I tumori della testa e del collo in prossimità di aree sensibili: progressi in neurochirurgia

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Policlinico “Le Scotte”
Firenze - Siena

MEYER
Azienda Ospedaliero-Universitaria

Tumori della testa e del collo in età pediatrica

1994-2010

1940 casi

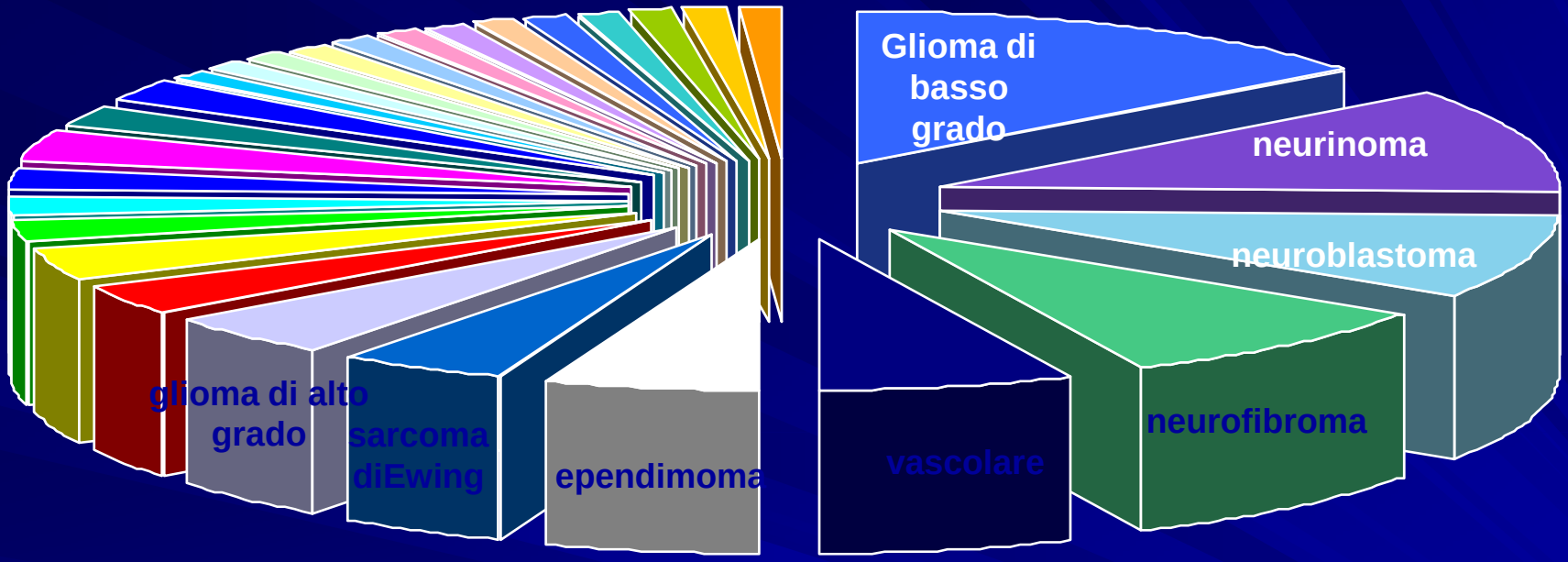
Necessità di un approccio multidisciplinare

- Come ottenere il massimo del controllo della malattia con bassa morbilità e mortalità?
- E’ sempre necessario ottenere una rimozione radicale?
- Quale è il miglior approccio chirurgico?
- Come ridurre le manipolazioni delle zone sensibili?

Problemi in Neuro oncologia pediatrica

- Sistema Nervoso Centrale in via di sviluppo
- Alta frequenza di tumori sotto tentoriali
- Tumori intra assiali > extra assiali
- Localizzazione complessa e istotipi diversi

TUMORI SPINALI
istologia



- glioma di basso grado
- neurofibroma
- sarcoma di Ewing
- osteosarcoma
- istiocitosi
- PNET
- emangioma
- lipoma
- miosite ossificante
- teratoma
- neuroblastoma
- vascolare
- glioma di alto grado
- cisti aneurismatica
- neurofibroma plessiforme
- dermoide
- fibrosarcoma
- medulloblastoma
- osteocondroma
- tumore del sacco vitellino
- neurinoma
- ependimoma
- linfoma
- cordoma
- osteoblastoma
- emangioblastoma
- ganglioneuroma
- meningioma
- osteoma osteoide

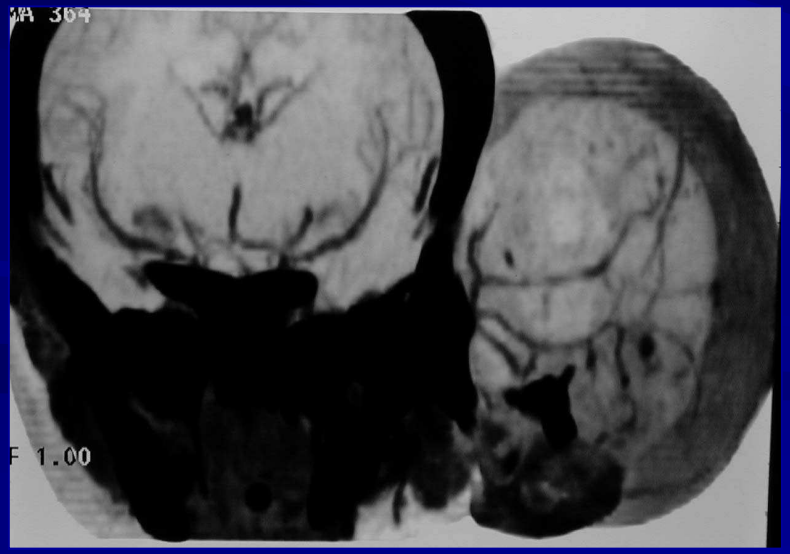
Surgical team

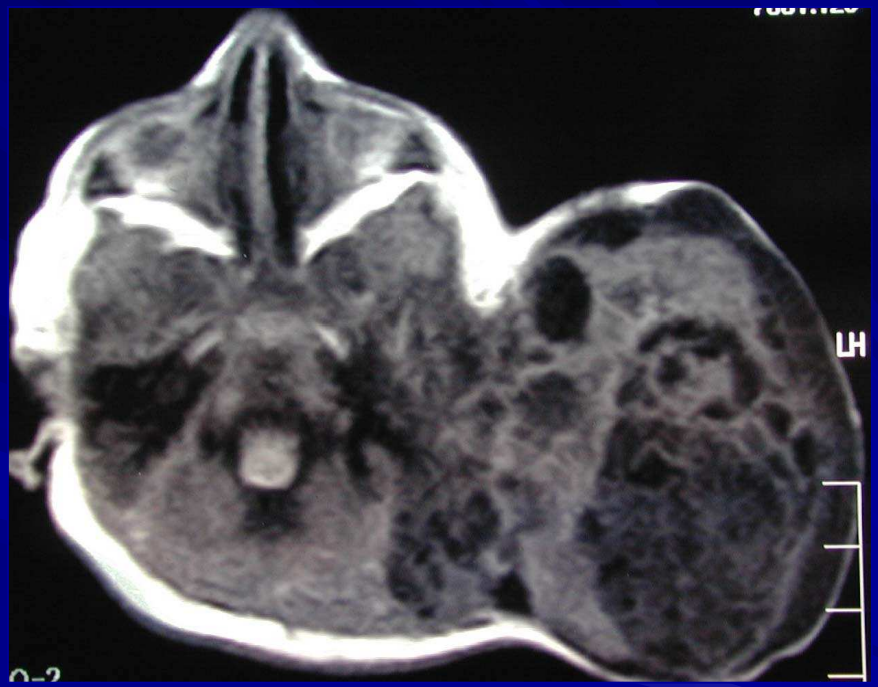
in children and teen-agers

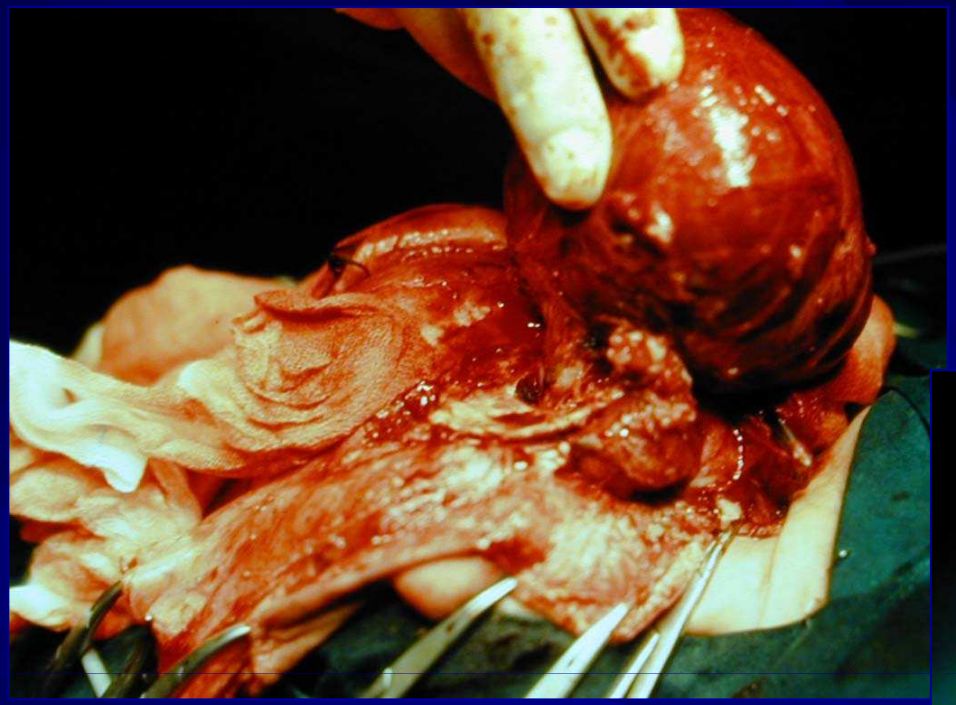
- Neurosurgery
- Ped. Surgery
- Genetist
- Rehabilitation
- Speech therapy
- ENT surgery
- Anesthesiology
- Maxillo facial
- Plastic surgery
- Dentistry
- Pediatrics
- Ophtalmology
- Radiology
- Psychology

Teratoma gigante in un neonato











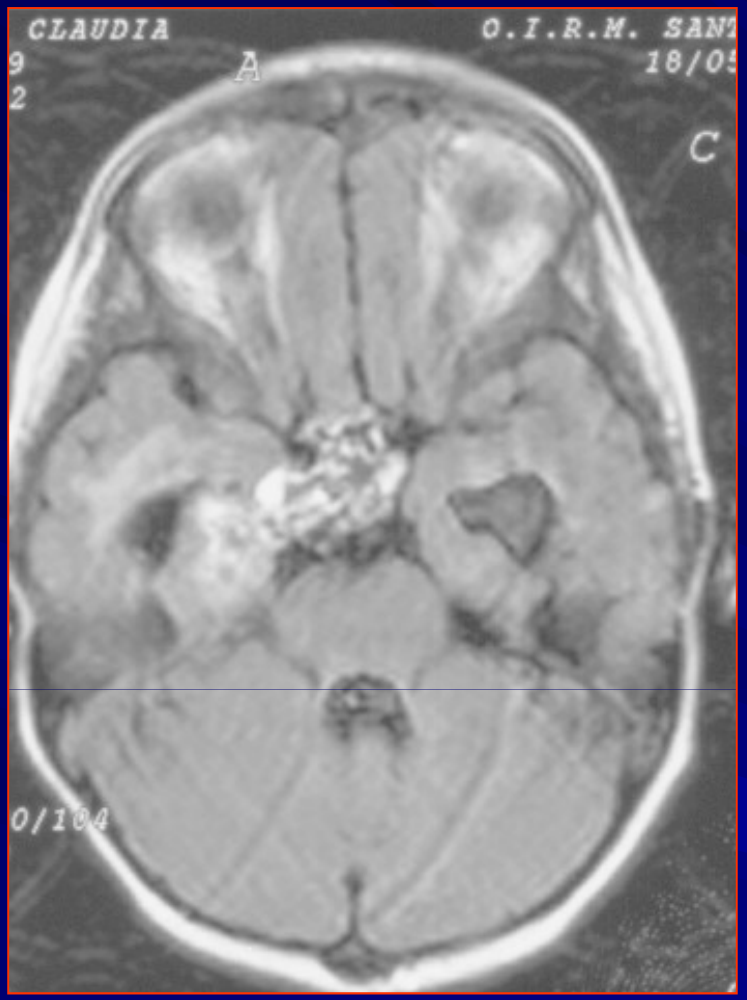
…1 anno dopo



TECNOLOGIA

- Coagulazione bipolare
- Aspiratore ultrasonico (CAVITRON-CUSA)
- Microscopio operatorio
- Trapano ad alta velocità
- Endoscopia
- Neuronavigatore
- Micro-ecocolordoppler
- RM e TC intra-operatoria





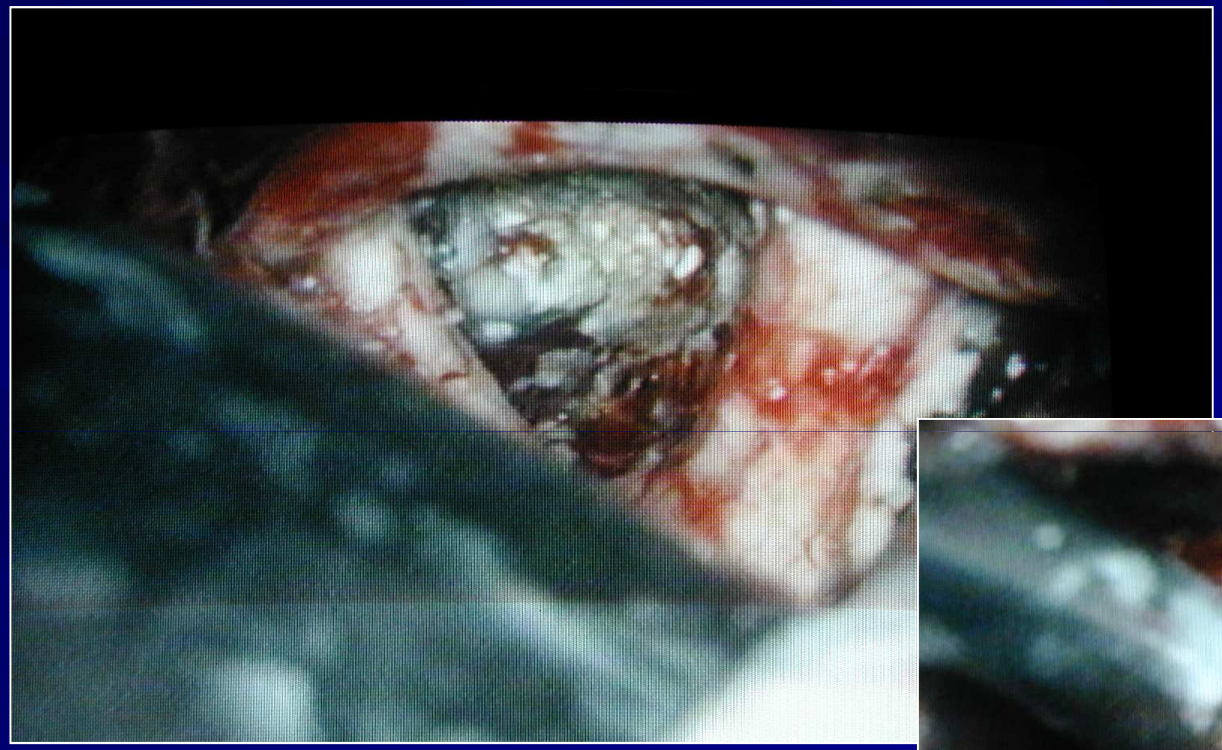
Craniofaringioma gigante

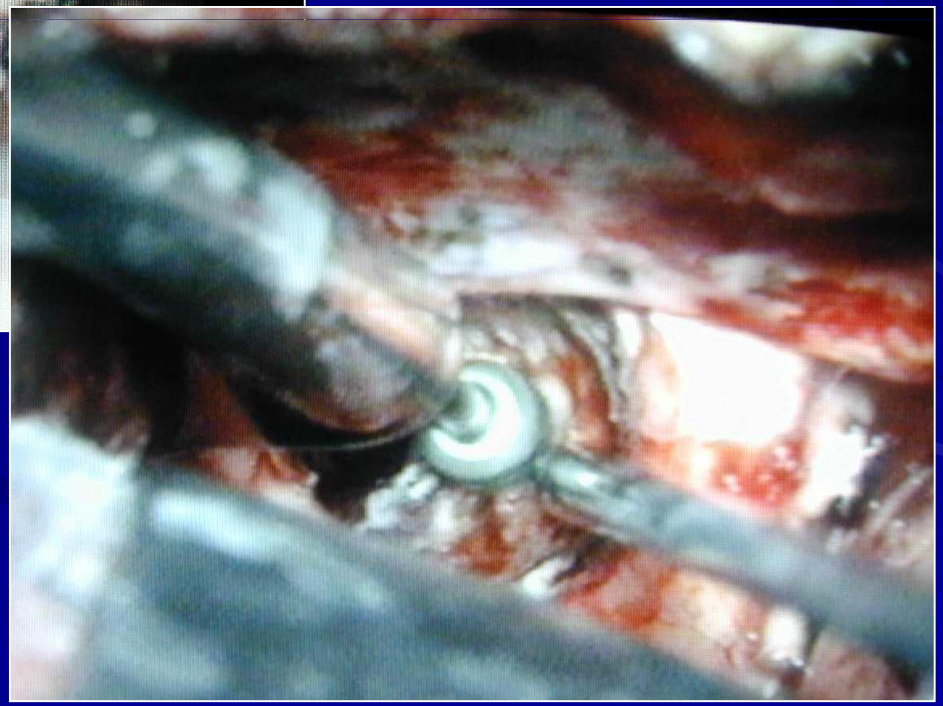
panemisferico e centrale



Craniotomi e frese ad “ALTA VELOCITA”

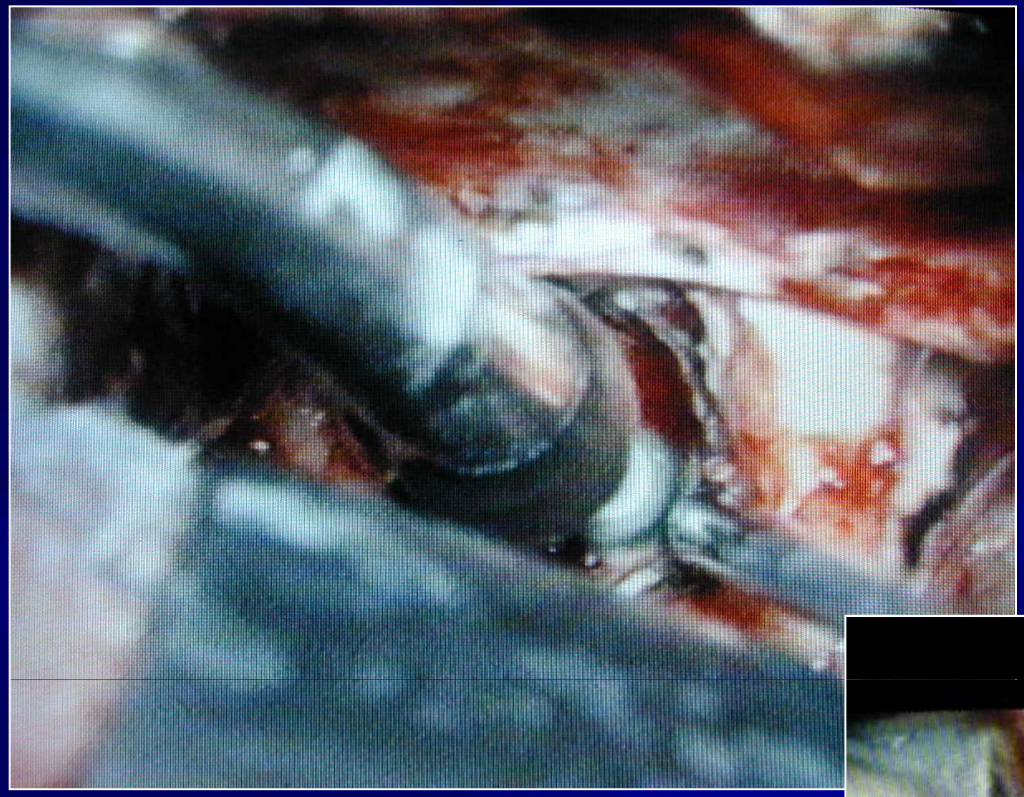
(100.000 giri al minuto)





Inizio asportazione

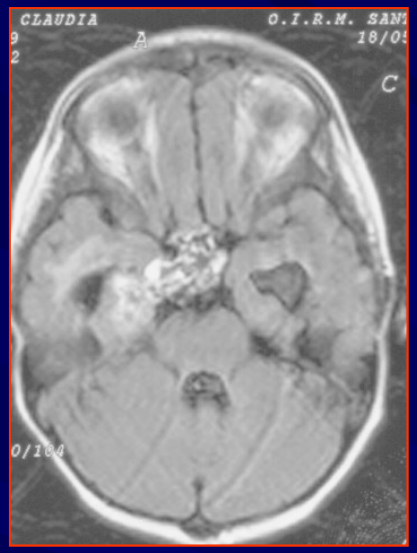
Alla dissezione delle vie ottiche





Fine della asportazione

Visione microscopica



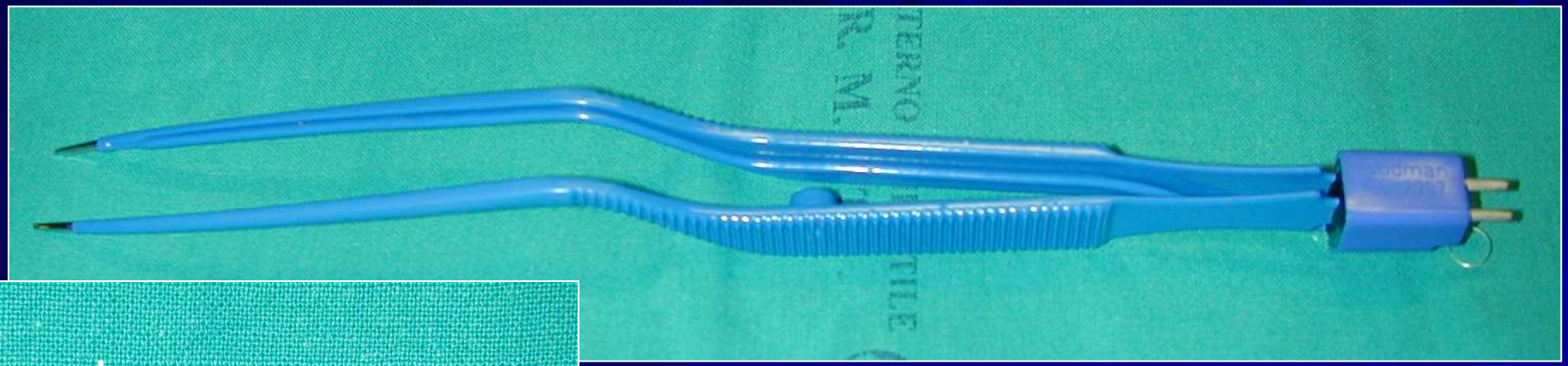
Pre op

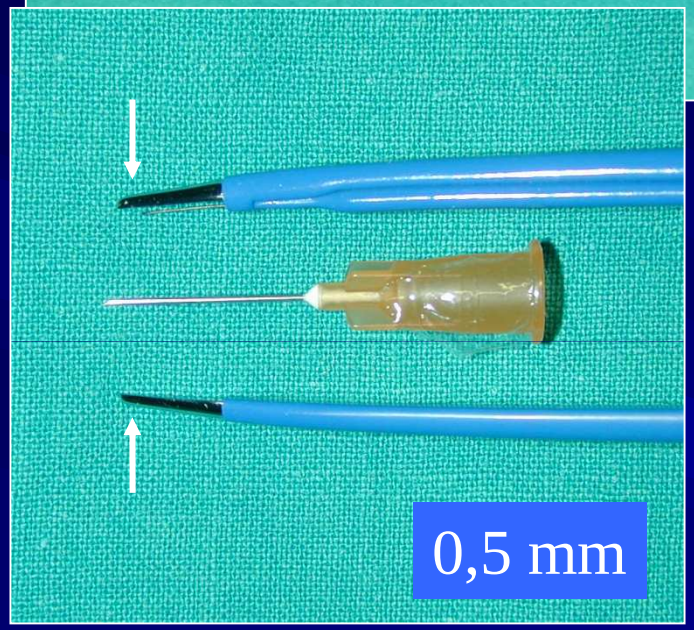


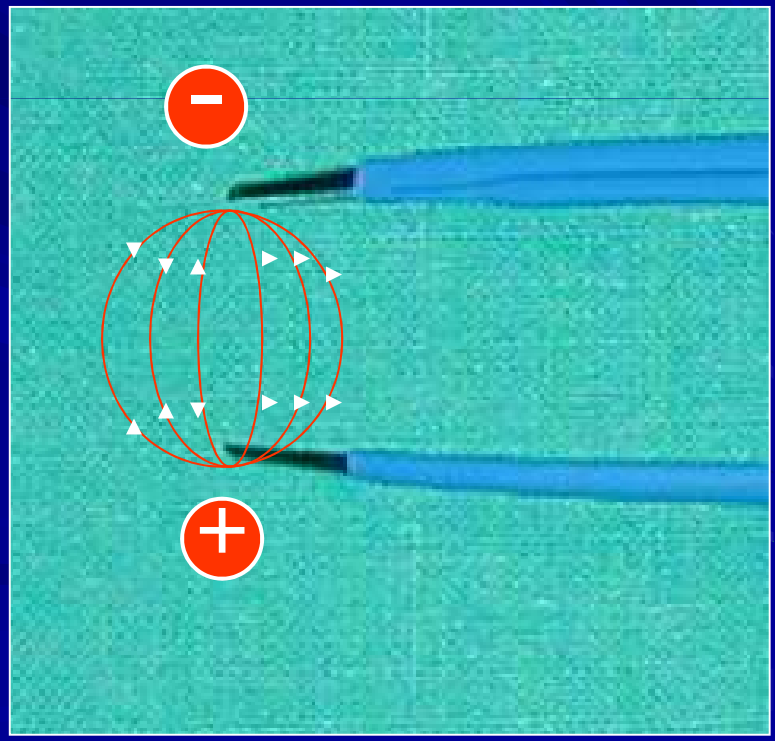


Post op







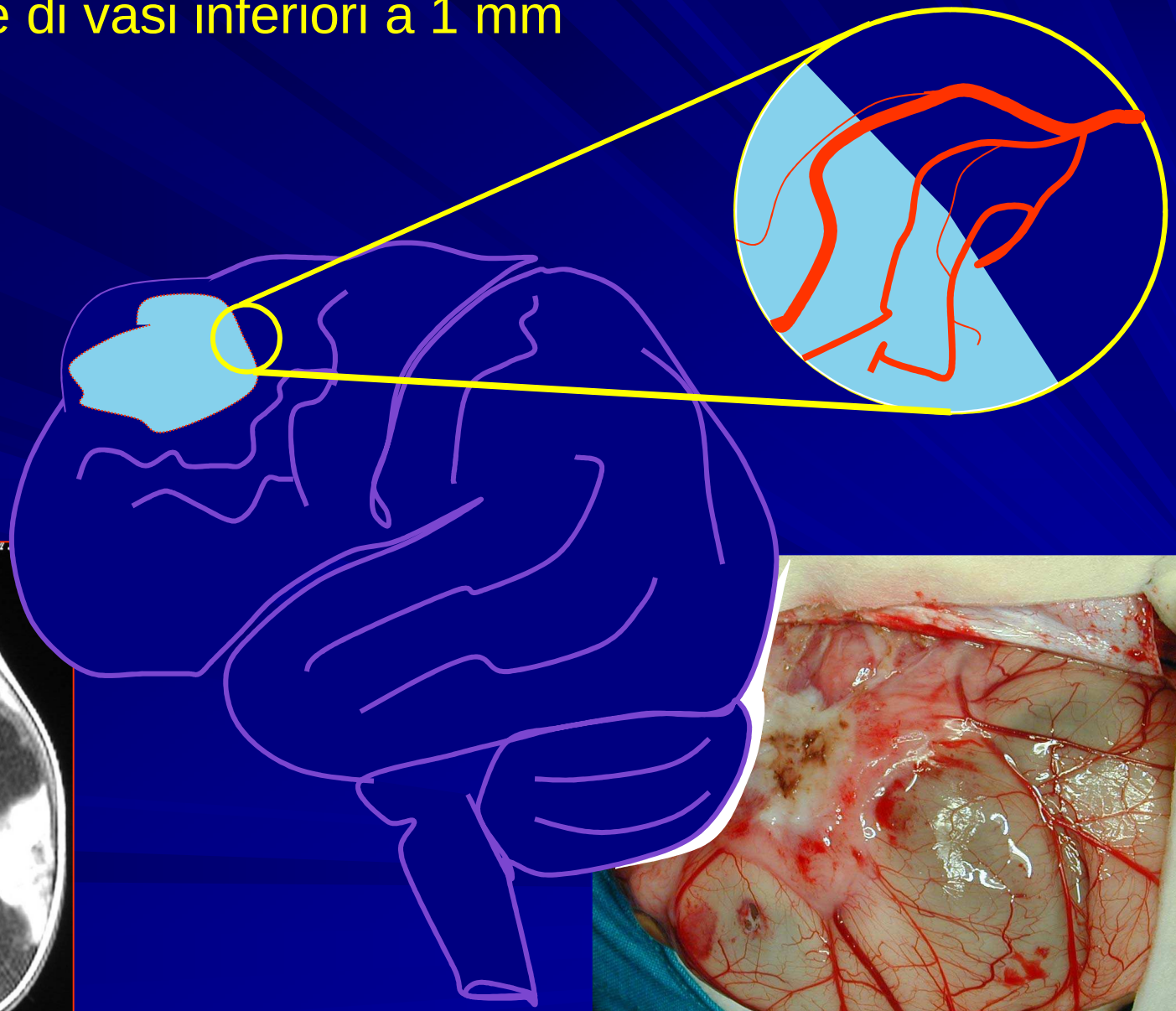


PINZA BIPOLARE

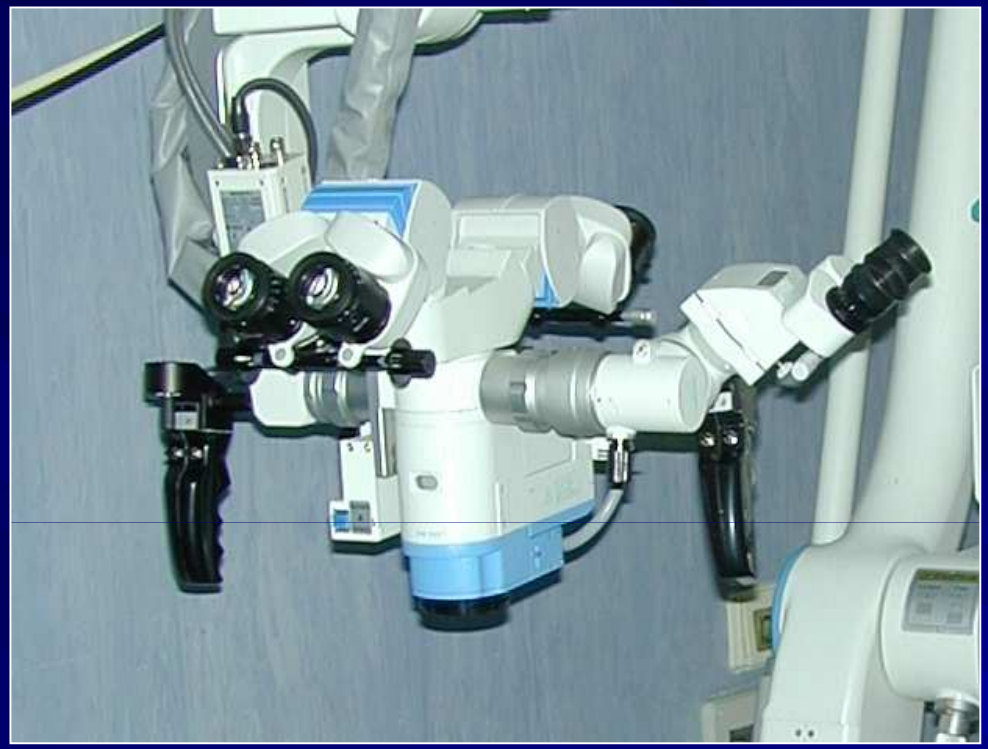
Campo elettrico solo nello spazio compreso tra le due punte = nessuna dispersione di energia

Coagulazione di vasi tra la superficie cerebrale ed il tumore
Coagulazione di vasi inferiori a 1 mm





Microscopio robotizzato





L’OTTICA E’ MONTATA SU UN BRACCIO MECCANICO

ROBOTIZZATO CHE NE SIMULA L’ASSENZA DI PESO

PERMETTENDONE IL RAPIDO MOVIMENTO

IN OGNI DIREZIONE DELLO SPAZIO E

CON OGNI INCLINAZIONE.

PER OGNI INTERVETO SI EFFETTUANO

CIRCA 500 CORREZIONI DI POSIZIONE DEL

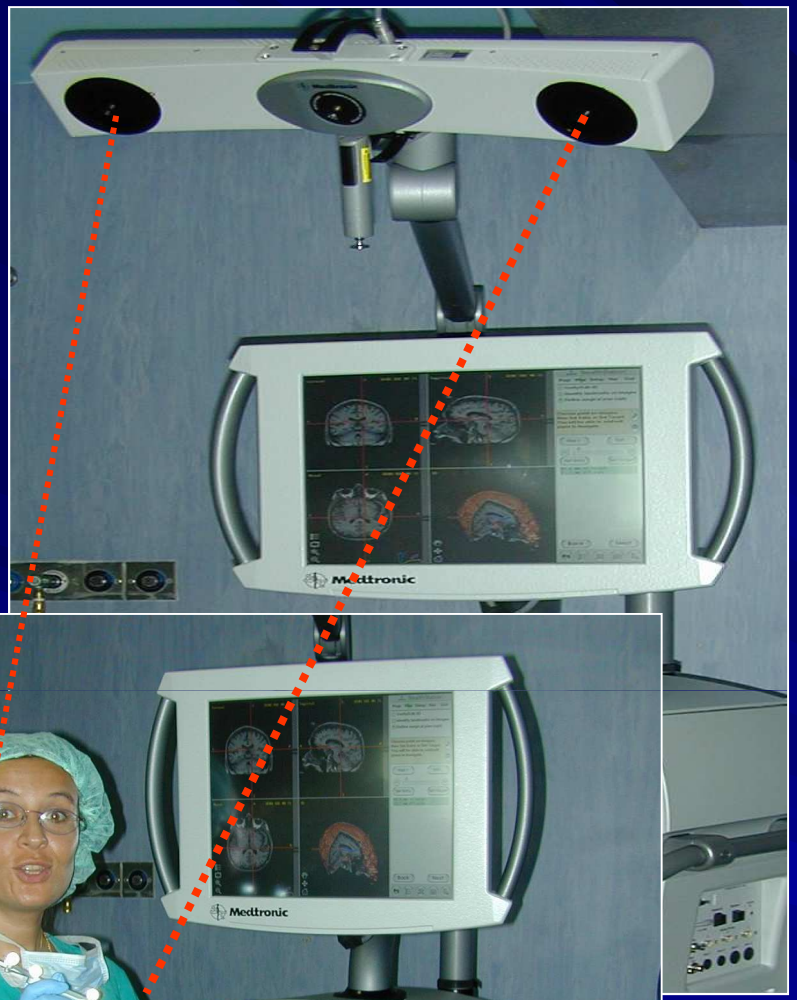
MICROSCOPIO



Microscopio operatore

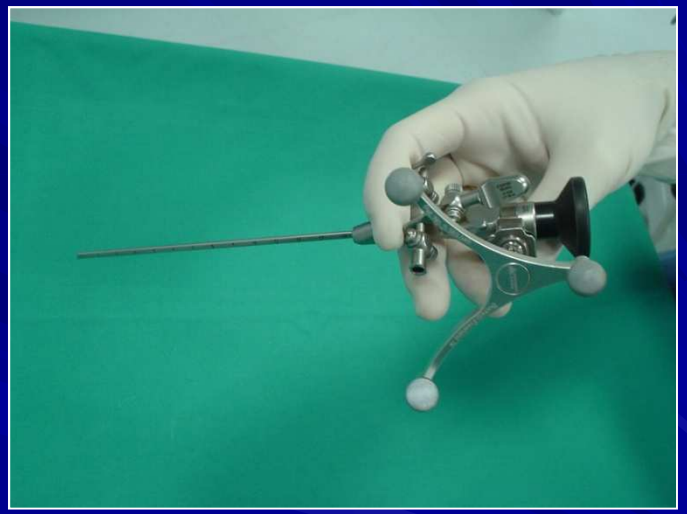
Neuronavigatore

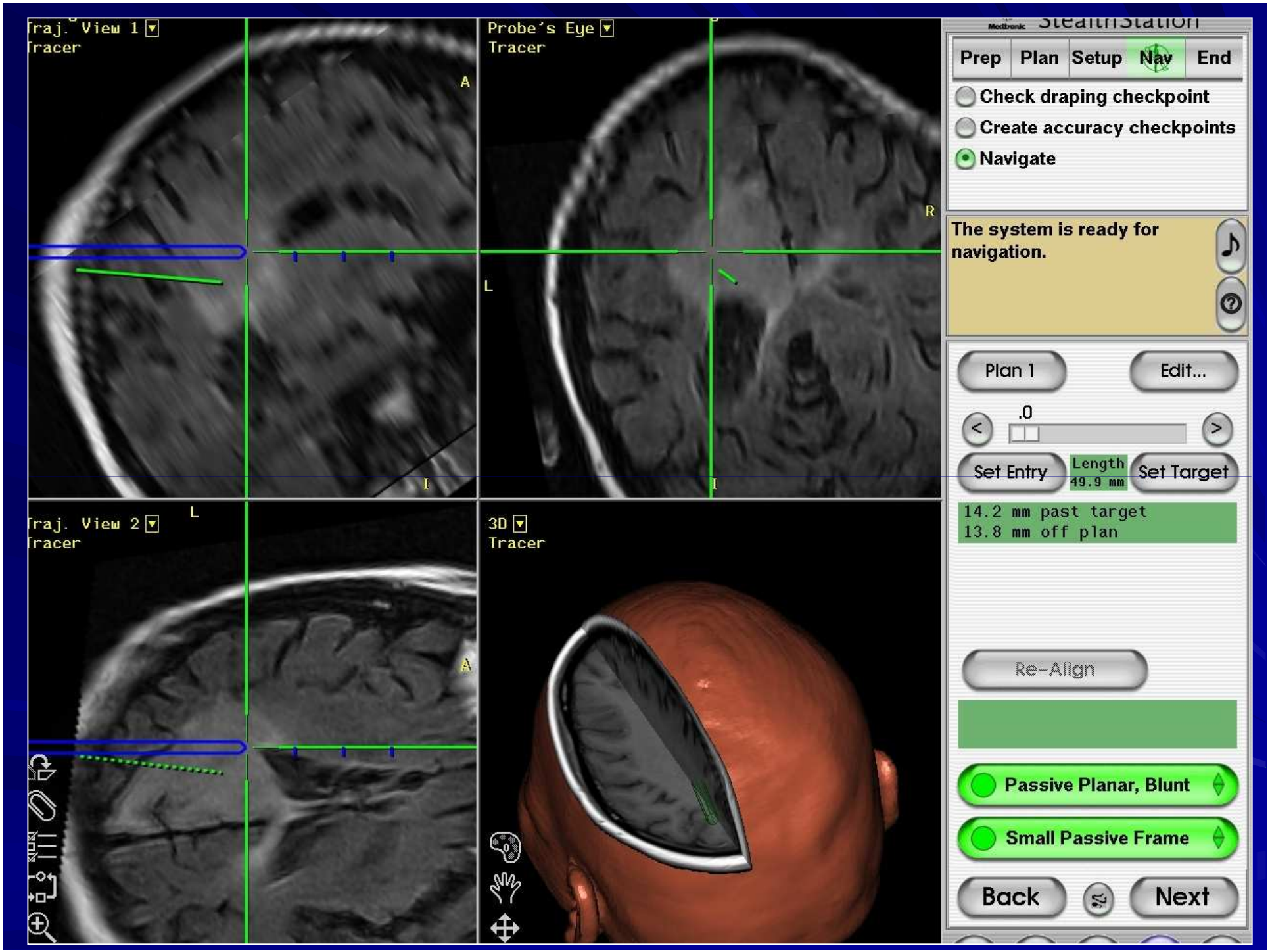


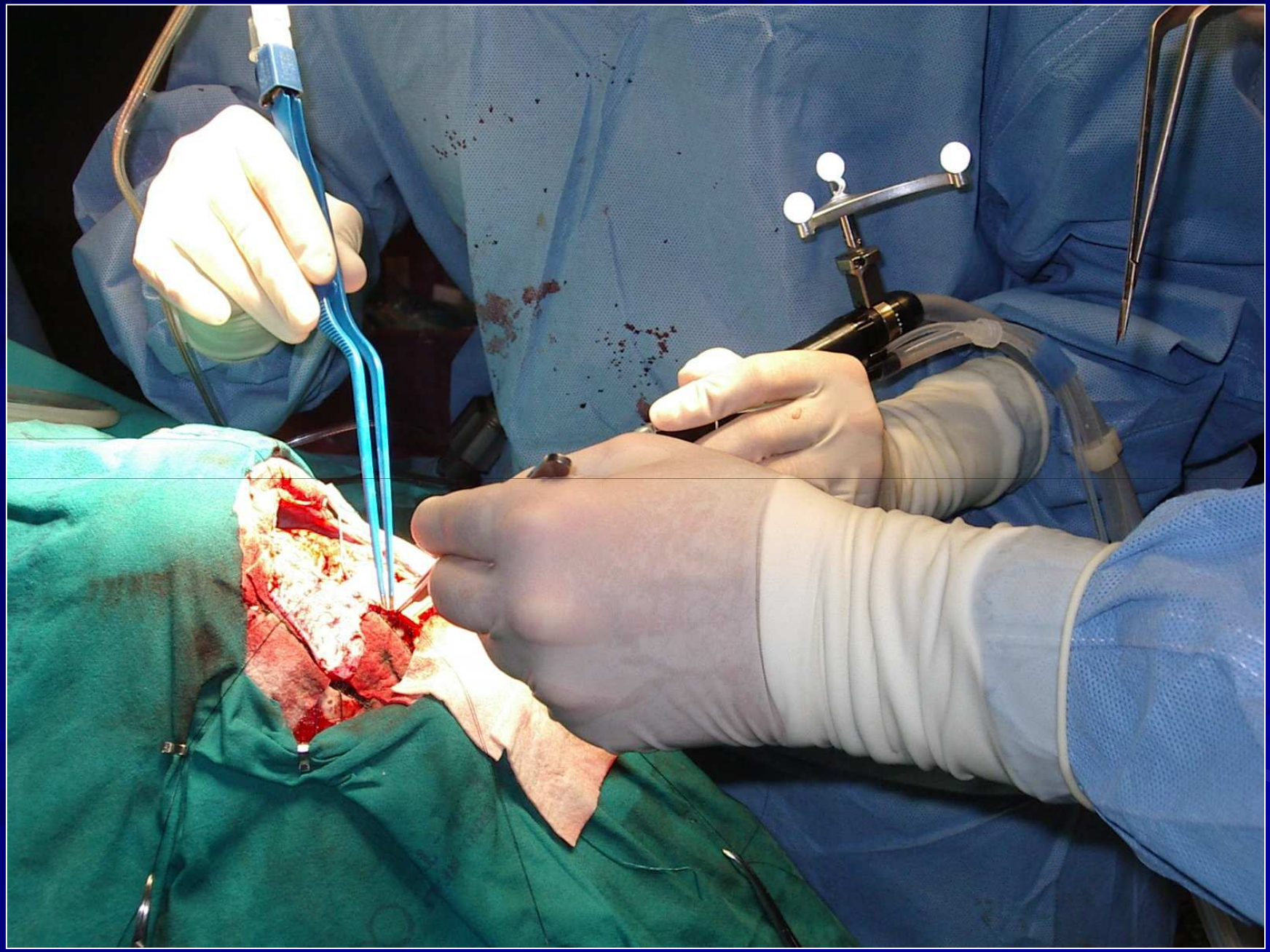

Medtronic

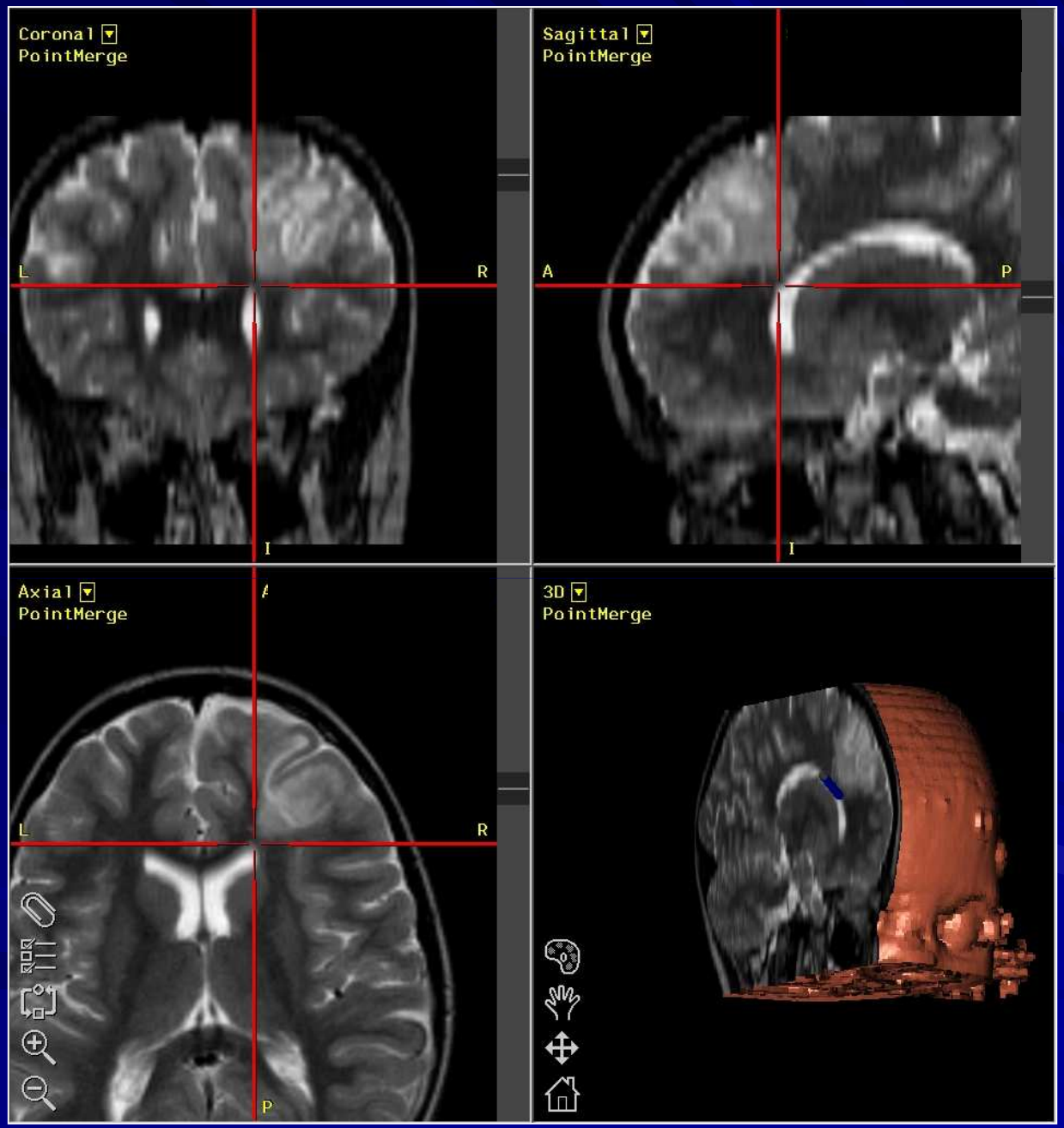

Medtronic

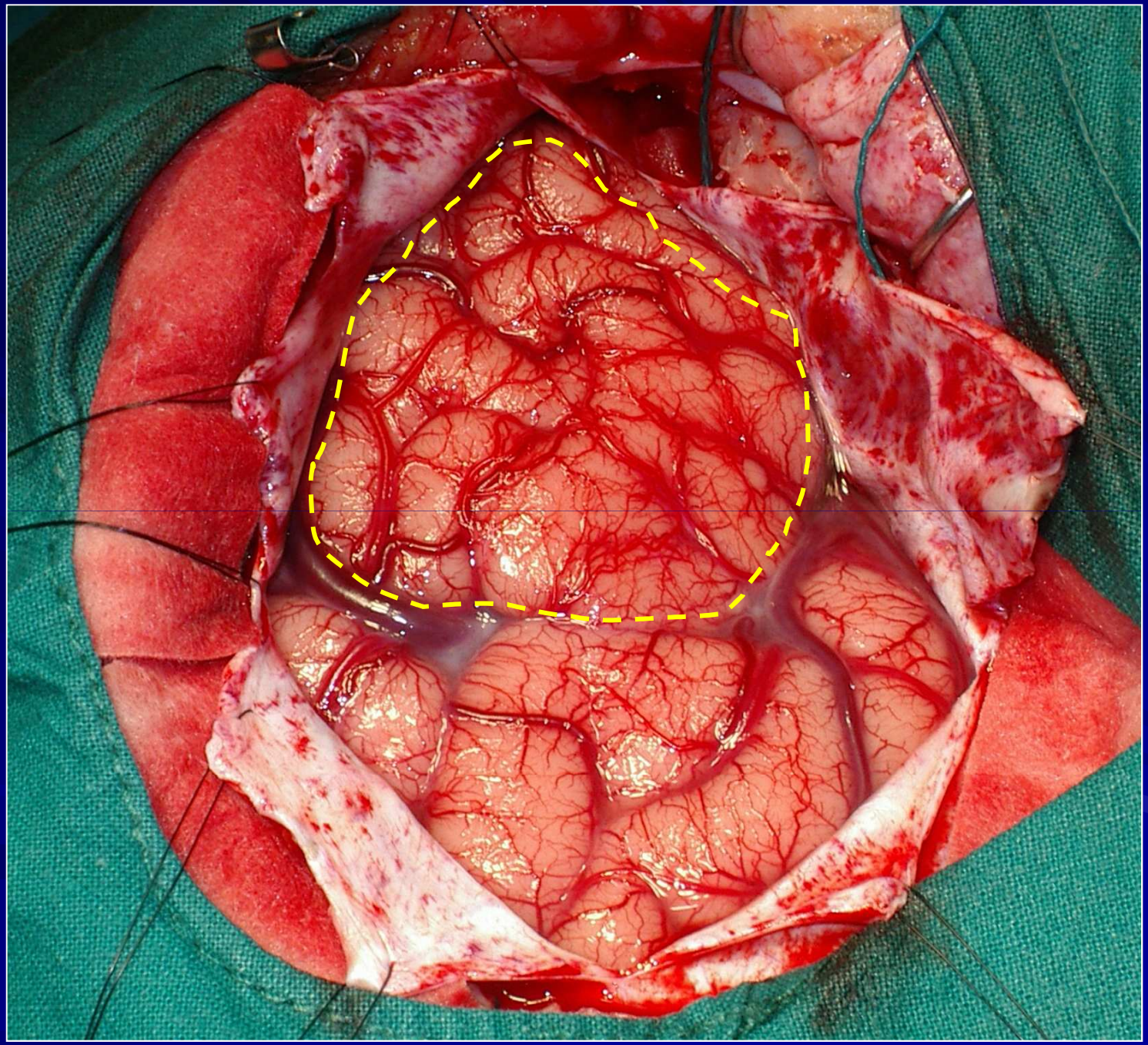


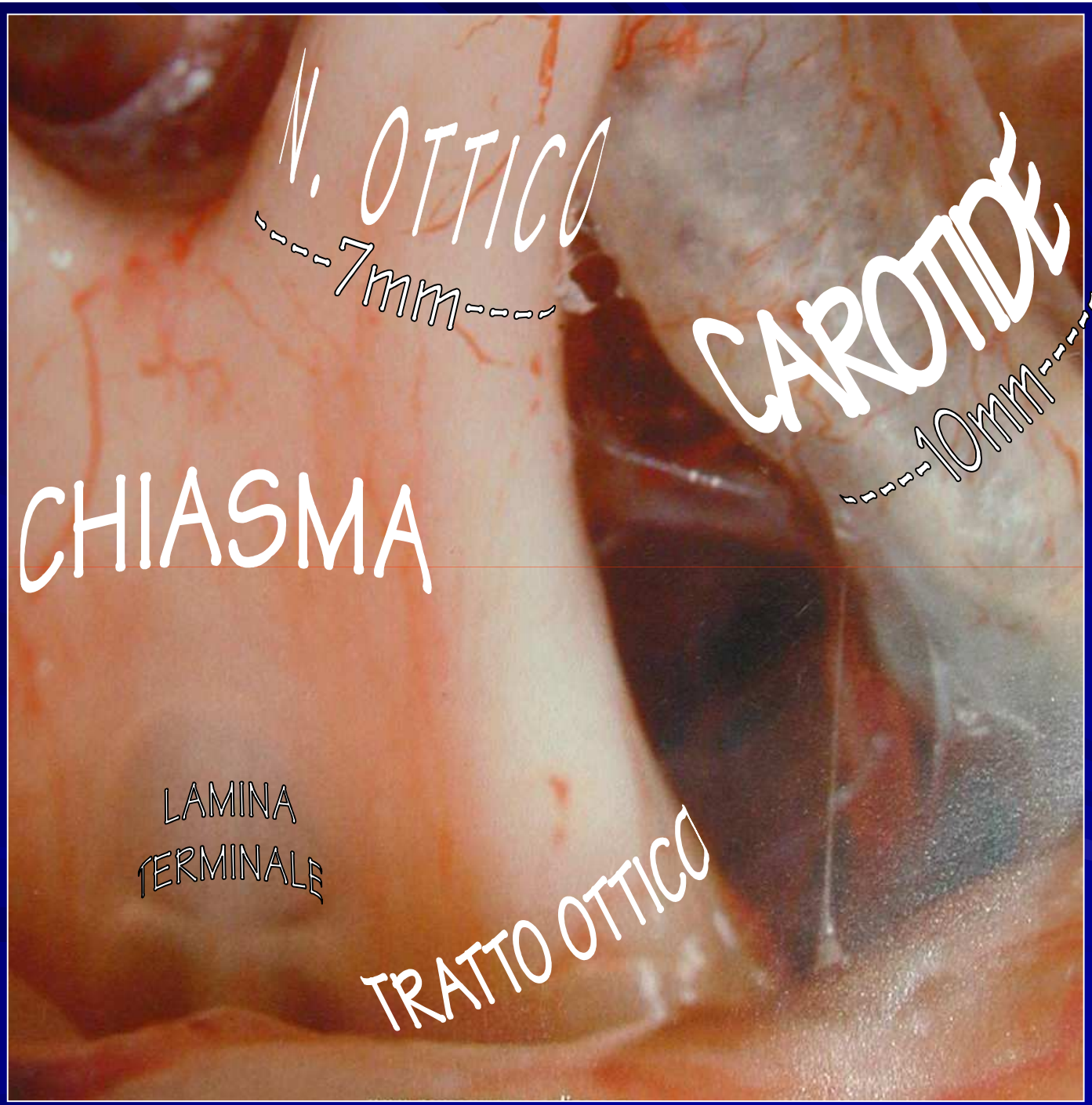



Traj. View 1
Tracer
A
I
Probe's Eye
Tracer
R
L
I
Traj. View 2
Tracer
L
A
3D
Tracer
Medtronic StealthStation
Prep
Plan
Setup
Nav
End
Check draping checkpoint
Create accuracy checkpoints
Navigate
The system is ready for navigation.
Plan 1
Edit...
.0
Set Entry
Length
49.9 mm
Set Target
14.2 mm past target
13.8 mm off plan
Re-Align
Passive Planar, Blunt
Small Passive Frame
Back
Next




Coronal
PointMerge
L
R
I
Sagittal
PointMerge
A
P
I
Axial
PointMerge
L
R
P
3D
PointMerge



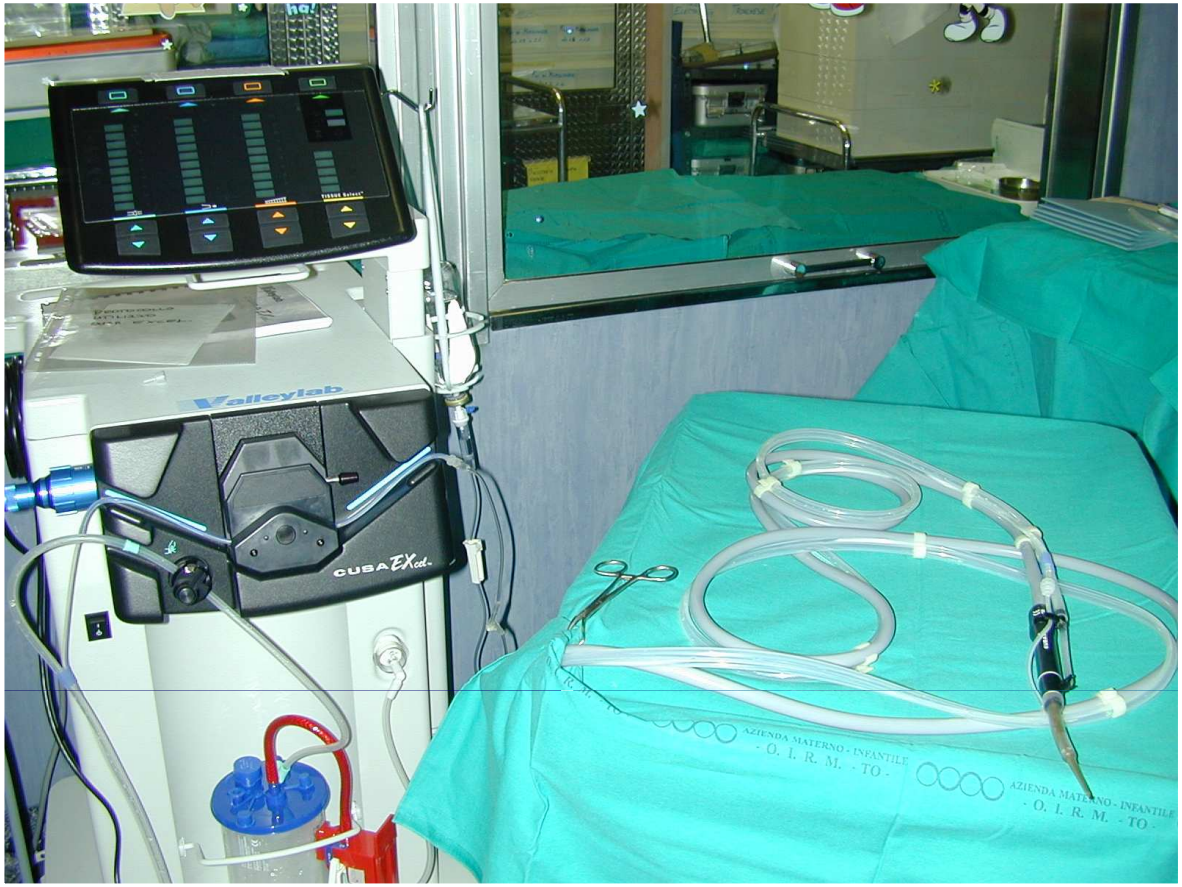

N. OTTICO
7mm
CAROTIDE
10mm
CHIASMA
LAMINA TERMINALE
TRATTO OTTICO

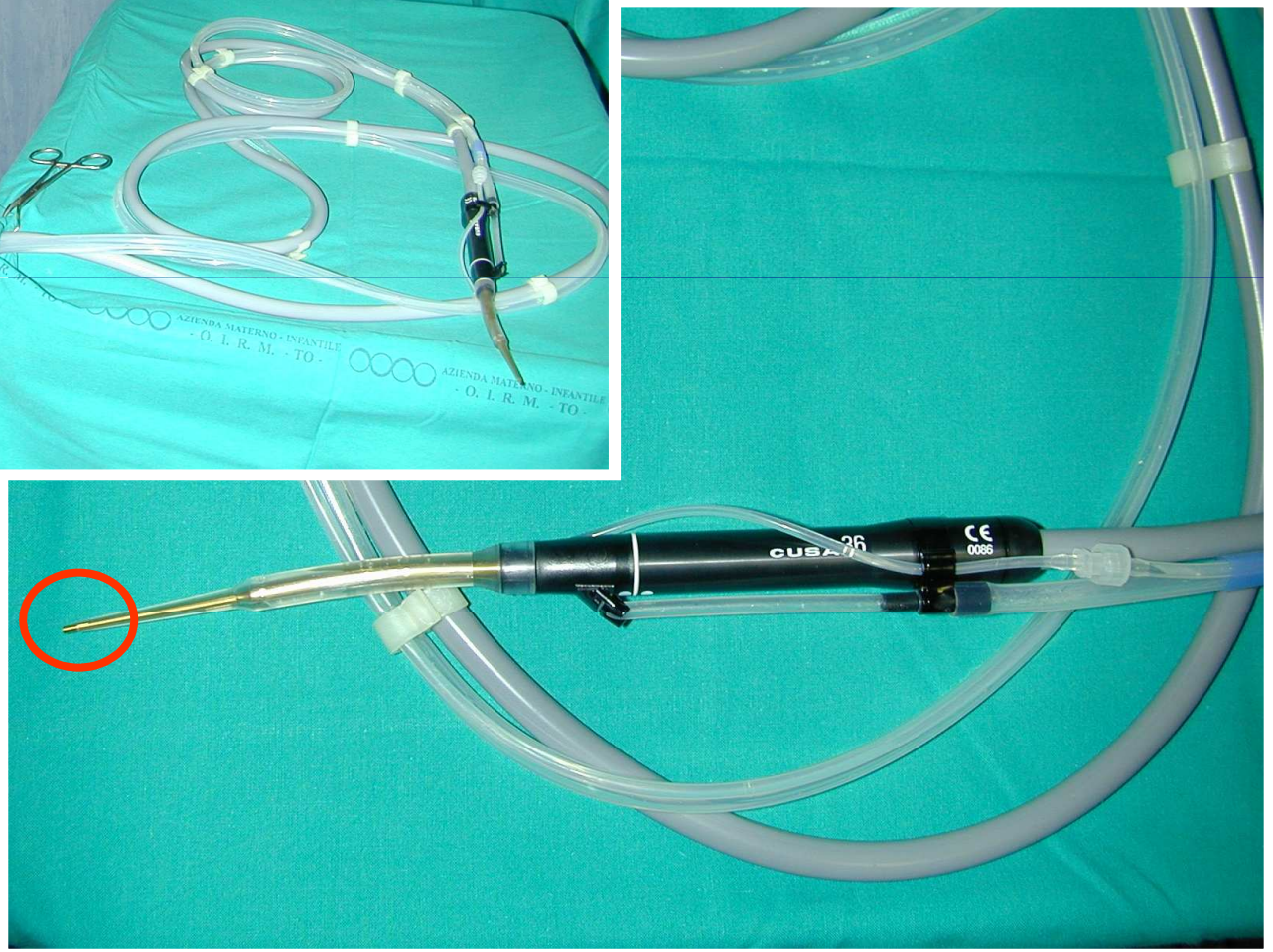
Aspiratore ad ultrasuoni (CUSA)

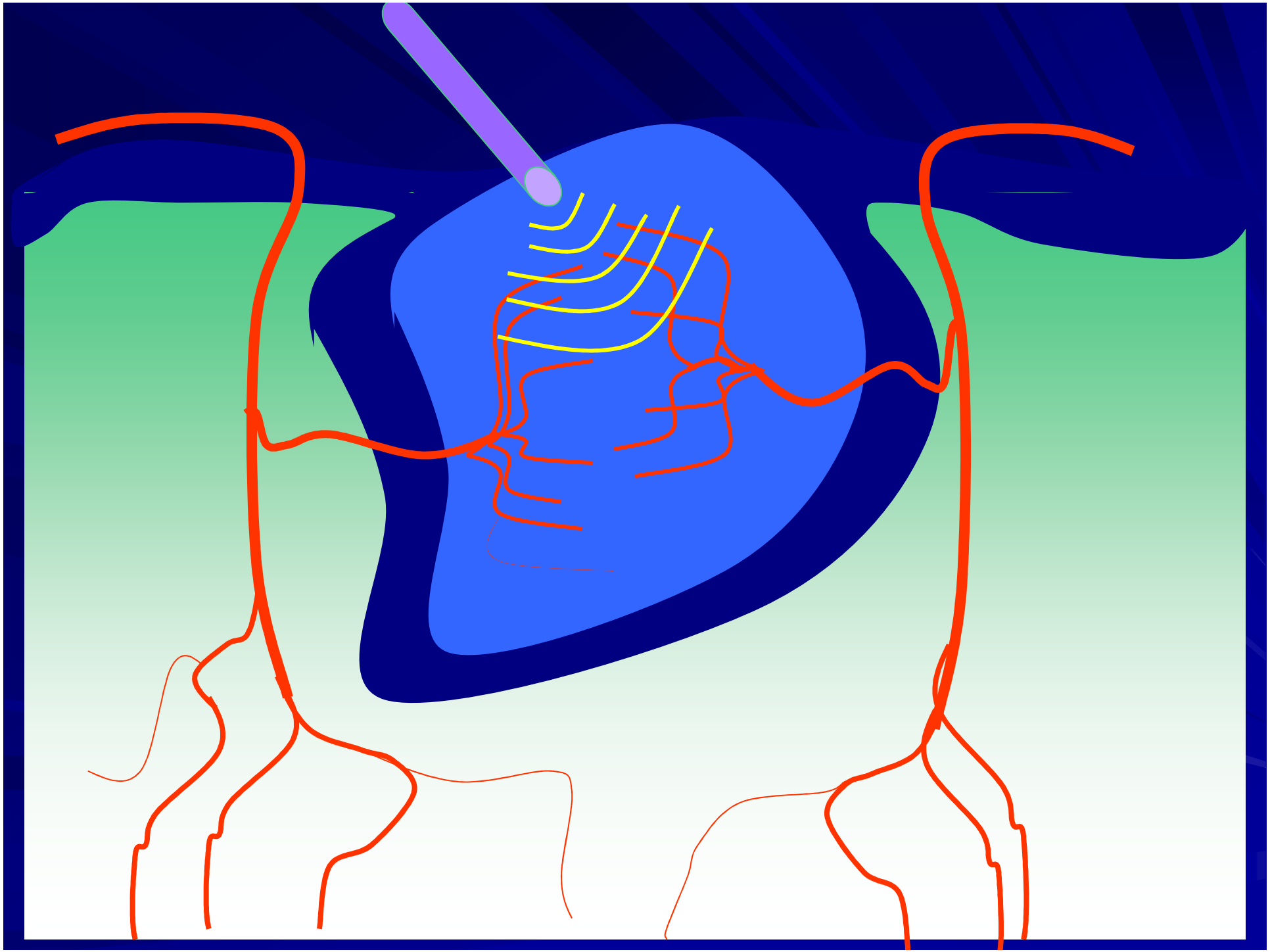
•Strumento microchirurgico che emette sulla punta vibrazioni fino a 20.000 HZ che può frantumare qualsiasi tessuto

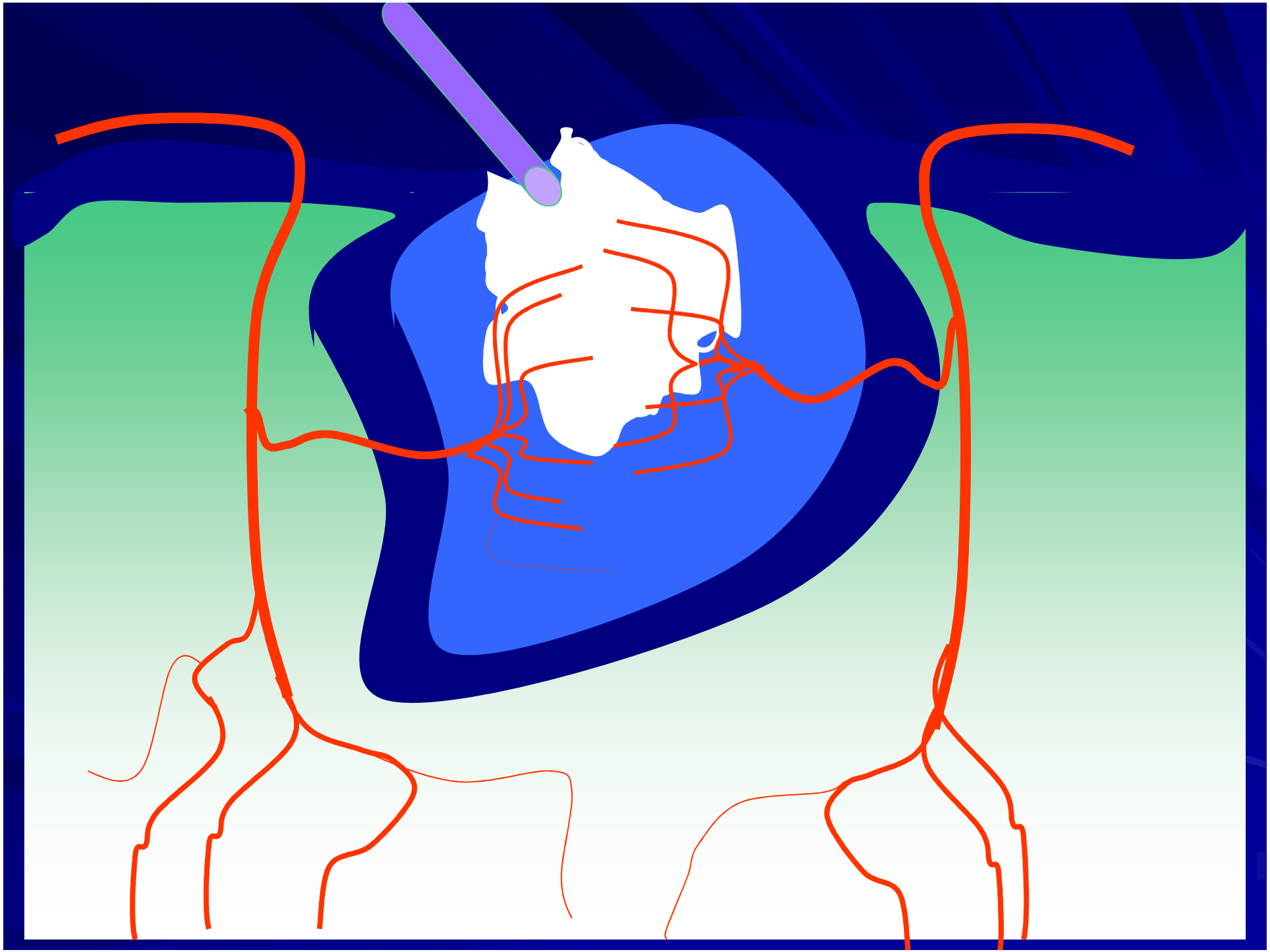
•Con la possibilità di regolare la selettività per lasciare integri vasi millimetrici

•Lo strumento aspira i detriti prodotti dalla frammentazione ultrasonica


Valleylab
CUSA EXcel
AZIENDA MATERNO - INFANTILE
- O. I. R. M. - TO -


CE
0086





Nessuna trazione sul tessuto nervoso sano durante la asportazione del tumore

Di utilizzo routinario
Evita le resezioni “en bloc”

Essenziale ed indispensabile nella chirurgia:

….del tronco encefalico

…..del midollo spinale

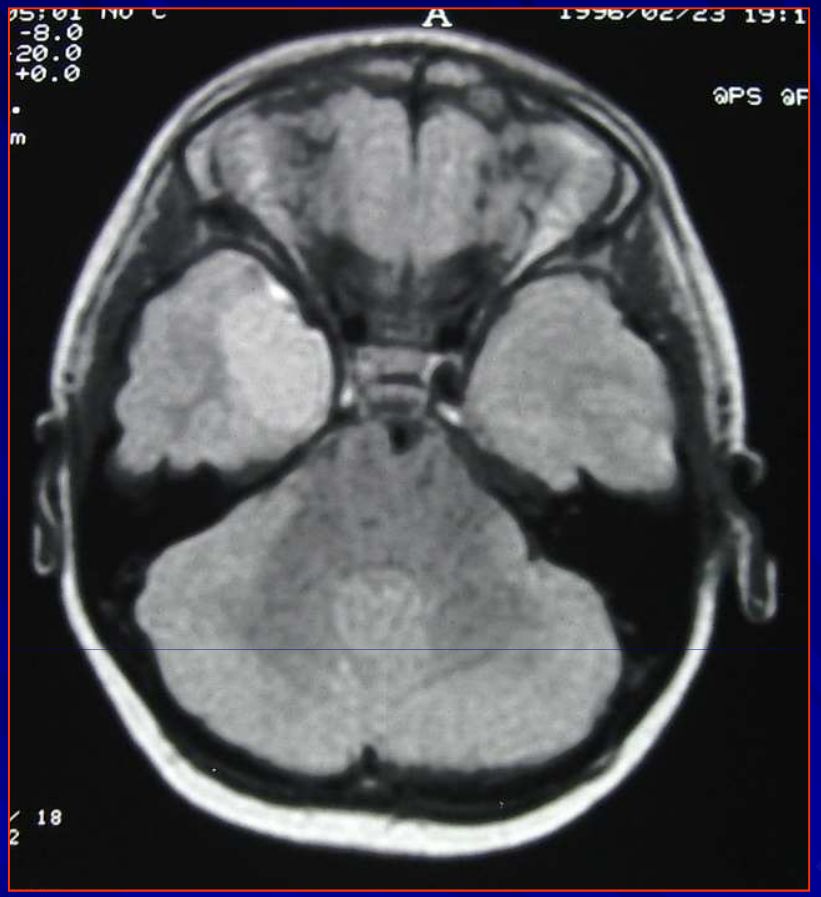
Nuove possibilità

- Chirurgia più agevole in aree eloquenti
- Chirugia tumorale ad alto rischio (neonati-lattanti)
- Vie di approccio intrassiali
- Netta riduzione della morbilità post operatoria

SE, M, 5aa.

Crisi parziali complesse





Controllo post-op a 7 aa

Ganglioglioma

Resezione delle strutture mesiali

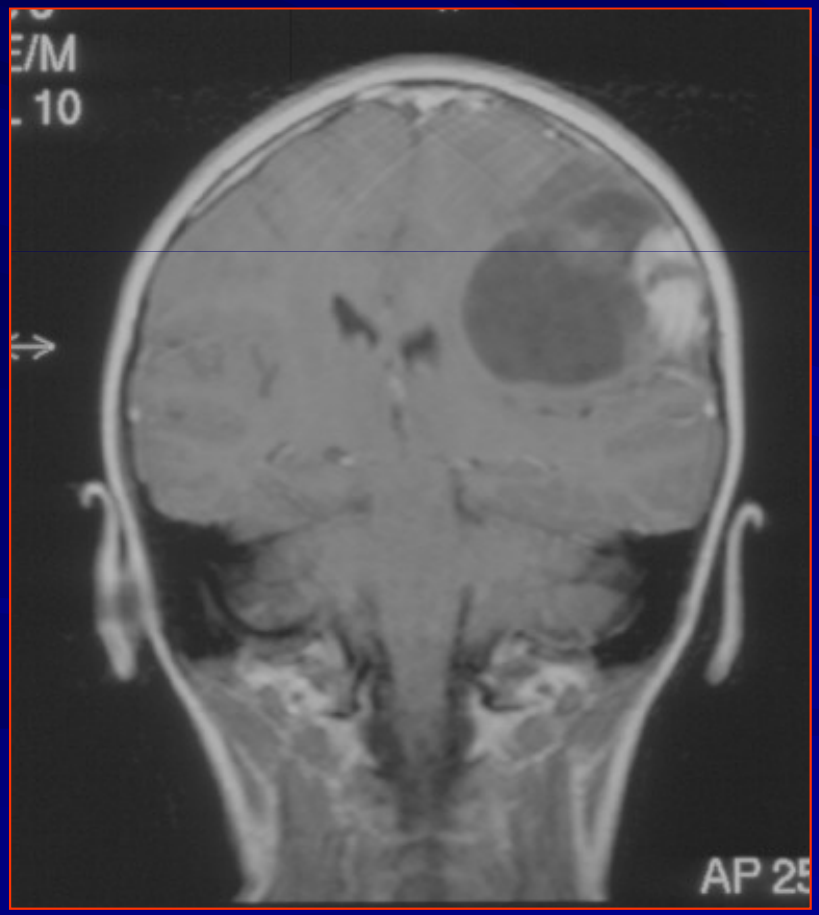


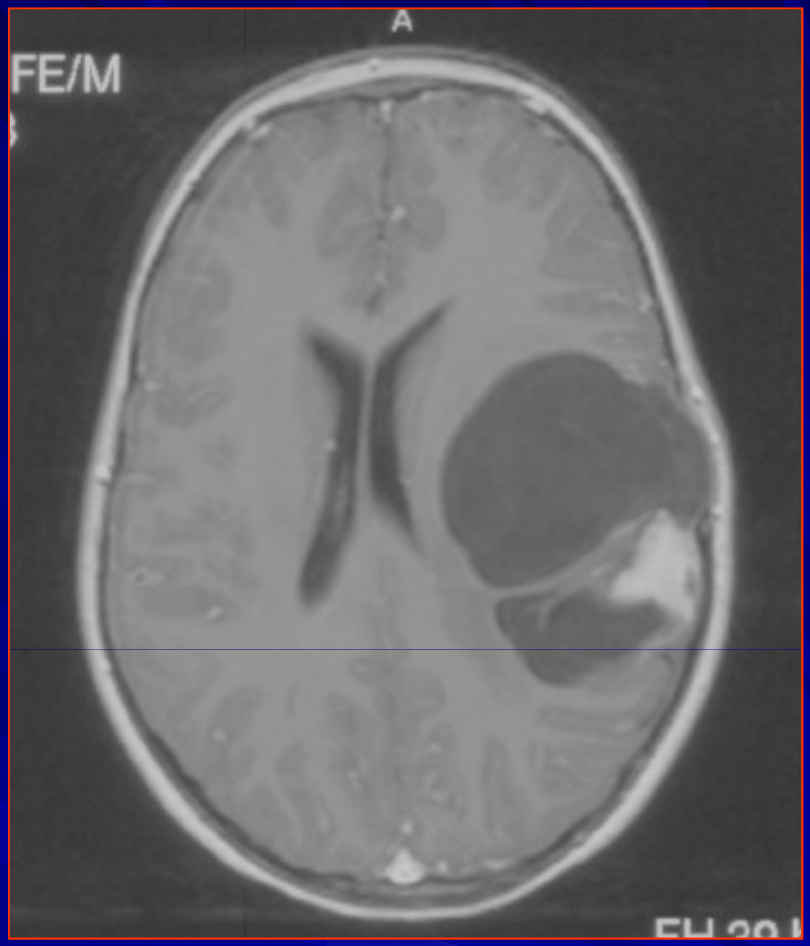


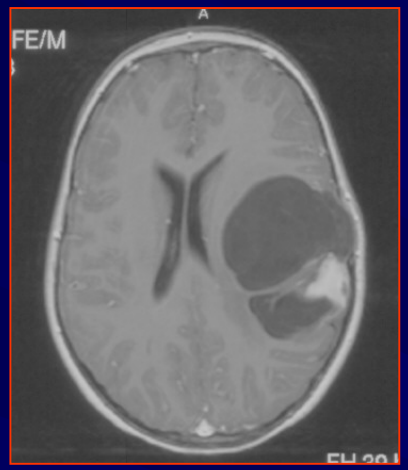
TA, F, 6a

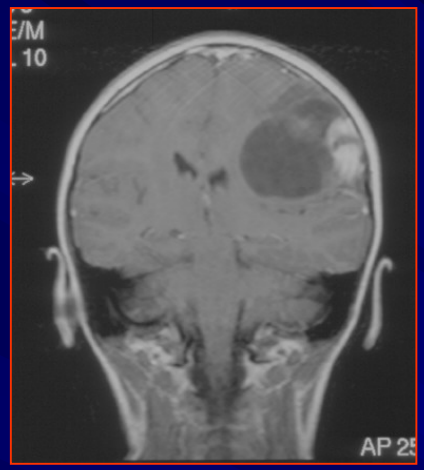
Crisi con disfasia da 1 mese

Tumore in area eloquente



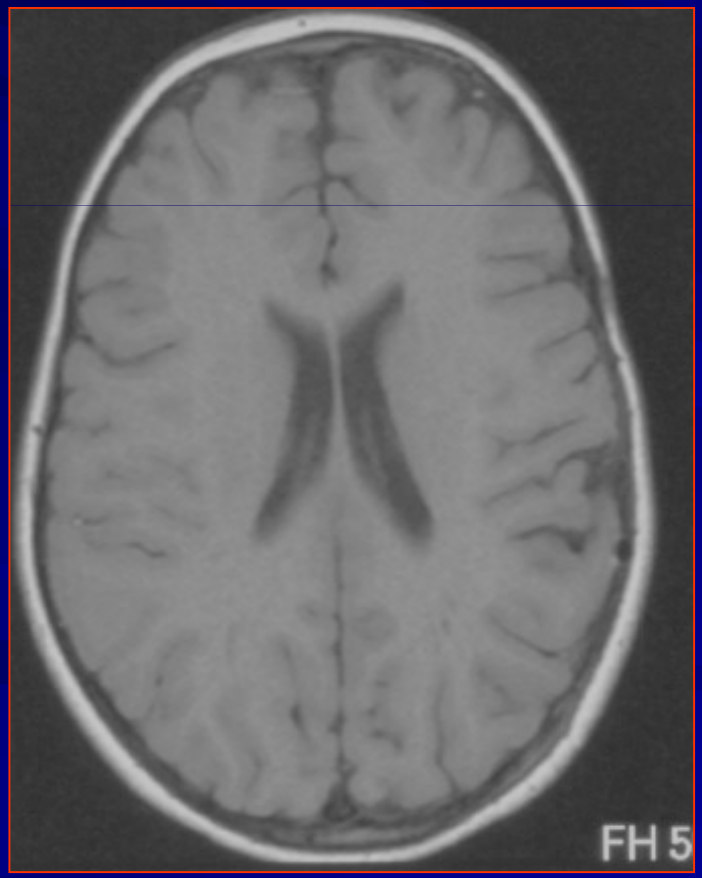


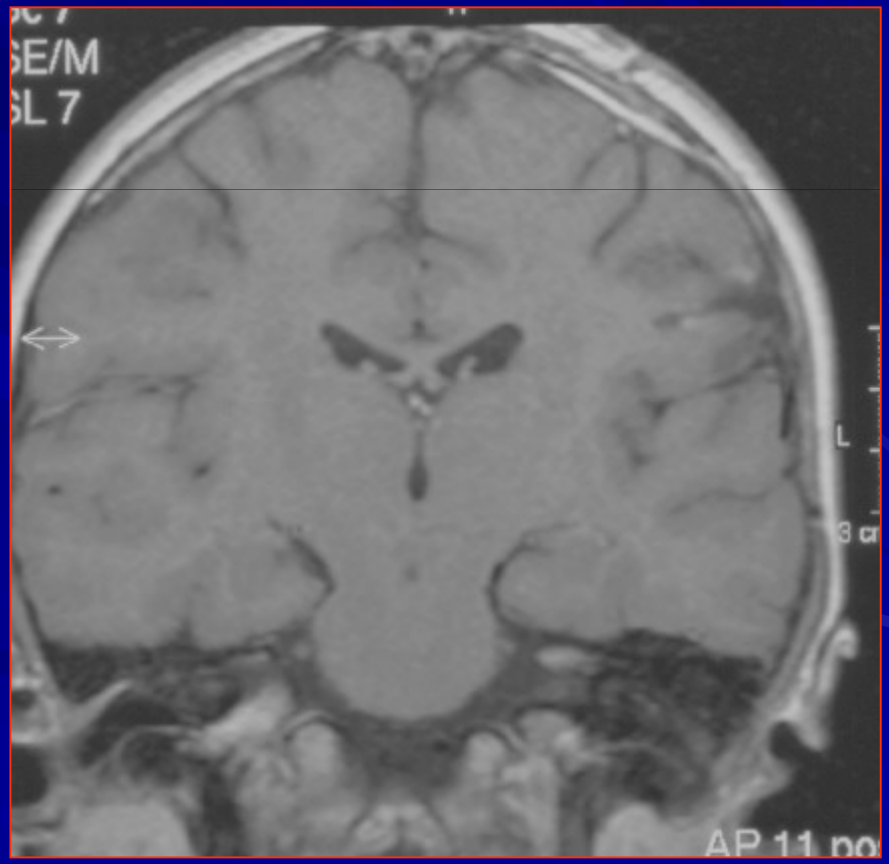




Controllo post-op a 1 anno

Xanto astrocitoma pleomorfo



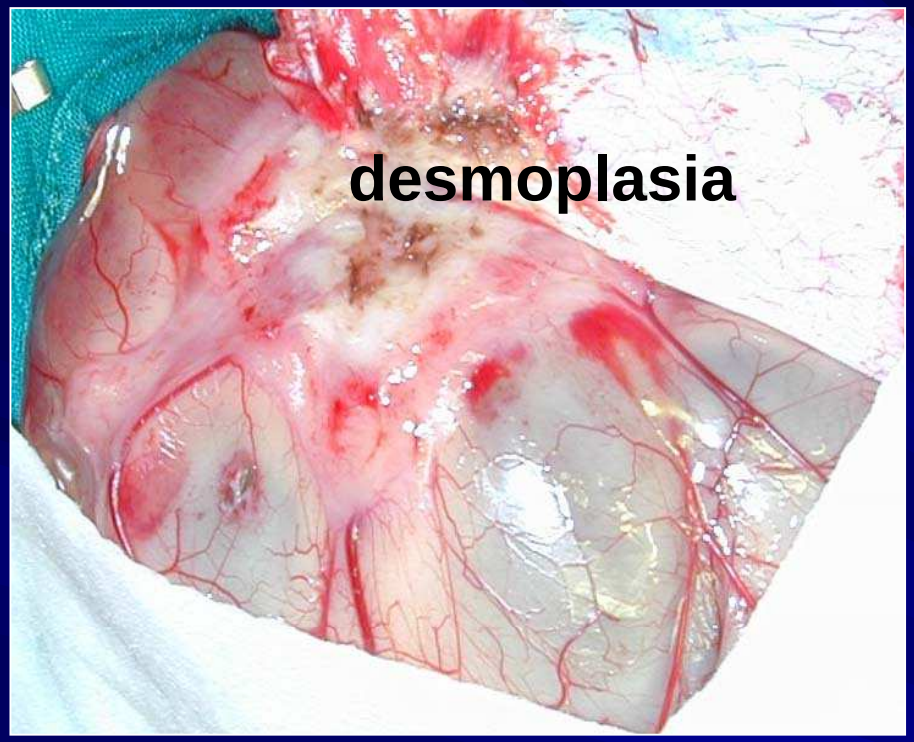


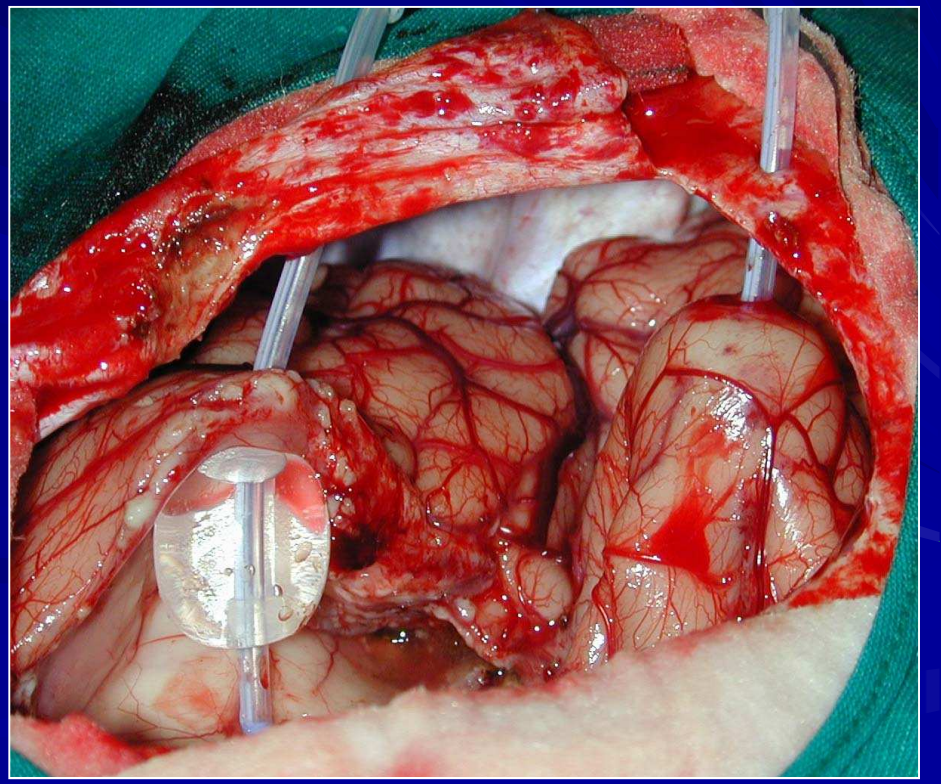




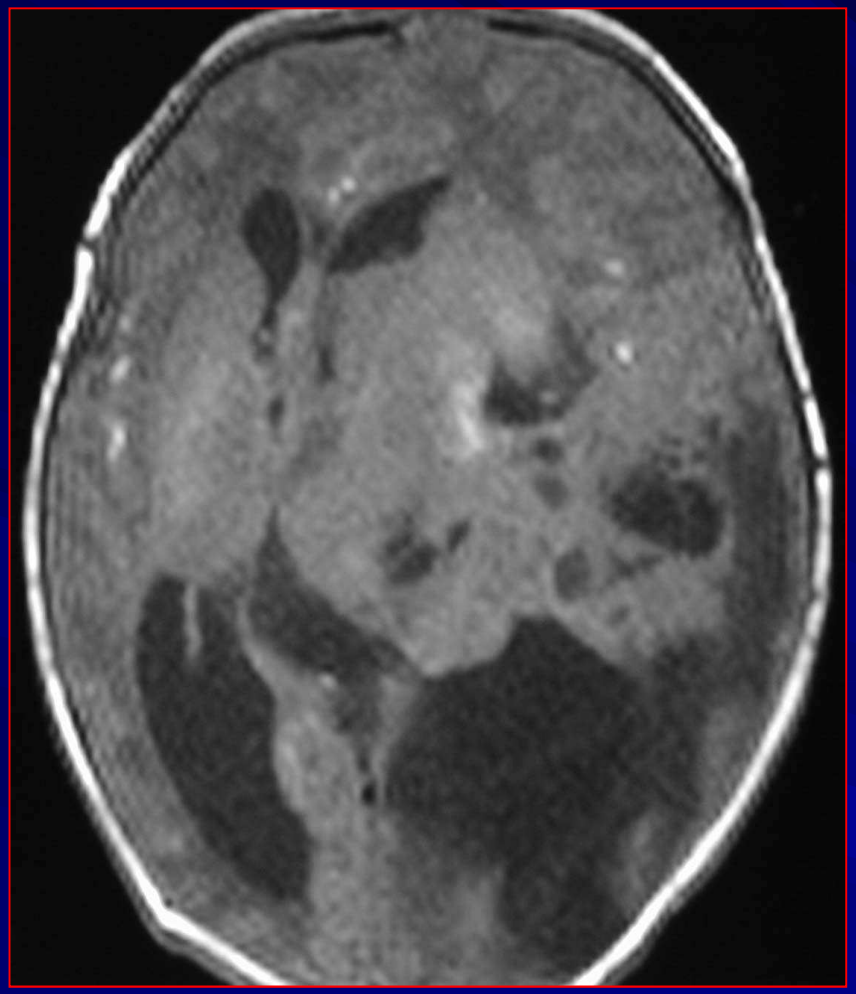
Tumore neonatale gigante

D.I.G.





Trattamento del collasso cerebrale





Tumore gigante neonatale

Astrocitoma di basso grado

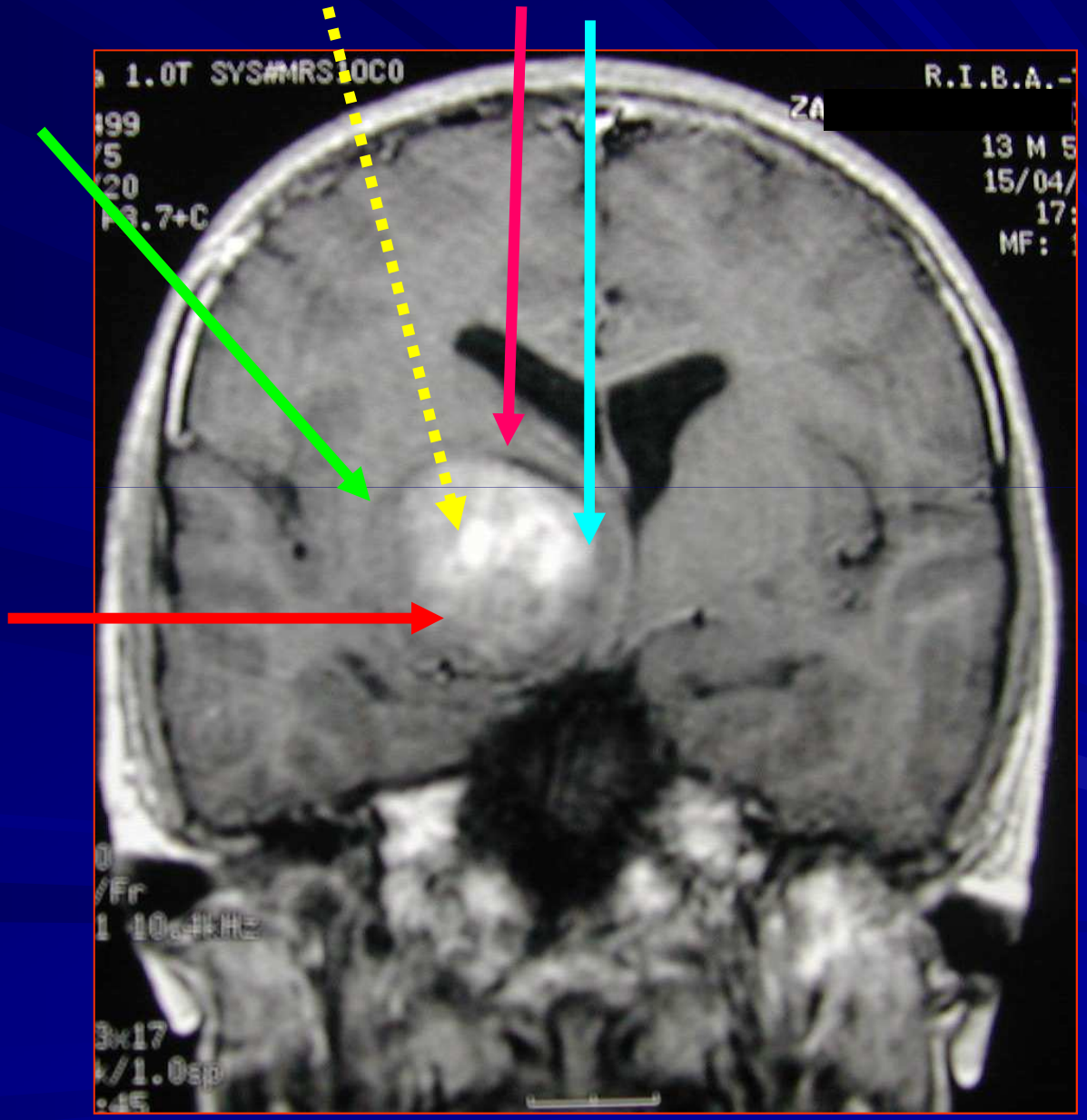
Le problematiche Neurochirurgiche



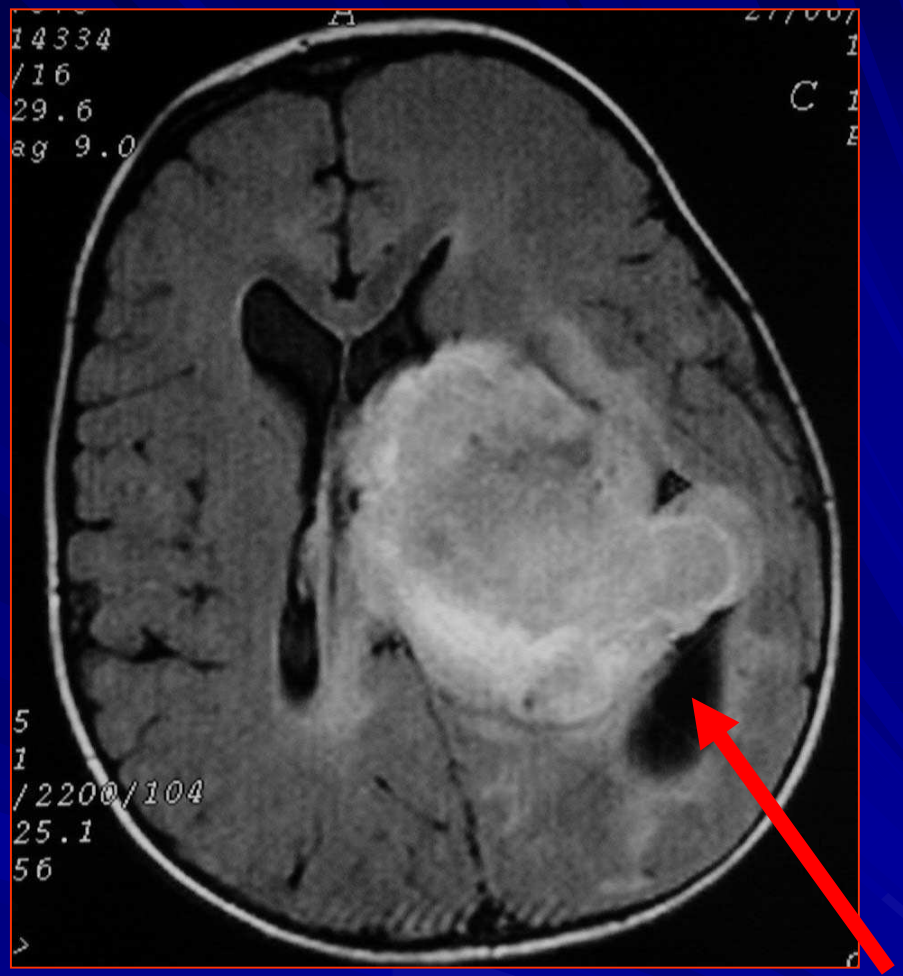
. Le vie d’approccio intracerebrali

. La salvaguardia delle funzioni

Vie di approccio possibili

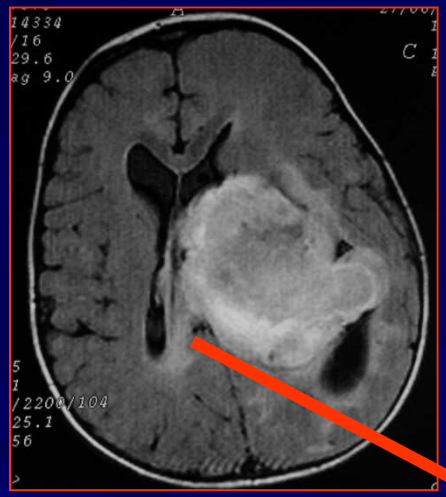


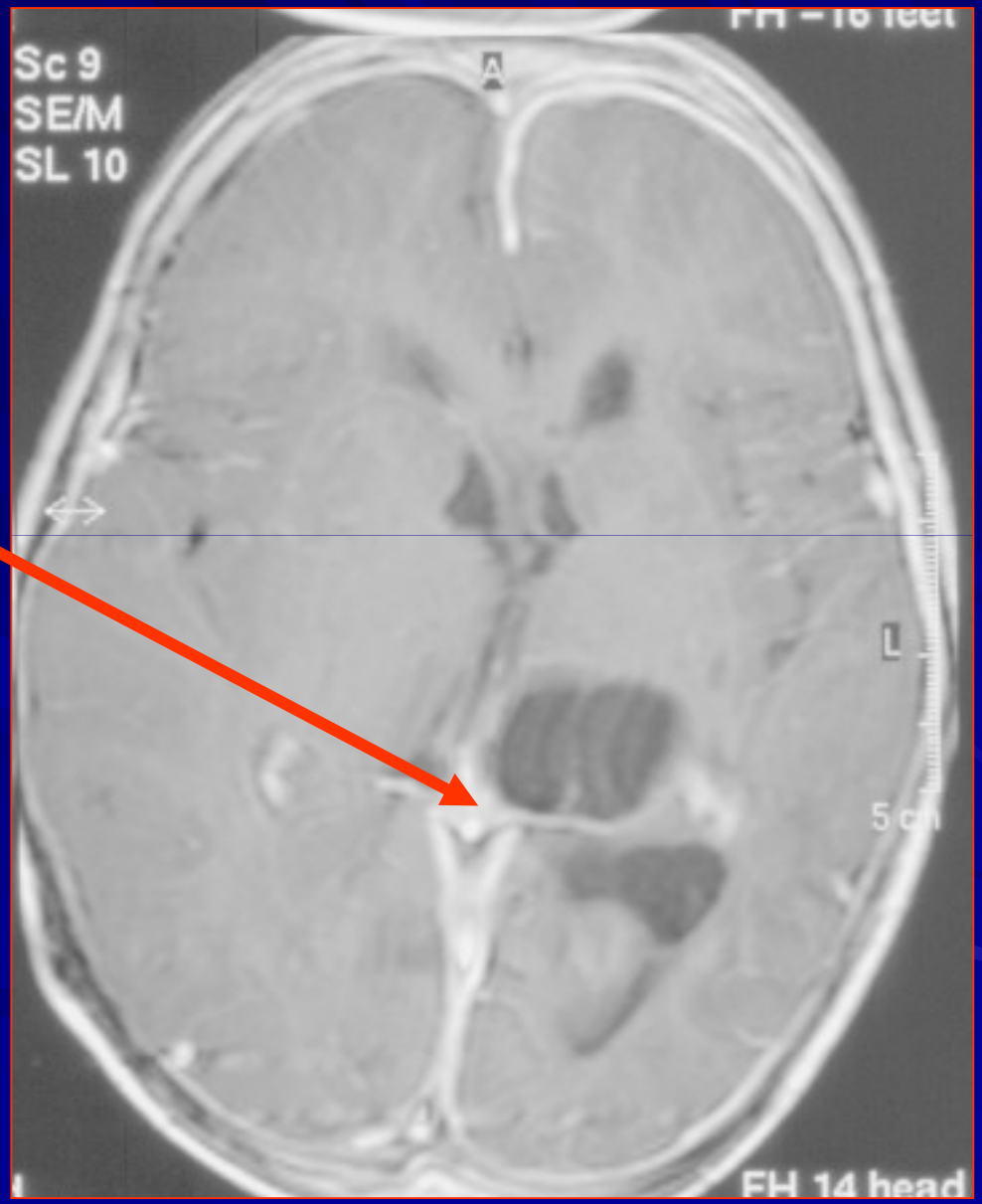




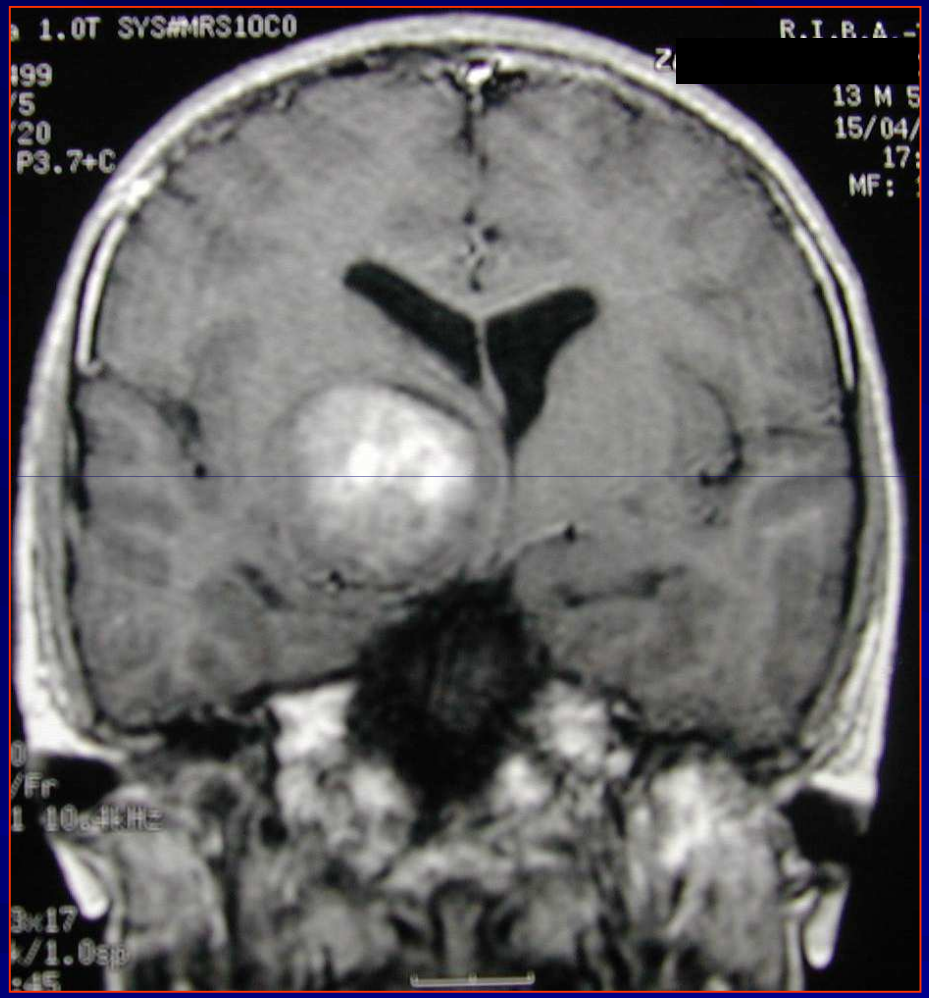
<u>Via transcorticale transventricolare</u> posteriore

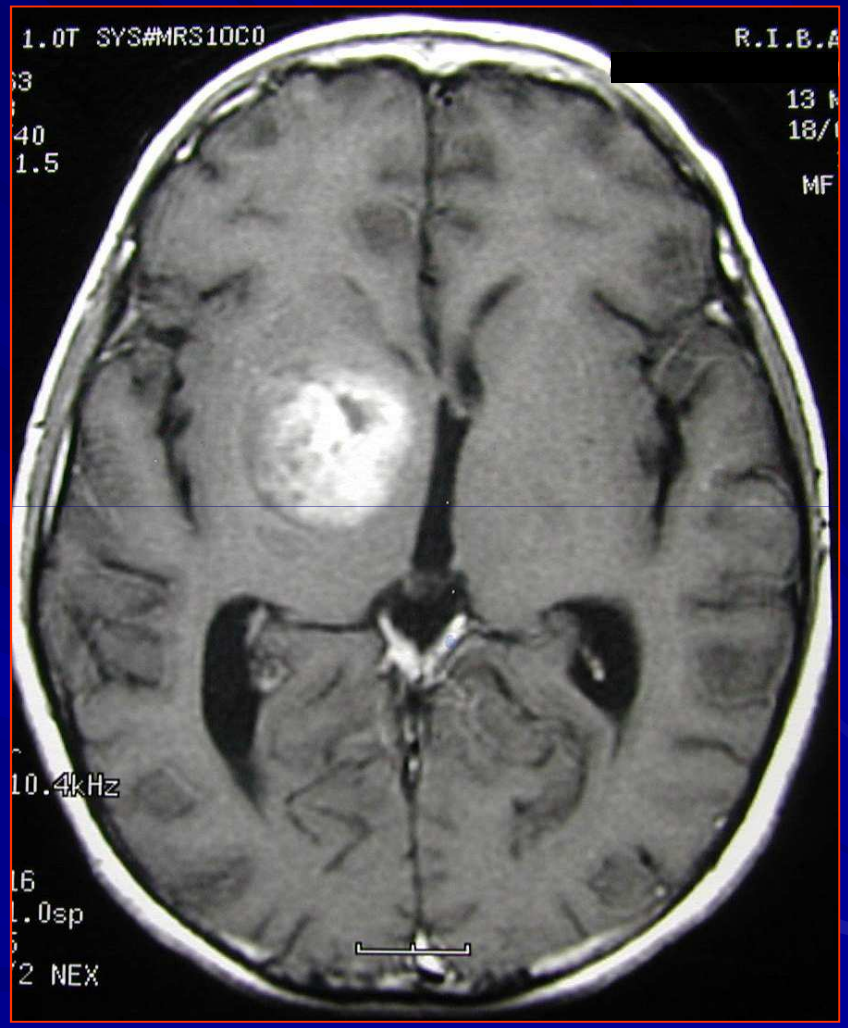
Meningioma gigante intraventricolare


14334
/16
29.6
ag 9.0
5
1
/2209/104
25.1
56

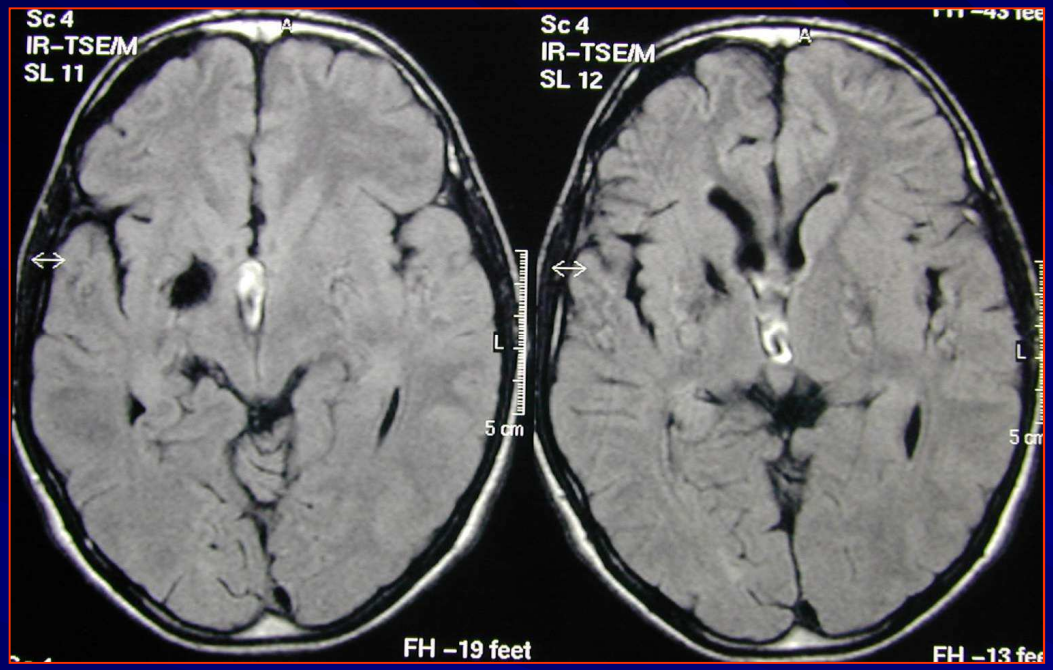

Sc 9
SE/M
SL 10
A
L
FH 14 head

Tumore dei gangli della base





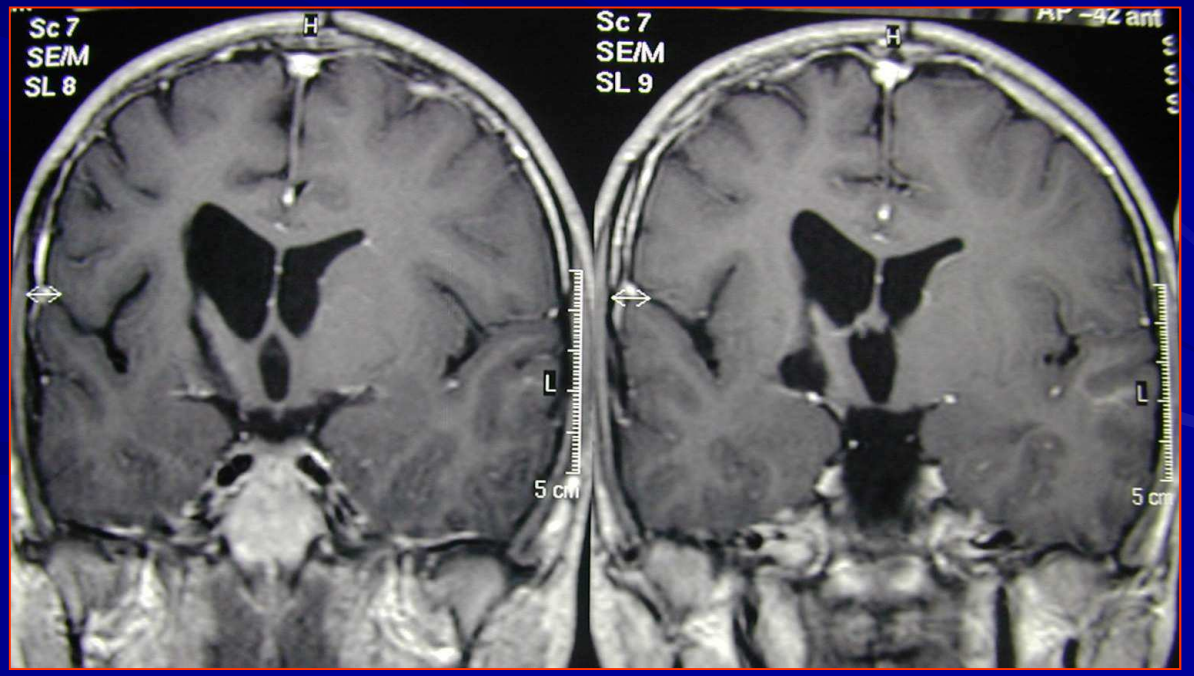
10 anni,emiparesi con “mano talamica”



Follow-up a 12 aa
Asportazione completa

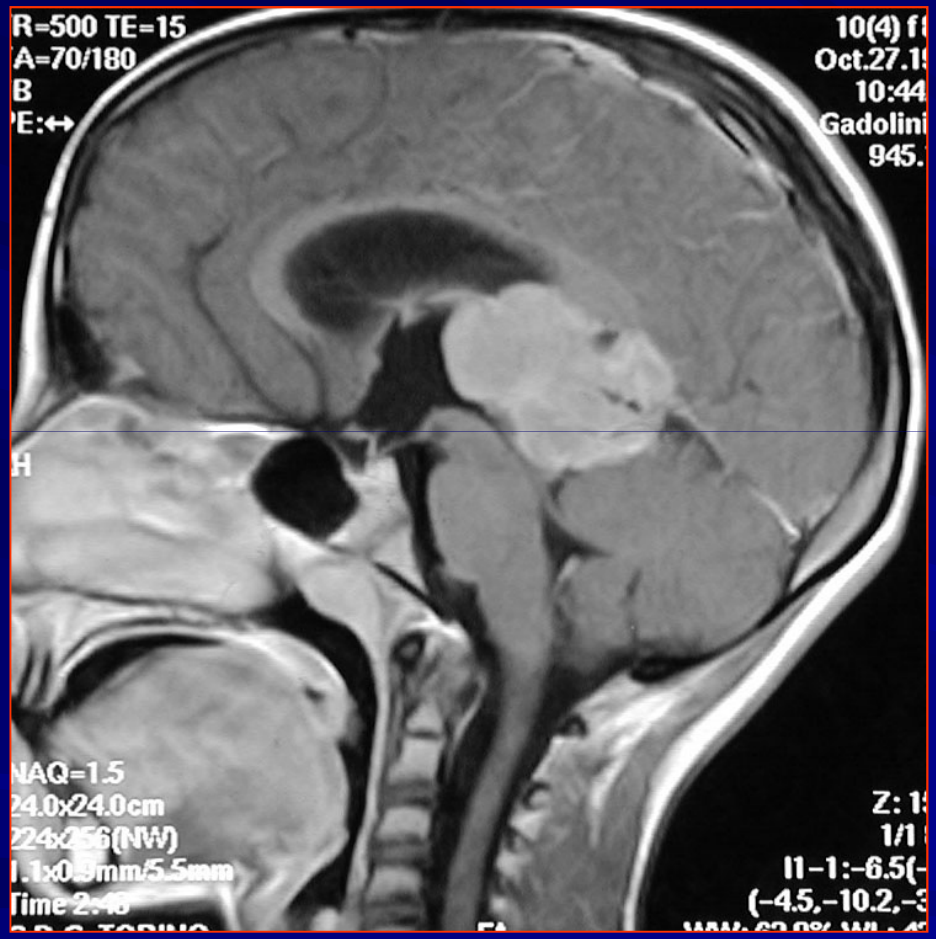
Astrocitoma pilocitico

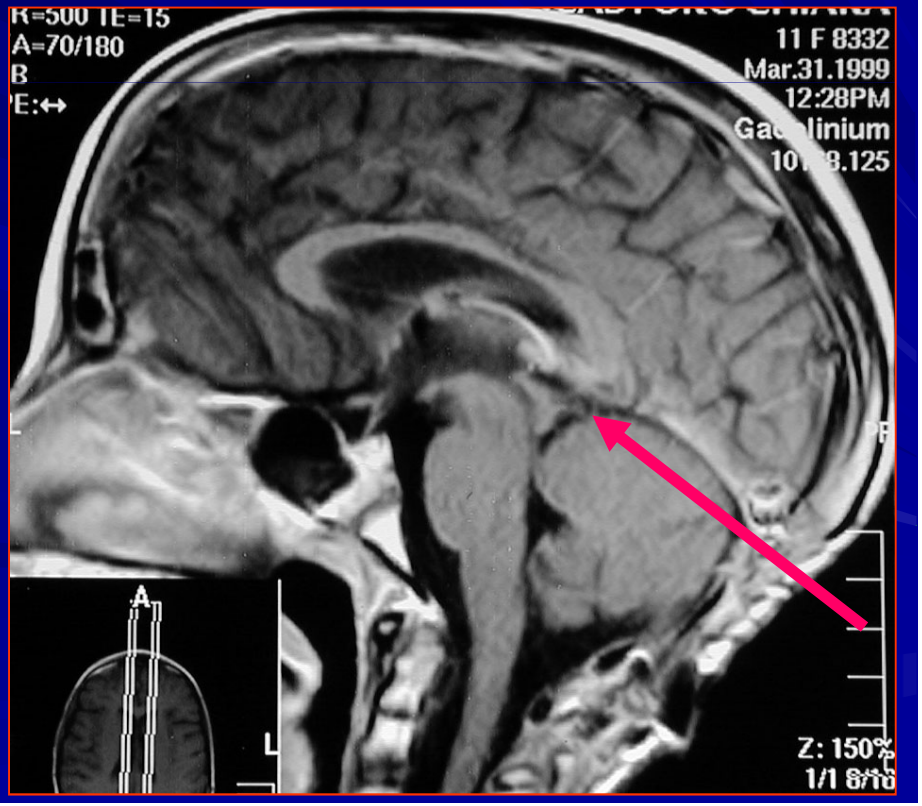
Nessun deficit motorio



Via infratentoriale sopracerebellare

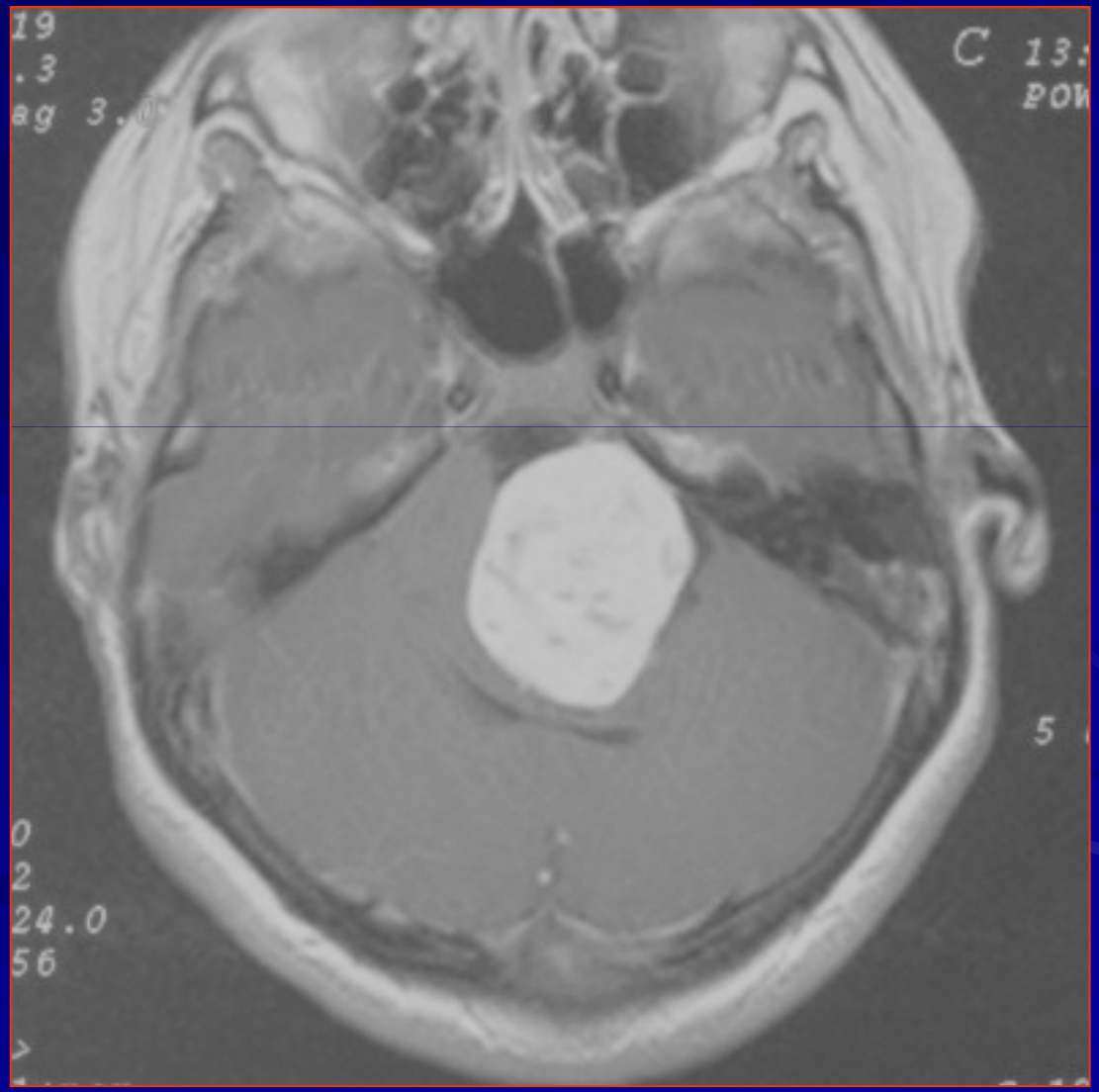


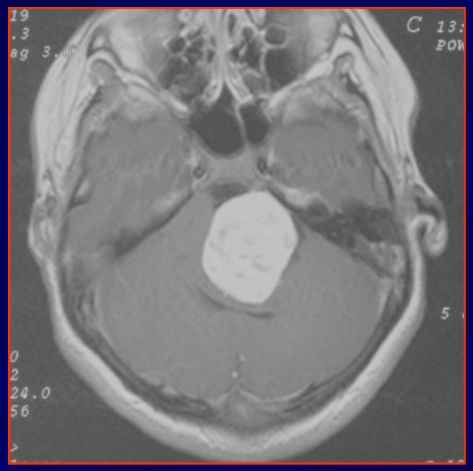


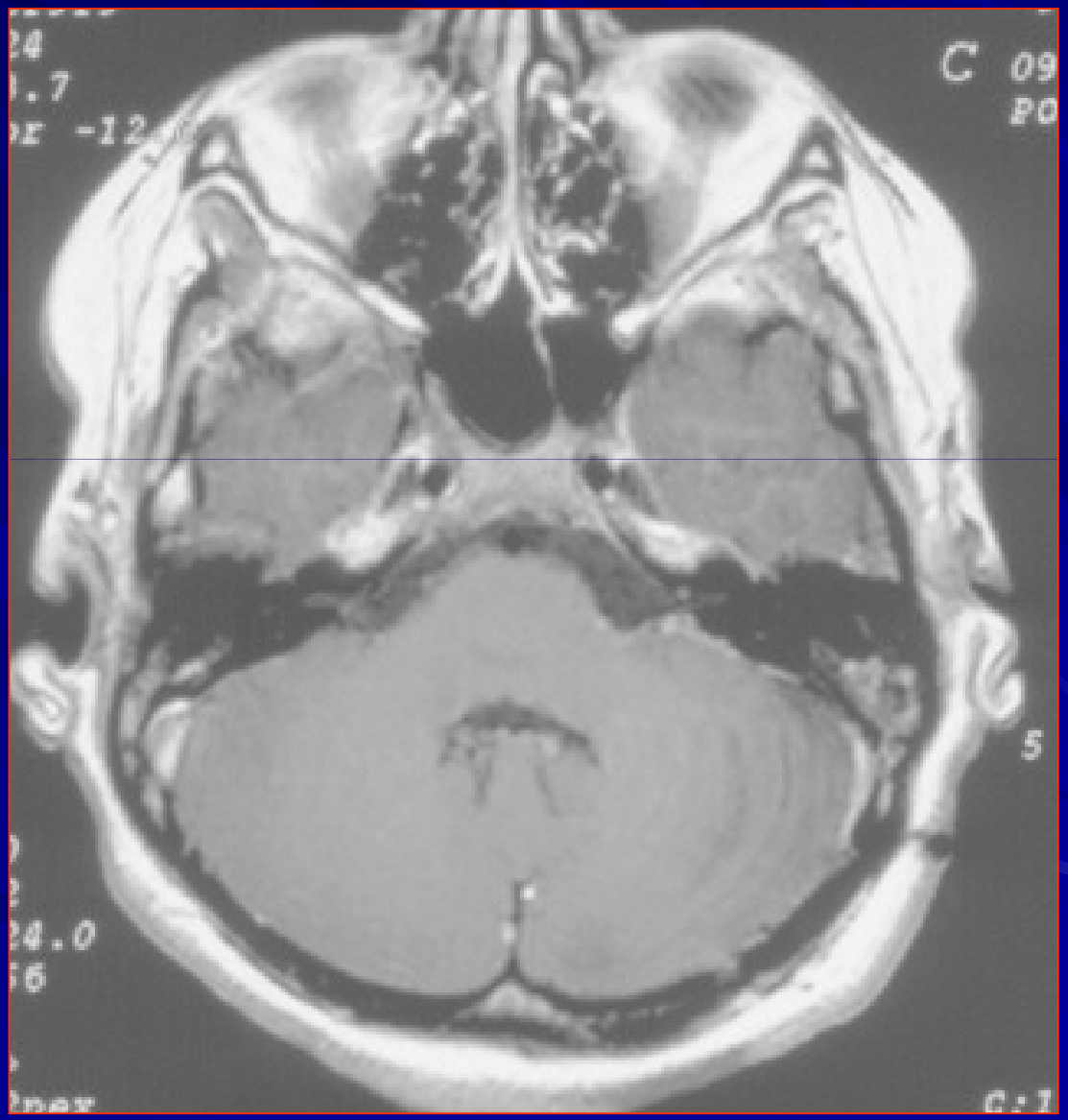


Via sub-occipitale retro-sigmoidea

Tumore angolo ponto-cerebellare







TC, F, 12 aa. Deficit nn.misti.

Endofitico solido-cistico



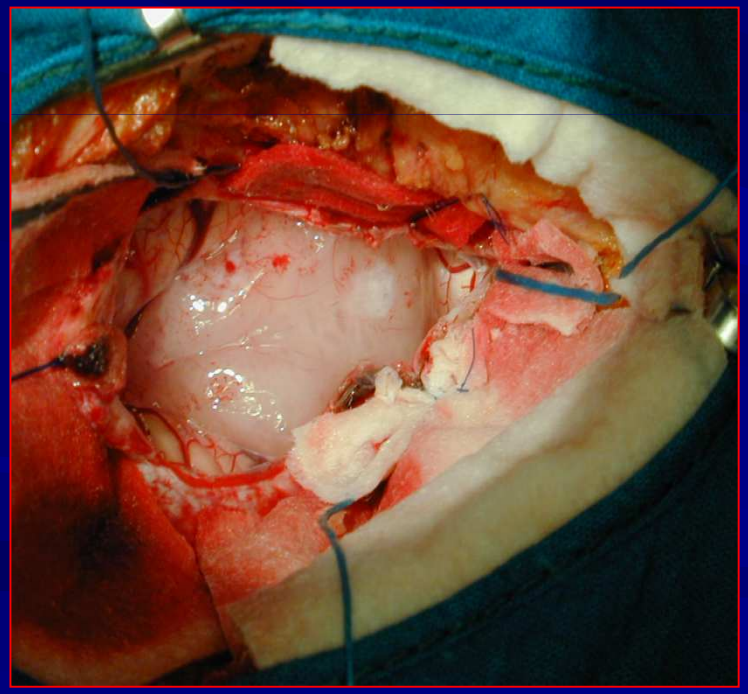


Astrocitoma grado I-II

Controllo a 6 aa dopo chirurgia subtotale

Residuo stabile

GOS 5

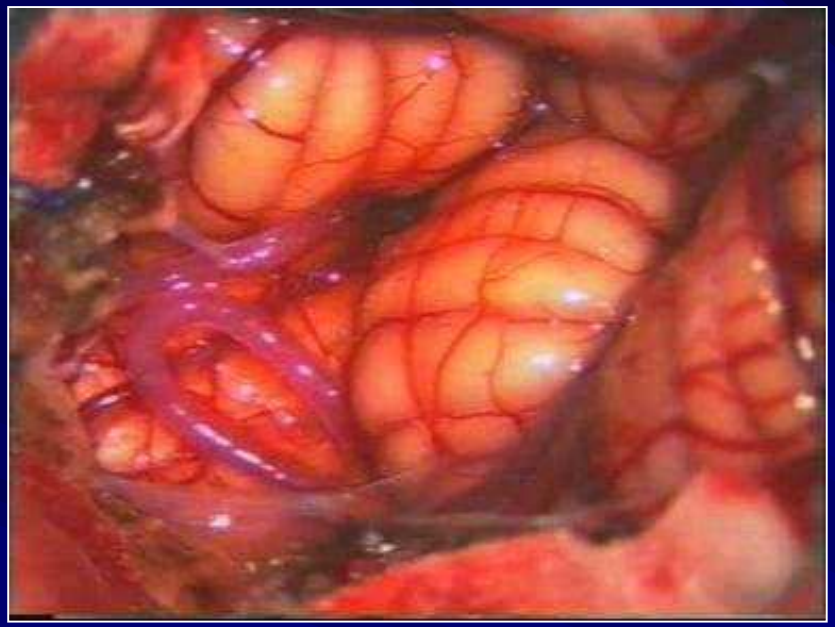


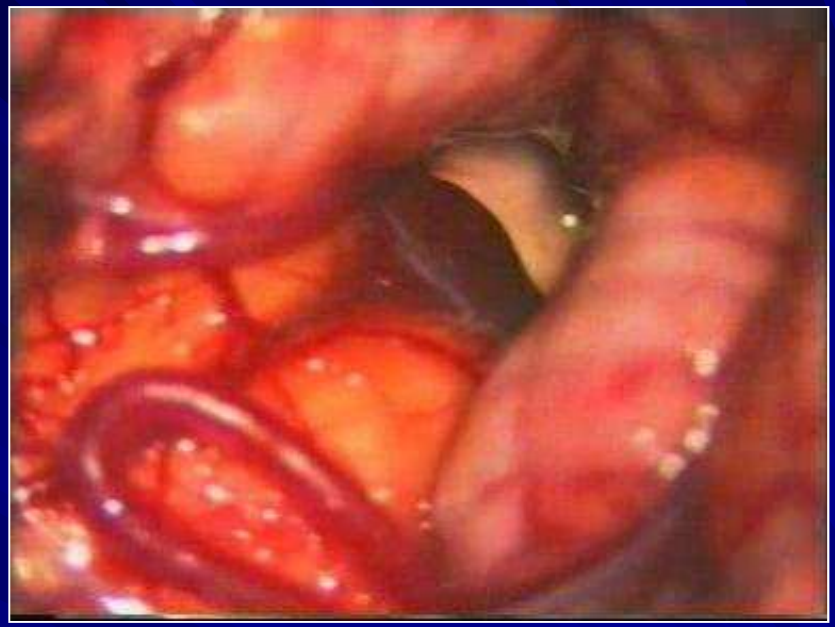


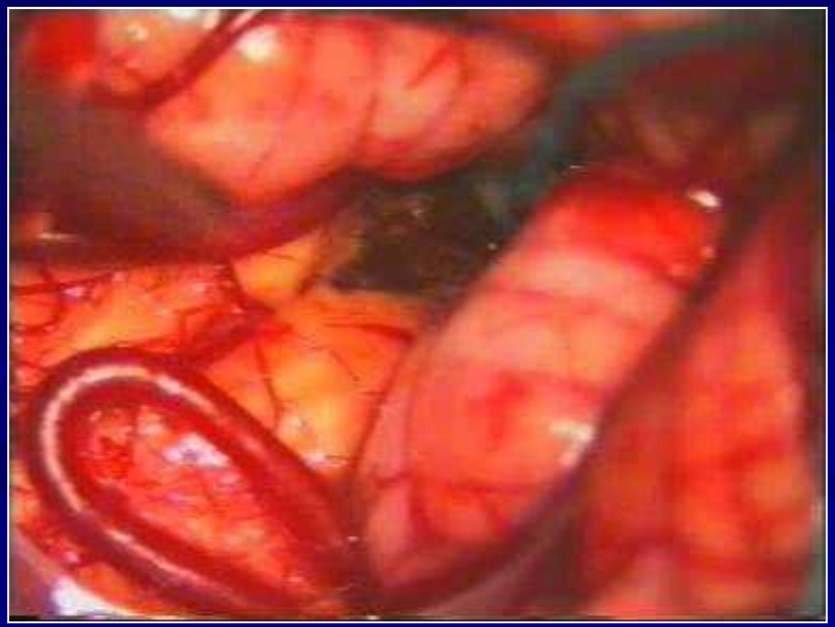


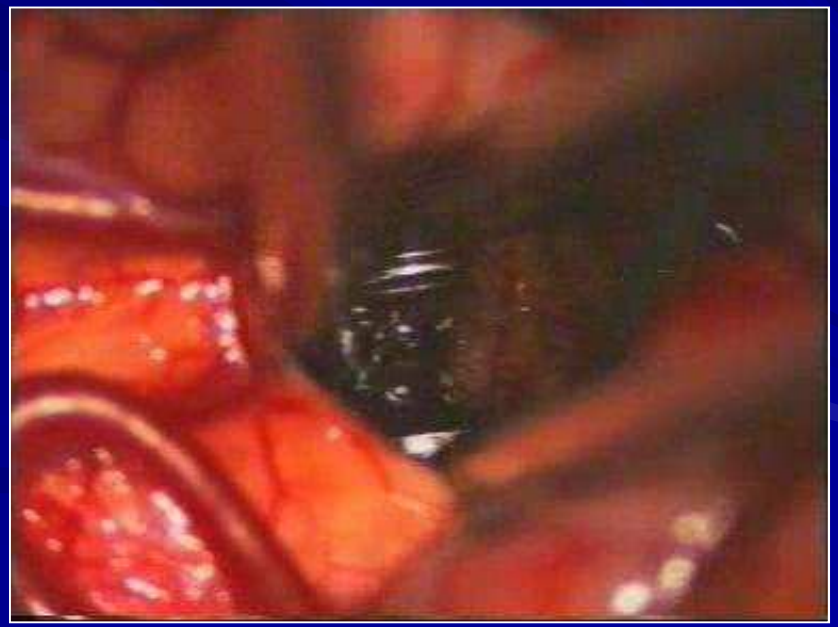
PG, F, 4 aa. Vomito centrale e deficit 12° nc.

Tumore vascolare solido endofitico





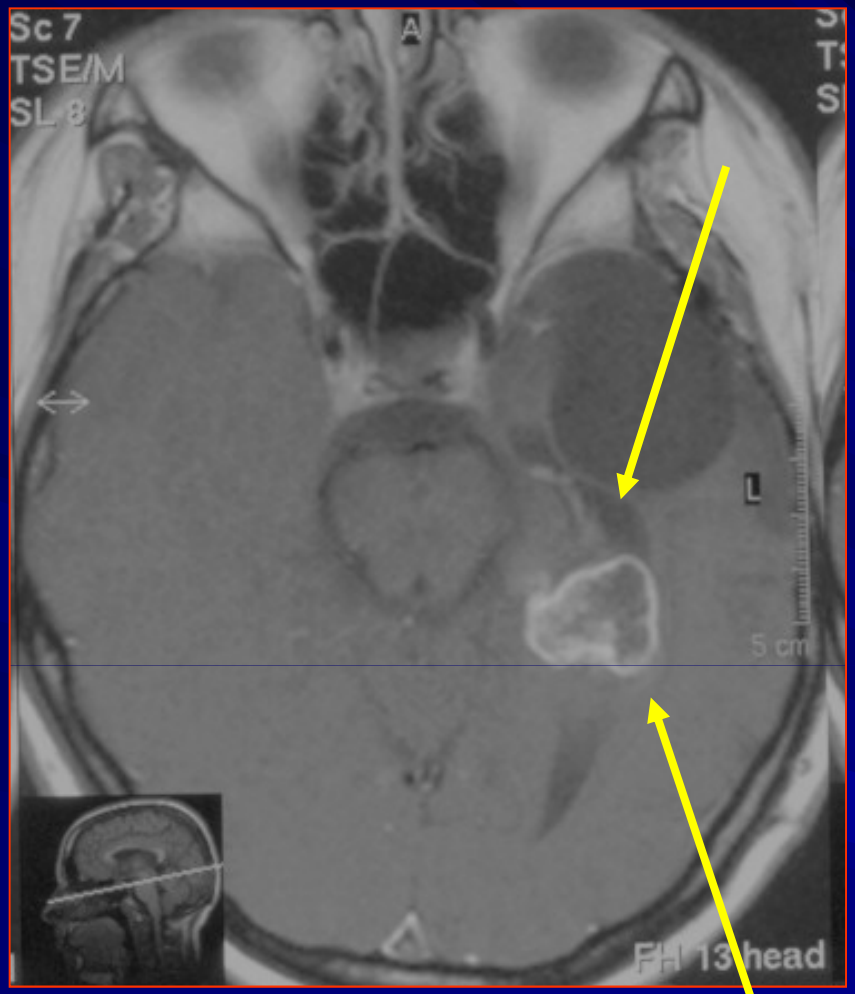


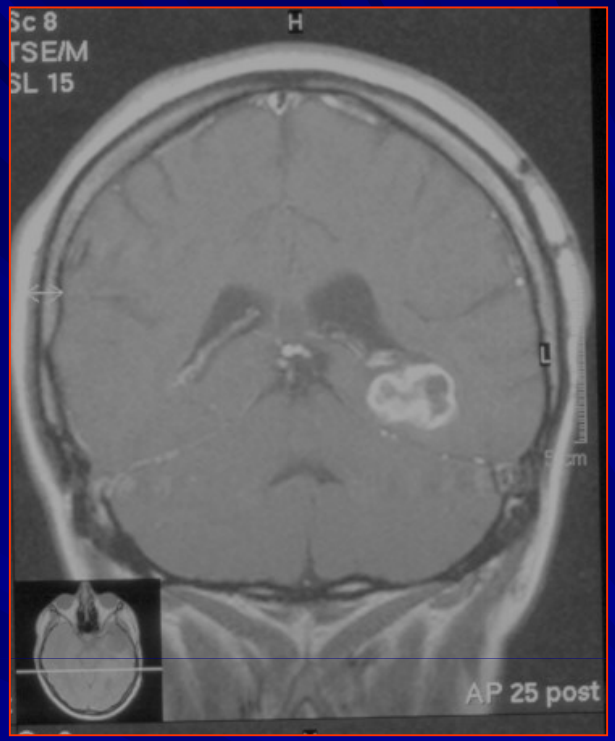


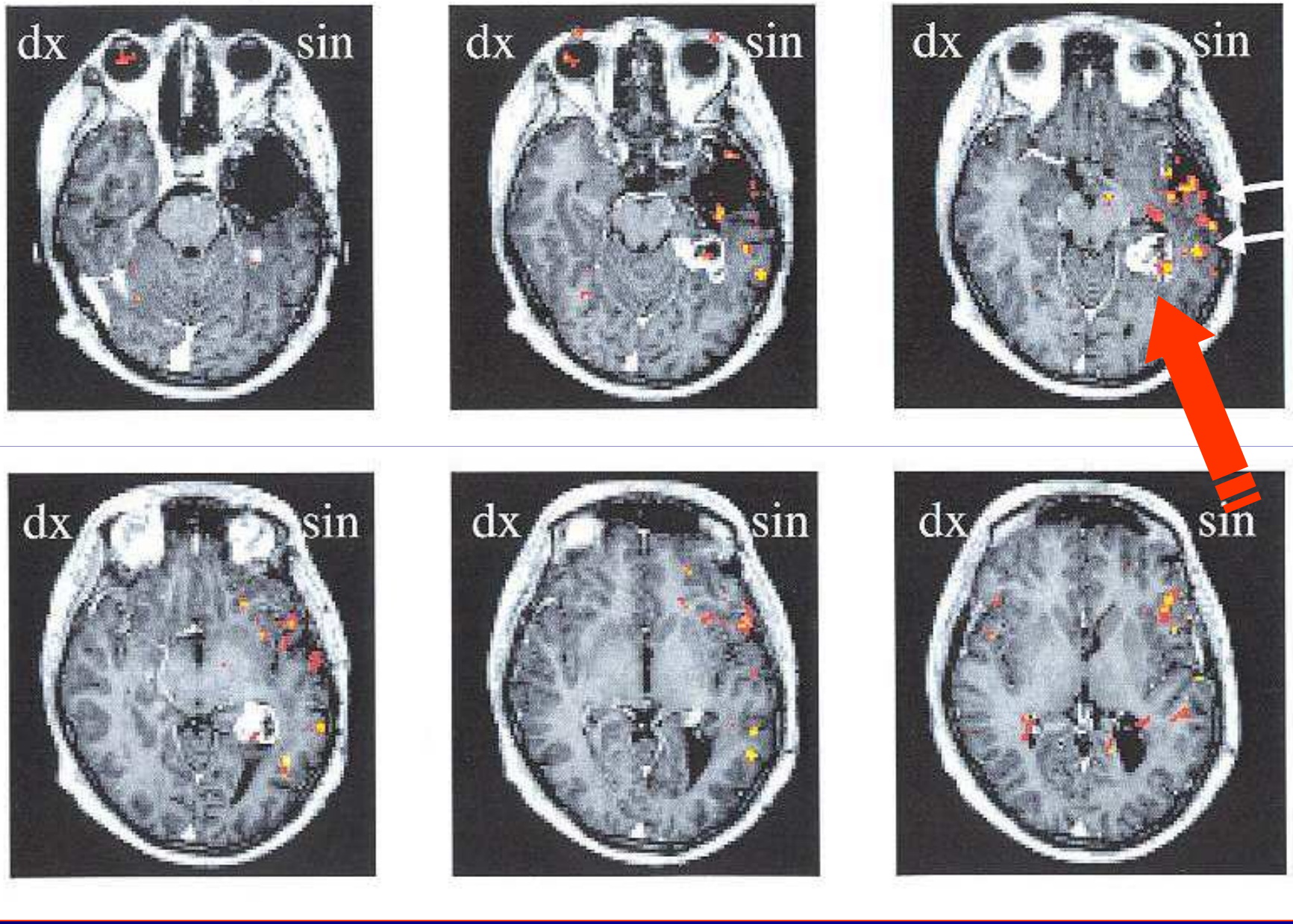


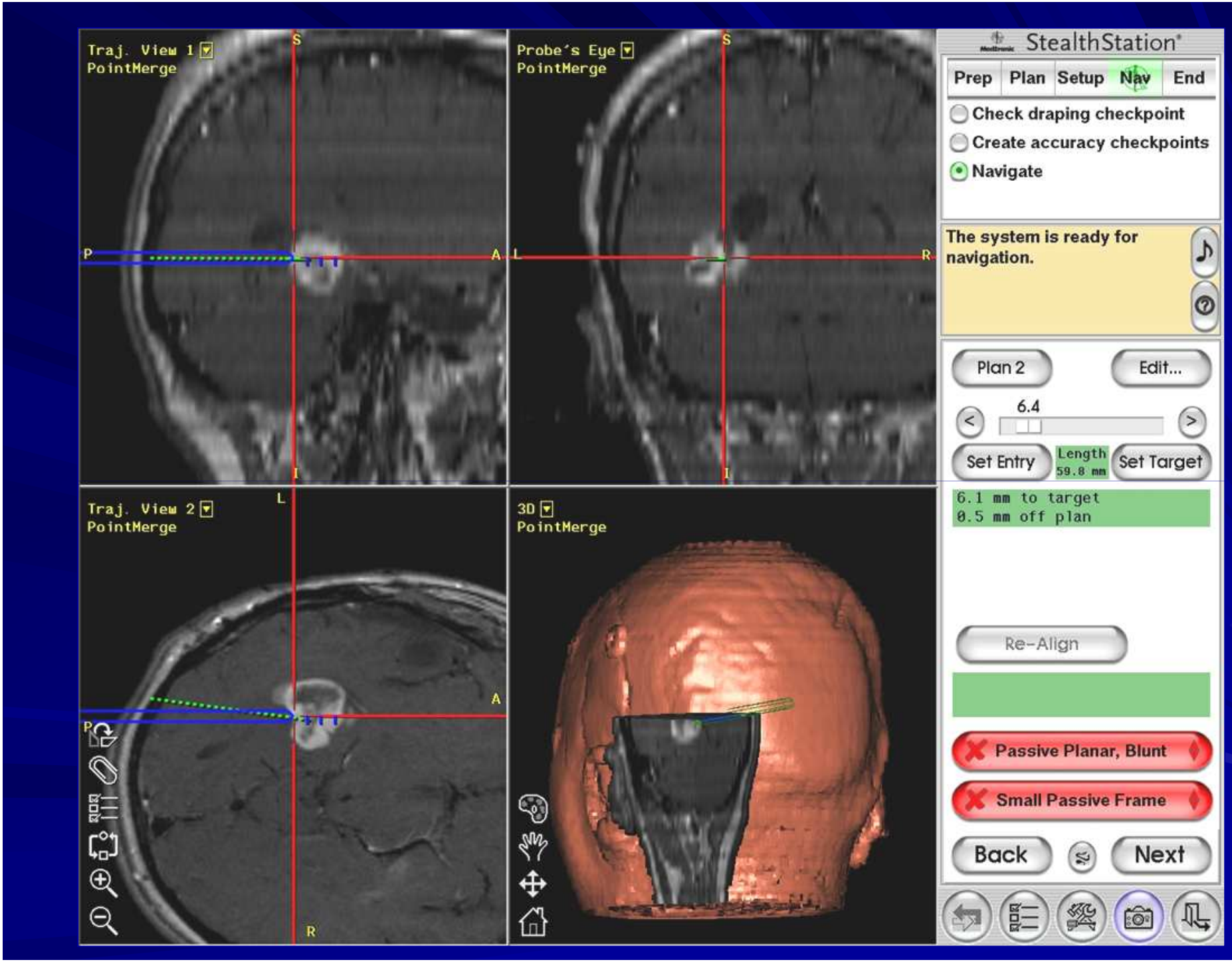
A 7 aa da asportazione radicale

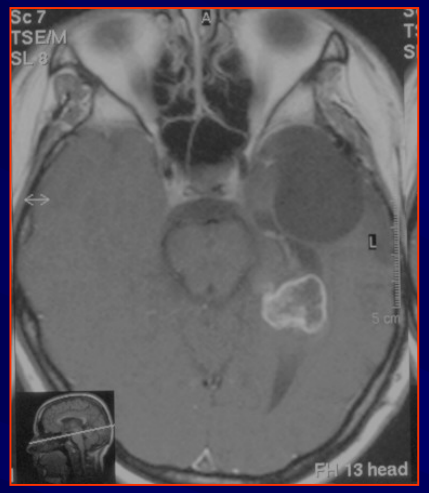



Sc 7
TSE/M
SL 8
A
L
5 cm
FH 13 head


Sc 8
TSE/M
SL 15
H
L
AP 25 post


dx
sin
dx
sin
dx
sin
dx
sin
dx
sin
dx
sin

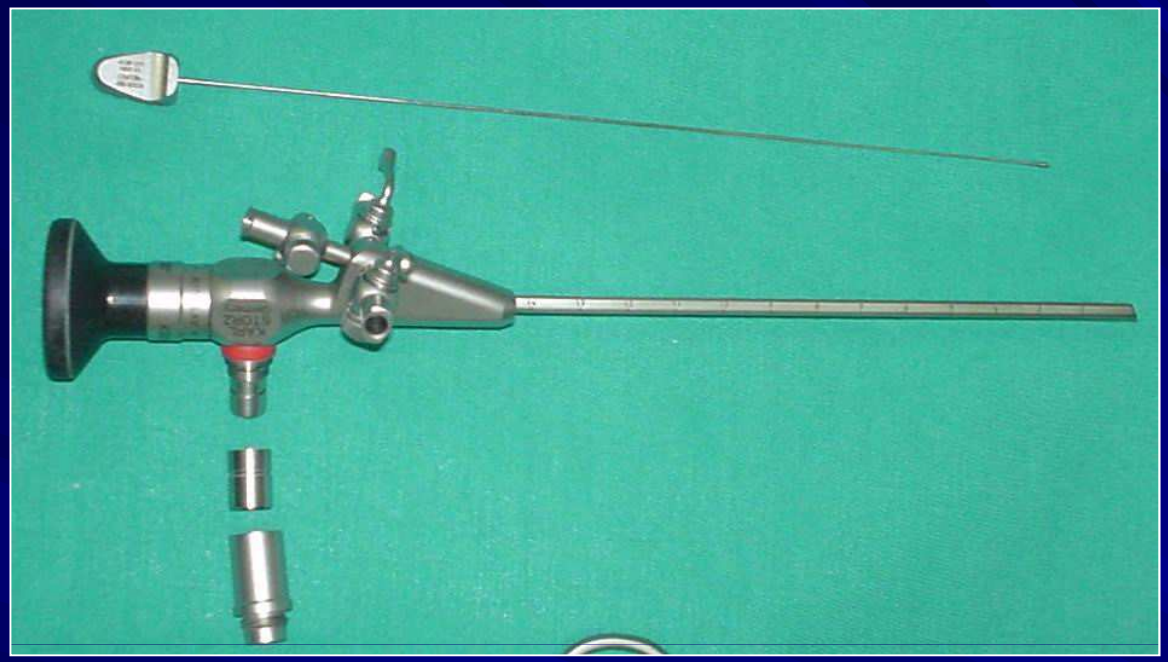

Traj. View 1
PointMerge
S
P
A
I
Probe's Eye
PointMerge
S
L
R
I
Traj. View 2
PointMerge
L
A
P
R
3D
PointMerge
StealthStation
Prep
Plan
Setup
Nav
End
Check draping checkpoint
Create accuracy checkpoints
Navigate
The system is ready for navigation.
Plan 2
Edit...
6.4
Set Entry
Length
59.8 mm
Set Target
6.1 mm to target
0.5 mm off plan
Re-Align
Passive Planar, Blunt
Small Passive Frame
Back
Next



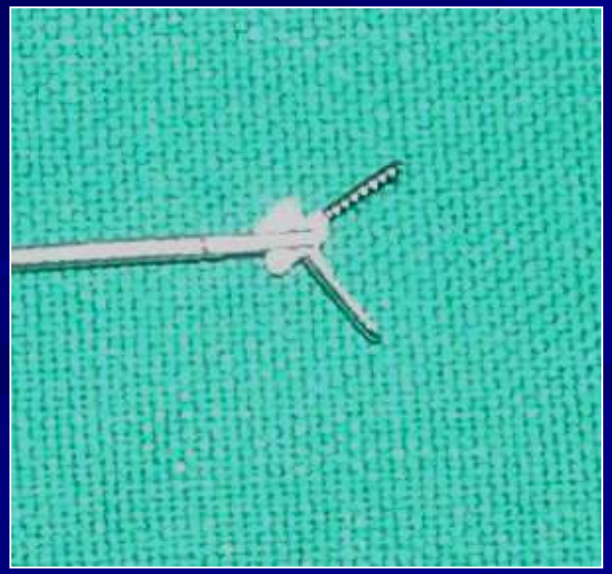
Controllo post-op a 6 aa

Ganglioglioma



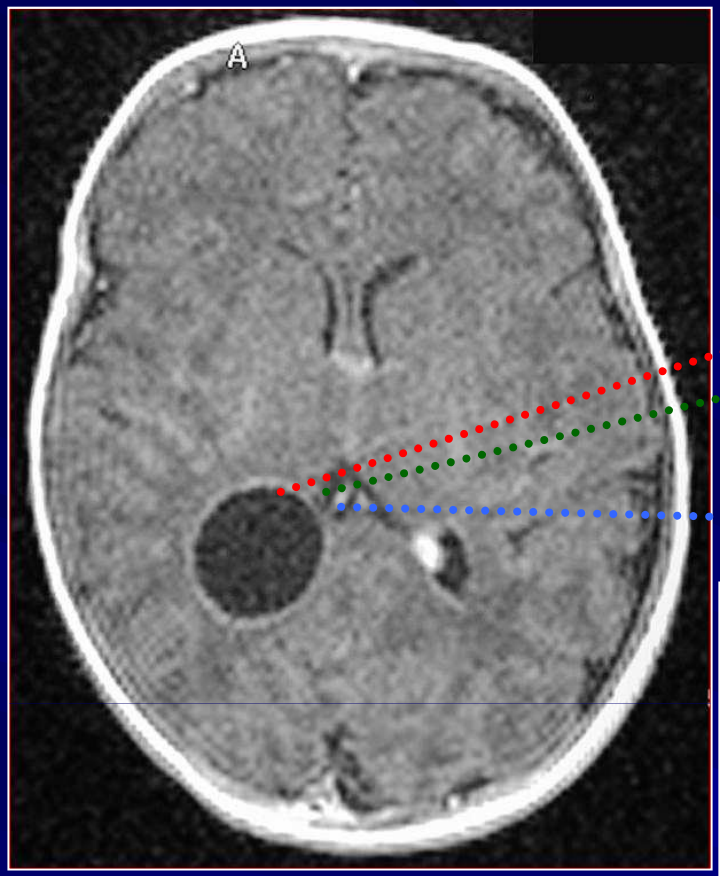


9.5 French

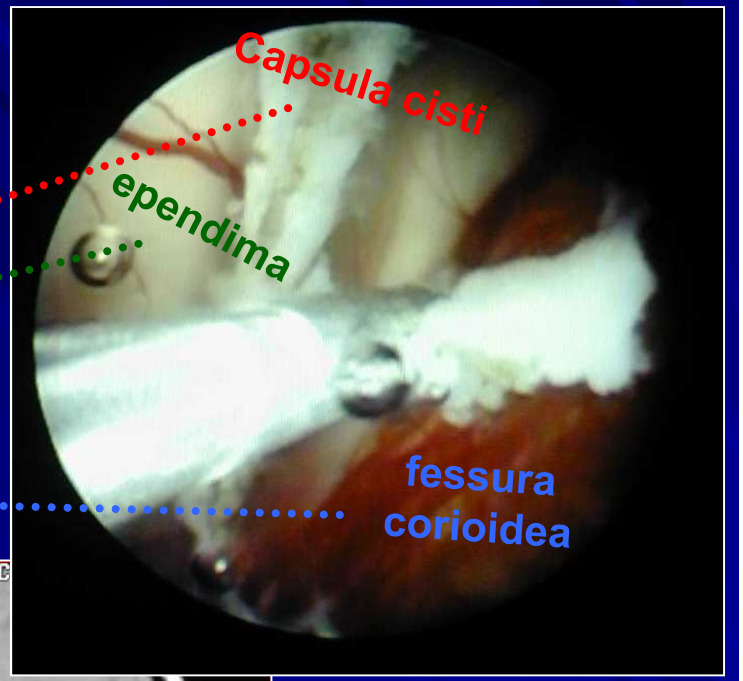








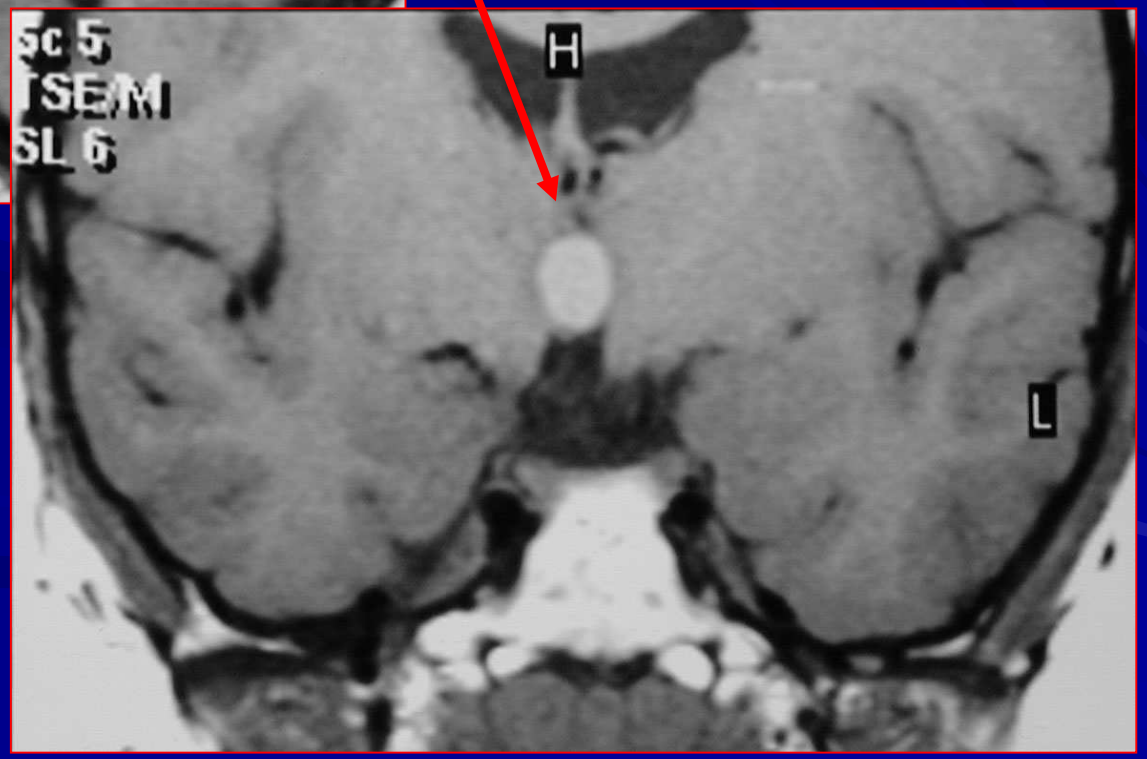
RM Pre-op





RM Post-op
5 aa

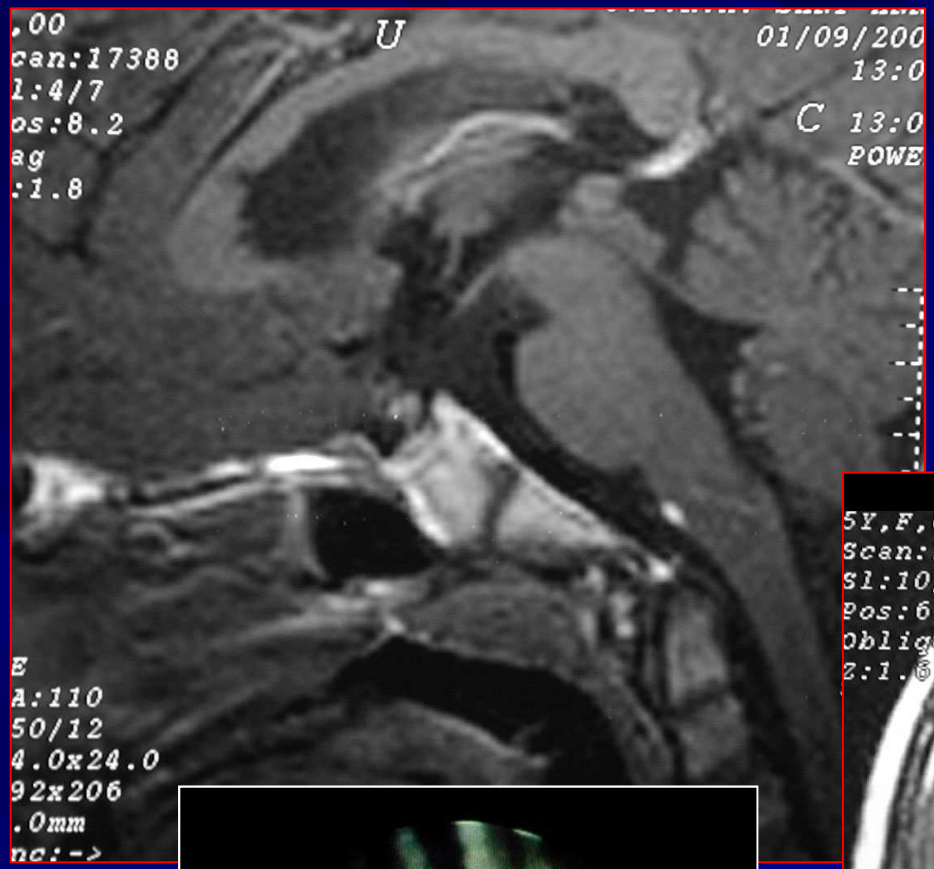




BF, F, 6 aa;

Craniofaringioma

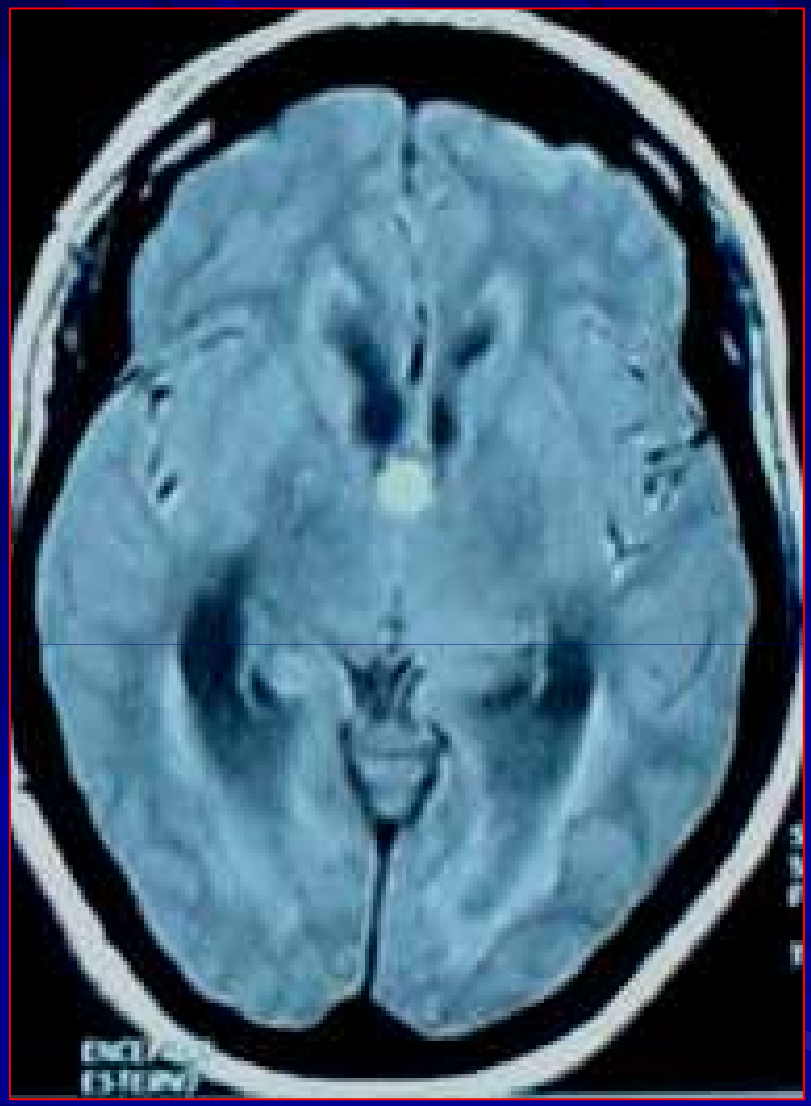
3 mesi dopo asportazione endoscopica esclusiva





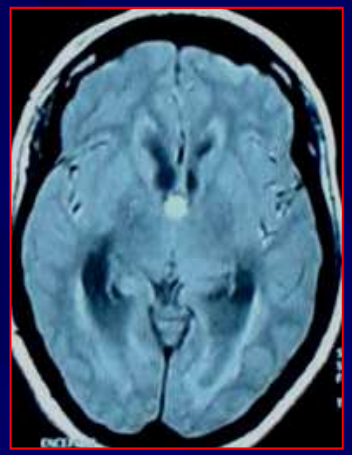






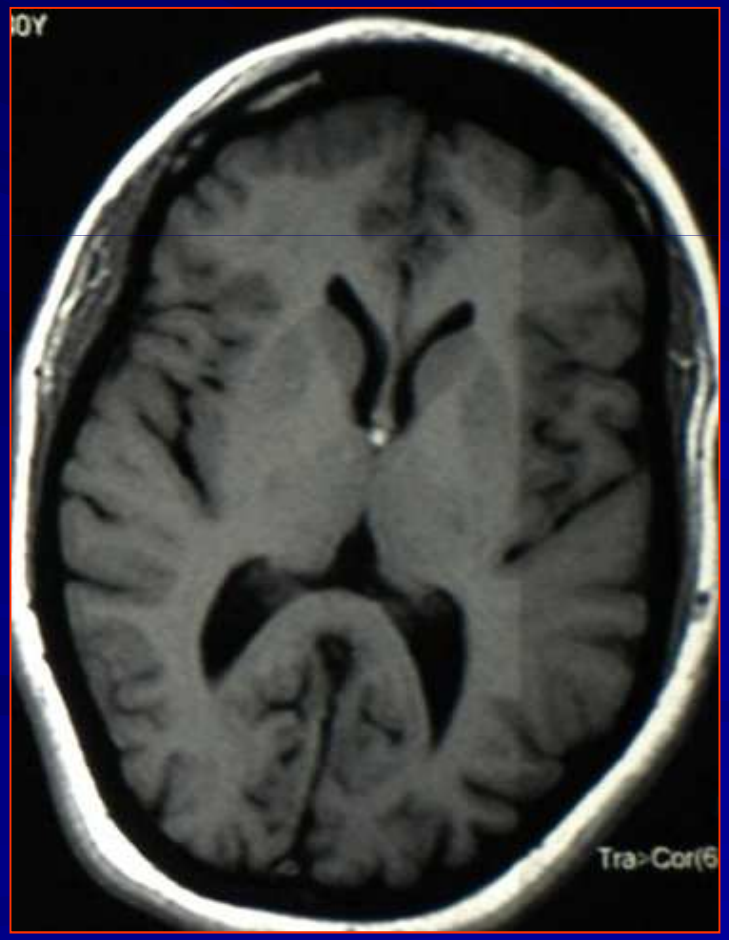
AMT, F, 36 aa. Idrocefalia associata a cisti colloide





Asportazione
endoscopica subtotale

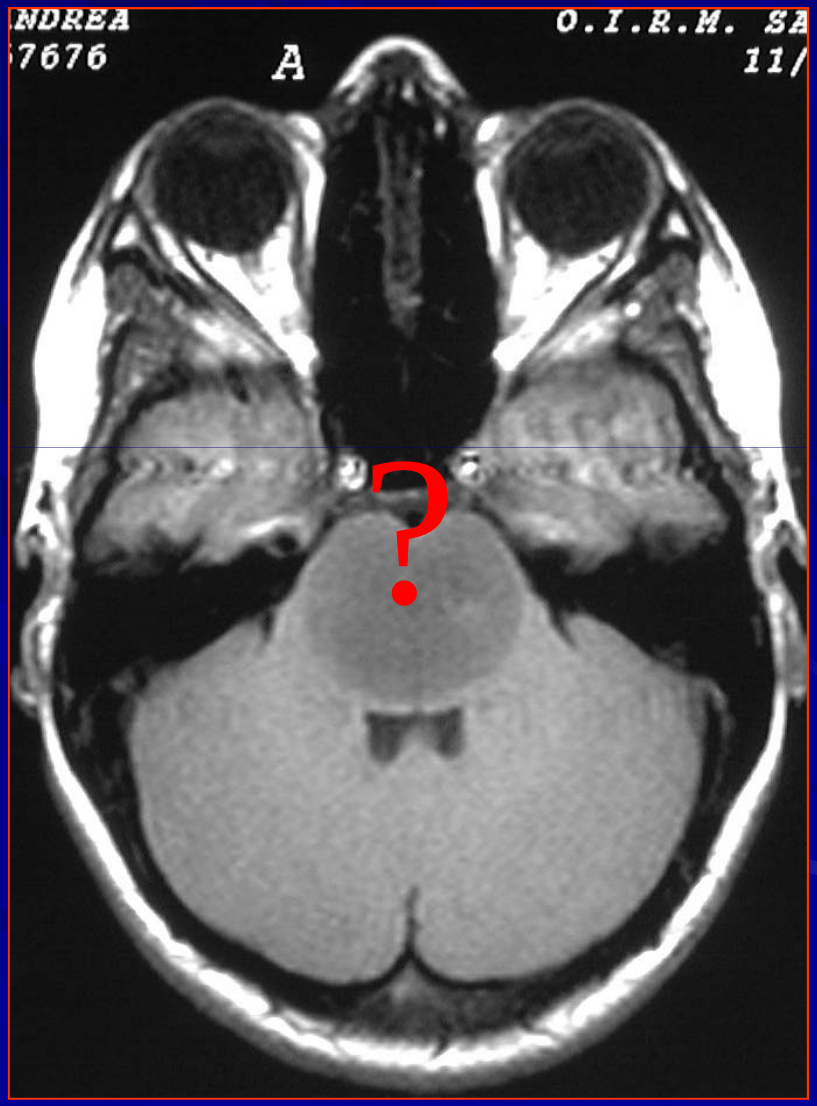
Trattamento idrocefalia

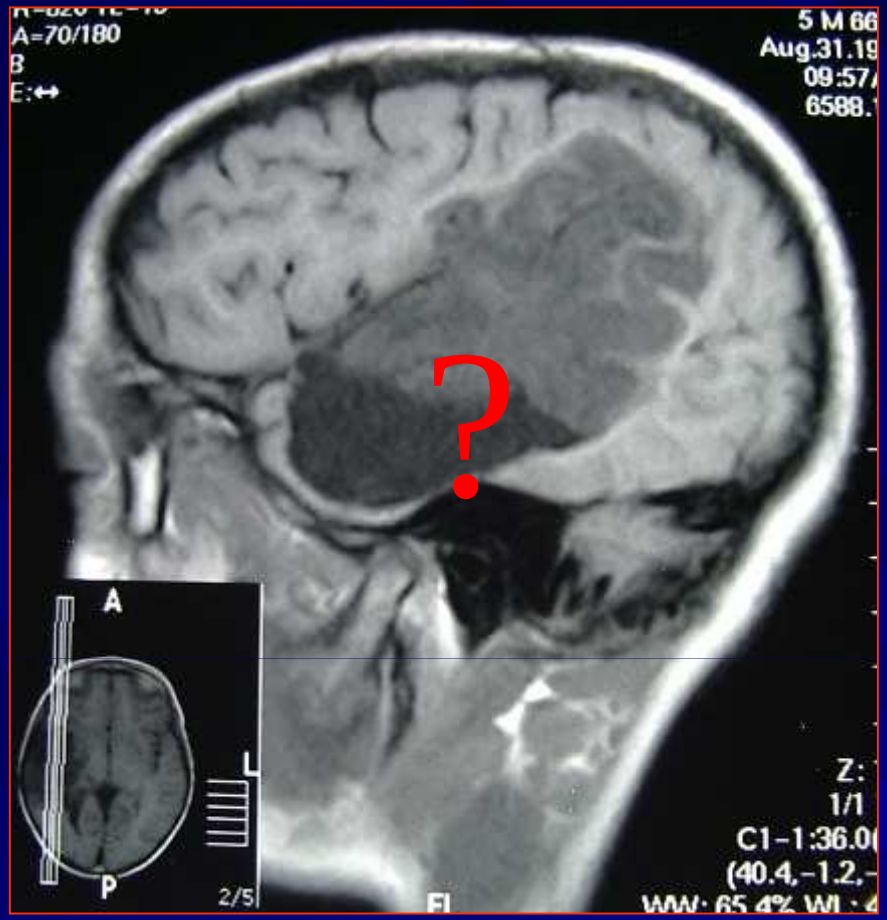


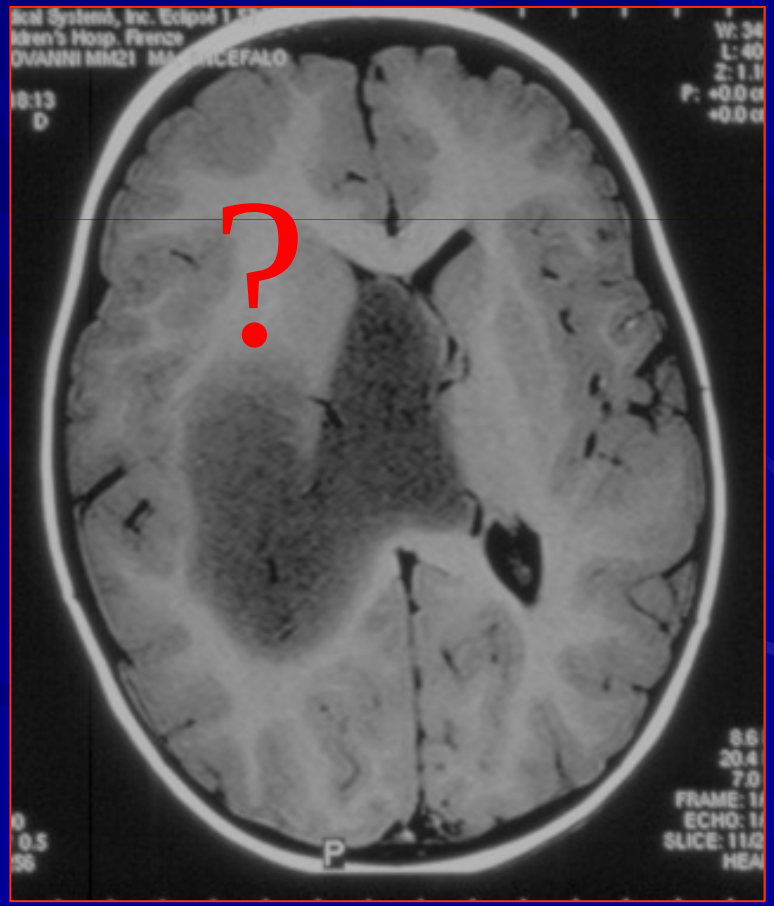


Problemi chirurgici ancora insoluti…….






A=70/180
B
E:↔
A
L
P
2/5
?


?
P

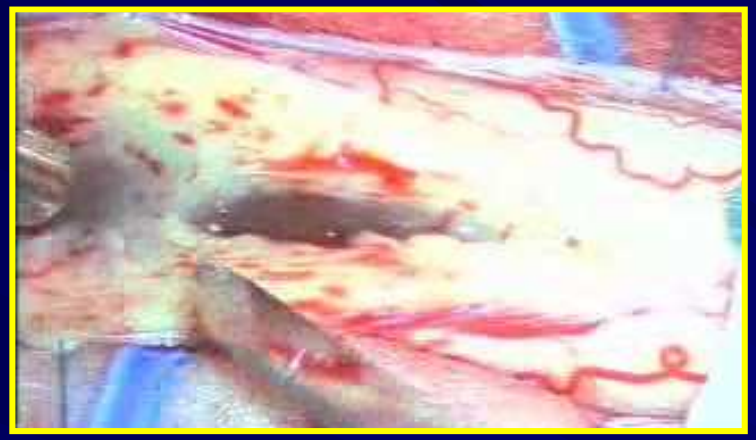


TUMORI INTRAMIDOLLARI
Alcuni esempi

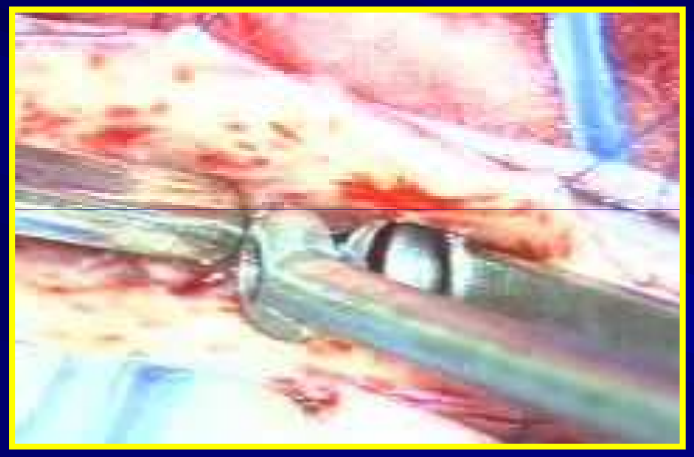
Z.D., 4 anni, maschio

Dolore e torcicollo



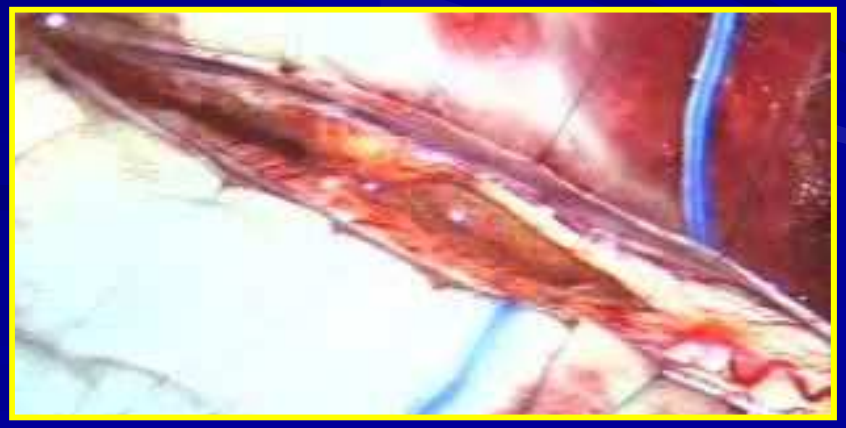














Sei anni dopo

(10 anni)



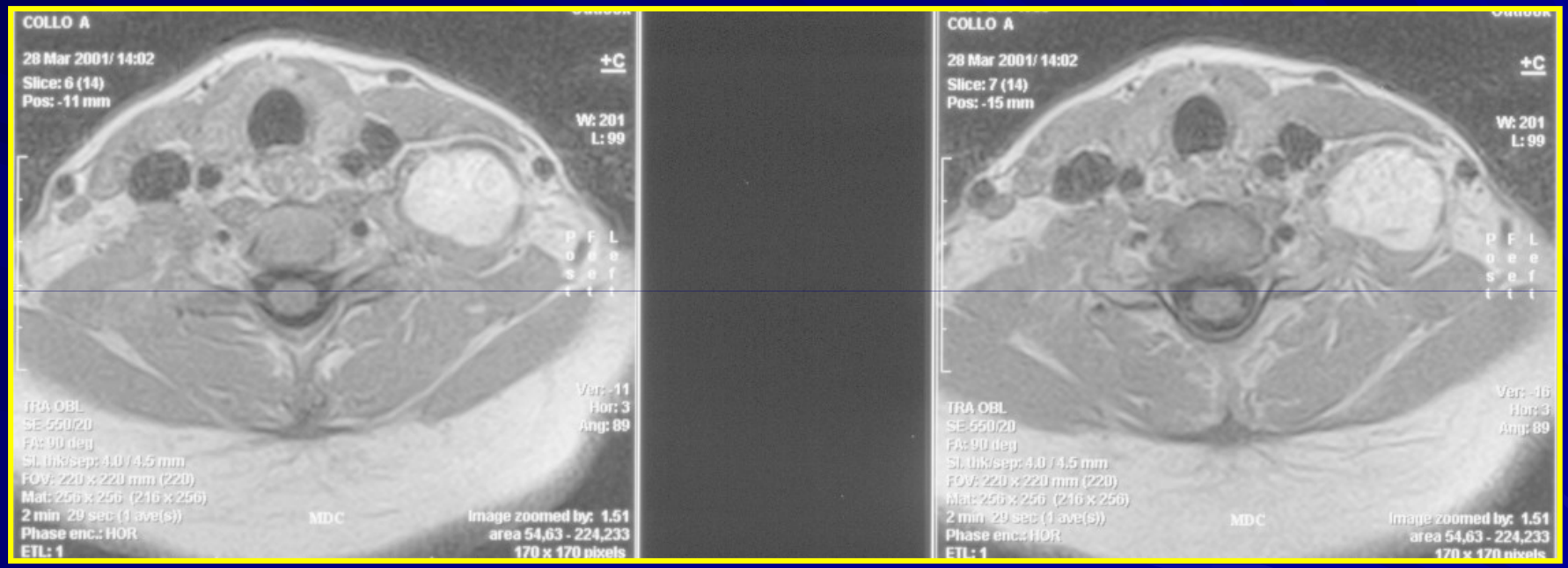






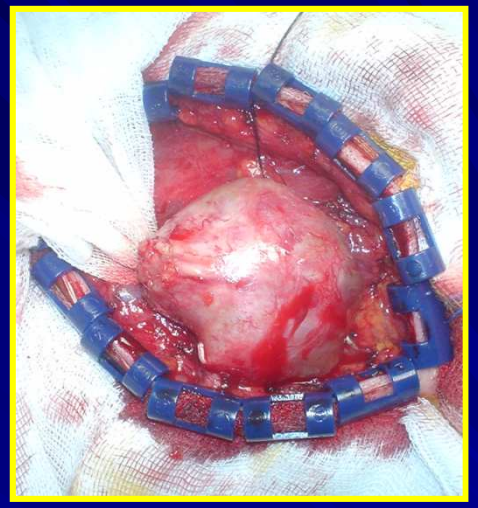
TUMORI PARAVERTEBRALI

Alcuni esempi



Femmina, 20 anni



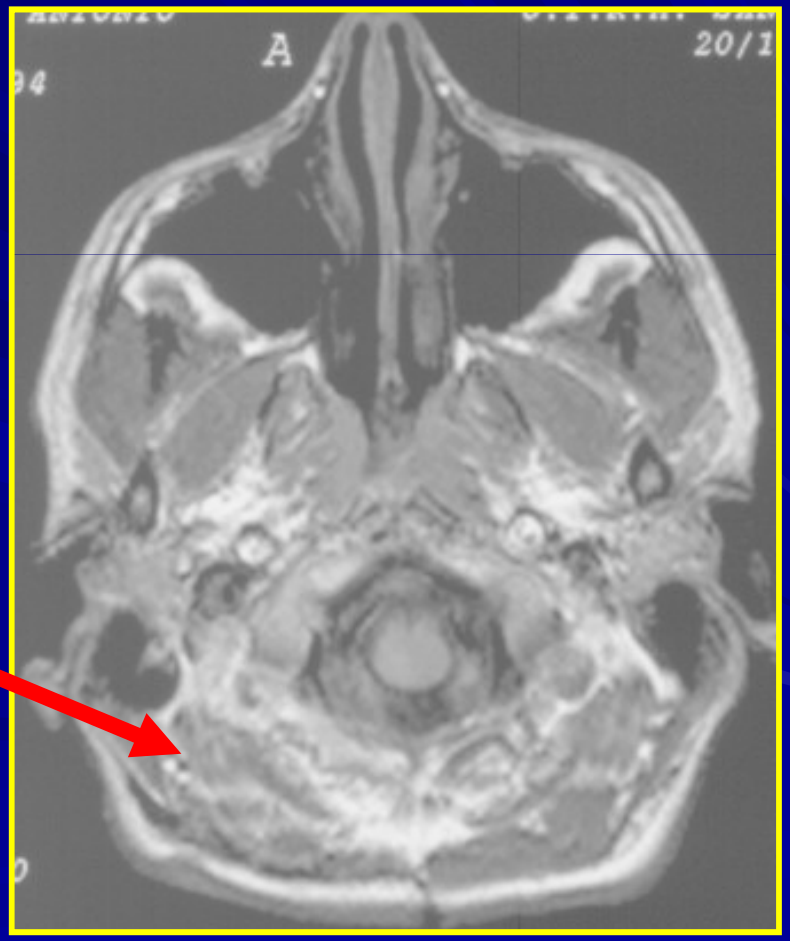




NEURINOMA

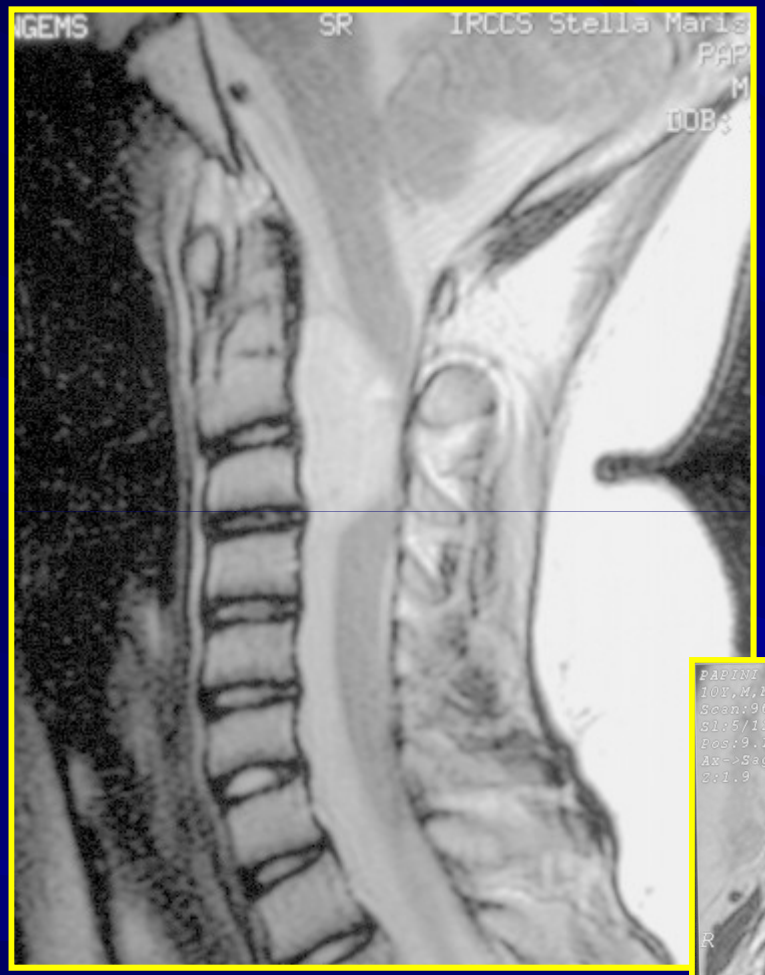
TUMORI PARAVERTEBRALI
Alcuni esempi





neurofibroma

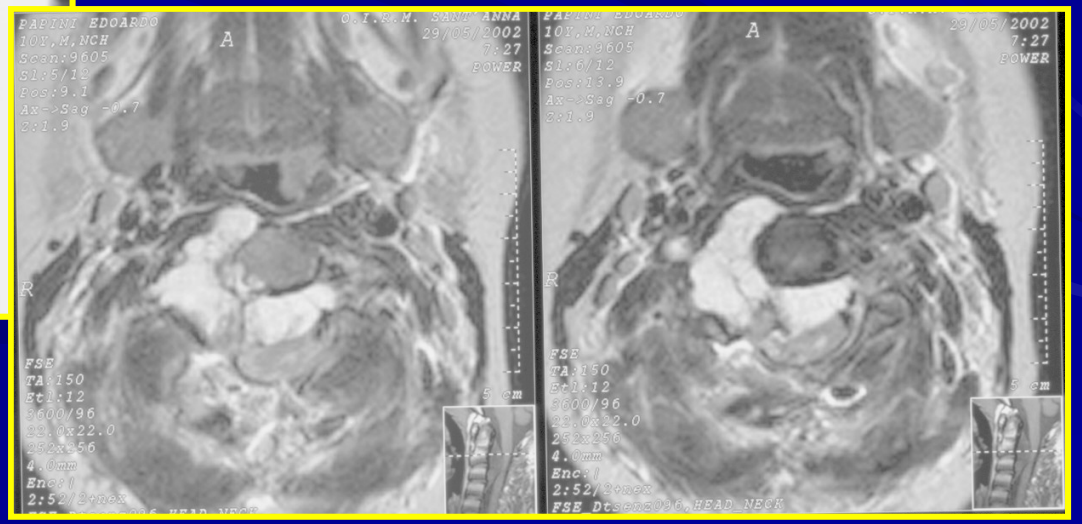
Un altro esempio...

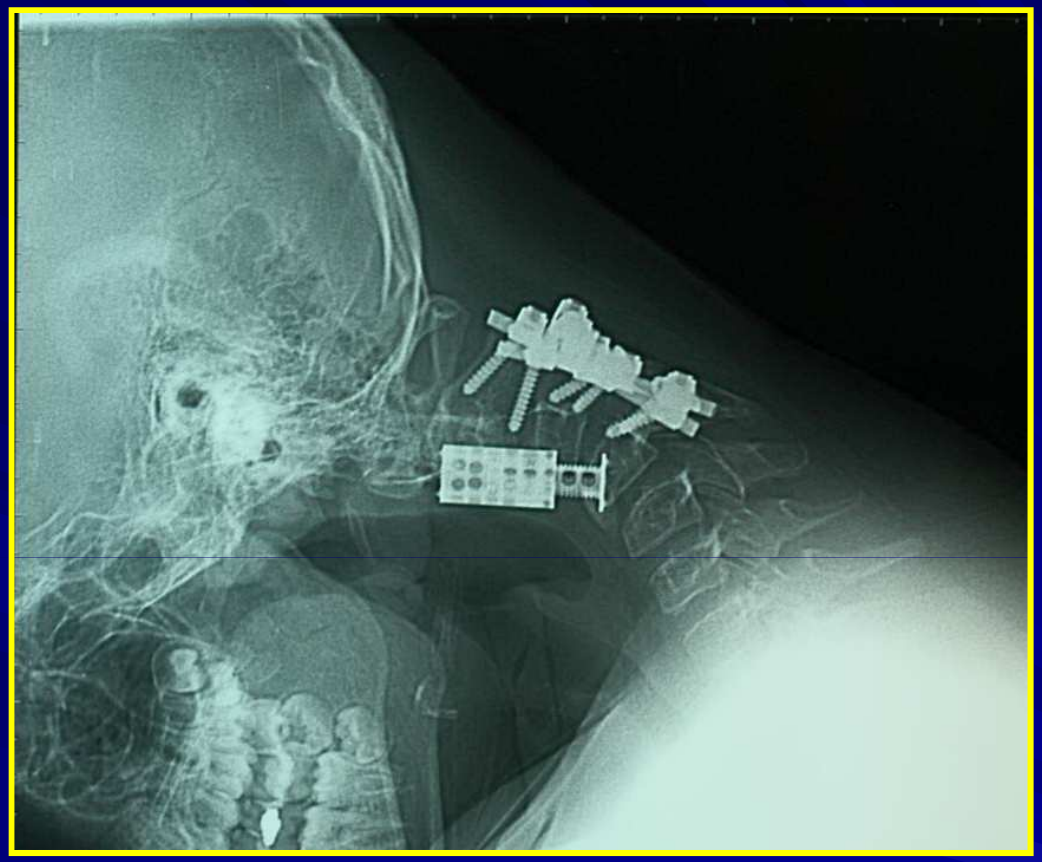


Maschio, 10 anni

Torcicollo ed emiparesi

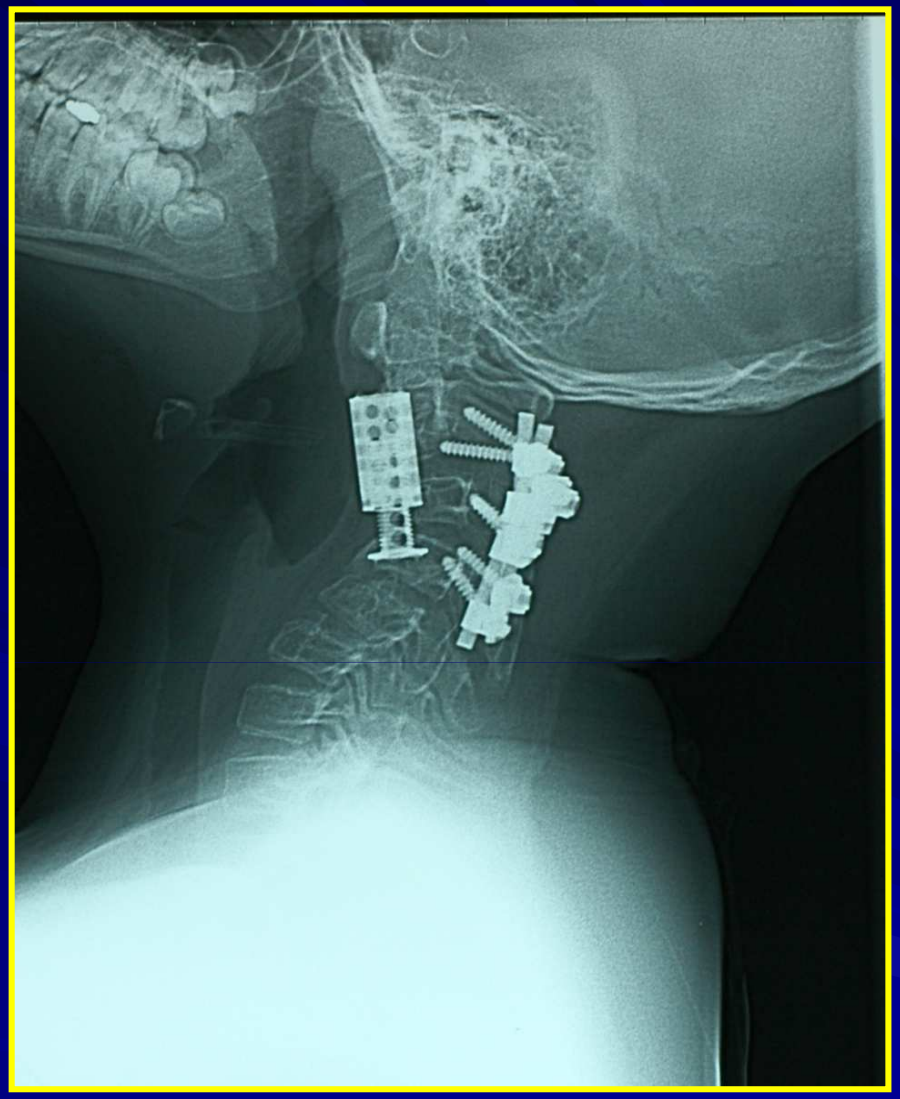
Cordoma





Radiografie cervicali dinamiche e valutazione clinica: 10 anni dopo

flessione



Radiografie cervicali dinamiche e valutazione clinica: 4 anni dopo

estensione

flessione laterale





RM


100
95
90
85
80
75
70
65
60
55
50
0
180