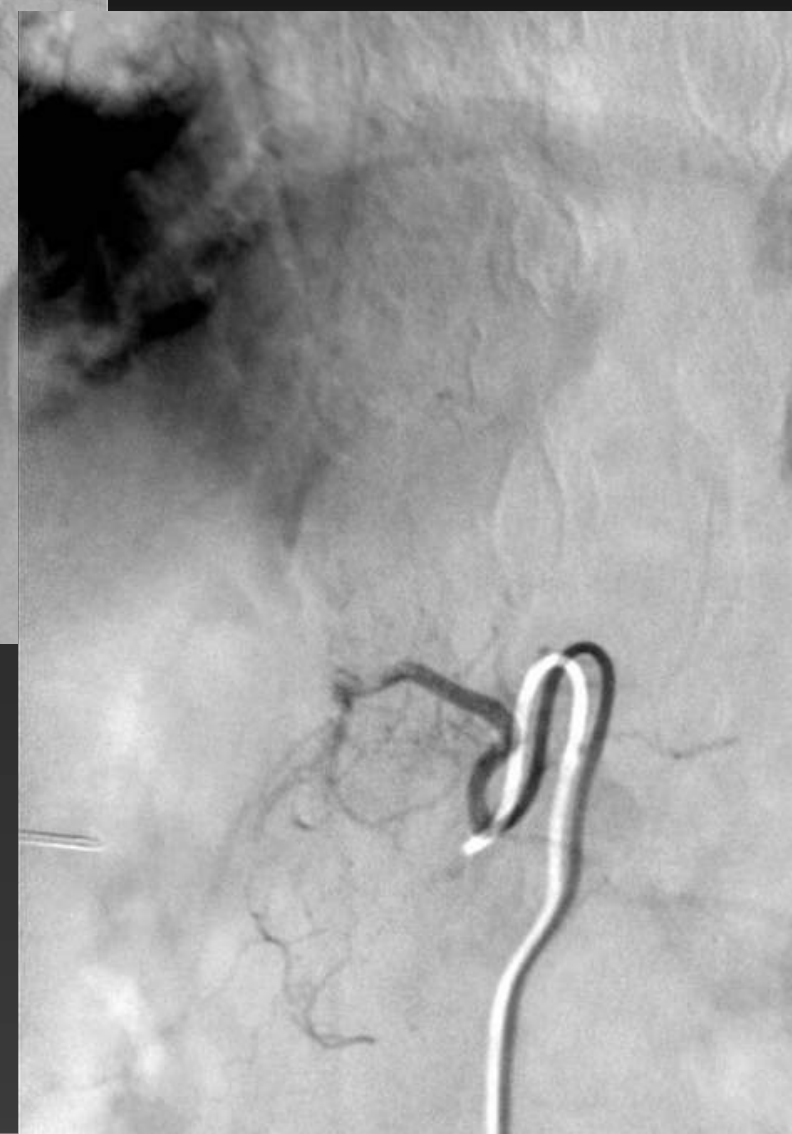
Case 3

- Dg workup ?
- imaging of the spine (MR, CT; region?)
- EMNG of lower limbs
 - modest to severe neural lesion in feet and calf muscles, signs of affection of upper motor neurons
- oncological staging (CT thorax-abdomen-pelvis)
- PET-CT
 - no signs of tumor recurrence or dissemination



location of fistula

MR angio, coronal

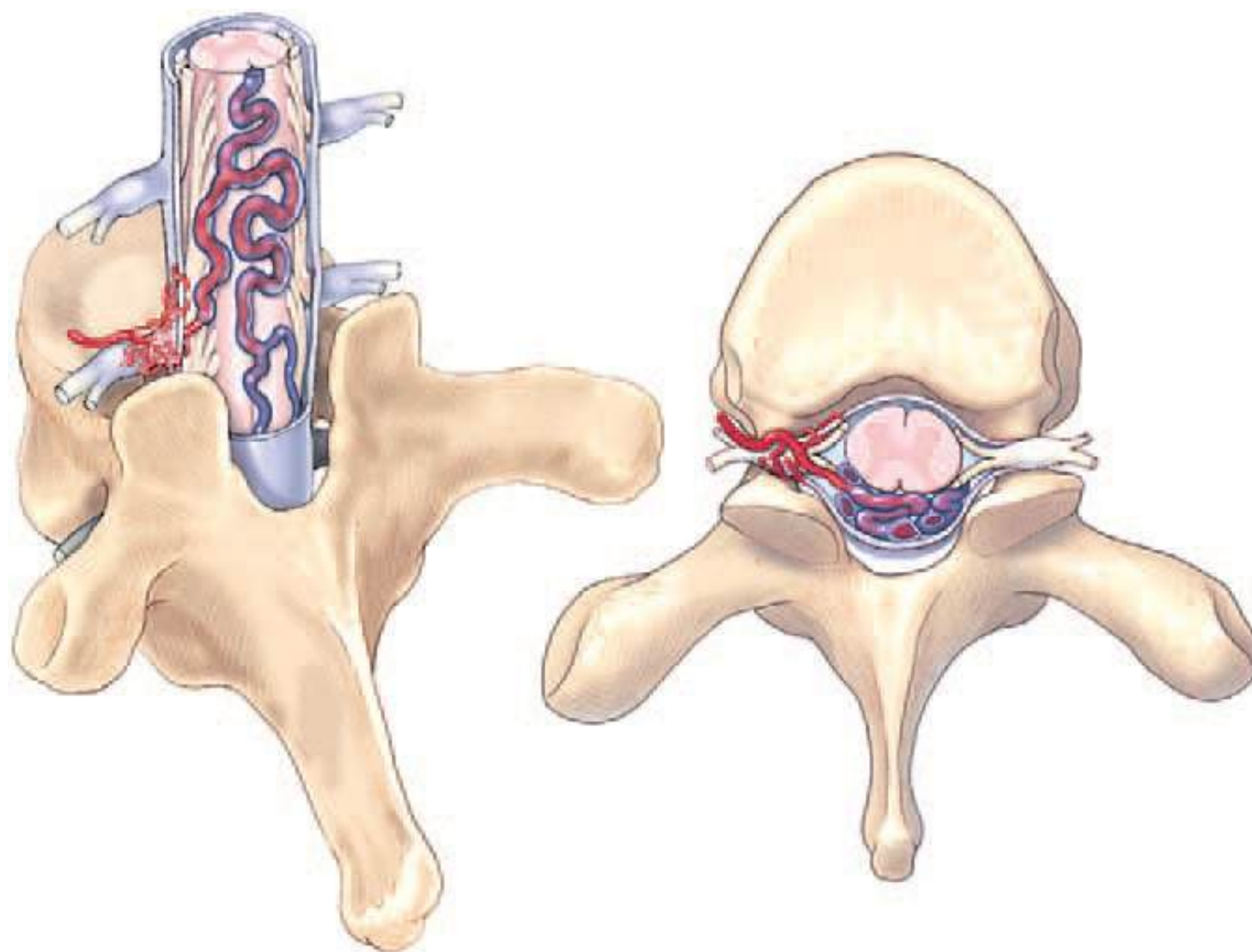


L1 dex

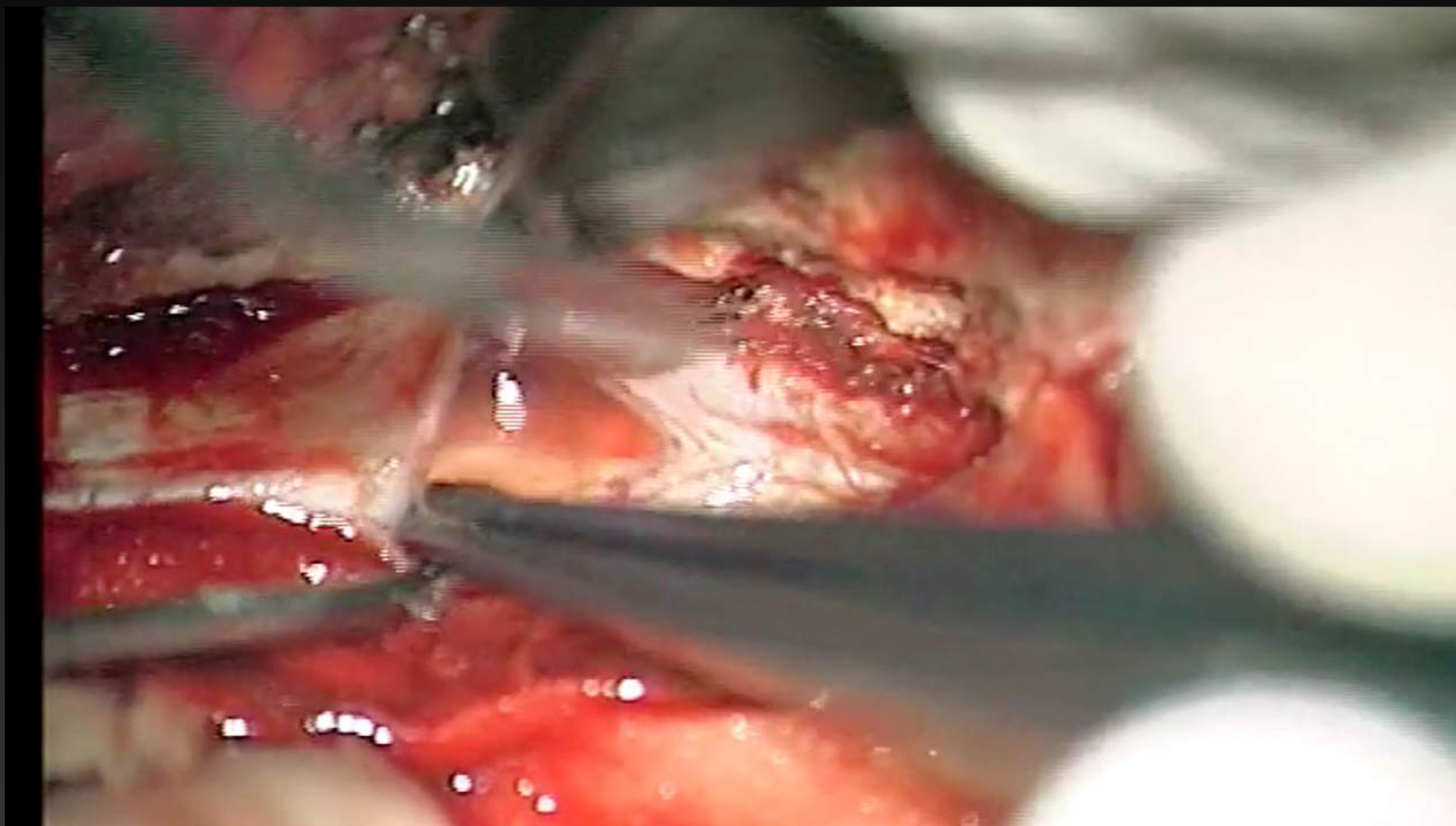
Pathophysiology

AV shunt is located inside the dura mater close to the spinal nerve root where the arterial blood from the radiculomeningeal artery enters a radicular vein, at the dorsal surface of the dural root sleeve in the intervertebral foramen

Spetzler et al. J Neurosurg (Spine 2) 2002. **96**:145–156.



Surgery





preop



postop

Case 3

- Regular follow-up
 - persisting spastic paraparesis
 - persisting urinary incontinence (self-catheterisation twice daily), chronic obstipation
 - no radiological signs of myelopathy on MR
 - regular physical therapy



smmarasanov@gmail.com

