

Trombolisi - embolectomia loco-regionale nello stroke ischemico iperacuto: analisi retrospettiva a singolo centro.

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Dr. Vincenzo Di Egidio

**DIRETTORE U.O.C. RADIODIAGNOSTICA E RADIOLOGIA VASCOLARE ED
INTERVENTISTICA
OSPEDALE CIVILE PESCARA**

No disclosures

Stroke

- 1 stroke ogni 53 sec
- 1 morte per stroke ogni 3.3 min (436/giorno)
- 750,000 strokes nuovi e ricorrenti per anno
- Mortalità
 - 7.6% 30d
 - 16-23% 3 mesi

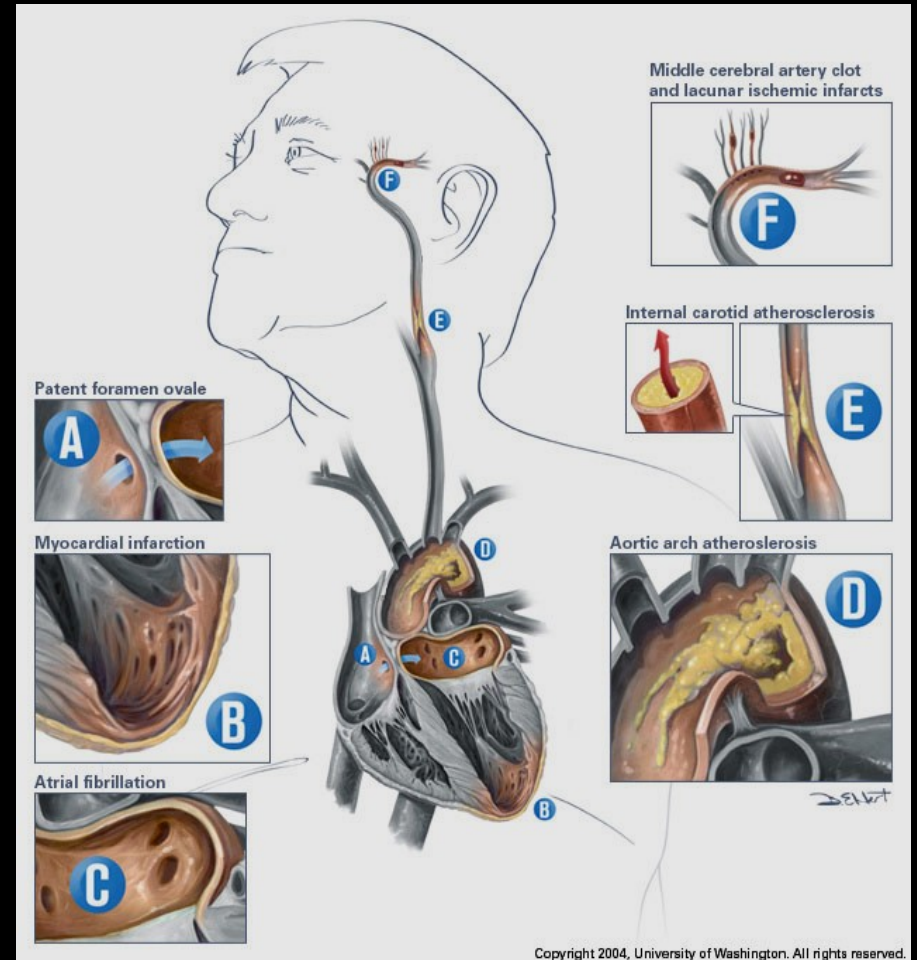


Stroke

- 500,000 Pz/anno
- Prima causa di disabilità.
- Permanenza ospedaliera media 42 giorni.
- Costi sociali: 20 billion dollars/years
(1 *bilione*: 1.000.000.000.000)

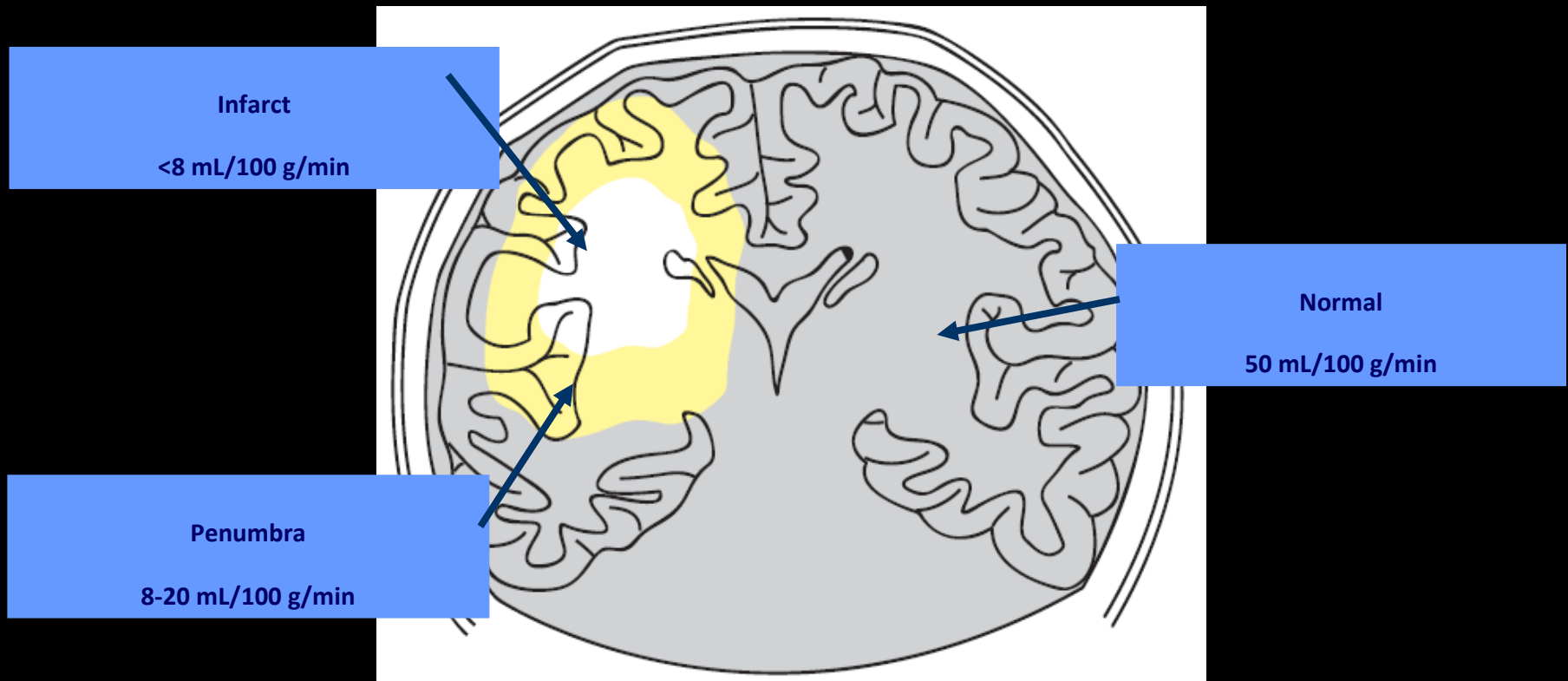


- Occlusione (50%)
 - Large vessel (ICA)
 - Branch (MCA)
 - Perforator (lacunar)
- Embolizzazione (25%)
 - Intra/Extracranial
 - Cardiac
- Criptogenetica (25%)



Ischemic Penumbra

Area of brain with compromised blood supply that can be salvaged by timely intervention



Increased MTT Area Statistics

(CBF reduced per number of slice)

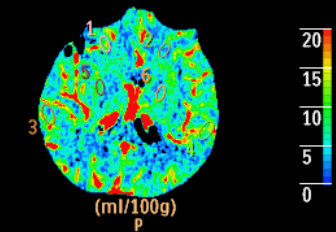
Normal CBV (CBV): normal CBV area into the CBF reduced region (Green in the Summary Maps).

Reduced CBV (rCBV): CBV reduced area into the the CBF reduced region (Red in the Summary Maps)

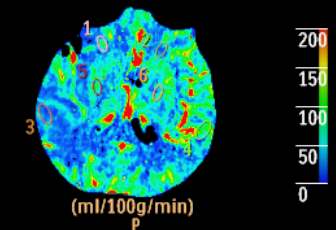
Index (In): ratio between reduced BF and normal BV area (green) and the reduced BF area (green+Red).

COLOR MAPPING

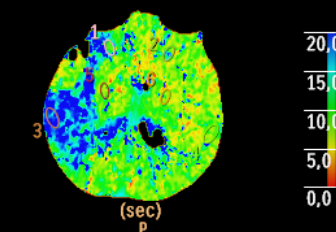
DONATO 1V CBV Philips, Brilliance 64 SW 5,00 mm



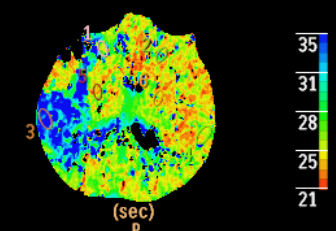
DONATO 1/51V CBV Philips, Brilliance 64 SW 5,00 mm



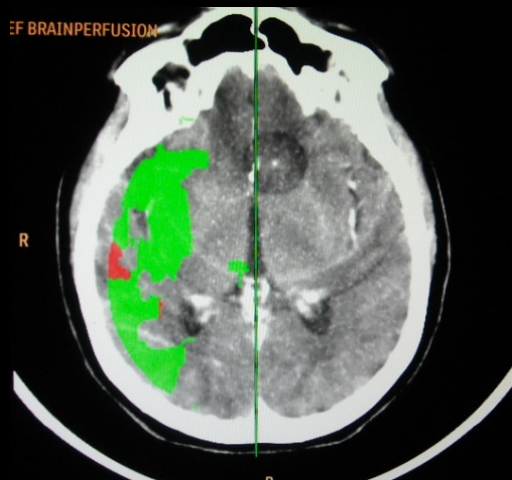
DONATO 1/51V MTT Philips, Brilliance 64 SW 5,00 mm



DONATO 1/51V IIP Philips, Brilliance 64 SW 5,00 mm

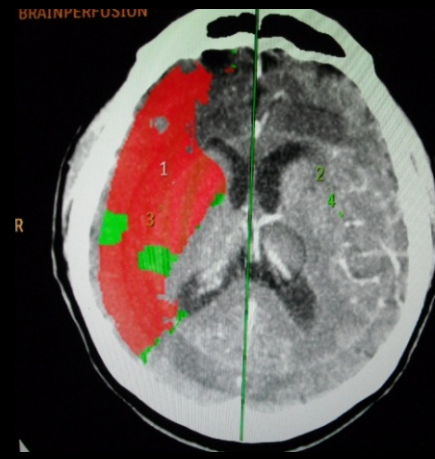


SUMMARY MAP

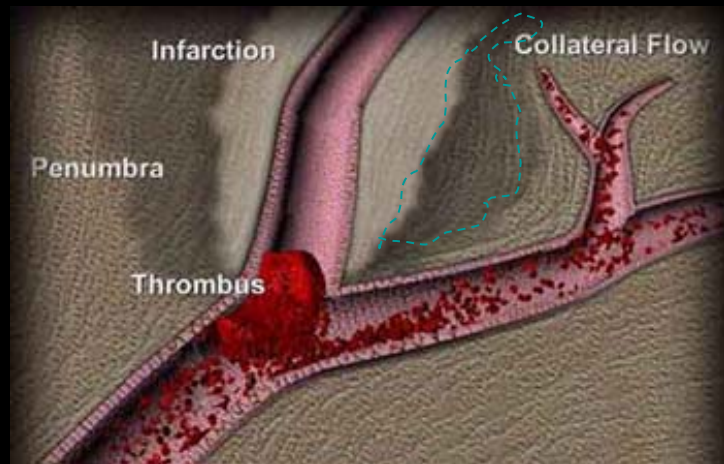


Green: increase of MTT above 50%, CBV above 2,0ml/100g.

Red: increase of MTT over 50%, CBV below 2,0ml/100g.



Dinamiche spazio-temporali dello sviluppo e dell'evoluzione del danno ischemico cerebrale



Morphology

Infarction

Inflammation and apoptosis

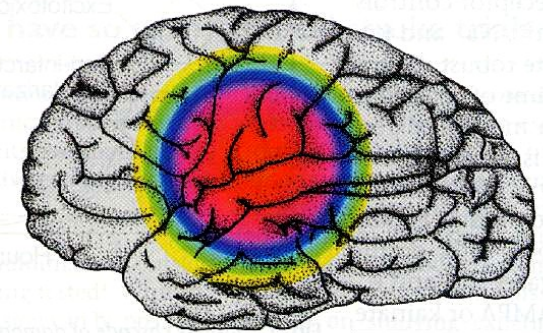
Biochemistry

Ionic failure
Anoxic depolarization
Glucose use ↓
Glutamate release
Glucose use ↑

Protein synthesis ↓
Acidosis
Oxygen extraction ↑

Selective gene expression

PENUMBRA CORE



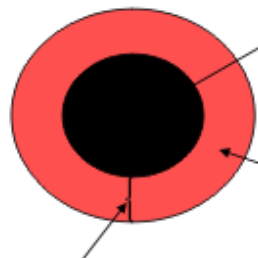
trends in Neurosciences

Ischemic Penumbra

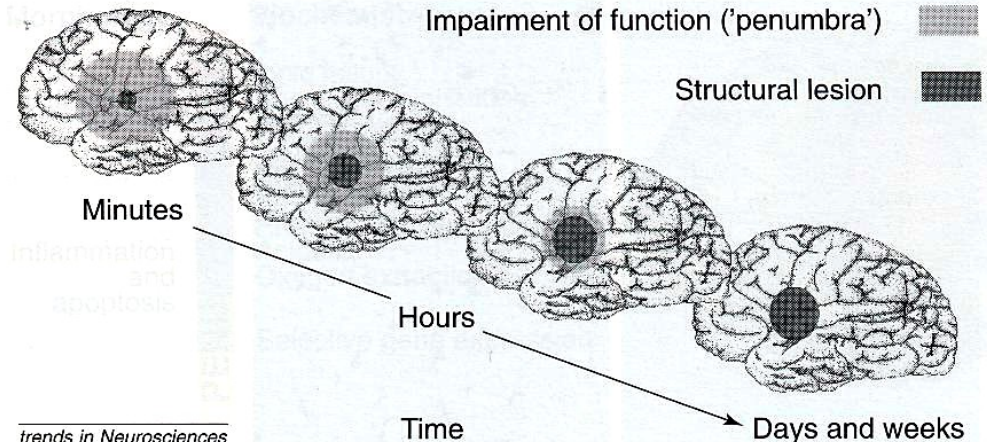
DWI / PWI Mismatch

- Diffusion Abnormality
- CBF < 10 ml/100g/min
- Cytotoxic edema
- Irreversible ischemia

- Perfusion Abnormality
- CBF = 10-18 ml/100g/min
- Neuronal paralysis
- Reversible ischemia

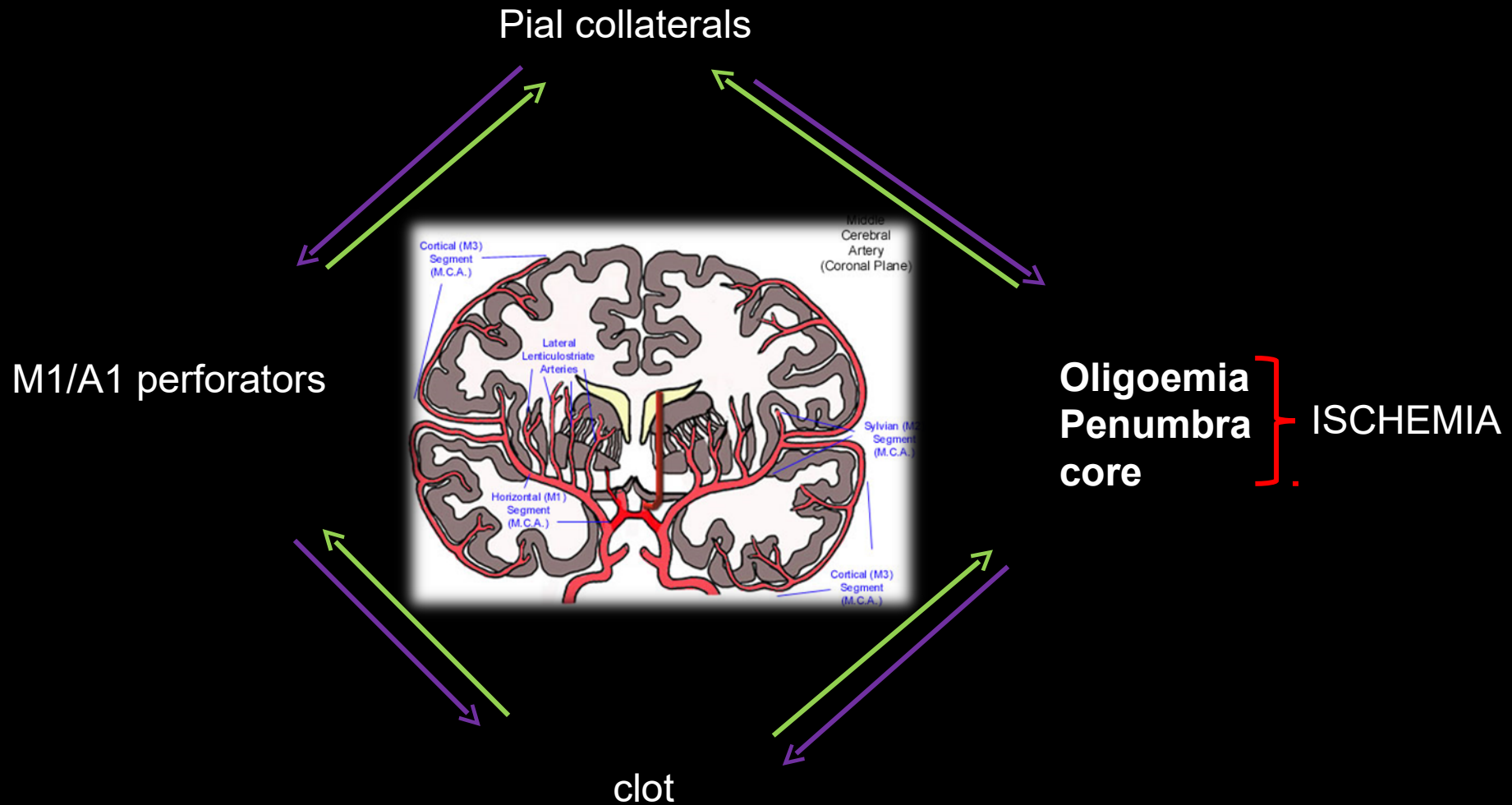


Penumbra



trends in Neurosciences

THE BASIC INTERACTING COMPONENTS OF ACUTE NEOPALLIAL ISCHEMIA



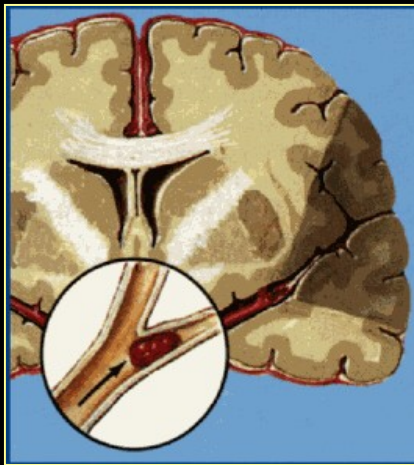
Meccanismo e Strategie della Riperfusione



SCOPO: valutare le differenti modalità operative di rimozione del trombo in caso di stroke iperacuto, meccanica e farmacologica da sole od in associazione, con i relativi tassi di ricanalizzazione nel breve e lungo periodo.

Riperfusione

•E' dimostrato che il rapido ripristino del flusso ematico cerebrale in caso di occlusione vascolare acuta può determinare il completo recupero della funzionalità del tessuto cerebrale



- La riperfusione del tessuto ischemico può avvenire attraverso 3 meccanismi:
- Ricanalizzazione spontanea
- Trombolisi farmacologica e/o meccanica
- Collaterali leptomeningei

A 15 anni dall'avvento delle prime terapie trombolitiche, numerosi studi e la pratica clinica hanno confermato il beneficio della riperfusione precoce

Trombolisi - RTCs

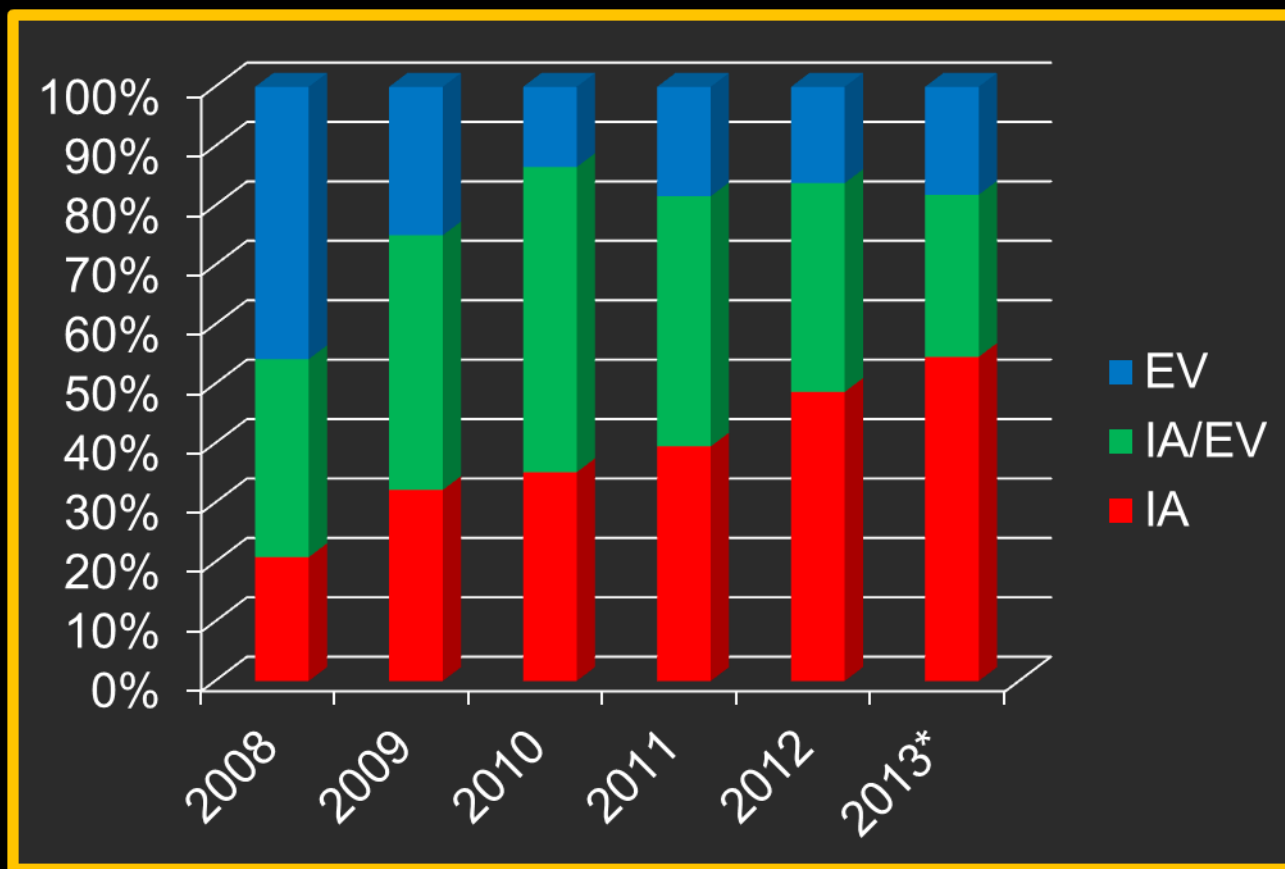
- Sistemica, endovenosa:
rtPA 0.9 mg/kg entro
3 ore dall'esordio.
- Endovascolare,
intrarteriosa
rtPA, urokinasi
Meccanica

13 RCTs on Thrombectomy

- IMS III
- MR Rescue
- Synthesis
- Mr Clean
- Thrace
- Piste
- Revascat
- Therapy
- Switf Prime
- River 5
- SITS
- Thrill
- Taste
- ...

TROMBOLISI ASL TERAMO

RADIOLOGIA VASCOLARE INTERVENTISTICA



MATERIALE E METODO:

Abbiamo analizzato una coorte di 118 pazienti (età media 57 anni, da aprile 2009 a gennaio 2013) con stroke, sottoposti a terapia locoregionale, considerando variabili demografiche, scala NIHSS all'ingresso e mRS (mean Rankin Scale) post trattamento, analisi delle mappe di perfusione TC, tassi di ricanalizzazione utilizzando la scala TICI (Thrombolysis in Cerebral Infarction) grado 0 (assenza di perfusione) fino al grado 3 (perfusione completa) e relative complicanze.

I risultati sono stati valutati con studi Angio-RM e/o Angio-TC e/o Angiografico post procedura e con follow-up entro 90 giorni.

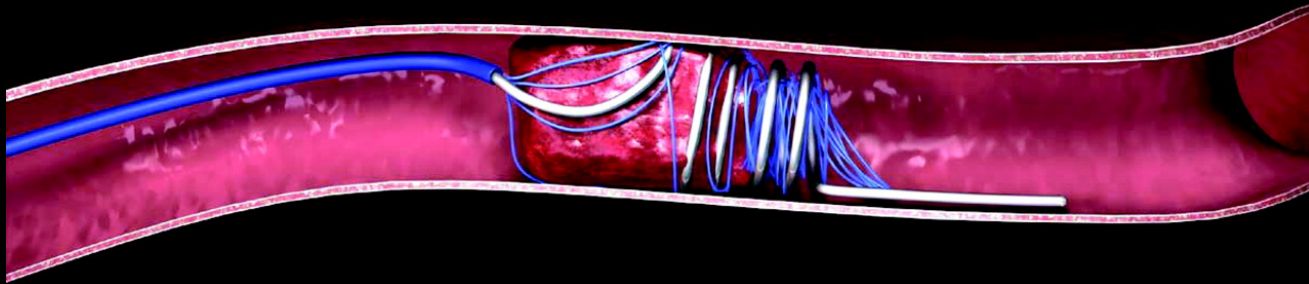


MATERIALE E METODO

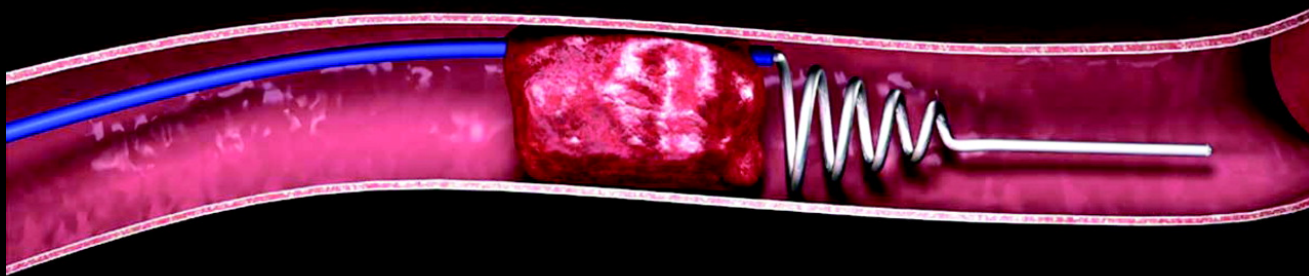
Per la fibrinolisi **farmacologica** abbiamo usato attivatore tissutale del plasminogeno - recombinant tissue plasminogen activator - r-tPA,

Per la trombolisi **meccanica** sono stati utilizzati diversi sistemi di embolectomia meccanica quali stent completamente recuperabili , sistemi di trombo aspirazione o microguide.

Endovascular Tools for Stroke Treatment



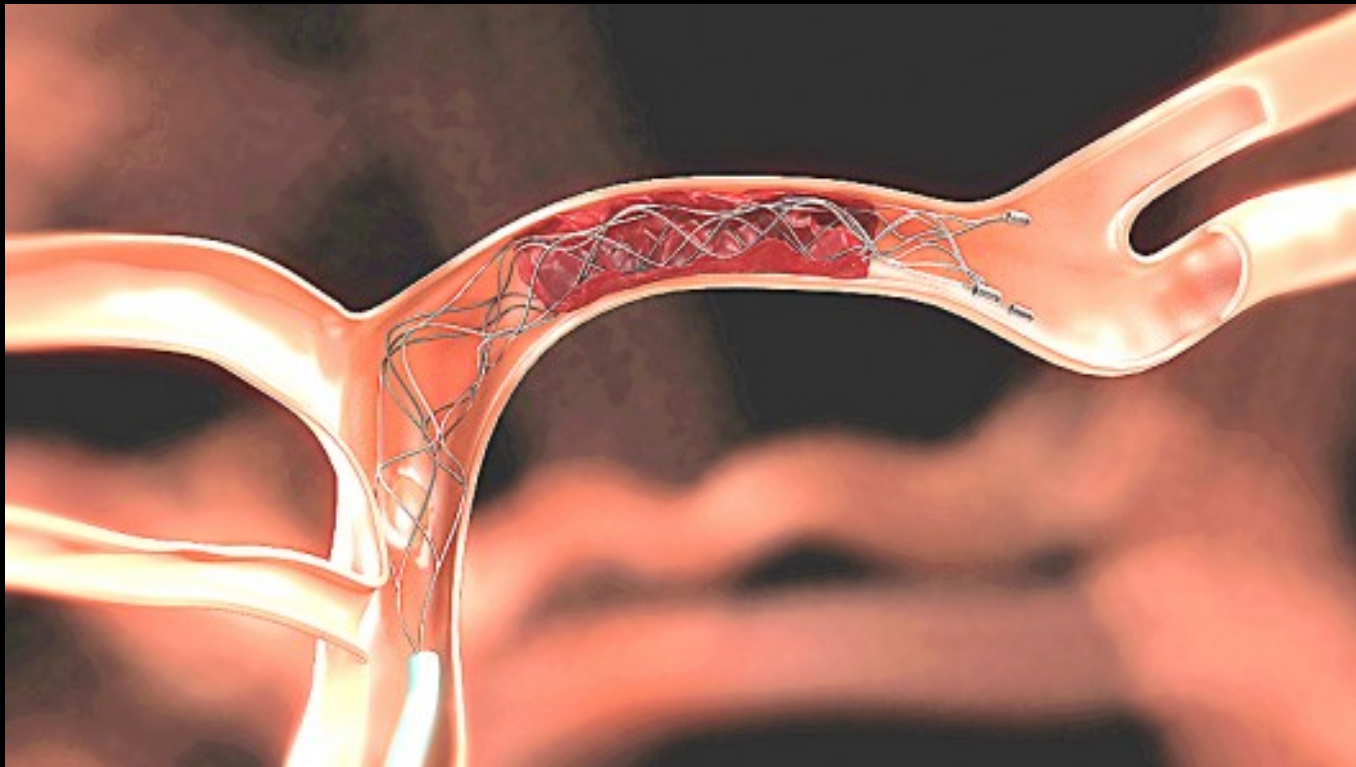
L5

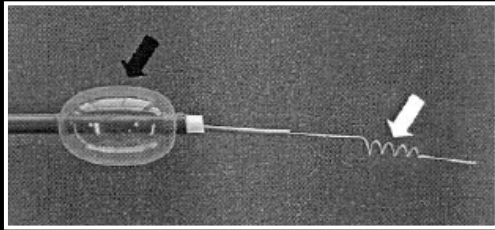


X6

Solitaire® Revive Aperio Stent Retrieval Device

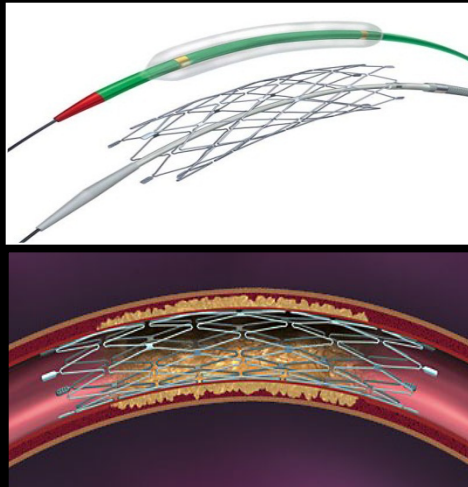
- Recanalization rates approaching 90%
- Recently received FDA approval





MERCI retriever

Dispositivo in nitinol che assume
una conformazione ad elica
quando fuoriuscito dal catetere guida



Angioplastica + Stent intracranico

Manovre di tromboaspirazione

Mechanical Embolectomy

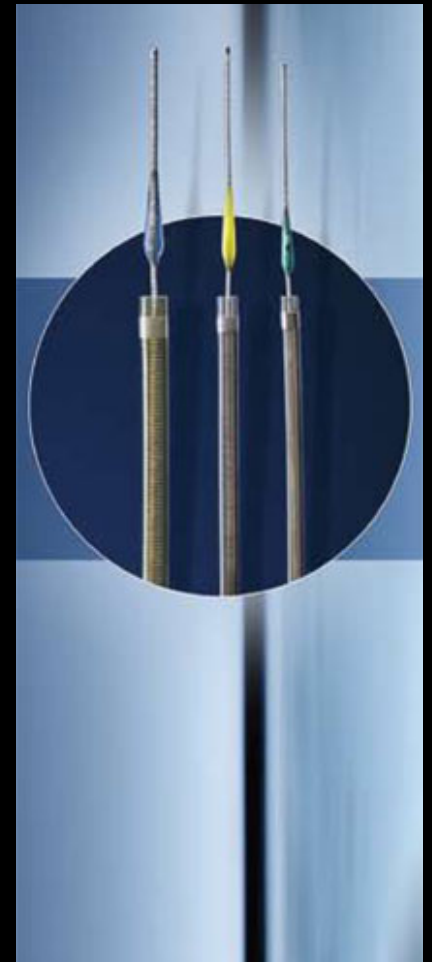
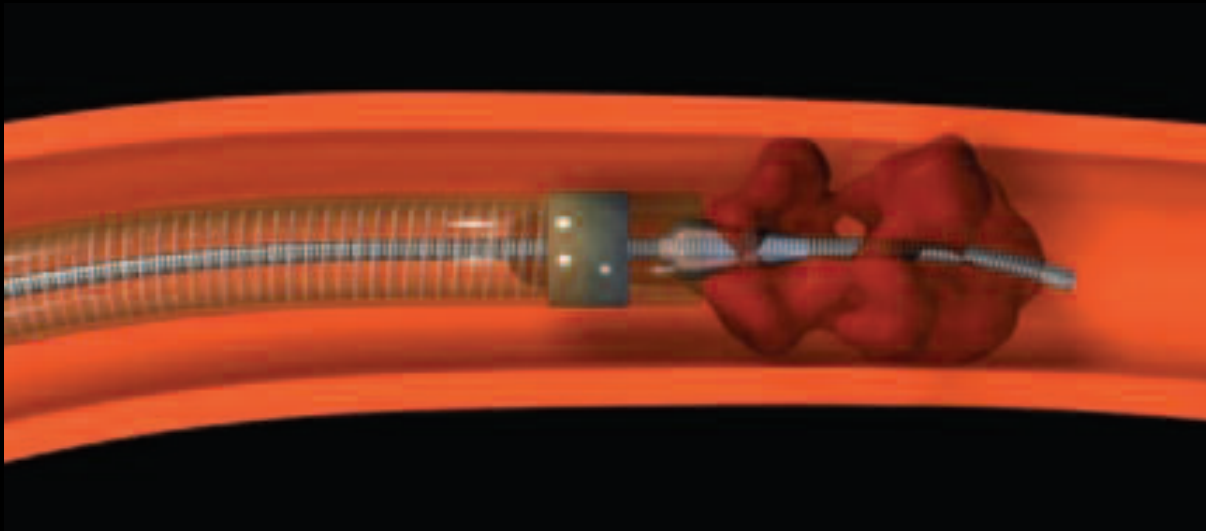
Merci Device



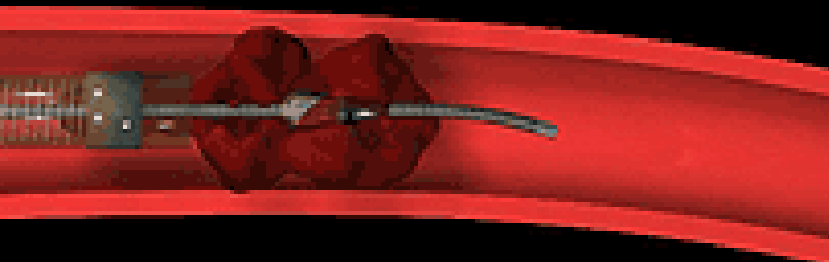
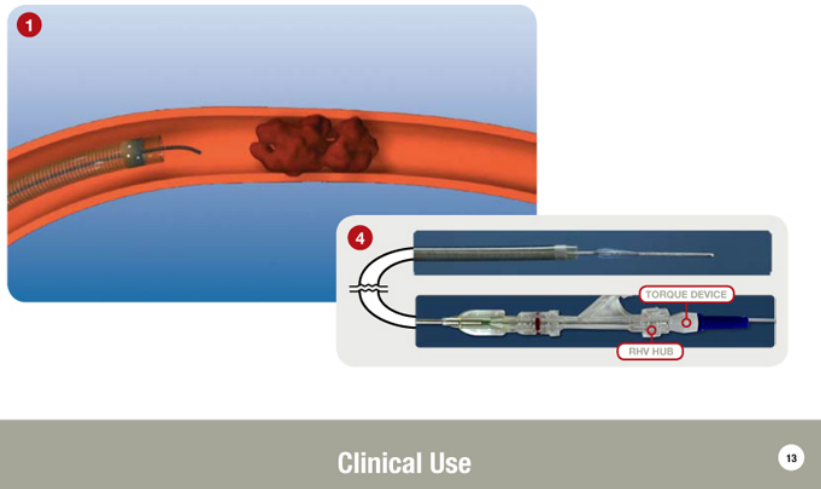
Endovascular Tools for Stroke Treatment

Penumbra[®] Stroke Device

- Stroke device for mechanical thrombectomy
- Higher rates of recanalization (~80%)



Mechanical Embolectomy Penumbra



Vessel Size (mm) Separator/Reperfusion Catheter Size Selection

Vessel Size (mm)	Separator/Reperfusion Catheter Size Selection
< 2.0	026
2.0 - 3.0	032
> 3.0	041

⚠ Minimum Guide Catheter ID = 0.065"

Clinical Use

Strategie terapeutiche per lo stroke acuto

RIPERFUSIONE (approccio vascolare)

(↑ Flusso ematico)

- ↓ Edema tissutale
- Trombolisi
- Angioplastica
- Endarterectomia
- Emodiluizione

NEUROPROTEZIONE (approccio parenchimale)

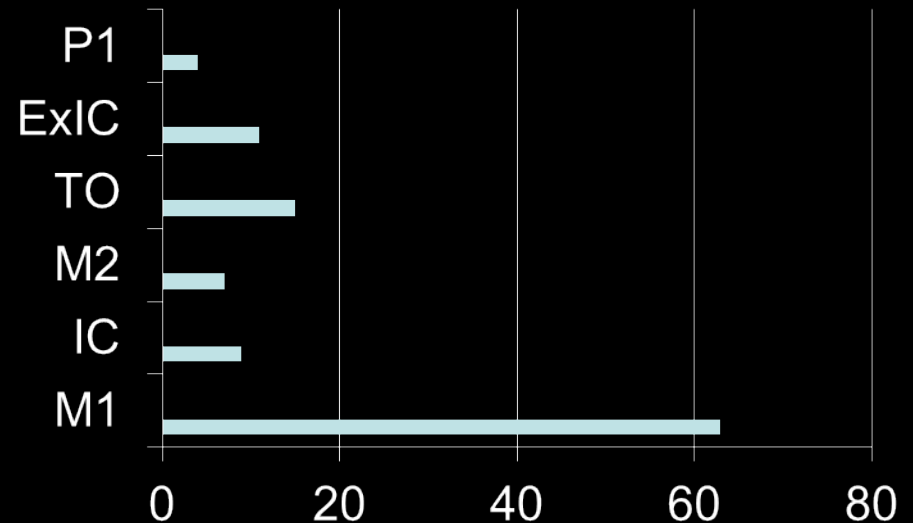
(↓ vulnerabilità del tessuto)

- Eccitotossicità ($[Ca^{2+}]_i$, $[Zn^{2+}]_i$?)
- Radicali liberi
- Infiammazione
- Apoptosi
-

RISULTATI

I siti di occlusione arteriosa pre-trattamento sono stati:

- M1 63 patients (53.38%)
- Intracranial carotid 9 patients (7,62%)
 - M2 7 (5,93%)
- Tandem occlusion 15 (12.71%)
- Extracranial internal carotid isolated occlusion 11 (9.32%)
 - P1 4 (3.38%)
- Basilar trunk 9 (7.62%)

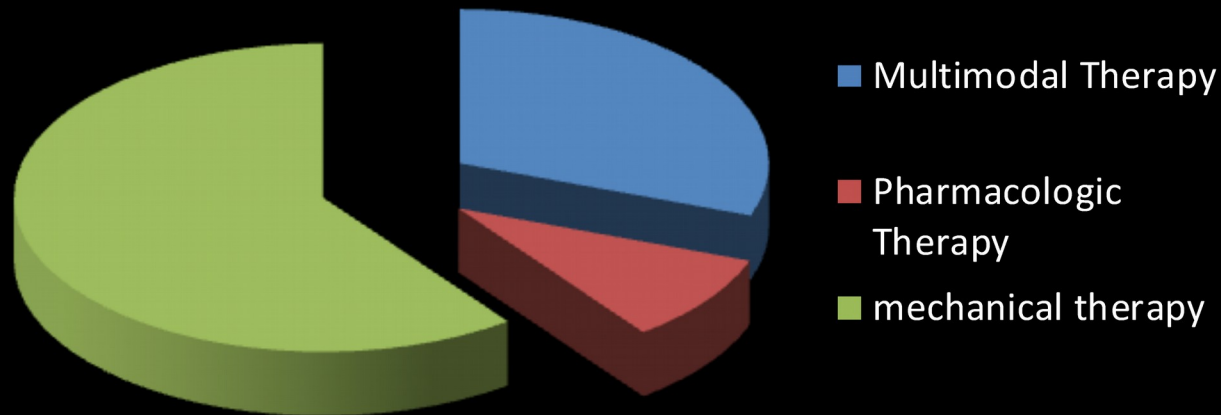


Le opzioni terapeutiche eseguite includevano

Multimodal therapy 36 patients (30.50%)

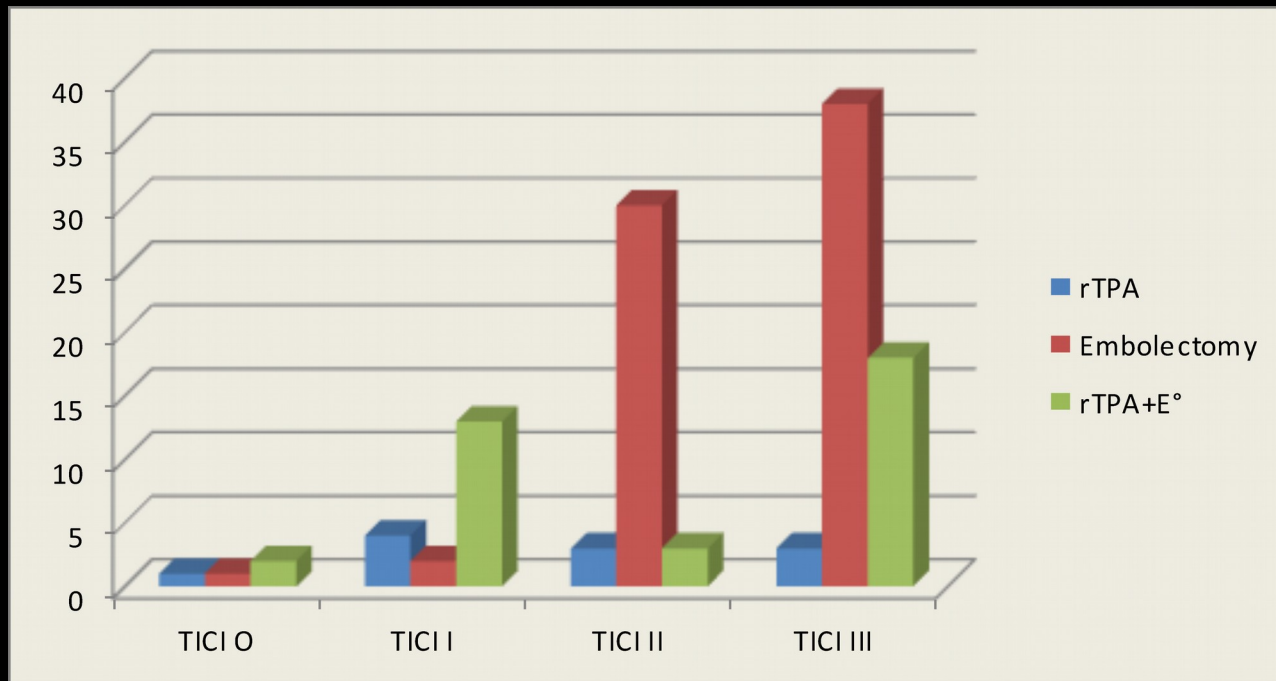
Pharmacologic therapy with tissue plasminogen activator (t-PA)
11 patients (9.32%)

Mechanical therapy 71 (60,16%)



Abbiamo osservato un tasso di ricanalizzazione significativamente elevato (TICI di 2-3) nei pazienti trattati con approccio meccanico (68/71 pazienti [95.77%])

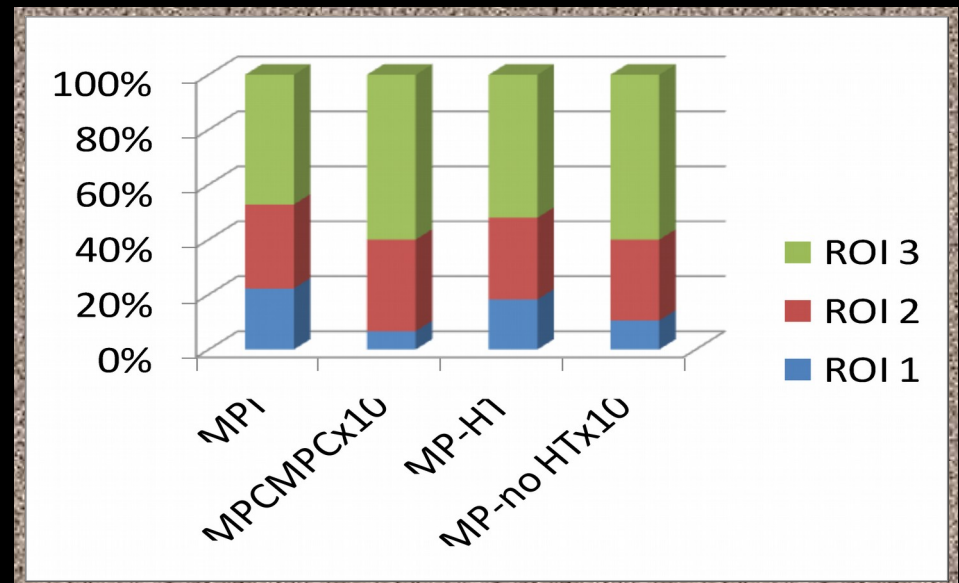
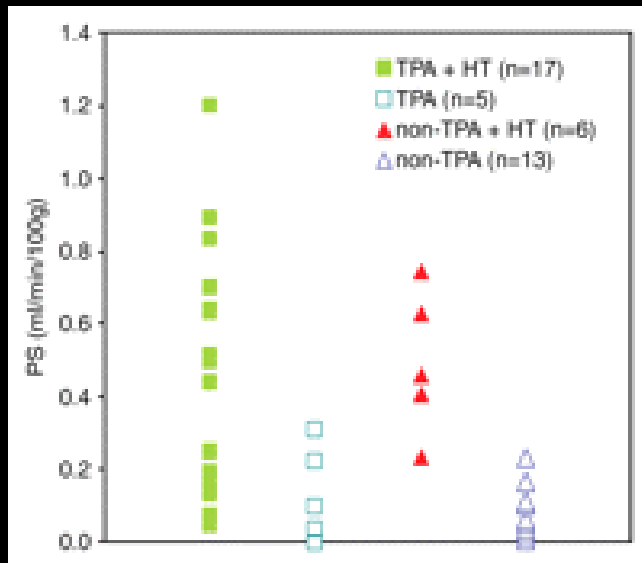
rispetto a quelli trattati con la sola terapia farmacologica (6/11 pazienti [54.54%]). $p < 0.001$.



106 infarcts (89.83%) showed **MPI ranged from 0 to 15** (mean: 3.7 ± 2.1) versus **MPC of 0-0.9** (mean: 0.38 ± 0.15 ; $P < .0001$).

11 infarcts (9.3%) developed HT, all of which were within the areas of MPI elevation.

MP-HT ranged from 4.9 to 14 (mean: 8.5 ± 2.4) versus MP No-HT of 0-5.7 (mean: 3.8 ± 2.0 ; $P < .0001$).

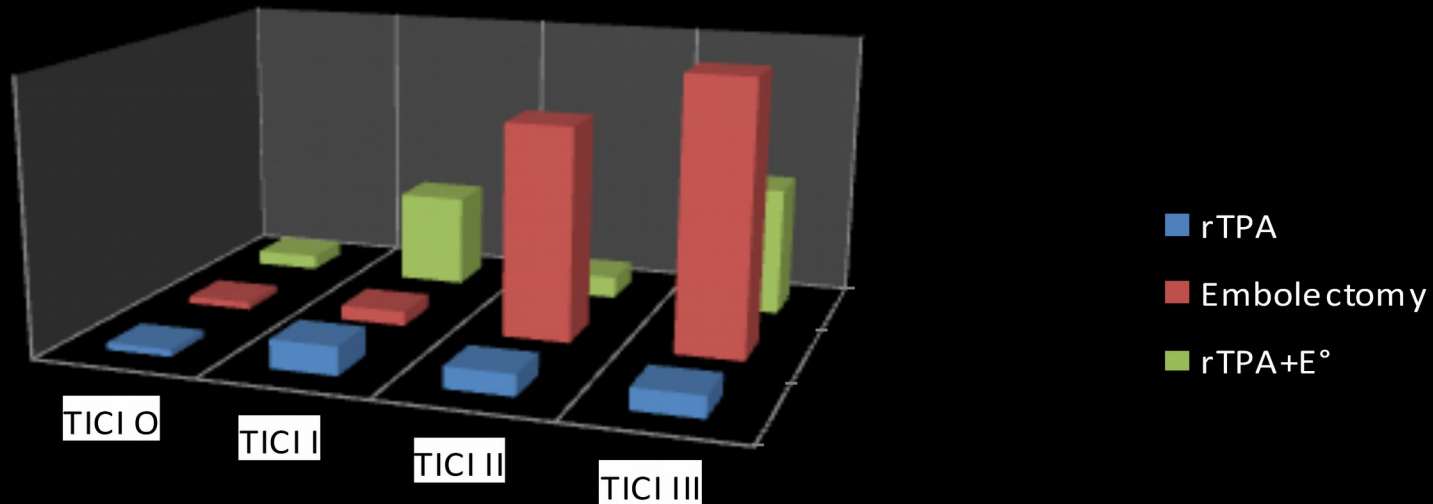


RESULTS

Forty infarcts (66%) were treated and the **recanalization** rate in patients treated with multimodal therapy was significantly higher TICI 2 or 3 recanalization rate ([82.14%]);

A significant **difference between MP-HT and MP No-HT** persisted with respect of local treatment ($p < 0.001$).

Median mRS at presentation was 5,2 (interquartile range, 7–20). And 2,7 at discharge (interquartile range, 1,7–3,2) ($p < 0.001$).

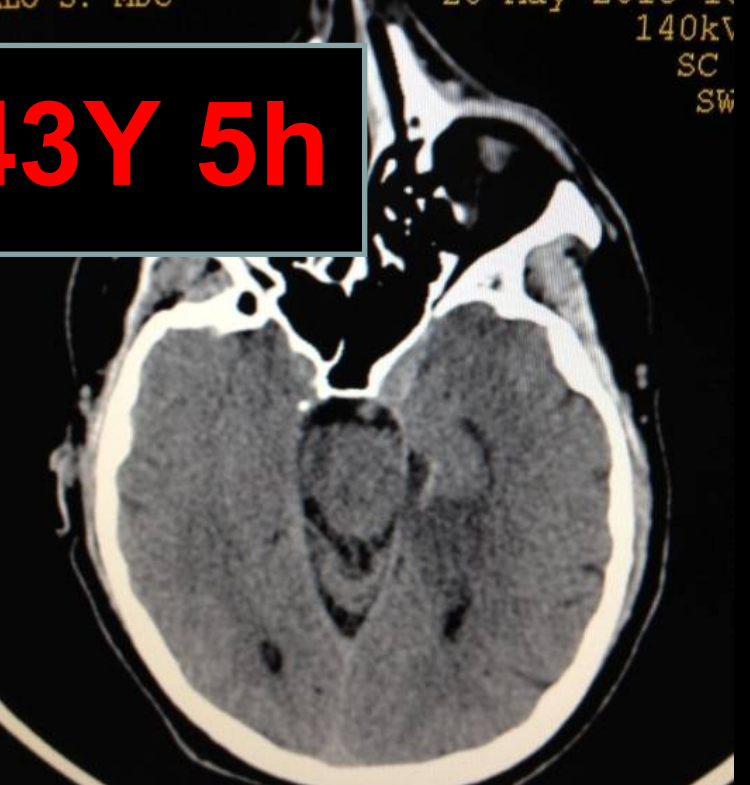
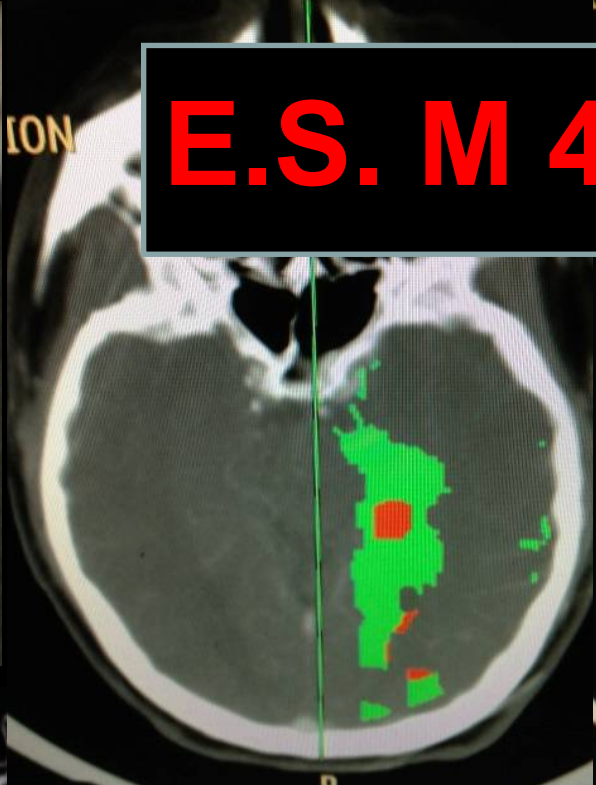


COSA FARE?



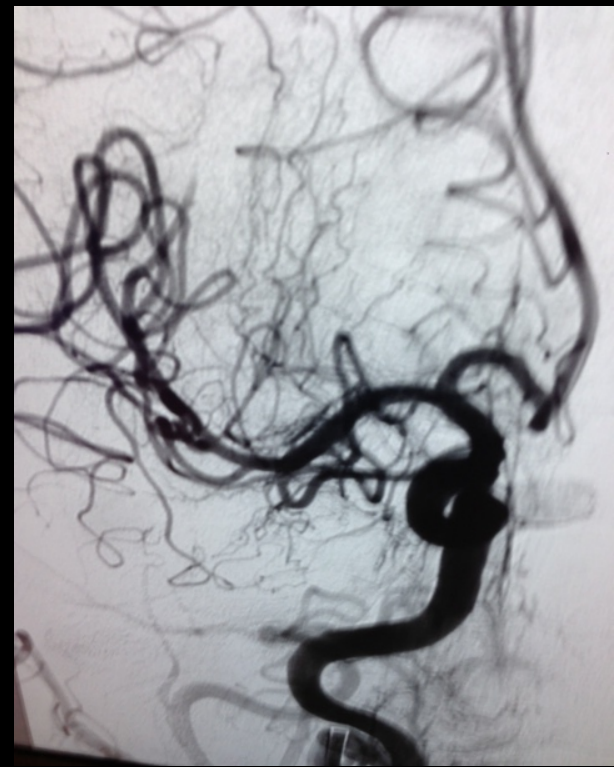
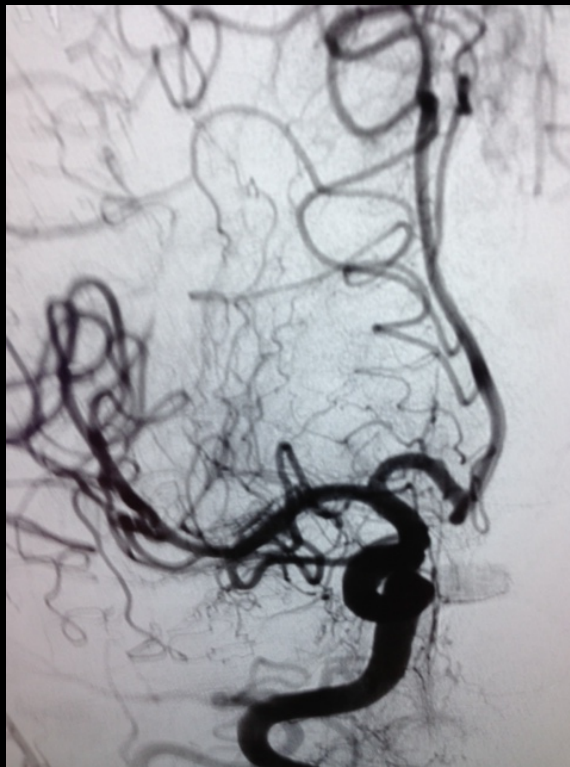


E.S. M 43Y 5h



M/44y
CEFALO S. MDC
un





- **ENDOTHELIAL DENUDATION** 73%
- **EDEMA OF THE TUNICA MEDIA** 52%
- **MURAL THROMBUS** 5%

Arterial wall response (injury) to mechanical thrombectomy devices (Gory B et al 2013)

(C.A.) M, 65 aa

Emiplegia sinistra, deviazione
sguardo verso sinistra, paresi
facciale sinistra

NHSS: 20

TC CRANIO, TC PERFUSIONALE, ANGIOTC VASI
COLLO e INTRACRANICO

Penombra M1 destra con core ischemico

AGF trombolisi meccanica M1 destra

TC CRANIO (controllo dopo procedura) focolaio
emorragico

TC CRANIO (24 h)

RM CRANIO, DIFFUSIONE E PERFUSIONE (10 gg)

Image size: 512 x 512
View size: 601 x 601
WL: 40 WW: 80

CENTRODRAPE ANTONIO 15222 P.O. ATRI (65 y)
ICTUS CEREBR. (Stroke)-EMERGENZE — CRANIO
22295
2

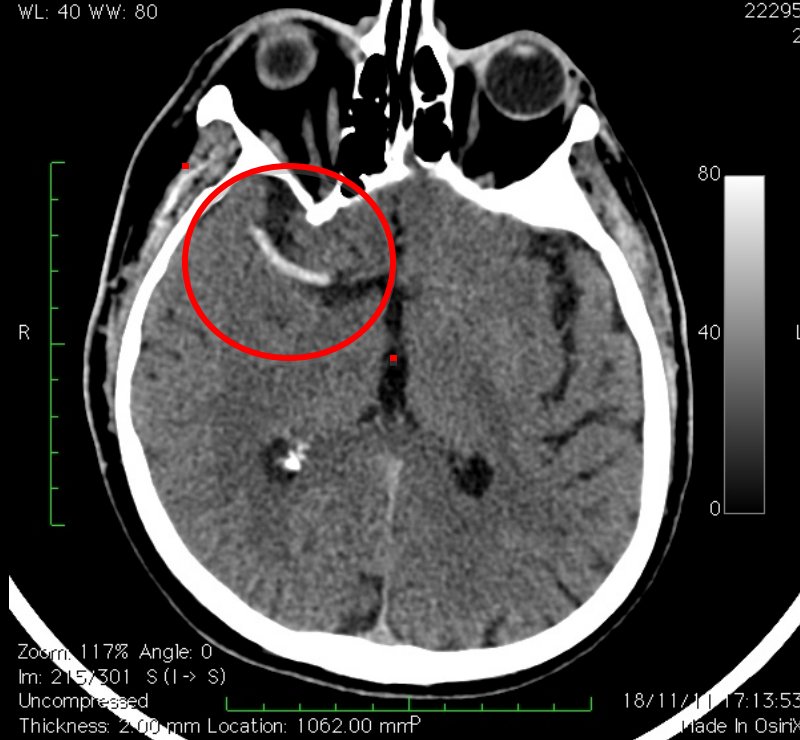


Figure 1 displays four PET brain scans arranged in a 2x2 grid. The top row shows perfusion images (P) for a patient with a 1073.2 mm SW 5.00 mm. The bottom row shows metabolism images (P) for the same patient. The left column shows the 1073.2 mm SW 5.00 mm, and the right column shows the 1073.2 mm SW 5.00 mm. The color scales indicate perfusion (ml/100g/min) and metabolism (sec).

R ² ROI	CBV (ml/100 g)	CBF (ml±.00 g/min)	MTT	TTP

Numero di slice	OSV normale (mm^2)	(%)	OSV idatro (mm^2)	(%)	Indice
1	935.2	7.9	113.9	1.1	0.89
2	1123.3	9.1	6.0	0.0	1.00
3	2150.6	17.2	0.0	0.0	1.00
Zoom: 63% Angle: 0	3002.1	22.0	3.0	0.0	1.00
Im: 1/4	3212.6	25.4	223.0	1.6	0.93
	3265.0	22.6	479.6	3.3	0.67
Uncompressed	3366.2	22.3	614.5	4.1	0.65
	3195.6	21.3	1197.9	9.0	0.73
Position: HFS	20159.7	16.9	2636.5	2.5	0.69

ANGIOTAC

TC PERFUSIONALE

VERDE: PENOMBRA

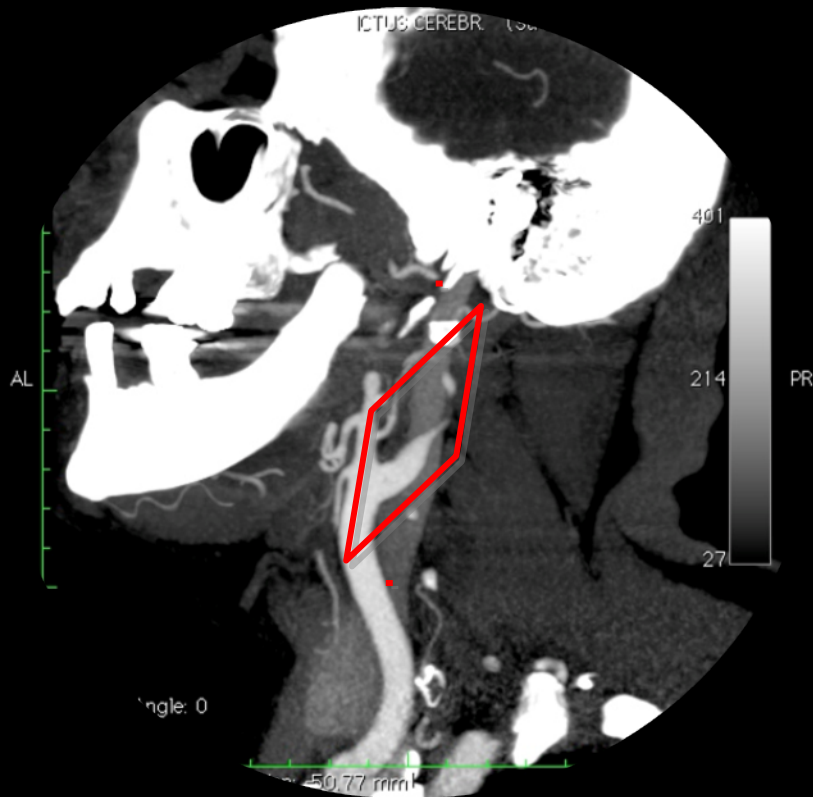
ROSSO: CORE ISCHEMICO

7% Angle: 0

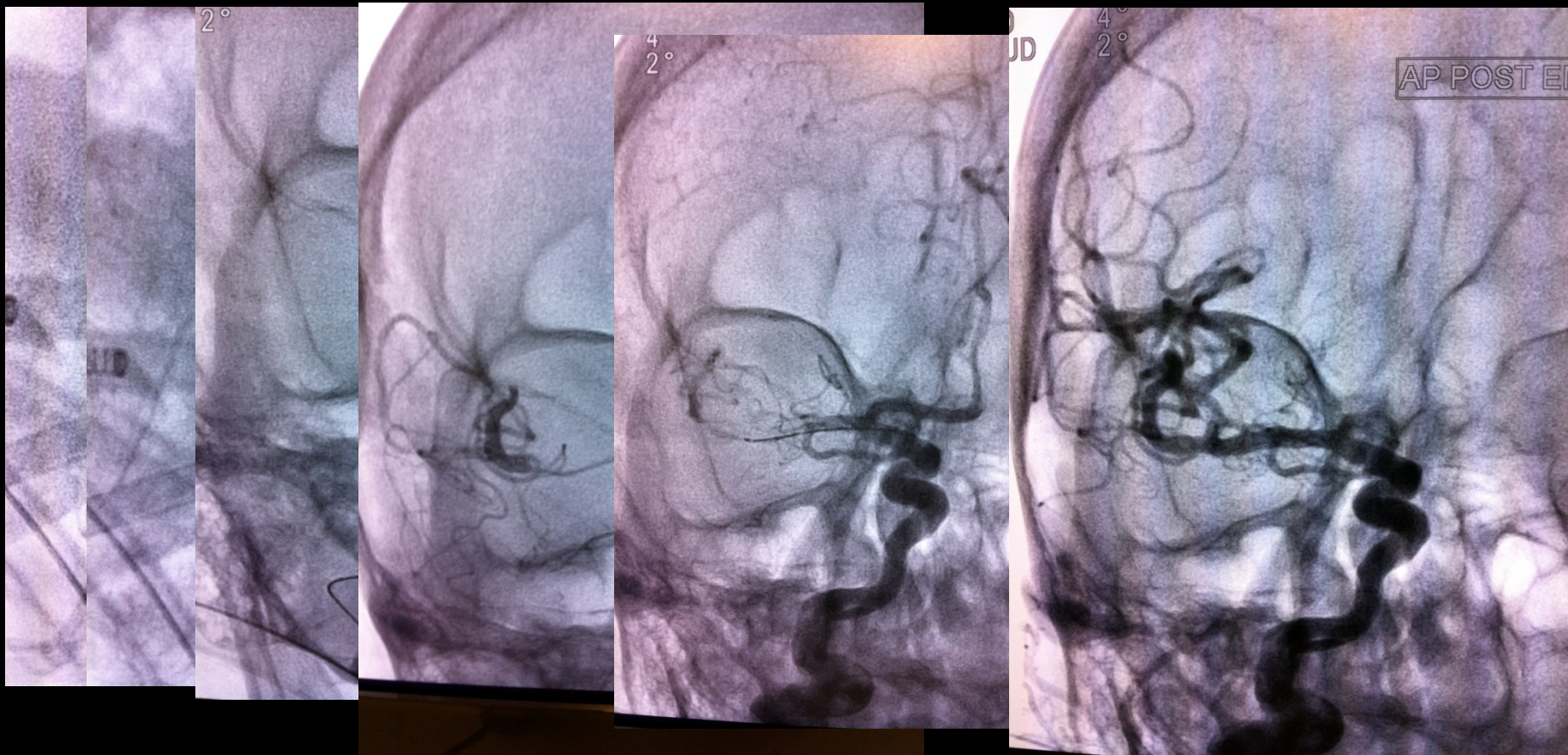
15.87 mm Location: 1059.27 mm

18/11/11 17:22:42
Made In Osint

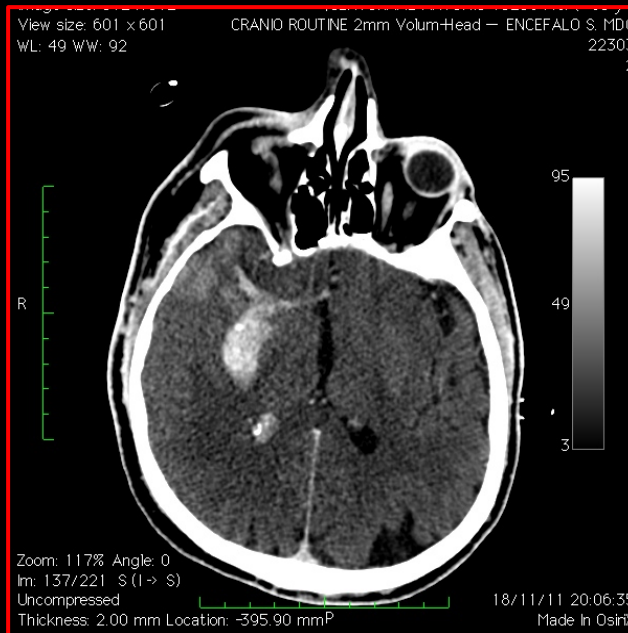
OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO



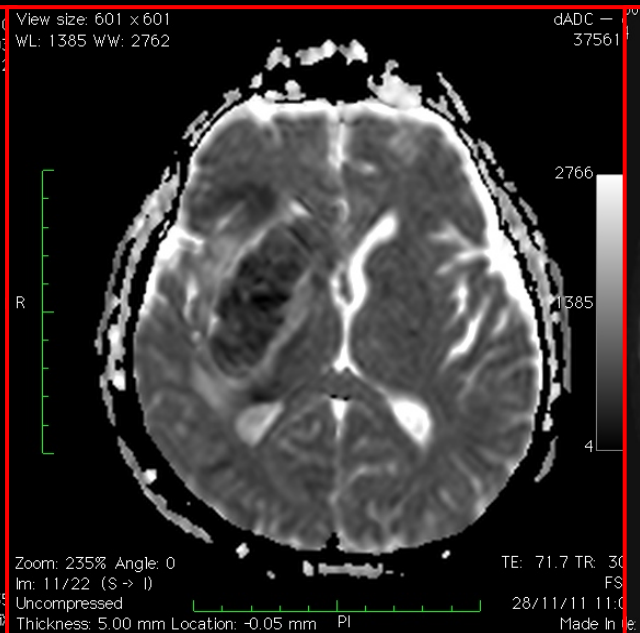
OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO - PROCEDURA



OCCLUSIONE CAROTIDE INTERNA E TROMBOSI SIFONE CAROTIDEO - CONTROLLO



TAC



RM- DIFFUSIONE



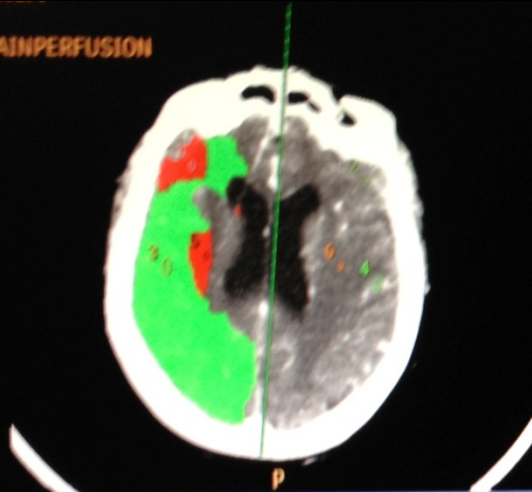
ANGIORM

A.A. F 73Y 5h 30min

8254 F/TZY

6 PERFUSIONE ENCEF BRAINPERFUSION

17,9 mm



Philips, Brilliance 64

30 Aug. 2013 9.40.30.00

80 kV

FOV 220,0 mm

SW 5,00 mm

Z 1,00

10 cm

C 40

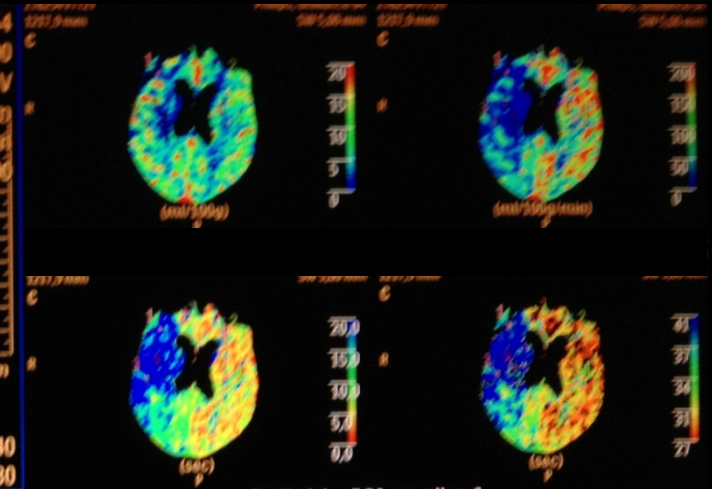
W 80

Statistiche ROI per slice 6

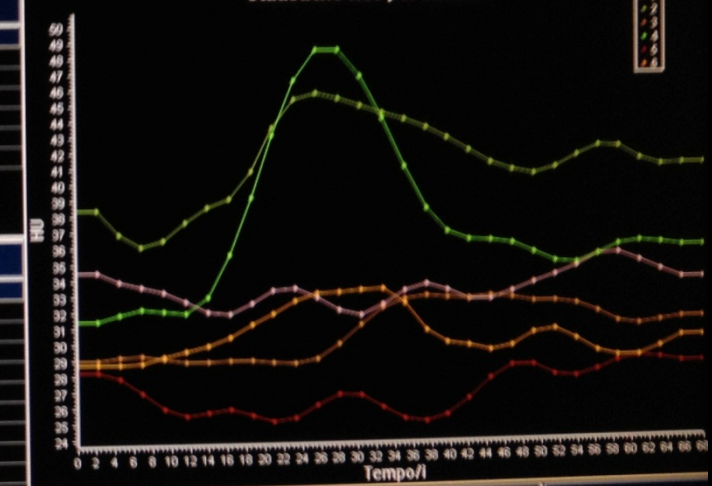
N° ROI	CBV (ml/100 g)	CBV (ml/100 g/min)	MTT	TTP
1	0,47	0,99	20,54	57,40
2	8,04	149,49	3,23	26,91
3	4,69	15,17	18,56	39,40
4	13,40	315,43	2,55	27,11
5	0,30	0,53	34,09	62,54
6	3,54	41,74	5,09	30,02

MTT aumentata Statistiche area

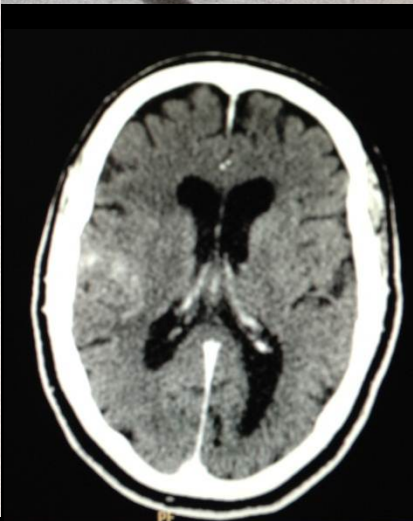
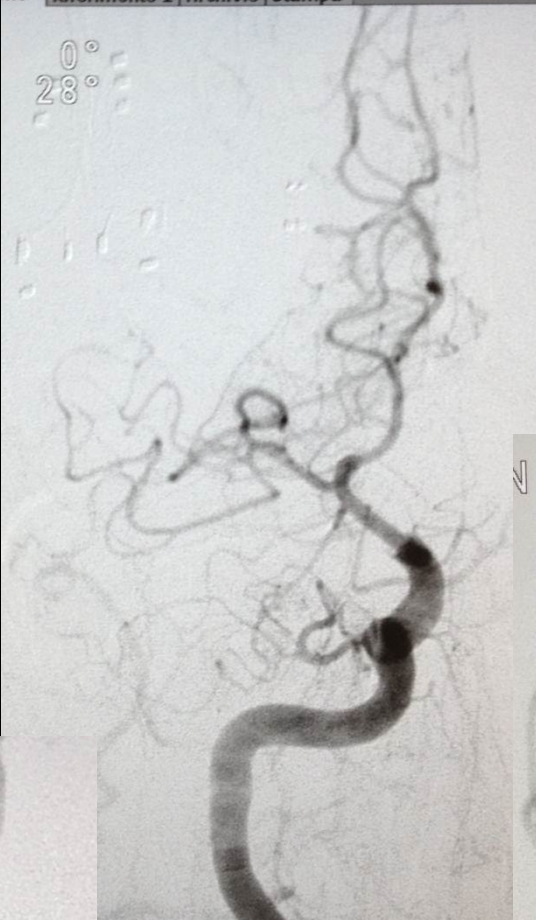
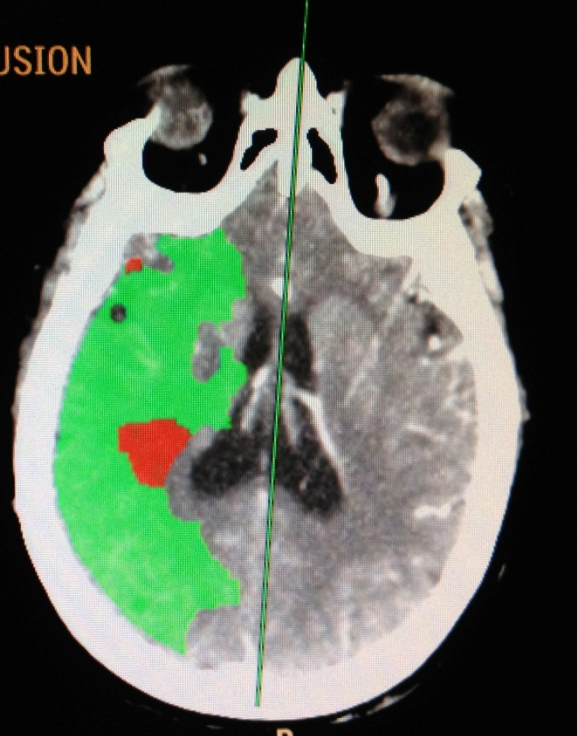
Numero di slice	CBV normale (mm ²)	(%)	CBV ridotto (mm ²)	(%)	Indice
1	3000,0	31,5	11,1	0,1	1,00
2	2939,3	30,5	0,0	0,0	1,00
3	3013,2	30,2	127,0	1,3	0,96
4	3240,6	32,4	249,6	2,5	0,93
5	2079,5	22,2	375,2	3,0	0,88
6	3091,5	31,4	470,4	4,8	0,87
7	3335,2	33,4	65,7	0,7	0,98
8	3460,1	34,2	1299,8	1,6	0,95



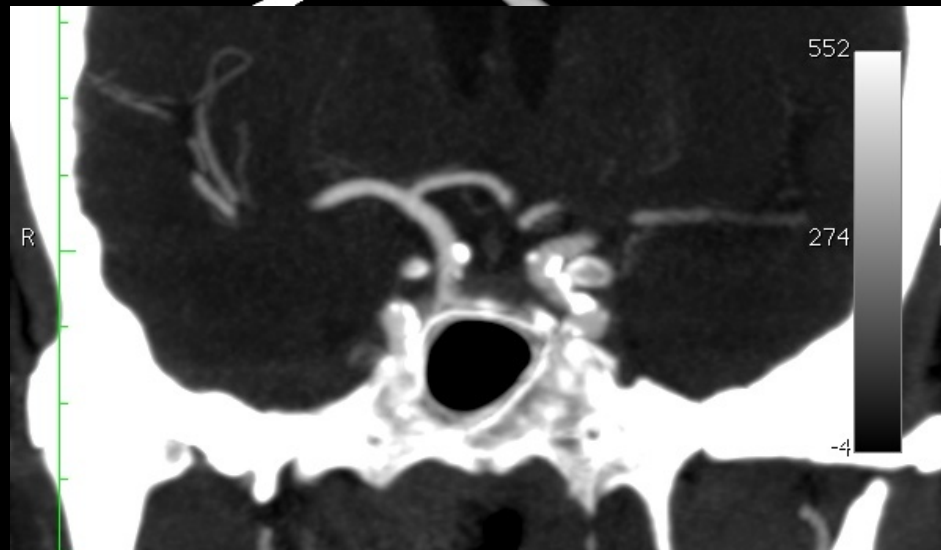
Statistiche ROI per slice 6



RFUSION



C.F. m 56Y 4h 30min



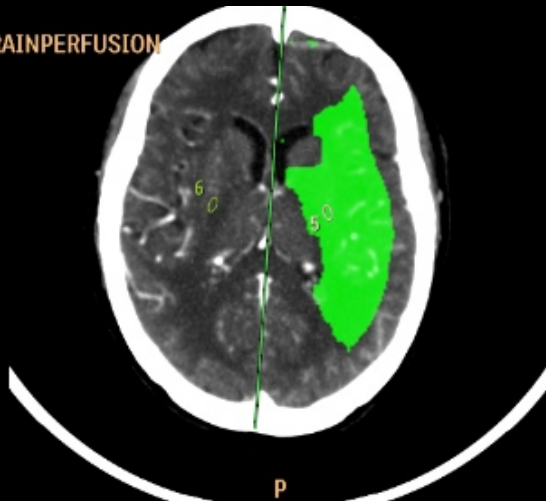
NIHSS 30

P-CT MULTI MODAL ANALYSIS

1714N-BS-1/10V
View Size: 1043 x 601
0-5 PERFUSIONE ENCEF BRAINPERFUSION
WL: 127 WW: 255
50,9 mm

C

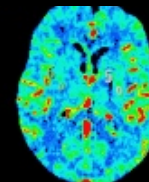
R



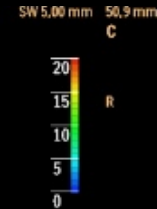
Philips, Brilliance 64
16 Nov, 2011 17.11.45.00
80 kV
FOV 220,0 mm
SW 5,00 mm
Z 1,00

C 81
W 127

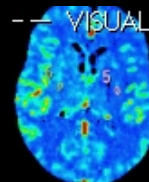
50,9 mm
C
R
S
1544073,0,1127
50,9 mm
C
R
C



(ml/100g)



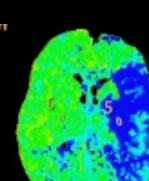
(ml/100g/min)



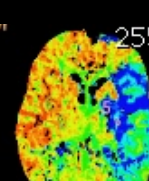
(ml/100g/min)

22218
2046
15
100
50
0

1544073,0,1127
50,9 mm
C
R
C



(sec)



(sec)

255
41
37
34
31
27
0

Statistiche ROI per slice 5

N° ROI	CBV (ml/100 g)	CBF (ml/100 g/min)	MTT	TTP
5	5,63	16,96	19,92	37,52
6	4,77	31,37	9,12	28,26

MTT aumentata Statistiche area

Numero di slice	CBV normale (mm ³ /2)	(%)	CBV ridotto (mm ³ /2)	(%)	Indice
1	1002,2	9,5	1,5	0,0	1,00
2	1446,0	12,1	0,0	0,0	1,00
3	1793,1	14,2	0,0	0,0	1,00
4	2194,9	16,2	0,0	0,0	1,00
5	2611,4	19,2	0,0	0,0	1,00
6	2530,2	19,1	0,9	0,1	1,00
7	2604,6	20,0	0,0	0,0	1,00
8	2222,2	17,6	0,0	0,0	1,00
9	16464,7	16,3	10,3	0,0	1,00

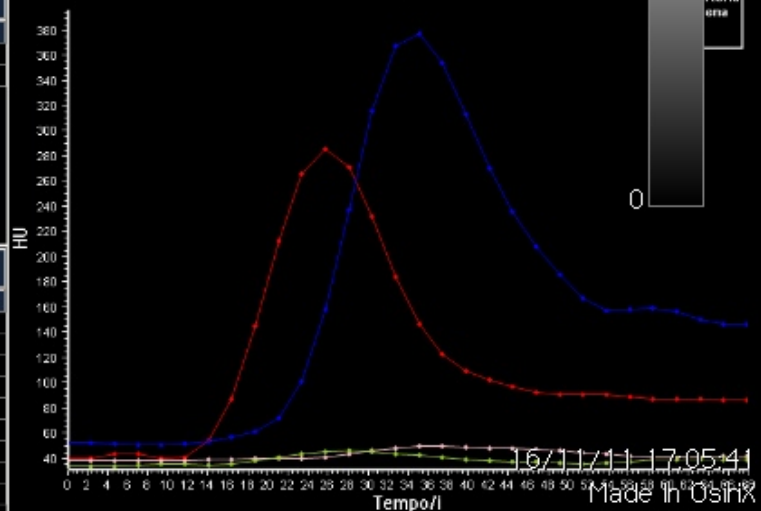
Zoom: 63% Angle: 0

Im: 1/1

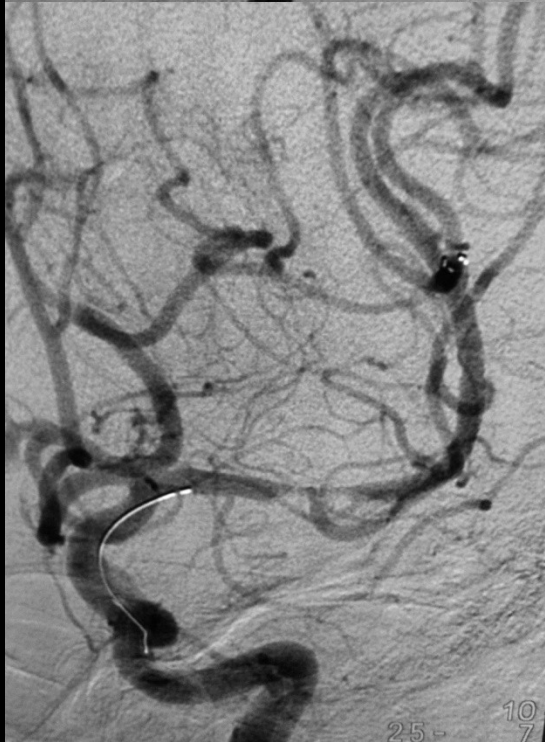
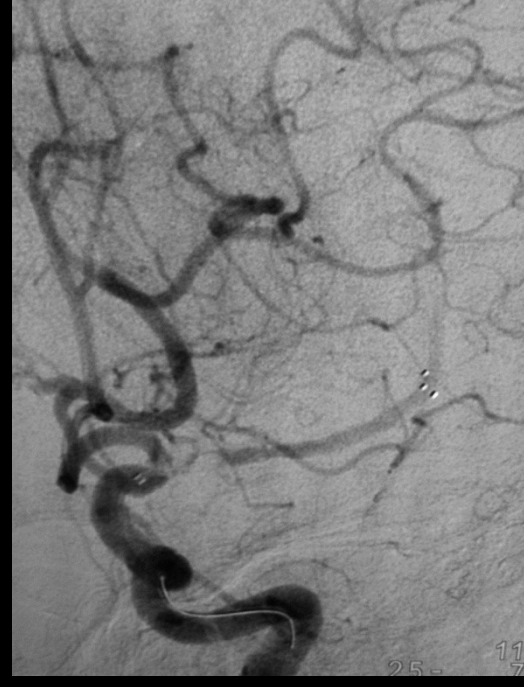
Uncompressed

Position: HFS

Statistiche ROI per slice 5



Teramo
16/11/11 17:05:41
Made in Osirix



512 x 512
31 x 601
80

SETTIMI MARIA ASSUNTA 15177 RIANIMAZIONE (79 y)
CRANIO ROUTINE 2mm Volum-Head — ENCEFALO S. MDC
22248
2



Angle: 0
(I → S)

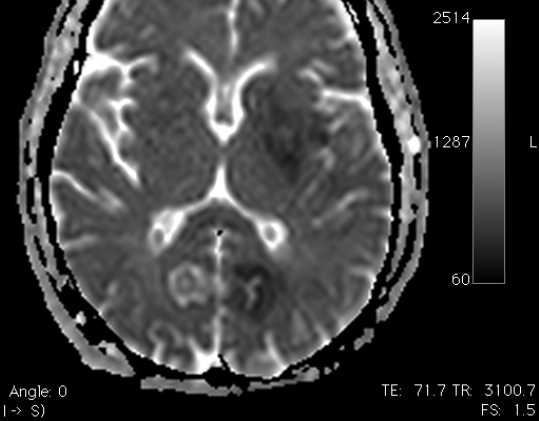
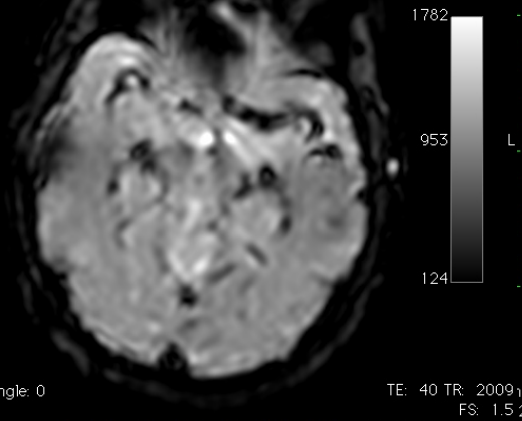
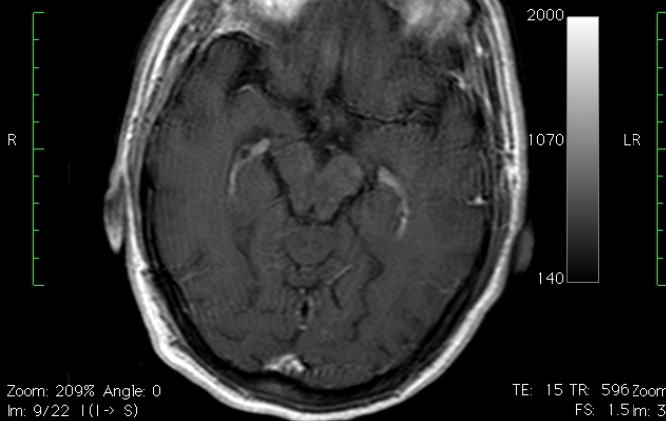
00 mm Location: 51.10 mm P 17/11/11 12:31:14
Made In OsiriX

View size: 601 x 601
WL: 1070 WW: 1860

T1W_SE_MDC CLEAR — T1W_SE_MDCView size: 601 x 601
374697776 WL: 953 WW: 1657
1001

Perfusione_2D SENSE — Perfusione_2D
374697776 WL: 1287 WW: 2454
901

374697776
402



Zoom: 209% Angle: 0
Im: 9/22 (I -> S)
Uncompressed
Thickness: 5.00 mm Location: -0.18 mm PI

TE: 15 TR: 596 Zoom: 313% Angle: 0
FS: 1.5 Im: 348/880
17/11/11 19:05:33 Uncompressed
Made In Osirix Thickness: 5.00 mm Location: -0.12 mm PI

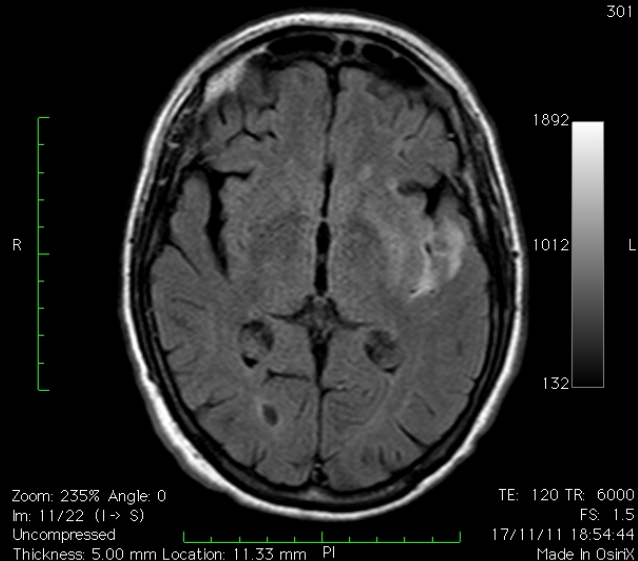
TE: 40 TR: 2009.1 235% Angle: 0
FS: 1.5 2/22 (I -> S)
17/11/11 19:03:34 Uncompressed
Made In Osirix Thickness: 5.00 mm Location: 17.07 mm PI

TE: 71.7 TR: 3100.7
FS: 1.5
17/11/11 18:56:21
Made In Osirix

View size: 601 x 601
WL: 1012 WW: 1760

T2W_FLAIR CLEAR — T2W_FLAIR
374697776
301

WL: 40 WW: 80
22498
2

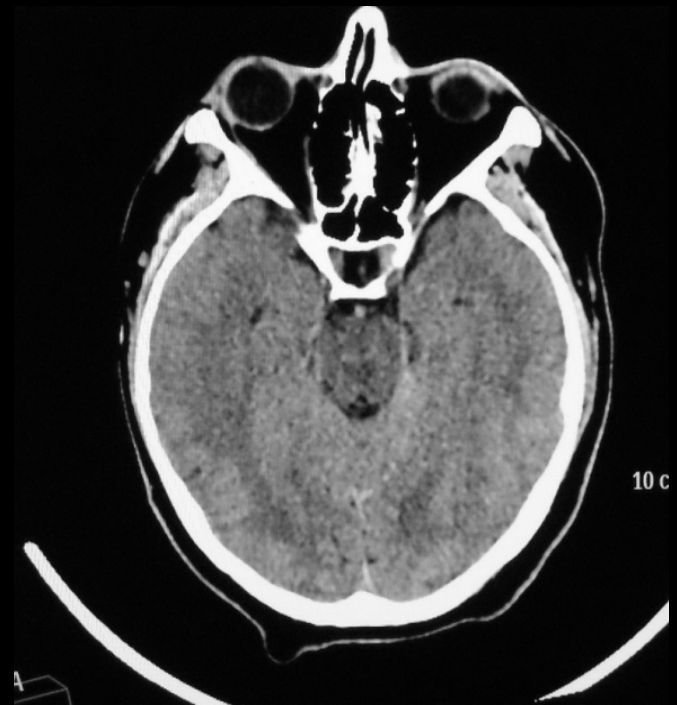
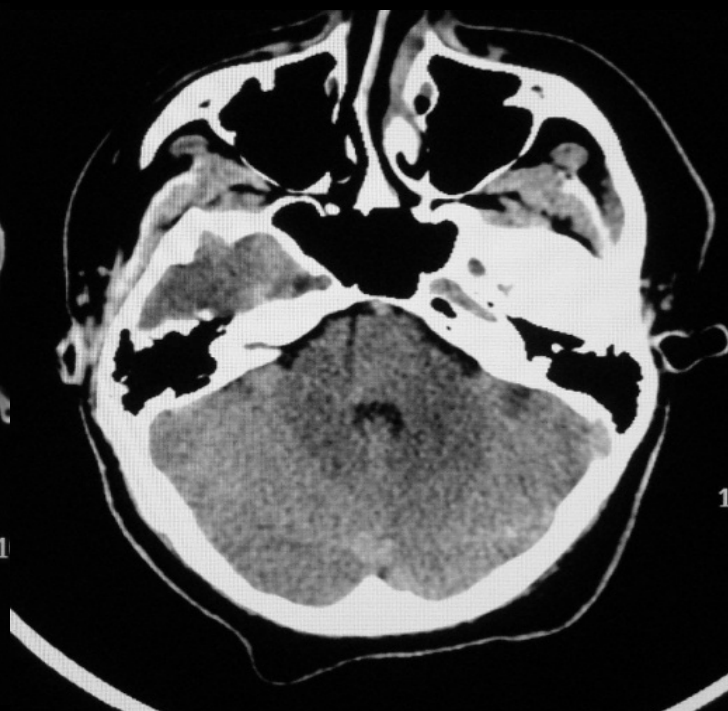


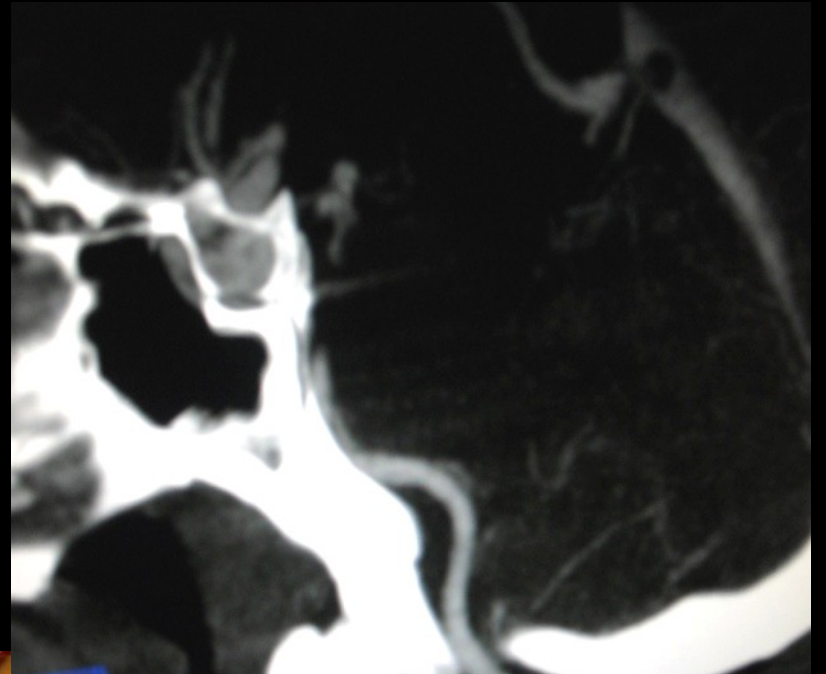
Zoom: 235% Angle: 0
Im: 11/22 (I -> S)
Uncompressed
Thickness: 5.00 mm Location: 11.33 mm PI

TE: 120 TR: 6000
FS: 1.5
17/11/11 18:54:44
Made In Osirix

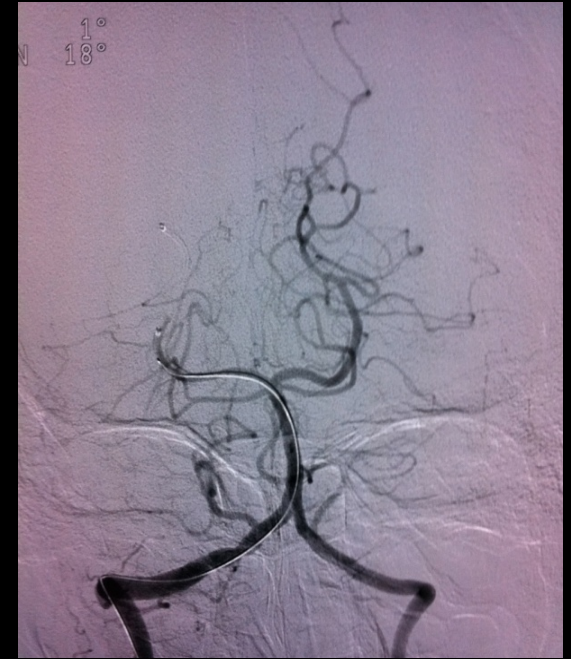
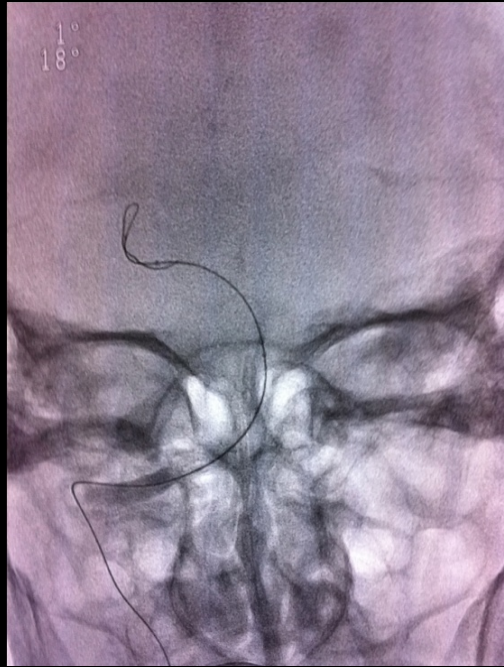
Zoom: 117% Angle: 0
Im: 77/142 (I -> S)
Uncompressed
Thickness: 2.00 mm Location: 142.20 mm P
24/11/11 17:02:13
Made In Osirix

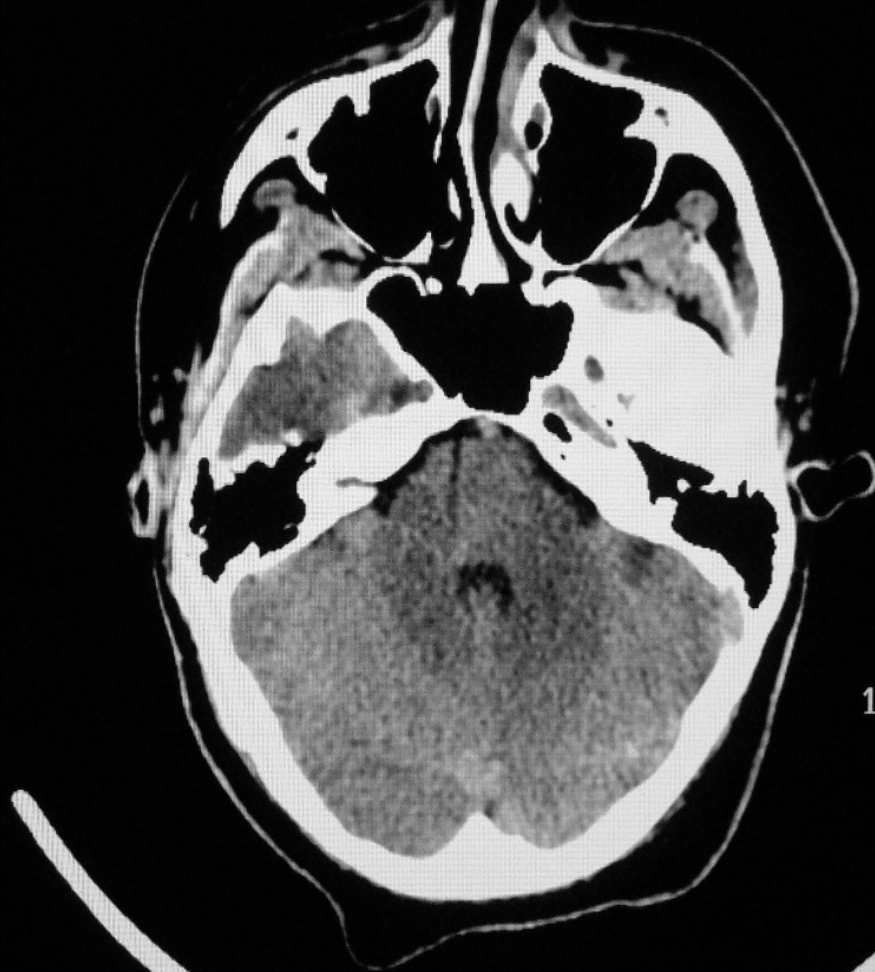
C.A. M 19 Y
Onset 4,5h
Atassia
Vertigo
NIHSS 18



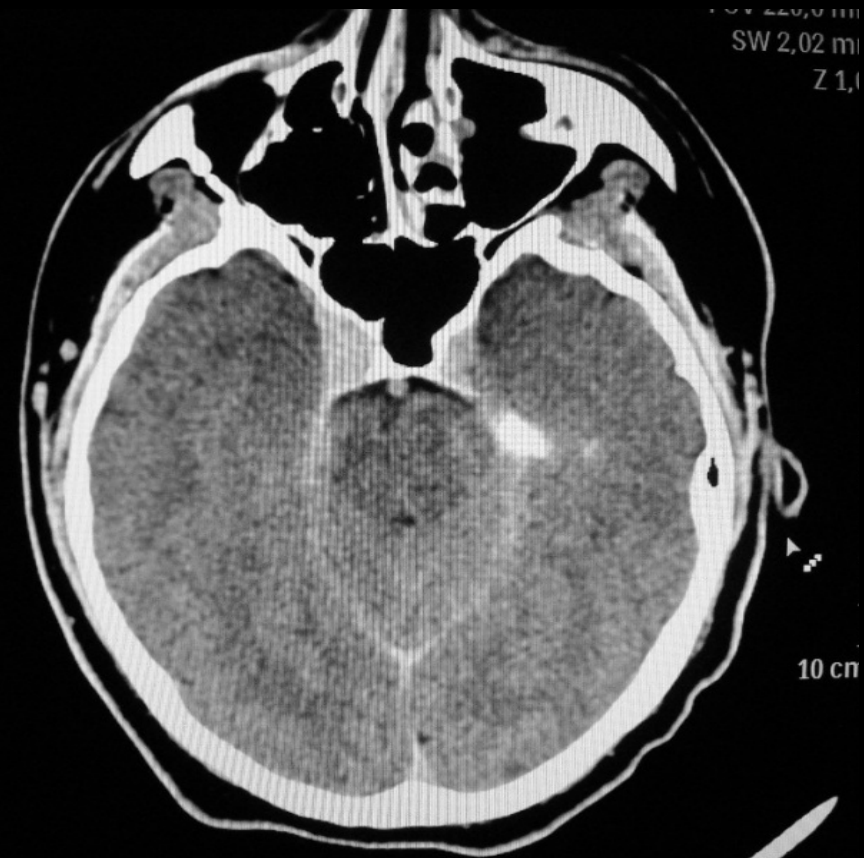


21:00 intra arterial Embolectomy + Actilyse





10 c



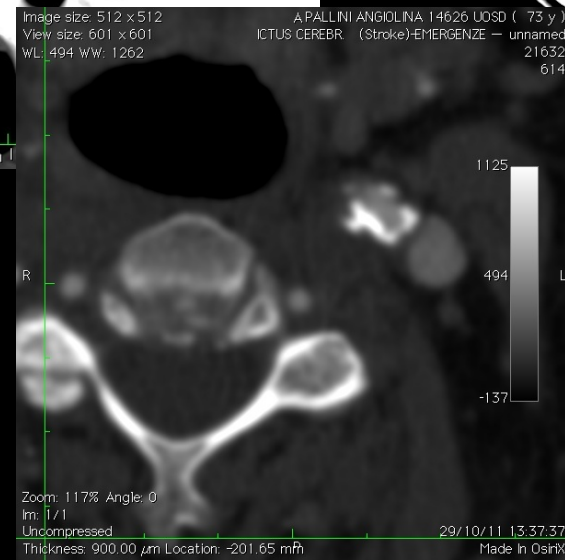
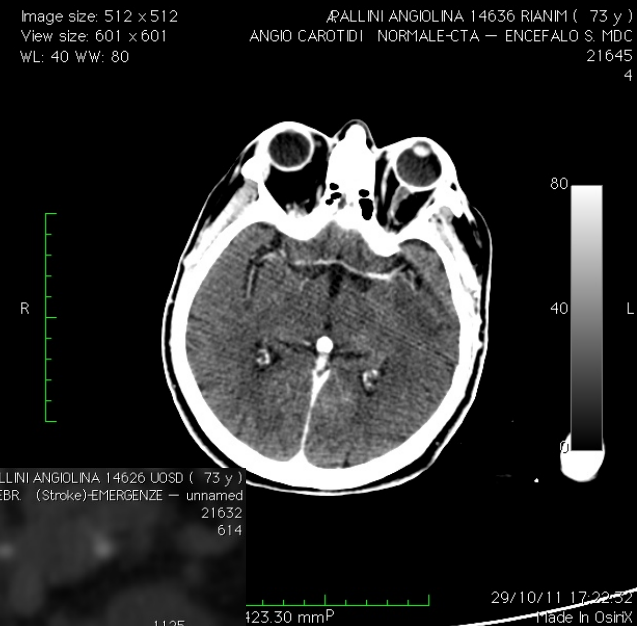
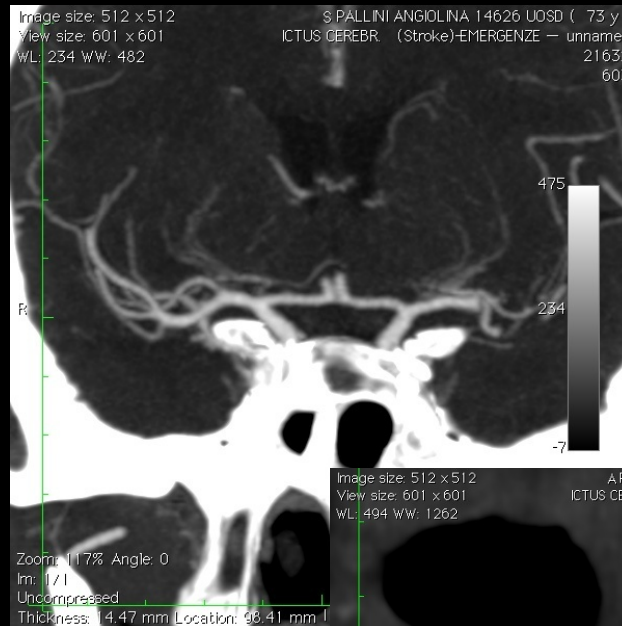
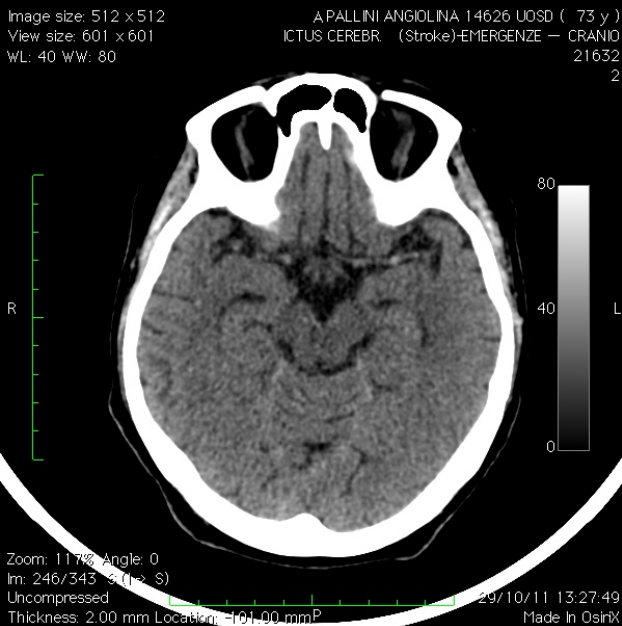
10 cn



10 cl

SW 2,02 ml
Z 1,1

(P.A.) F, 77 aa
 4h onset, Right hemiplegia, afasia,
 Diabetic, NIHSS 21

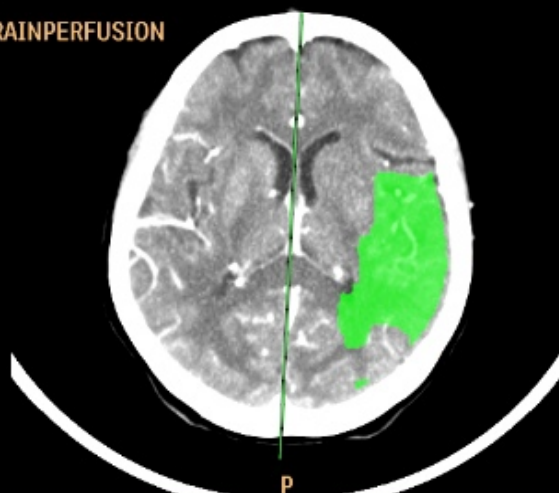


P-CT MULTI MODAL ANALYSIS

14626 UOSD F/72Y
View size: 1043 x 601
Q-R PERFUSIONE ENCEF BRAINPERFUSION
WL 127 WW 255
-78,6 mm

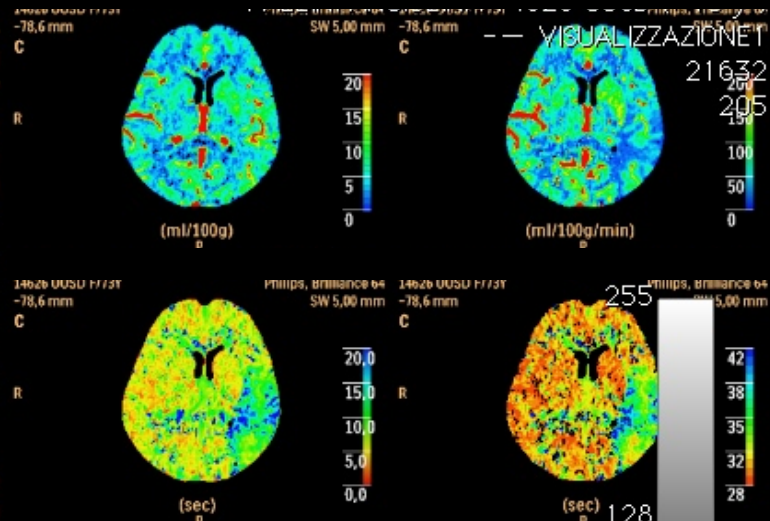
C

R



Philips, Brilliance 64
29 Oct, 2011 13.28.20.00
80 kV
FOV 220,0 mm
SW 5,00 mm
Z 1,00

C 40
W 80



Statistiche ROI per slice 8

N° ROI	CBV (ml/100 g)	CBF (ml/100 g/min)	MTT	TTP
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MTT aumentata Statistiche area

Numero di slice	CBV normale (mm ²)	(%)	CBV ridotto (mm ²)	(%)	Indice
1	109,3	1,4	1,5	0,0	0,99
2	0,0	0,0	0,0	0,0	1,00
3	1087,8	11,0	0,0	0,0	1,00
4	729,7	6,3	0,0	0,0	1,00
5	1487,4	11,6	0,0	0,0	1,00
6	1507,3	10,8	0,0	0,0	1,00
7	2069,3	14,5	0,0	0,0	1,00
8	2061,9	15,1	0,0	0,0	1,00
9	9072,8	9,8	1,5	0,0	1,00

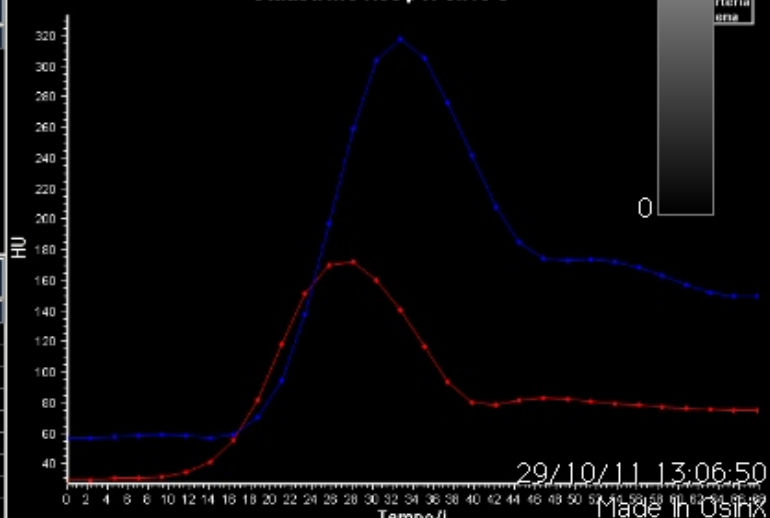
Zoom: 63% Angle: 0

Im: 1/1

Uncompressed

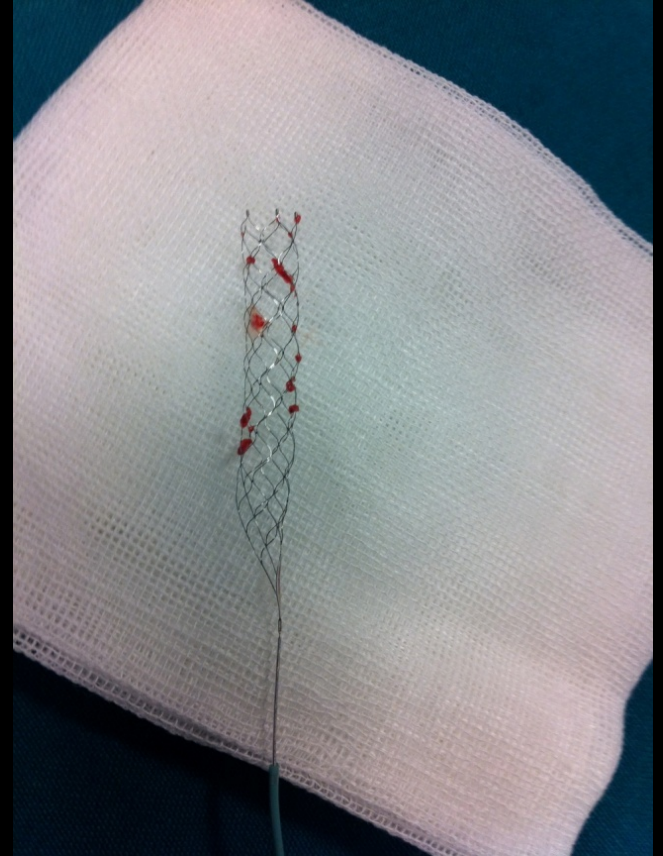
Position: HFS

Statistiche ROI per slice 8



29/10/11 13:06:50

Made in Osirix



size: 512 x 512
ze: 601 x 601
WW: 80

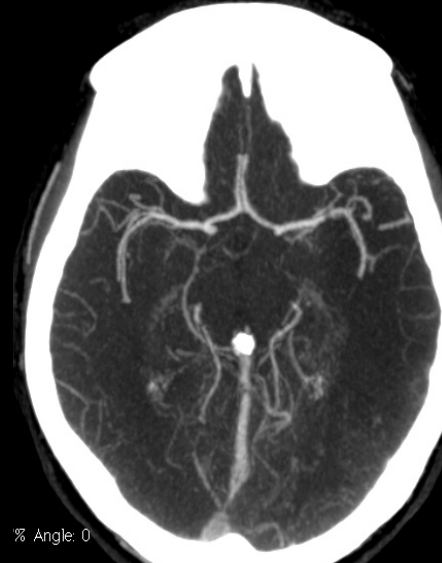
PALLINI, ANGIOLINA 16643-RIANIMAZIONE
CRANIO ROUTINE 2mm Volum-Head — ENCEPHAL
ze: 601 x 601
WW: 260



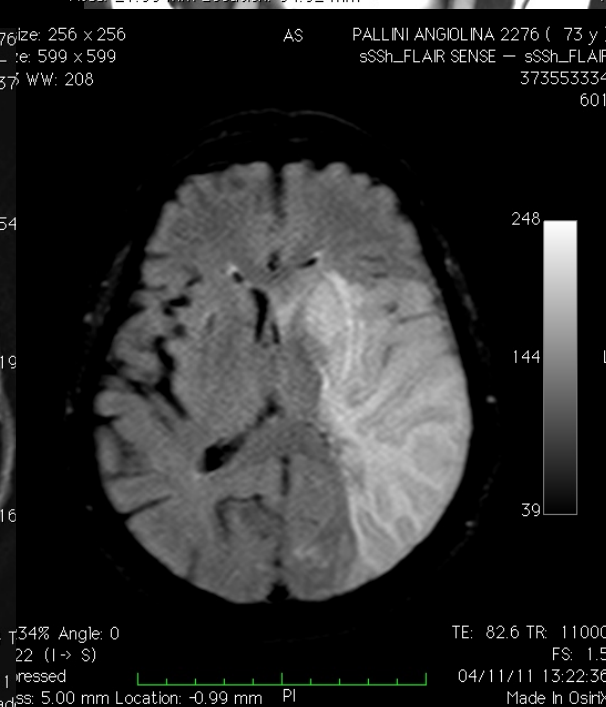
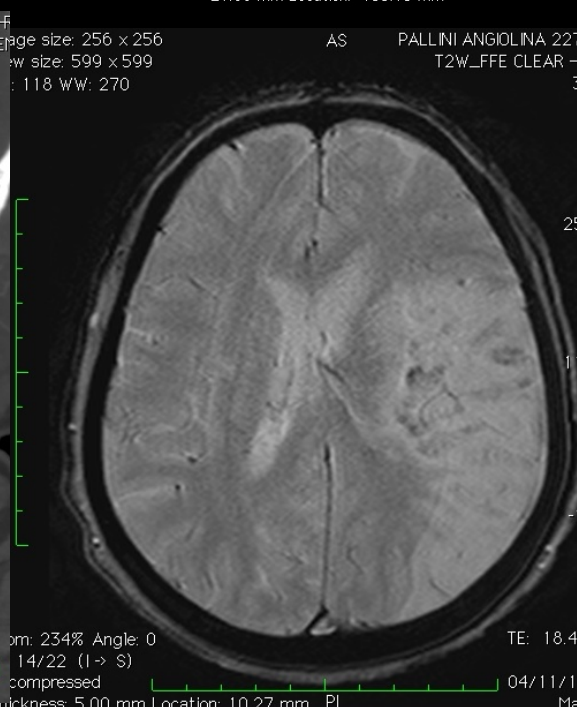
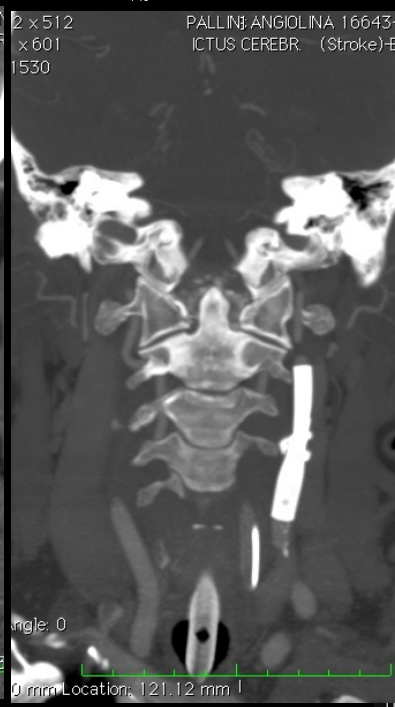
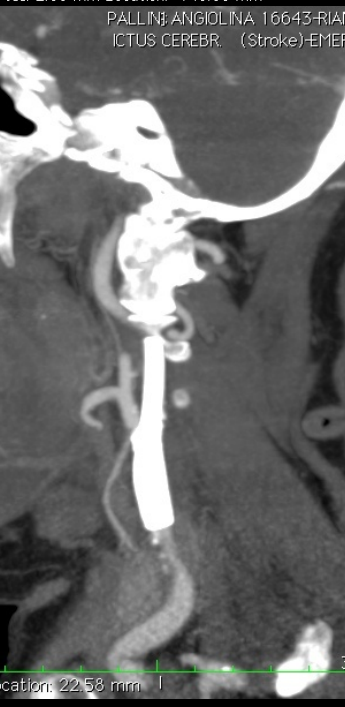
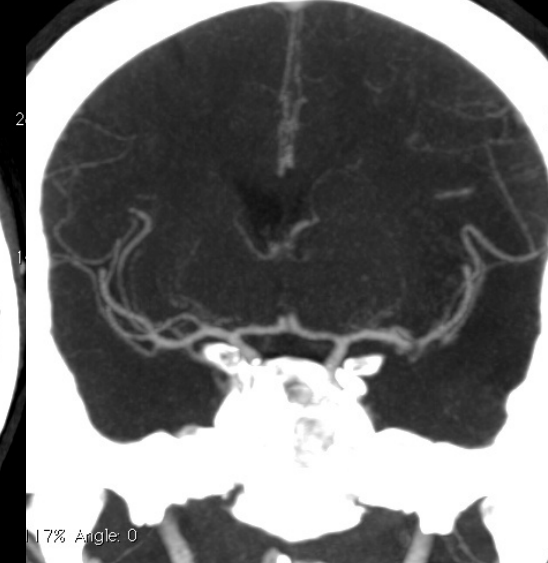
PALLINI, ANGIOLINA 16643-RIANIMAZIONE
size: 512 x 512
ze: 601 x 601
WW: 284



PALLINI, ANGIOLINA 16643-RIANIMAZIONE
ICTUS CEREBR. (Stroke)-EMERGENZE
size: 512 x 512
ze: 601 x 601
3 WW: 387



PALLINI, ANGIOLINA 16643-RIANIMAZIONE
ICTUS CEREBR. (Stroke)-EMERGENZE
size: 512 x 512
ze: 601 x 601
3 WW: 387



PALLINI ANGIOLINA 15379 -NEUROL (73 y)
CRANIO ROUTINE 2mm Volum+Head — ENCEFALO S. MDC
22467
2

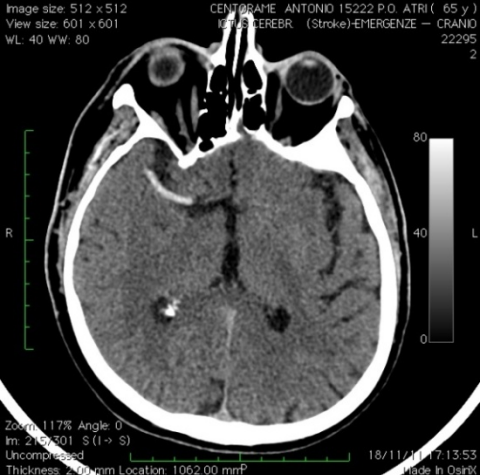


Zoom: 117% Angle: 0
Im: 73/140 (L: S)
23/11/ Uncompressed
Thickness: 2.00 mm Location: 220.90 mm P
23/11/11 18:31:29
Made In OsiriX

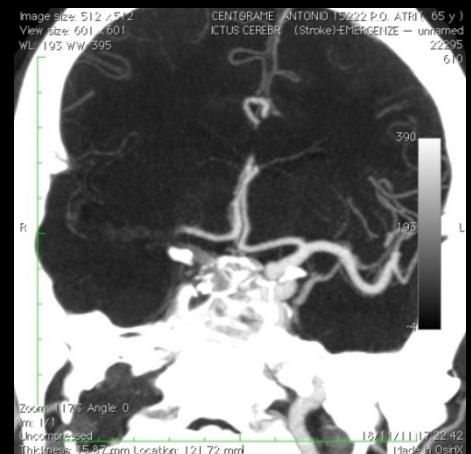
PALLINI ANGIOLINA 15379 -NEUROL (73 y)
CRANIO ROUTINE 2mm Volum+Head — ENCEFALO S. MDC
22467
2



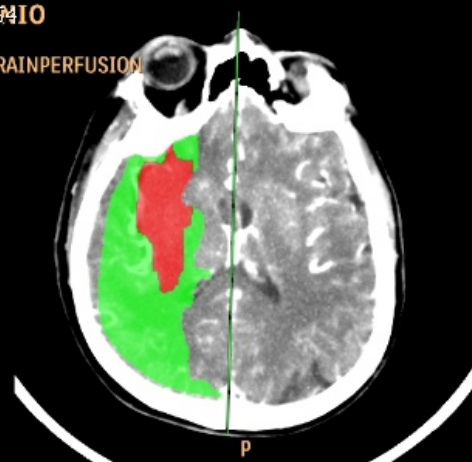
Zoom: 117% Angle: 0
Im: 108/149 S (I → S)
11/11 Uncompressed 23/11/11 18:31:30
Made I Thickness: 2.00 mm Location: 255.90 mm P Made In Osintx



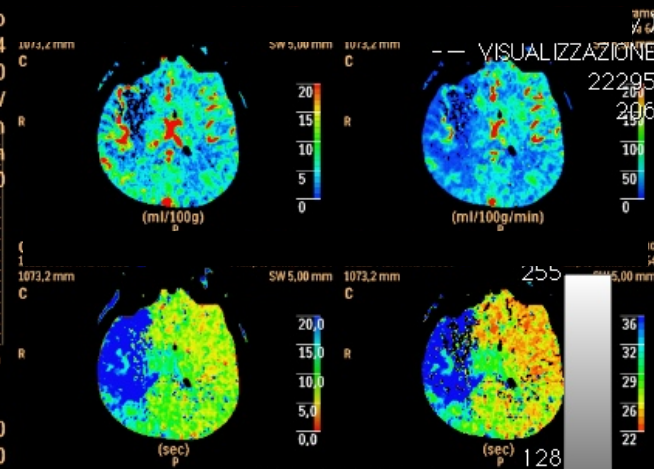
(C.A.) M, 65 y, onset 3h, Left Hemiplegia, visual loss and left deviation of ocular globes, NIHSS 25



66 ANTIO
565V
50 X 601
ENCEF BRAINPERFUSION
255



O.C. Mazzini Teramo
Philips, Brilliance 64
18 Nov, 2011 17.14.19.00
80 KV
FOV 220,0 mm
SW 5,00 mm
Z 1,00



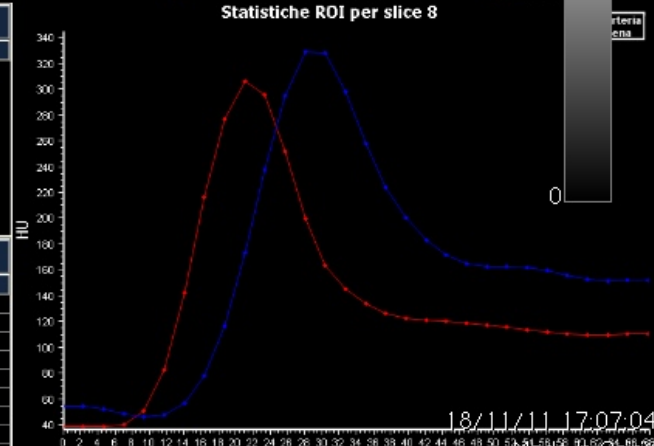
Statistiche ROI per slice 8

N° ROI	CBV (ml/100 g)	CBV (ml/100 g/min)	MTT	TTP
1	935,3	7,9	113,9	1,1
2	1123,3	9,1	0,0	0,0
3	2150,6	17,2	0,0	0,0
4	3092,1	22,9	0,0	0,0
5	3212,6	22,4	223,0	1,6
6	3265,0	22,6	478,6	3,3
7	3366,2	22,3	614,5	4,1
8	3195,6	21,3	1197,9	9,0
9	20150,7	16,9	2636,5	2,5

MTT aumentata Statistiche area

Numero di slice	CBV normale (mm ²)	(%)	CBV ridotto (mm ²)	(%)	Indice
1	935,3	7,9	113,9	1,1	0,69
2	1123,3	9,1	0,0	0,0	1,00
3	2150,6	17,2	0,0	0,0	1,00
4	3092,1	22,9	0,0	0,0	1,00
5	3212,6	22,4	223,0	1,6	0,93
6	3265,0	22,6	478,6	3,3	0,67
7	3366,2	22,3	614,5	4,1	0,65
8	3195,6	21,3	1197,9	9,0	0,73
9	20150,7	16,9	2636,5	2,5	0,60

Zoom: 63% Angle: 0
Im: 1/4
Uncompressed
Position: HES



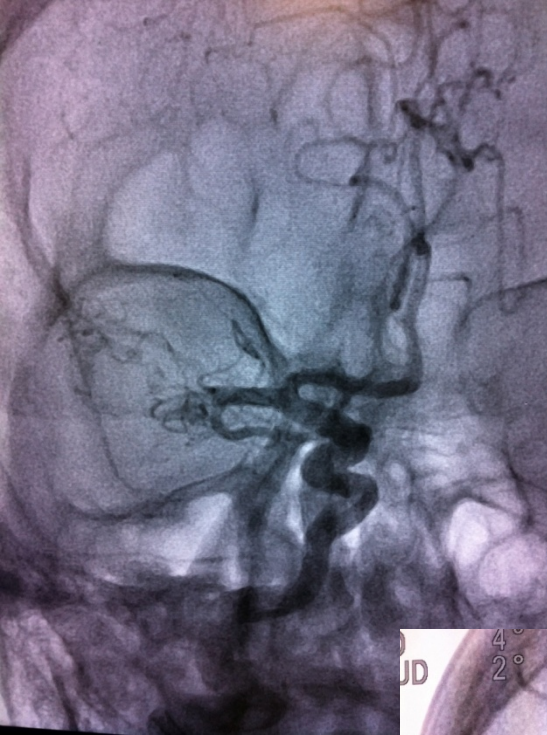


Image size: 512 x 512
View size: 601 x 601
WL: 40 WW: 80

ΔENTORAME ANTONIO 15242-ASL (65 y)
CRANIO SEQ. 2,5mm-Head - ENCEF View size: 601 x 601
2; WL: 160 WW: 278

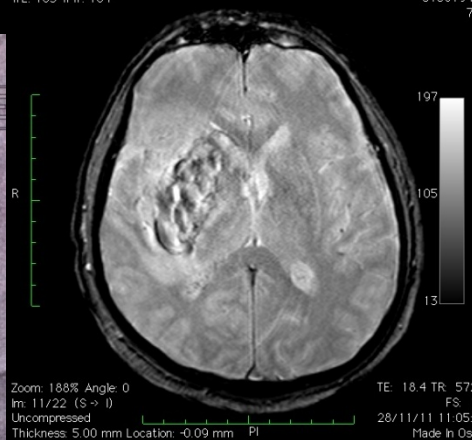
AS CENTORAME ANTONIO 2854 (65 y)
T2W_FLAIR CLEAR - T2W_FLAIR
375619430
301

Zoom: 117% Angle: 0
Im: 36/64 (I -> S)
Uncompressed
Thickness: 2.50 mm Location: -70.27 mm P

Image size: 320 x 320
View size: 601 x 601
WL: 105 WW: 184

Zoom: 235% Angle: 0
Im: 10/22 (S -> I)
Uncompressed
Thickness: 5.00 mm Location: 5.22 mm PI
Made in OsirX

AS CENTORAME ANTONIO 2854 (65 y)
T2W_FLAIR CLEAR - T2W_FLAIR
375619430
701

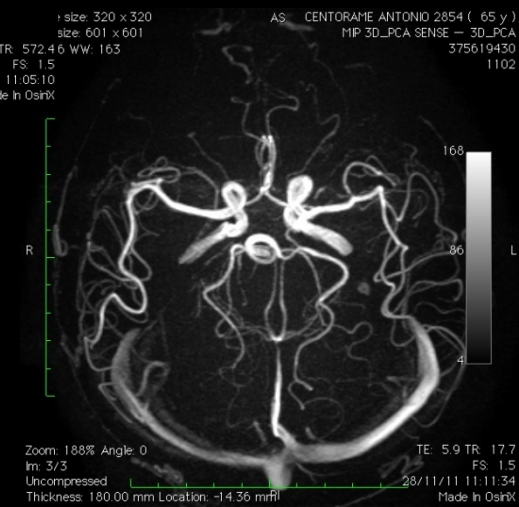


Zoom: 188% Angle: 0
Im: 11/22 (S -> I)
Uncompressed
Thickness: 5.00 mm Location: -0.09 mm PI

Image size: 320 x 320
View size: 601 x 601
WL: 163
TE: 18.4 TR: 572.46
FS: 1.5
28/11/11 11:05:10
Made in OsirX

AS CENTORAME ANTONIO 2854 (65 y)
MIP 3D_PCA SENSE - 3D_PCA
375619430
1102

mRs 3



Zoom: 188% Angle: 0
Im: 3/3
Uncompressed
Thickness: 180.00 mm Location: -14.36 mm PI

TE: 5.9 TR: 17.7
FS: 1.5
28/11/11 11:11:34
Made in OsirX

30/10/1946

Esami :

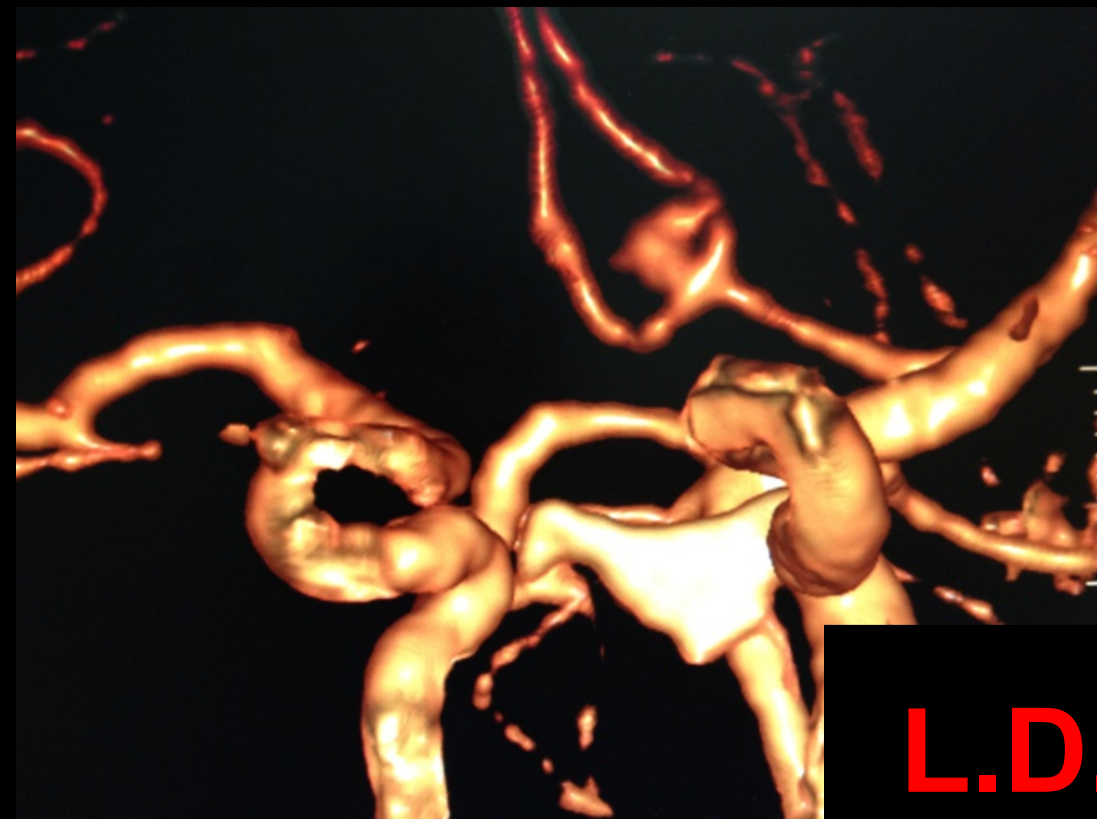
Ricostruzioni tridimensionali TC (*) 30786
ANGIO TC ESOCRANICO
ANGIO TC INTRACRANICO
TC CEREBRALE (senza e con contrasto)

P.O. TERAMO Rianimazione

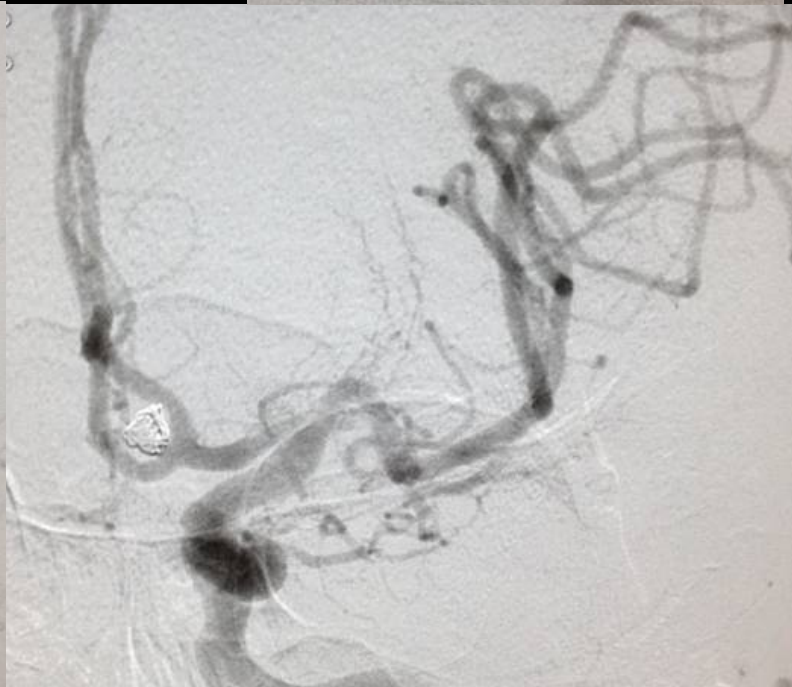
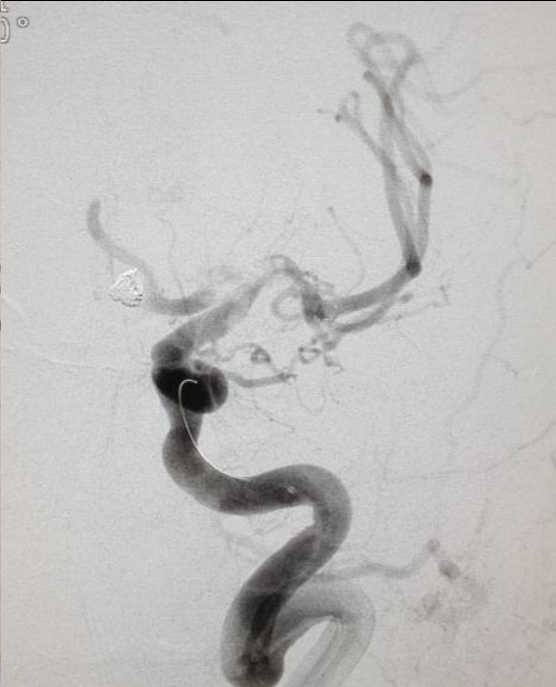
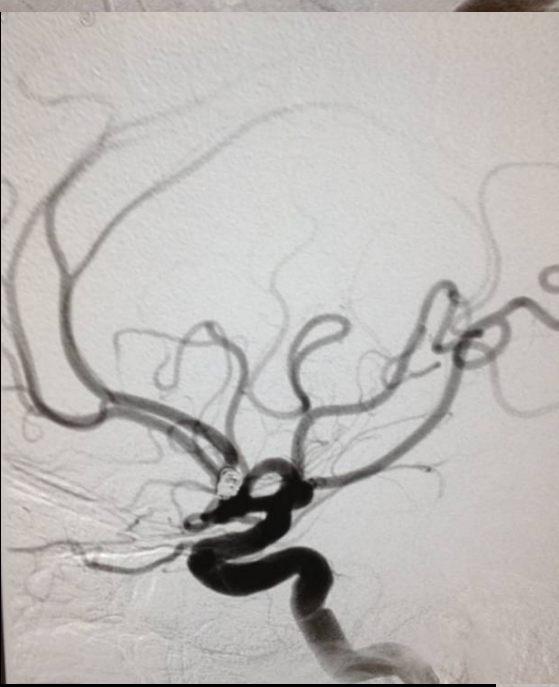
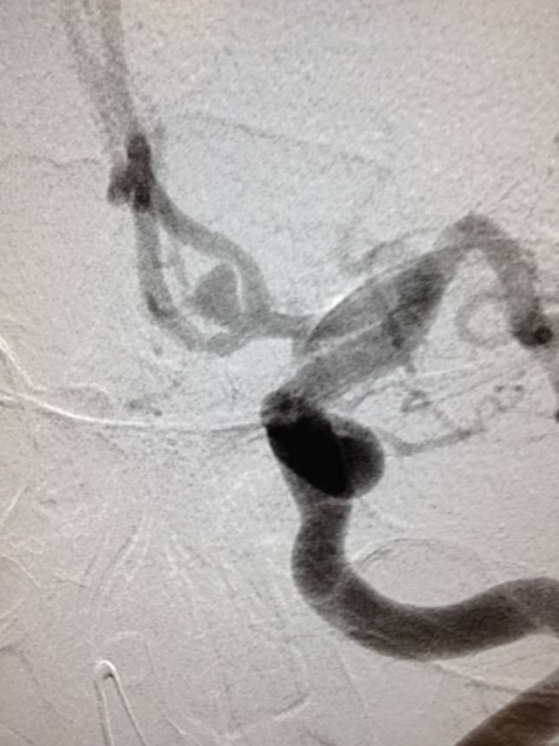
Numero Rich: **121070955**

Del 27/12/2012

URGENTE



L.D.D M 67Y ESA



**B. A. DONNA 41 ANNI
EMIPLEGIA F.B.C. SN
DEV. SGUARDO yp
TC NEG. IN ALTRA SEDE
SOSPETTO INF. ACM DX**

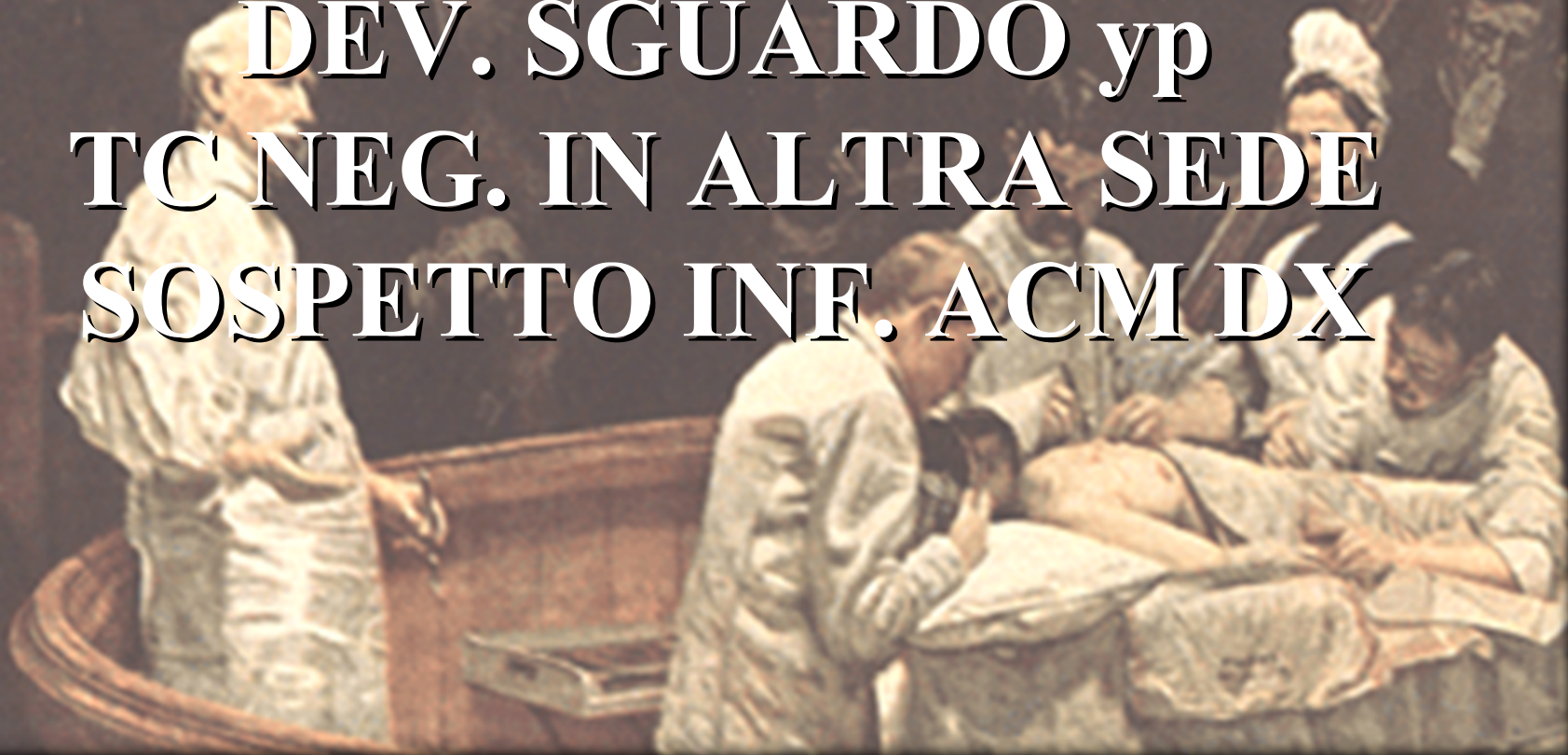
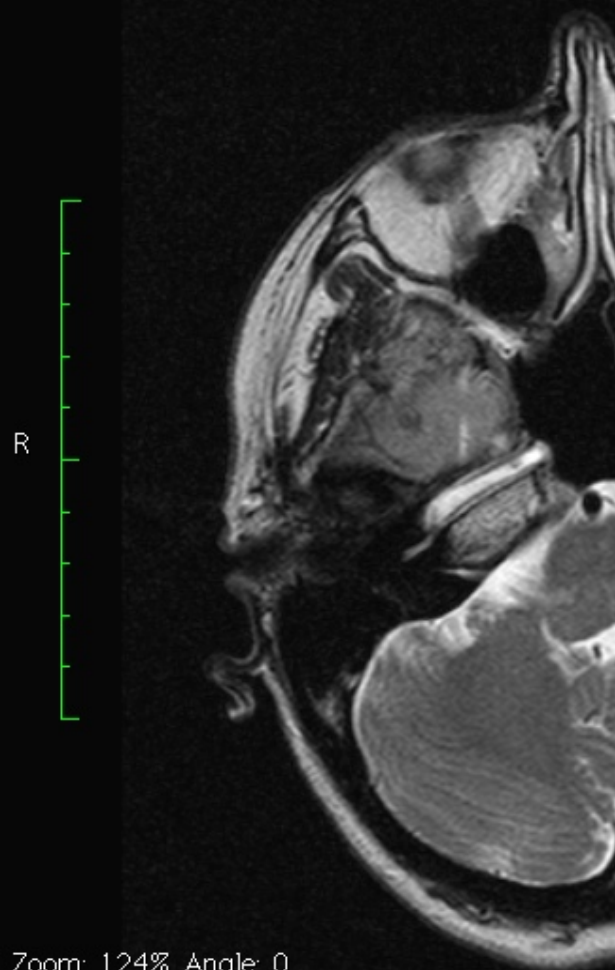


Image size: 512 x 512

View size: 635 x 635

WL: 917 WW: 1936



Zoom: 124% Angle: 0

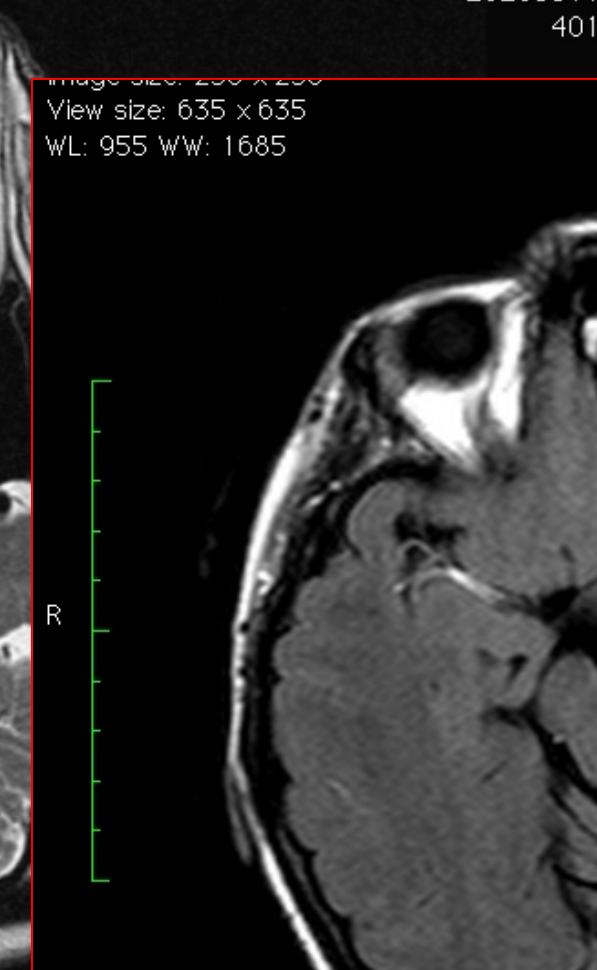
Im: 4/22 I(I → S)

Thickness: 3.00 mm Location: 7.29 mm

Image size: 512 x 512

View size: 635 x 635

WL: 917 WW: 1936



Zoom: 248% Angle: 0

Im: 9/22 I(I → S)

Thickness: 5.00 mm Location: 20.61 mm

40 y, 40 y

T2W/TSE

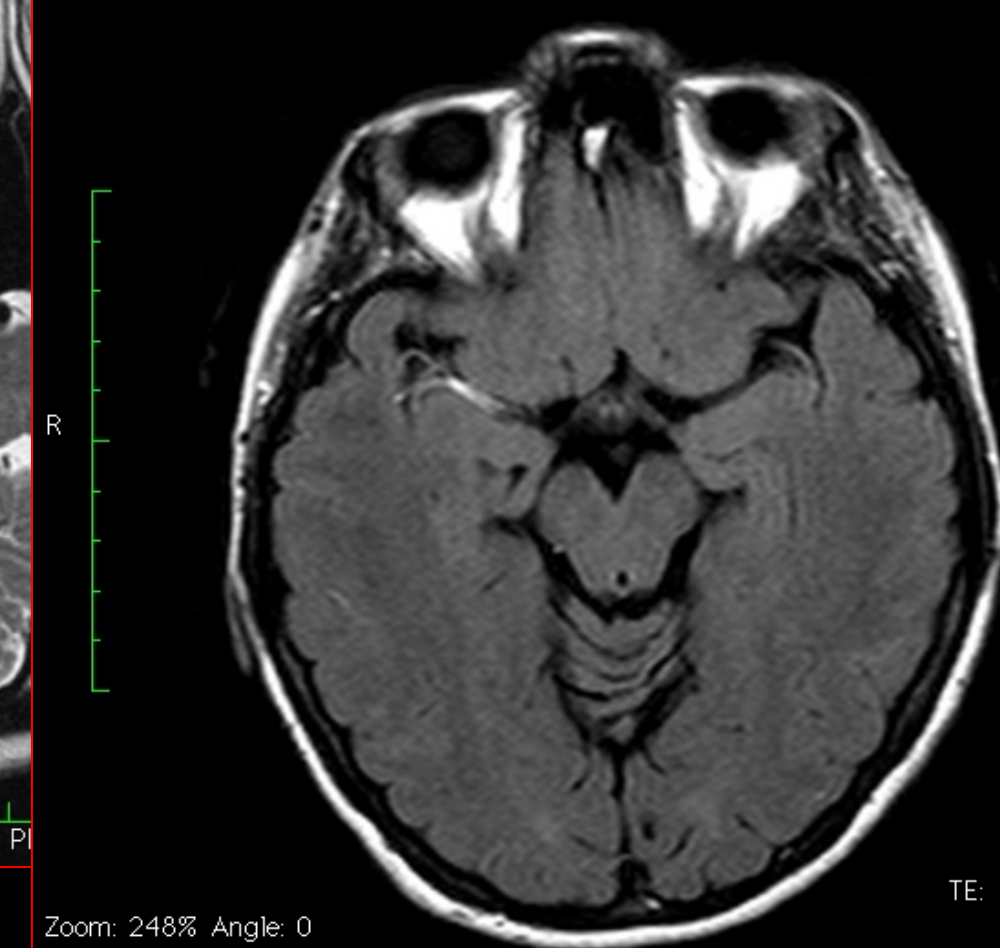
26285511

401

Image size: 512 x 512

View size: 635 x 635

WL: 955 WW: 1685



Zoom: 248% Angle: 0

Im: 9/22 I(I → S)

Thickness: 5.00 mm Location: 20.61 mm

40 y, 40 y

FLAIR-TRA

26285511

301

1798

955

112

L

TE: 100 TR: 6000

FS: 1.5

18/05/10 17.56.23

Made In OsiriX

Pixel Size: 500 x 500
WL: 369 WW: 734

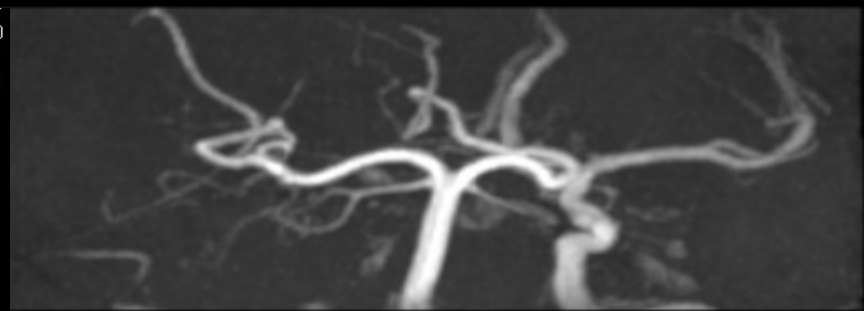
R

301/ISO
26285511
501

736
369
2

Zoom: 124% Angle: 0
Im: 1/100 1 (I -> S)
Thickness: 1.00 mm Location: -11.22 mm PI

TE: 3.4 TR: 3
FS: 1
18/05/10 18.03.4
Made in Osiri

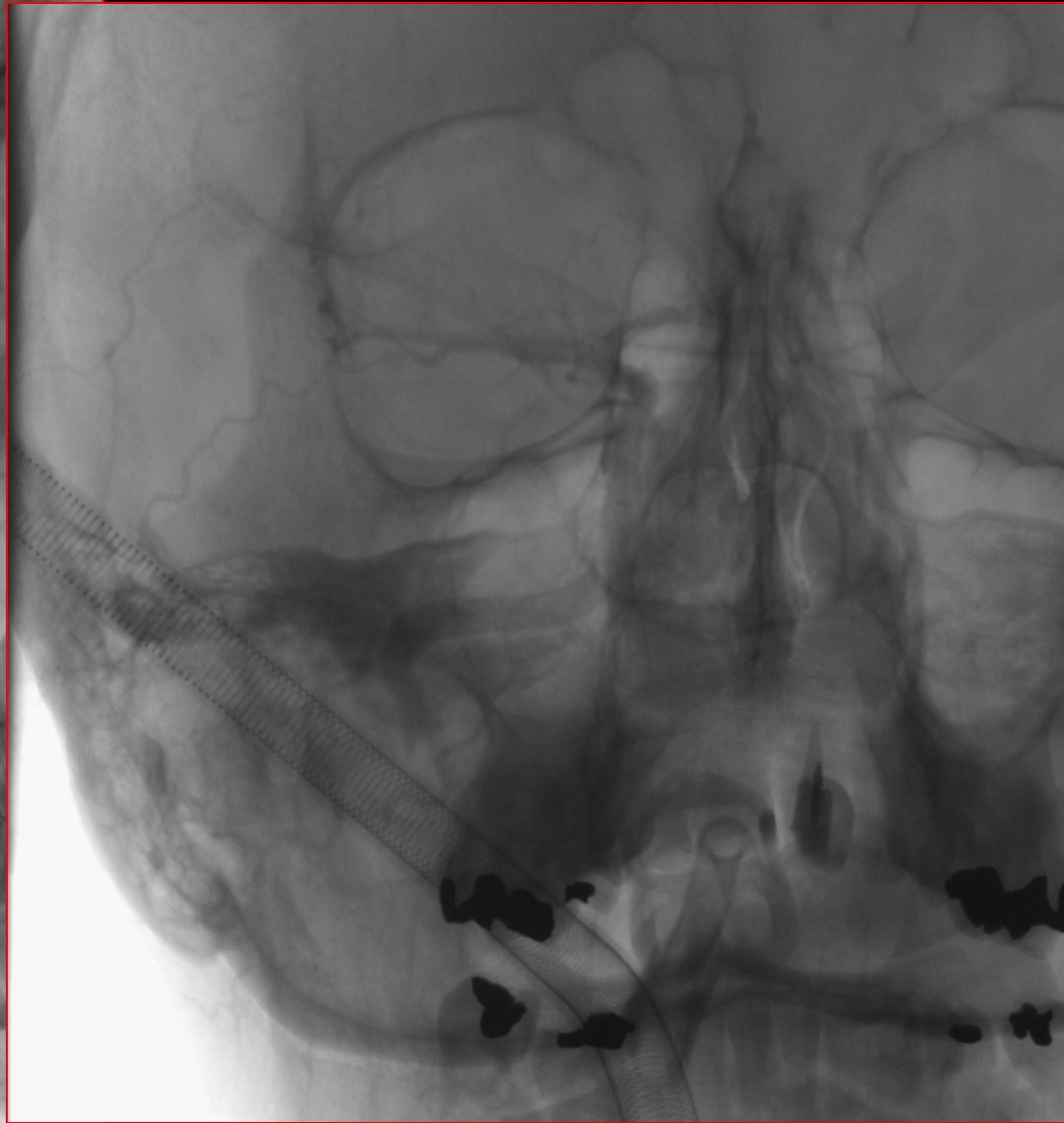


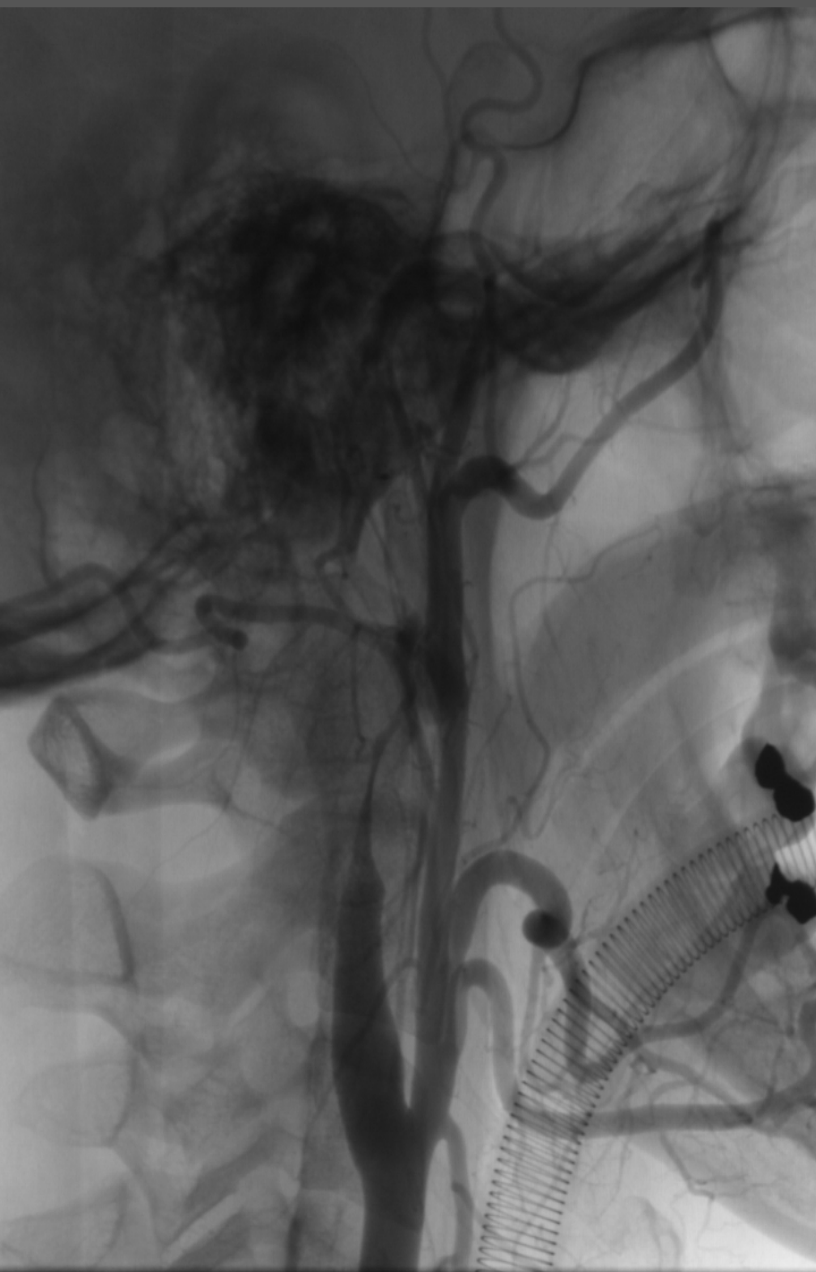
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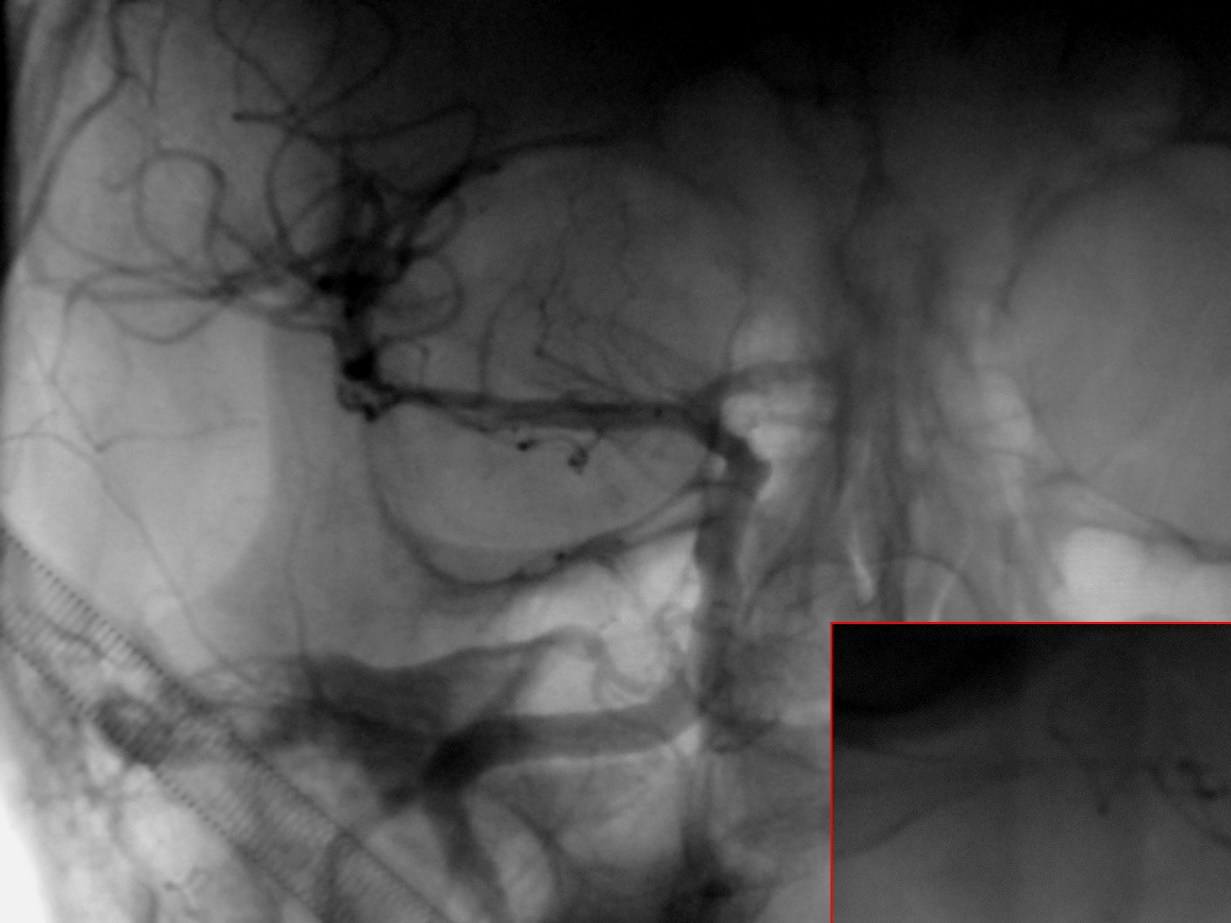


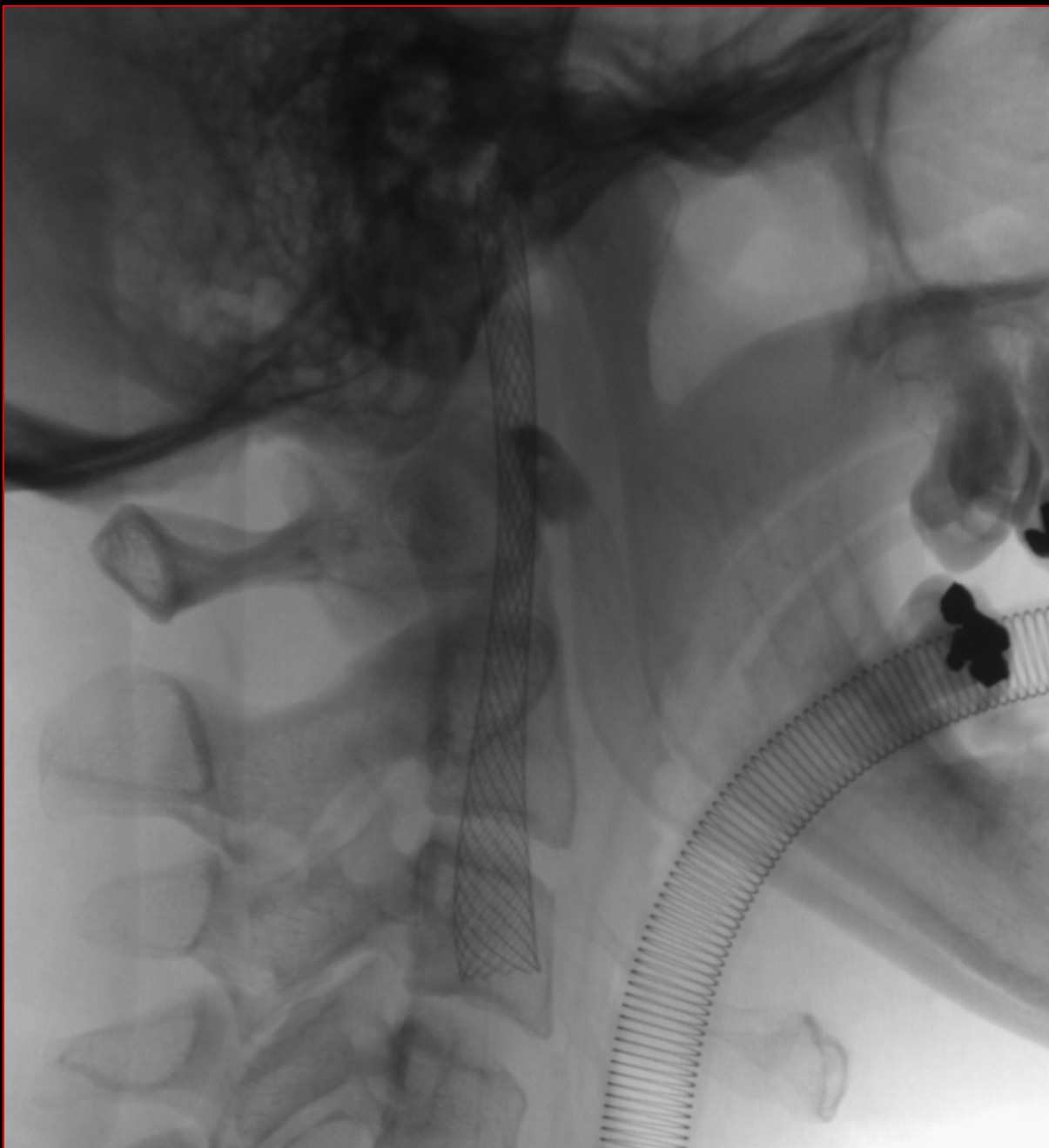
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894
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TE: 3.4





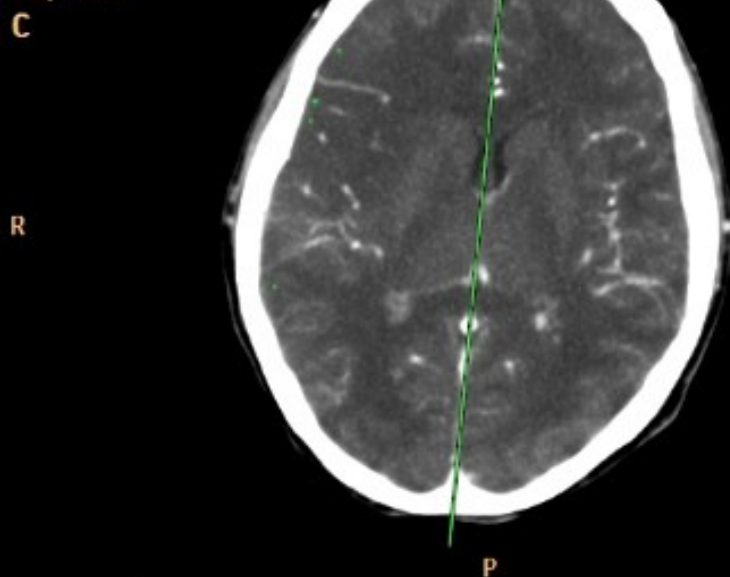




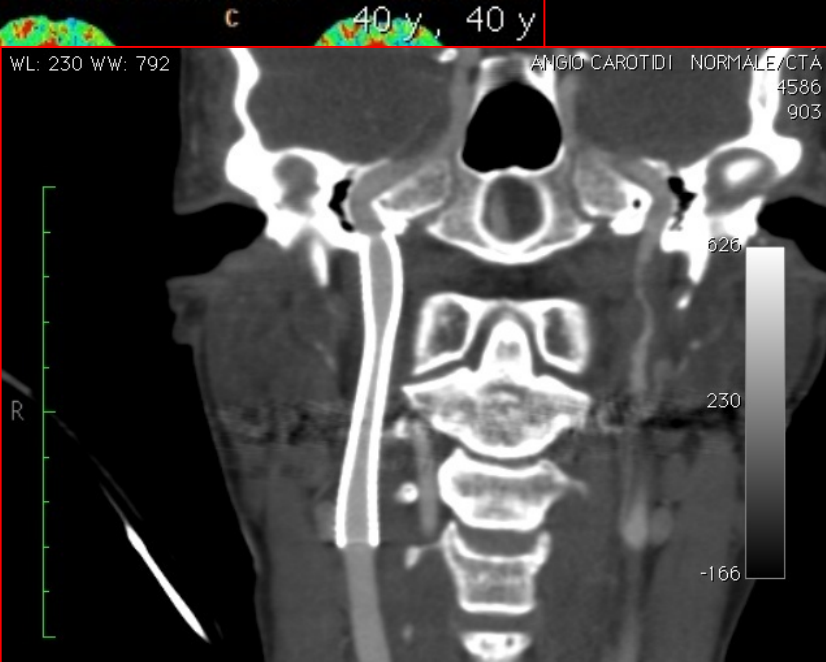




View size: 722 x 635
 WL: 127 WW: 255
 0-8 PERFUSIONE ENCEFALICA/PERFUSIO

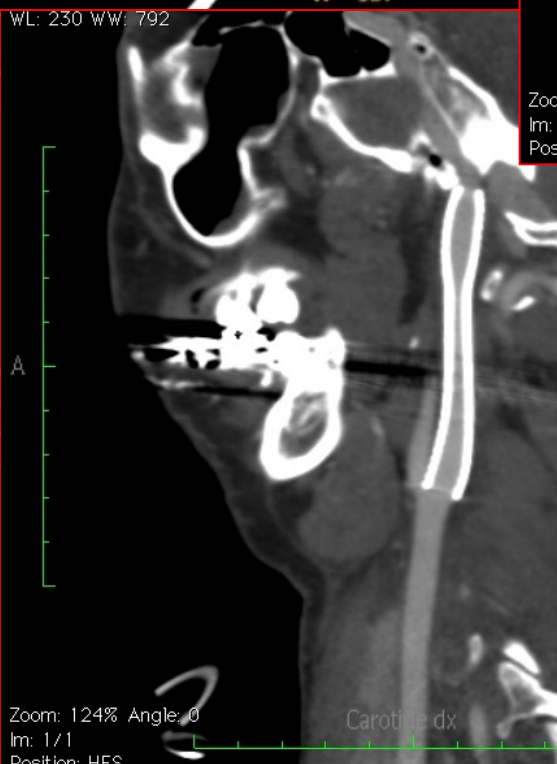


Philips, Brilliance 64
 19 May, 2010 16:55:16.00
 80 kV
 FOV 220,0 mm
 SW 5,00 mm
 Z 1,00
 10 cm
 BILANZOL
 251 F/40Y
 C 91
 W 187



Statistiche ROI per s		
N° ROI	CBV (ml/100 g)	CBF (n
MIT aumentata Statisti		
Numero di slice	CBV normale (mm^2)	(%)
1	0,0	0,0
2	1067,9	12,0
3	47,3	0,4
4	0,7	0,0
5	0,0	0,0
6	0,0	0,0
7	0,0	0,0
8	0,0	0,0
9	3,7	0,0
Totale	1119,6	1,1

Zoom: 71% Angle: 0
 Im: 1/1
 Position: HFS
 Thickness: 2.50 mm Location: 1250.85 mm P



View size: 635 x 635

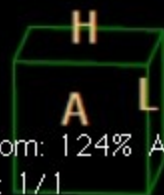
WL: 127 WW: 255

40 y, 40 y

4586

915

R



Zoom: 124% Angle: 0

Im: 1/1

Position: HFS

View size: 635 x 635

WL: 127 WW: 255

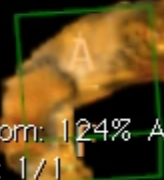
40 y, 40 y

4586

922

R

F



Zoom: 124% Angle: 0

Im: 1/1

Position: HFS

255

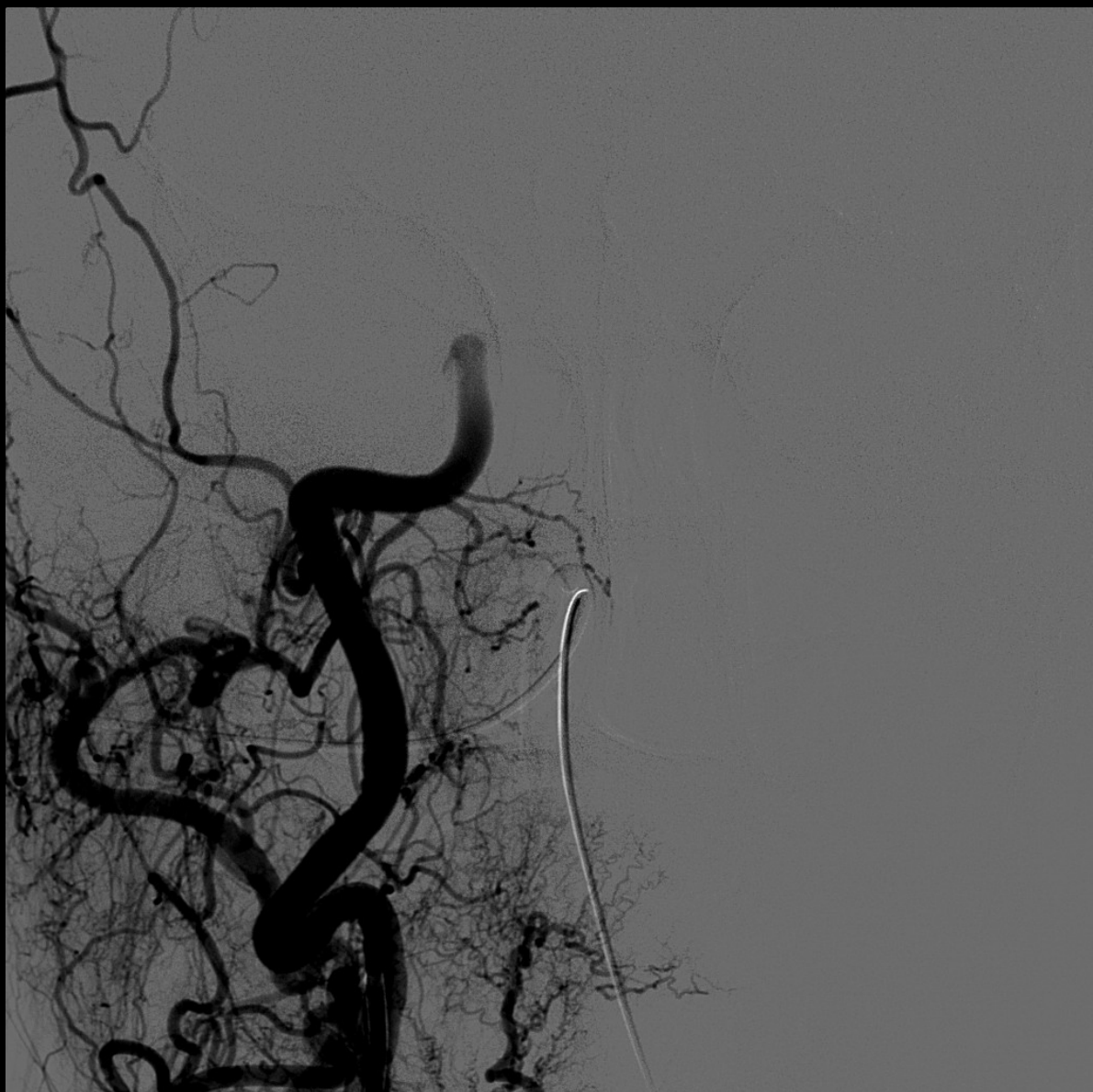
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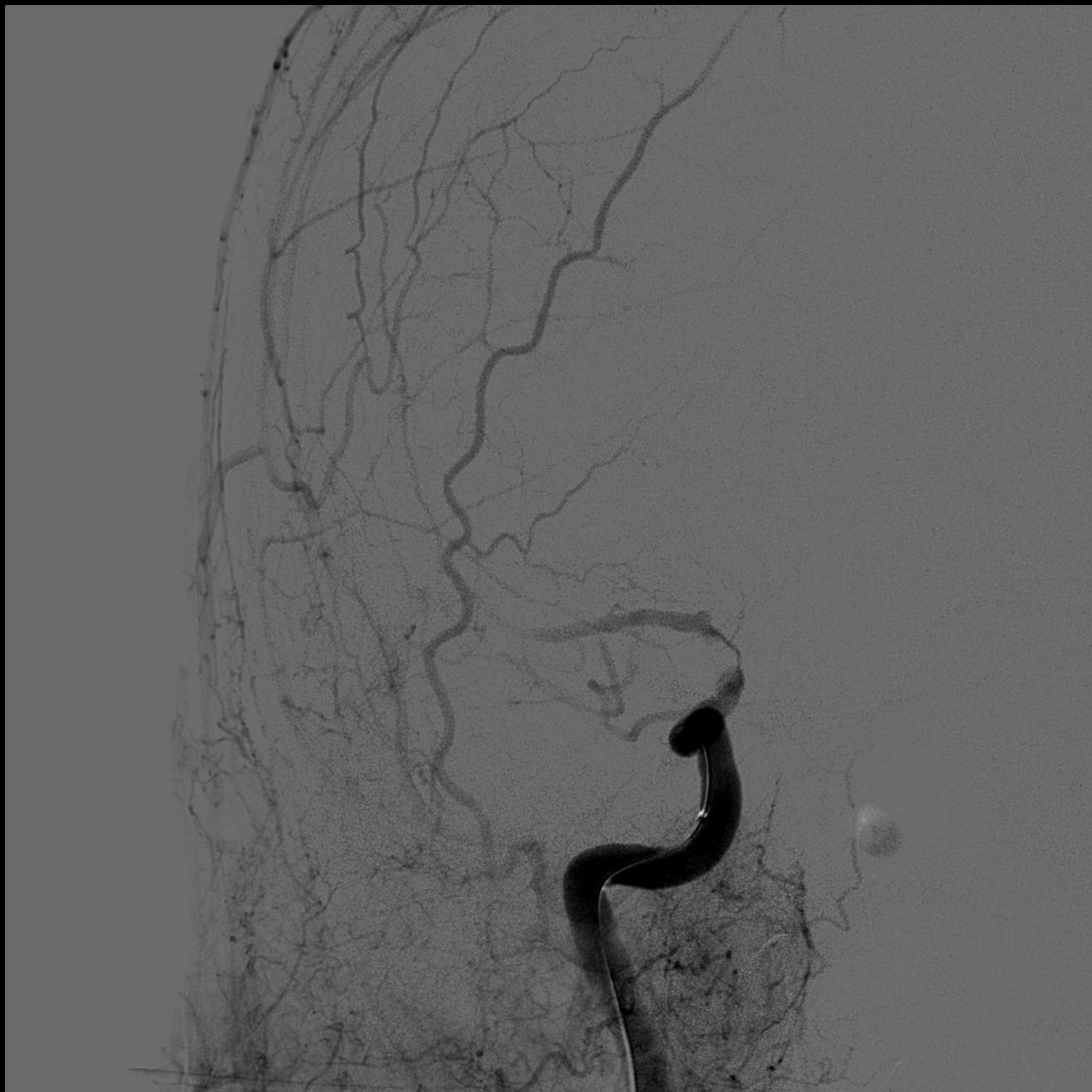
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3 cm

19/05/10 16:36:51

Made In Osirix



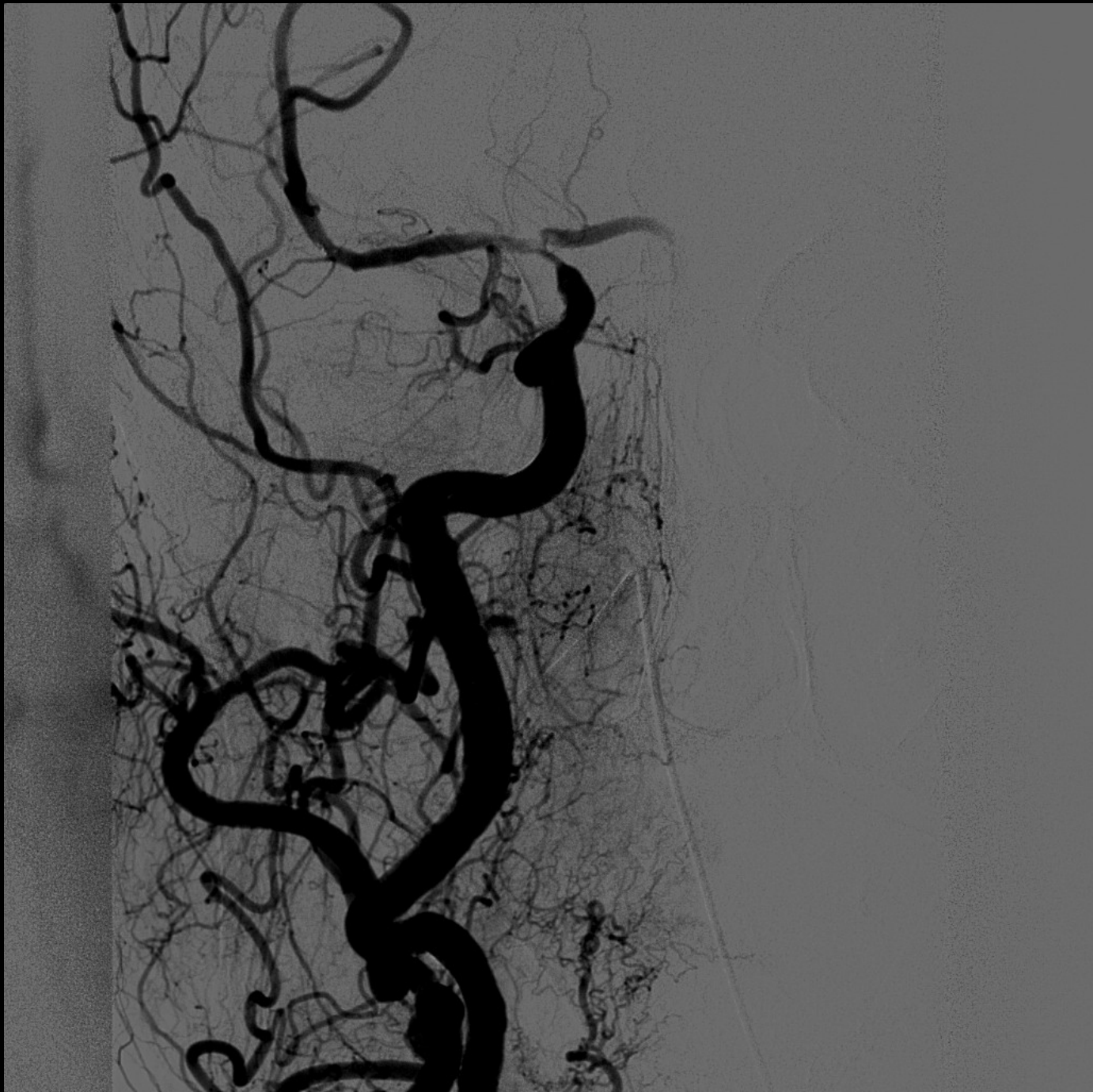






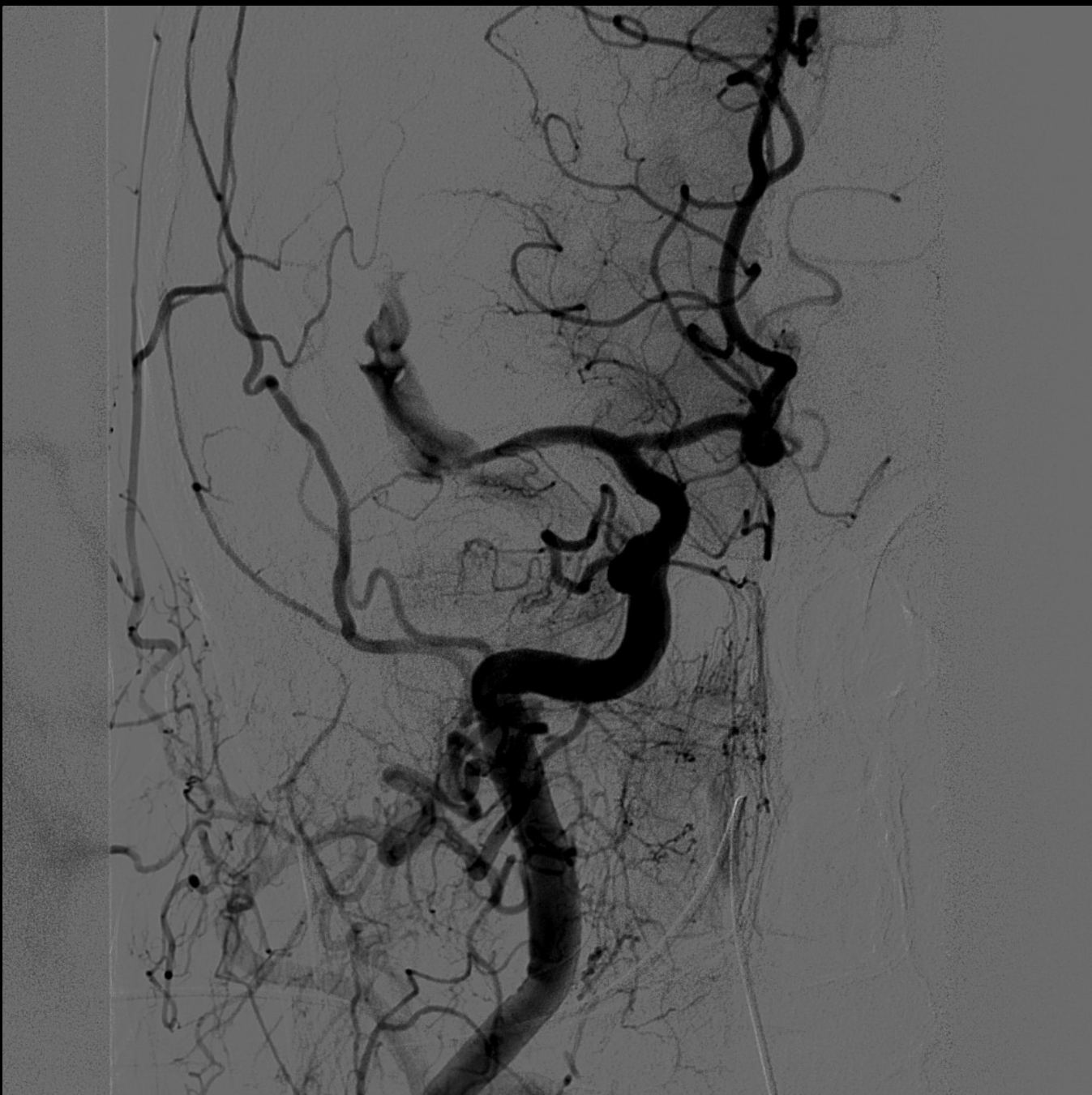




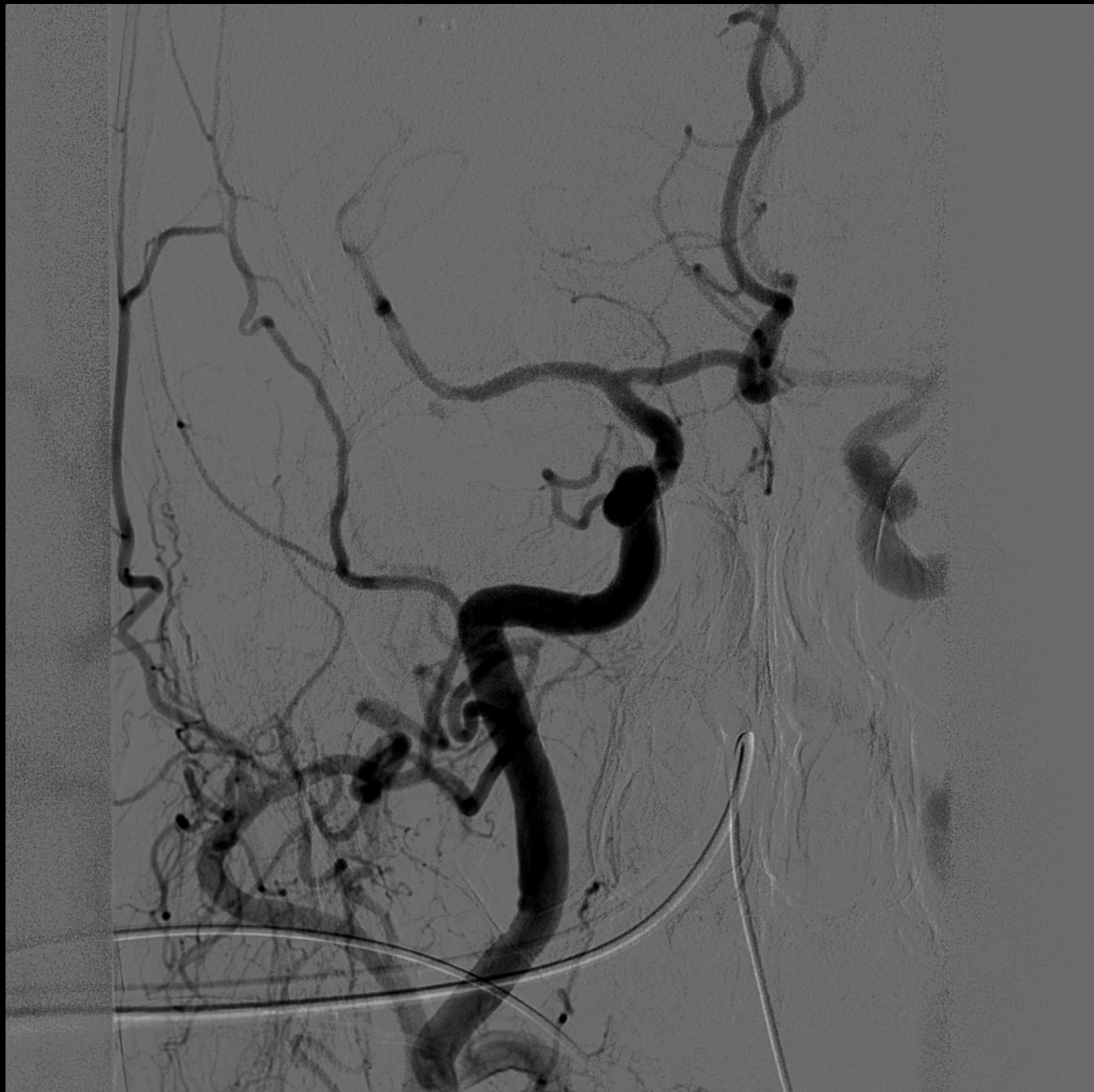


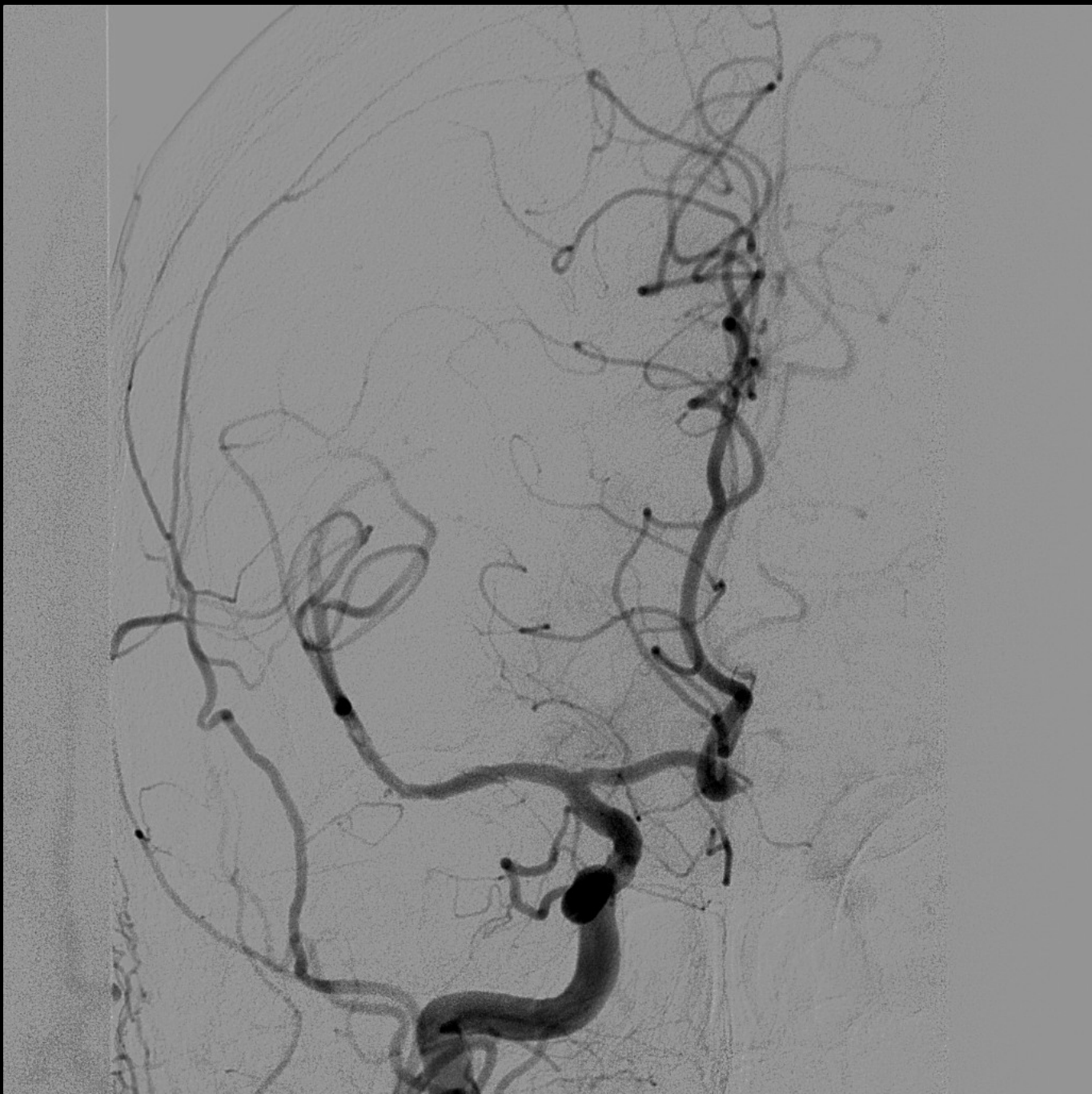




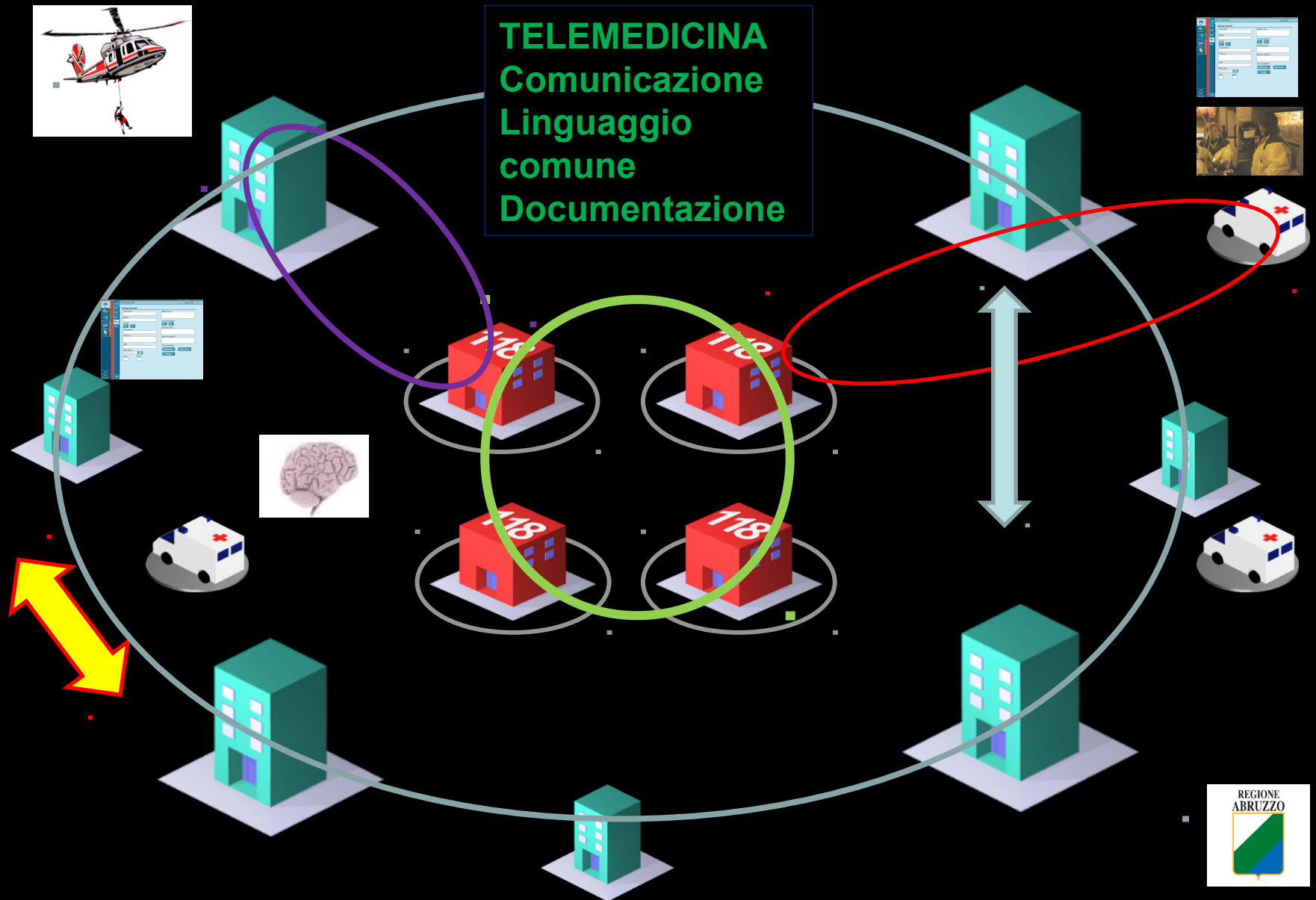








RETE dell'EMERGENZA



RCT of endovascular treatment

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Endovascular Therapy after Intravenous t-PA versus t-PA Alone for Stroke

Joseph A. Brott, M.D., Paul F. Grotthuss, Ph.D., Andrew W. Demchuk, M.D.,
Sharon C. Furlan, Ph.D., Rongchun Chen, M.D., Michael S. Hill, M.D.,
Edward C. Jauch, M.D., Todd S. Jones, M.D., Benjamin Kim, M.D.,
Frank J. Kline, M.D., Edgar von Kummer, M.D., Colleen A. Moline, M.D.,
Earl M. Sorenson, M.D., Ronald Sudduth, M.D., Wayne M. Cunniff, M.D.,
Richard D. Zucke, M.D., Terrie M. Wallach, M.D., Michael Good, M.D.,
Wesley S. Edwards, M.D., Albert Margulies, M.D., Ph.D., Stefan T. Engelke, M.D.,
Craig Anderson, M.D., Ph.D., Justin Squire, D.N., B.S.N.,
Janet Greenberg, B.S., M.A., M.T.S., Kathy Robinson, Ph.D., B.N., J. Scott Jerni, Ph.D.,
Robert H. Martin, Ph.D., Julia D. Finkel, M.D., and Thomas A. Tornqvist, M.D.,
for the Interventional Management of Stroke (IMS) II Investigators

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

A Trial of Imaging Selection and Endovascular Treatment for Ischemic Stroke

Christopher S. Kidwell, M.D., Raza Jahan, M.D., Jeffrey Goldstein, D.Phil.,
John E. Atton, Ph.D., and Nancy, Ph.D., Zahra Ajani, M.D., Lei Feng, M.D., Ph.D.,
Scott C. Miller, M.D., Scott Olson, M.D., Lee H. Schwamm, M.D., Albert J. Yee, M.D.,
Raymond S. Marder, M.D., Philip M. Meyers, M.D., David B. Vavagel, M.D.,
Michael S. Hill, M.D., and Michael S. Hill, M.D., for the STYRISS Expansion Investigators

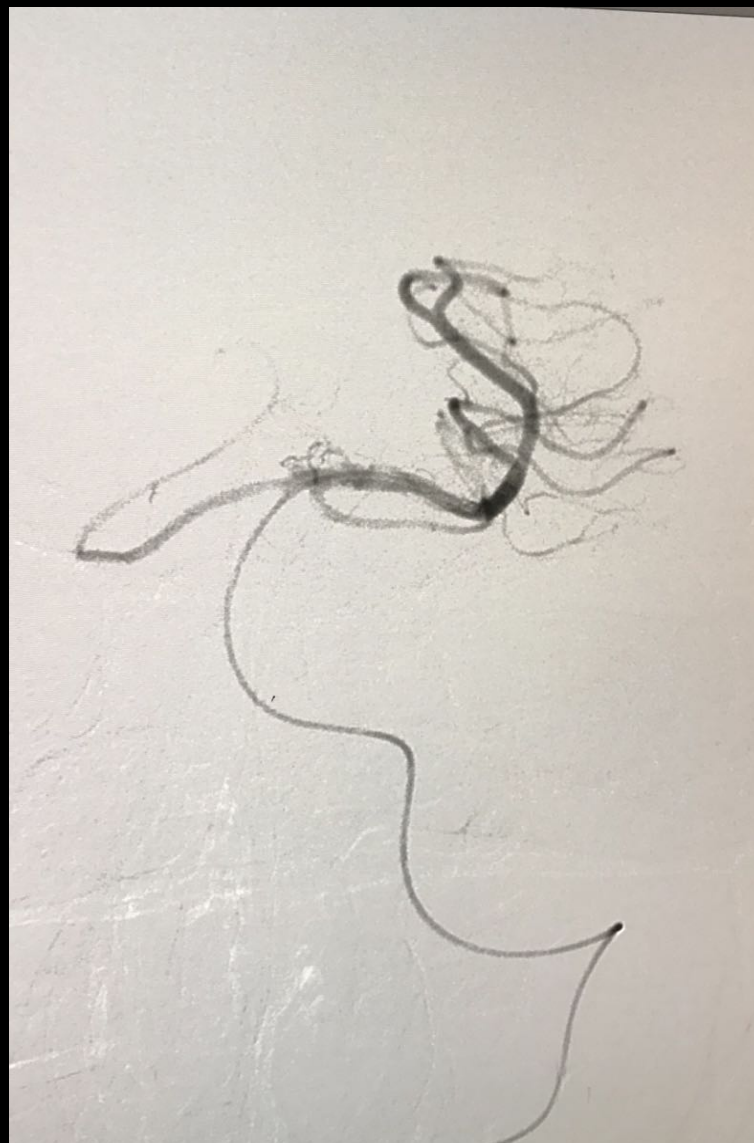
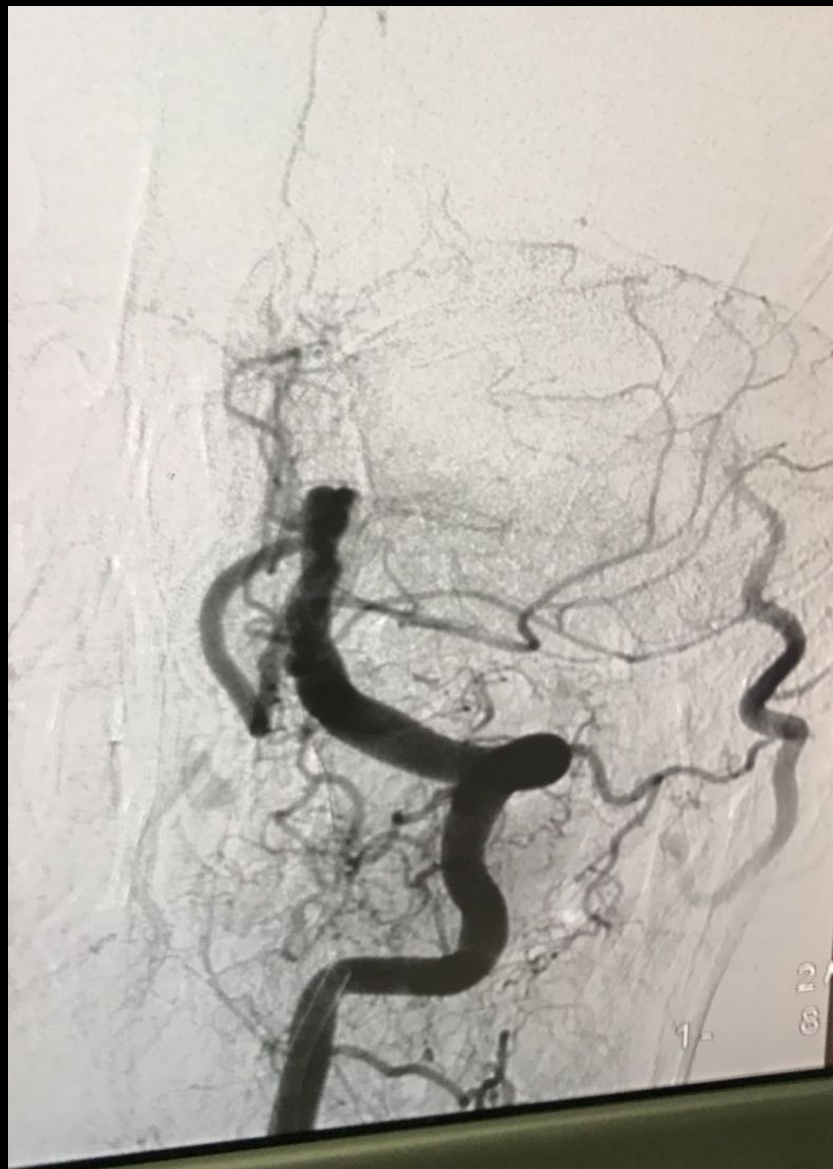
THE NEW ENGLAND JOURNAL OF MEDICINE

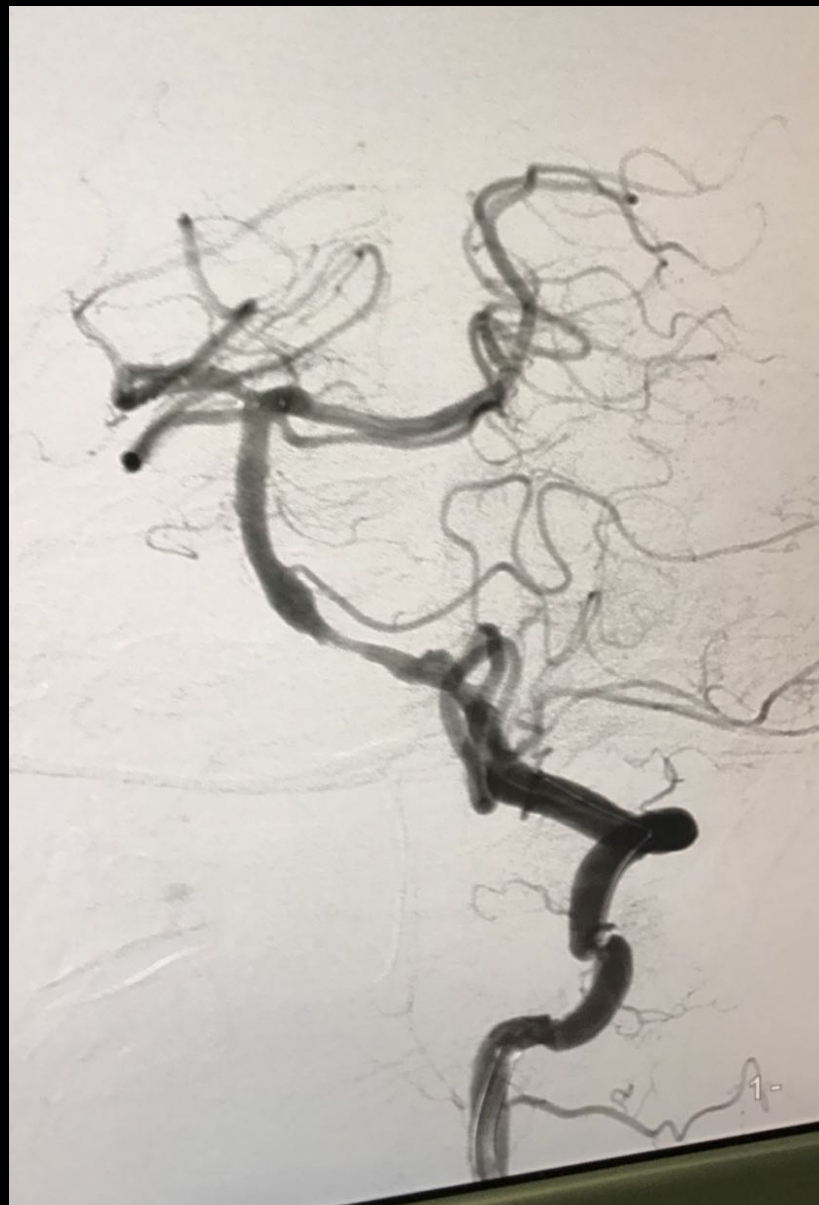
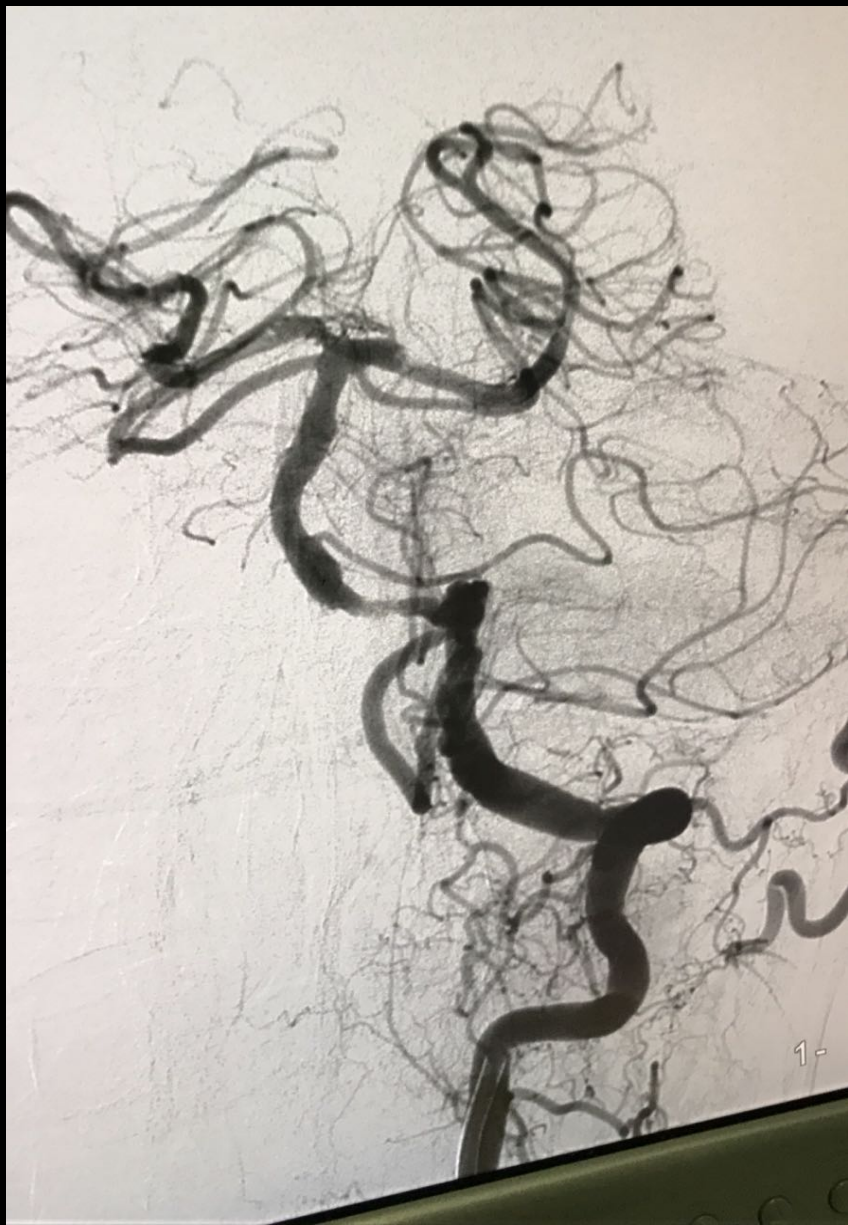
ORIGINAL ARTICLE

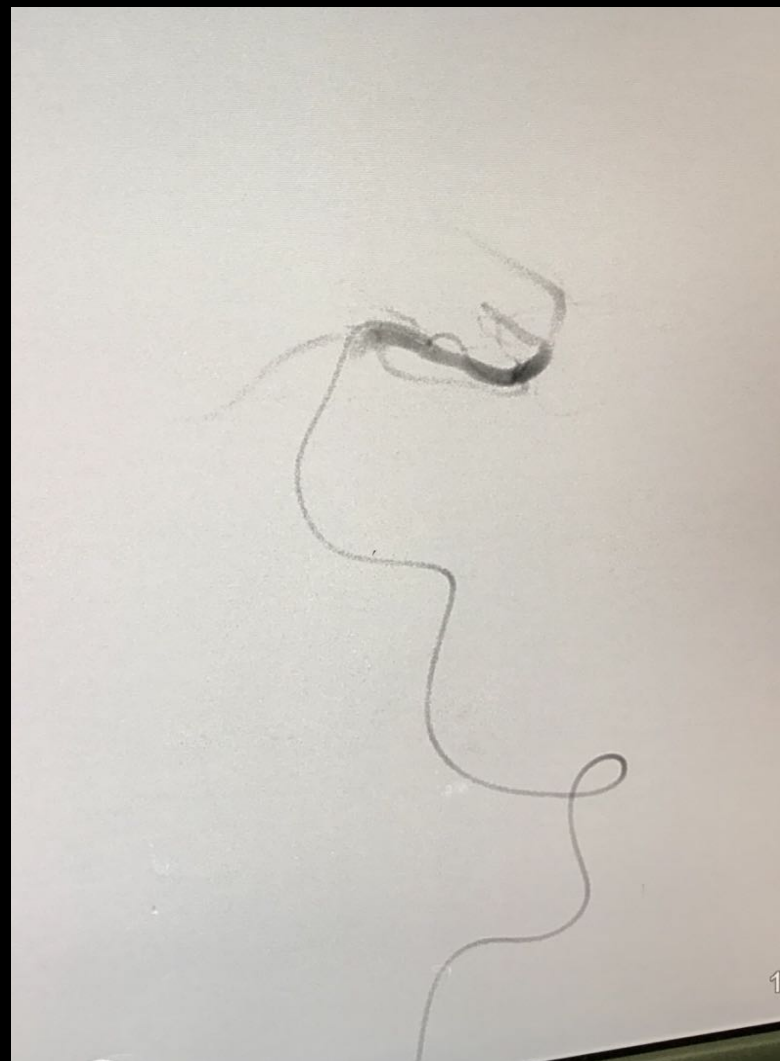
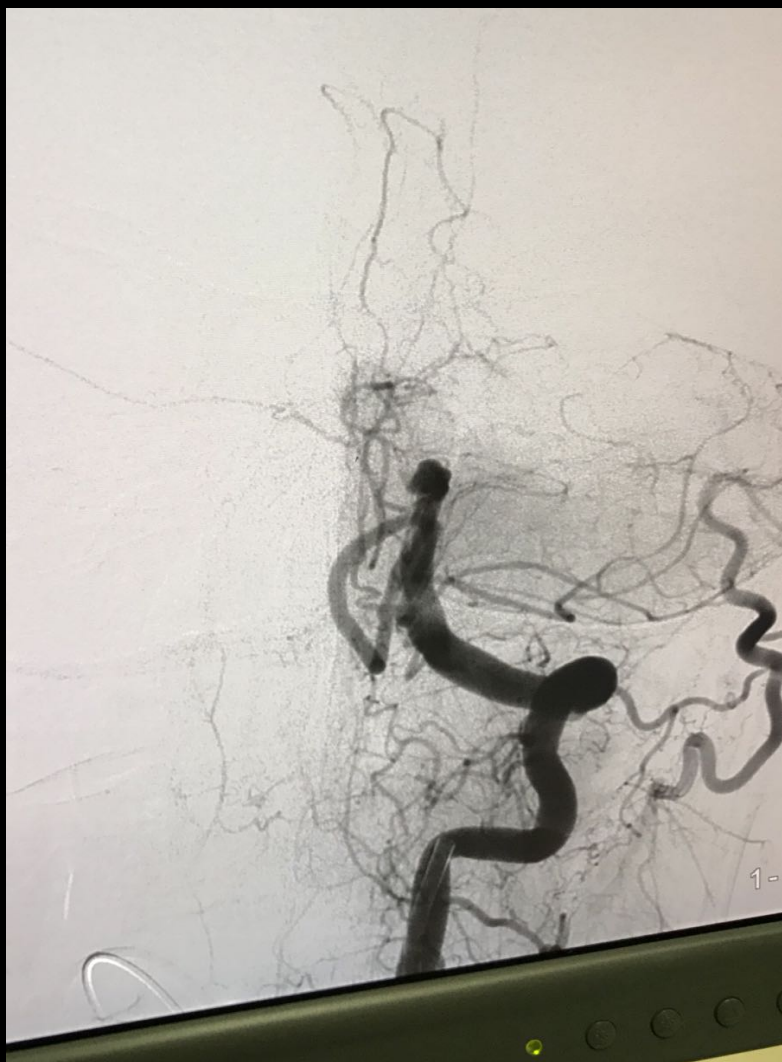
Endovascular Treatment for Acute Ischemic Stroke

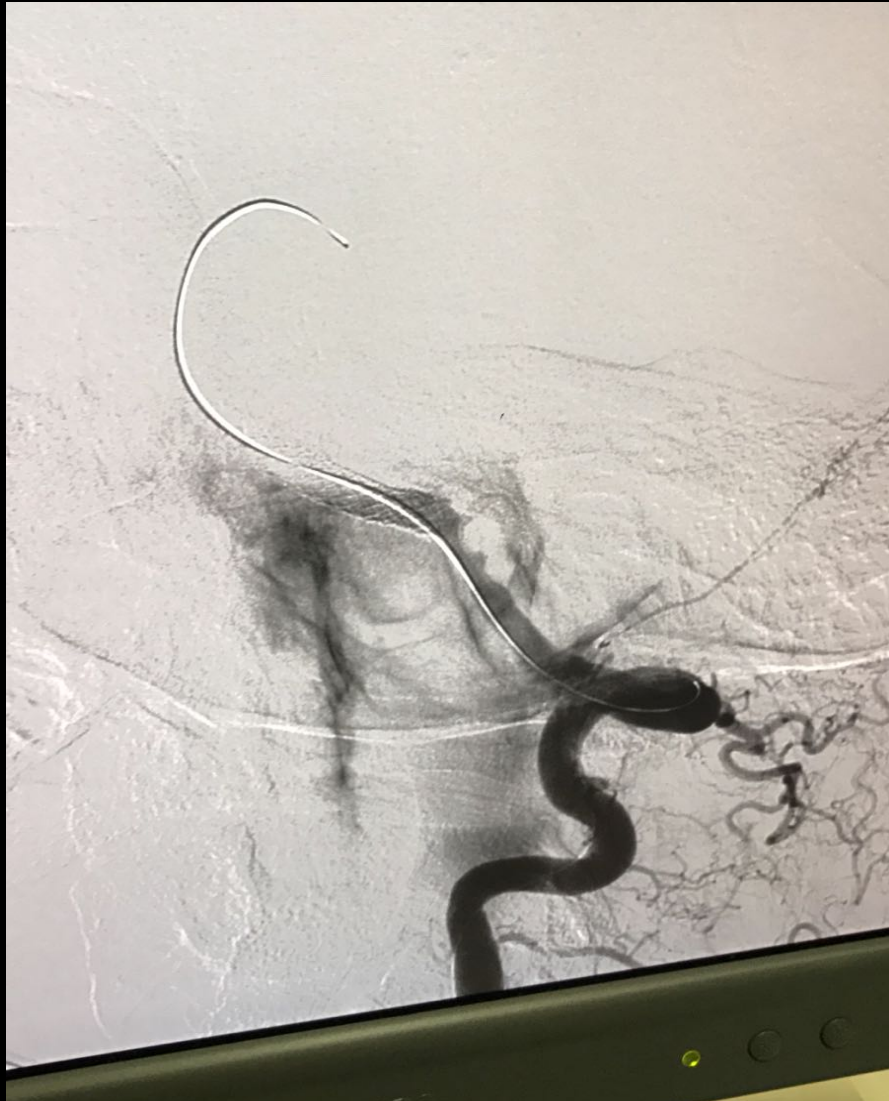
Alessia Crotone, M.D., Luca Valassori, M.D., Michele Nichelatti, Ph.D.,
Annalisa Spola, Ph.D., Michela Porcia, Ph.D., Roberto Clerici, M.D.,
and Edwards Bozzardi, M.D., for the STYRISS Expansion Investigators

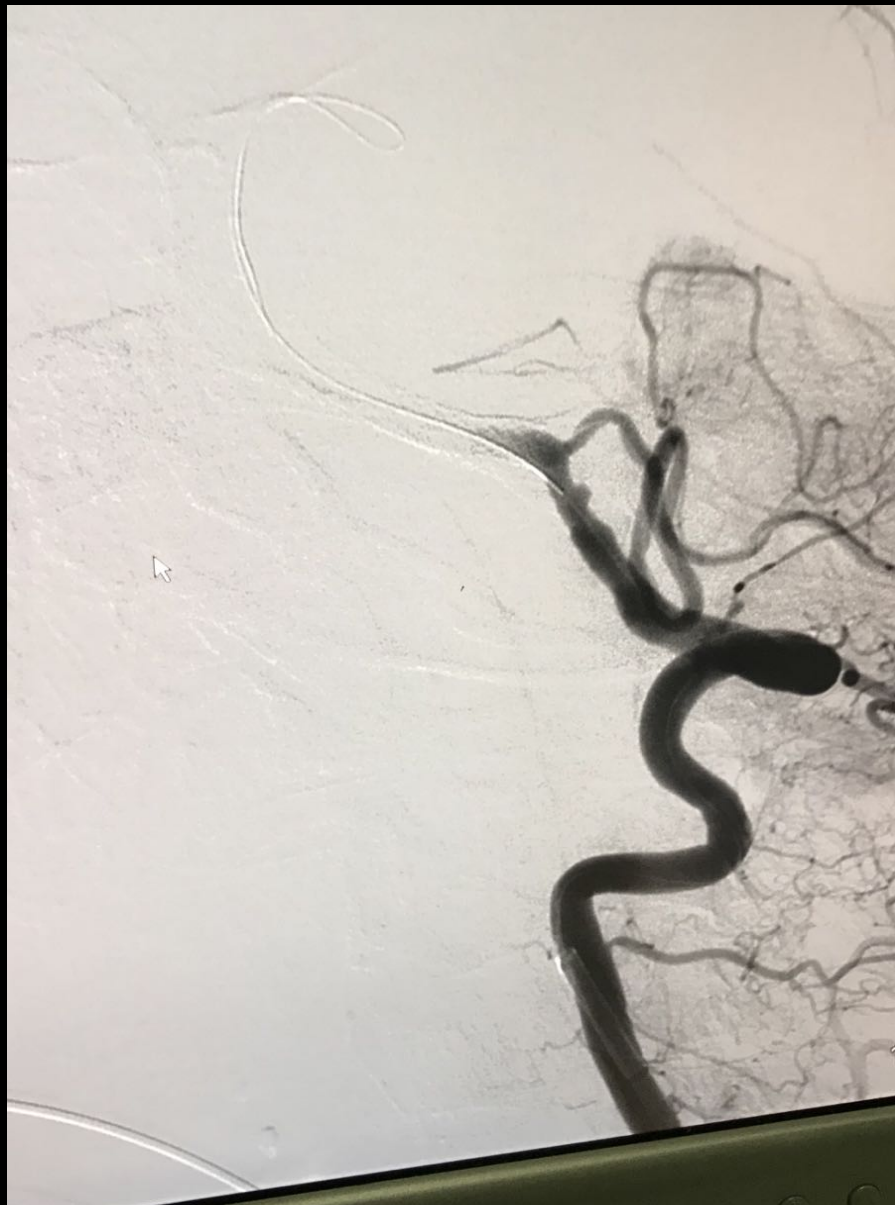
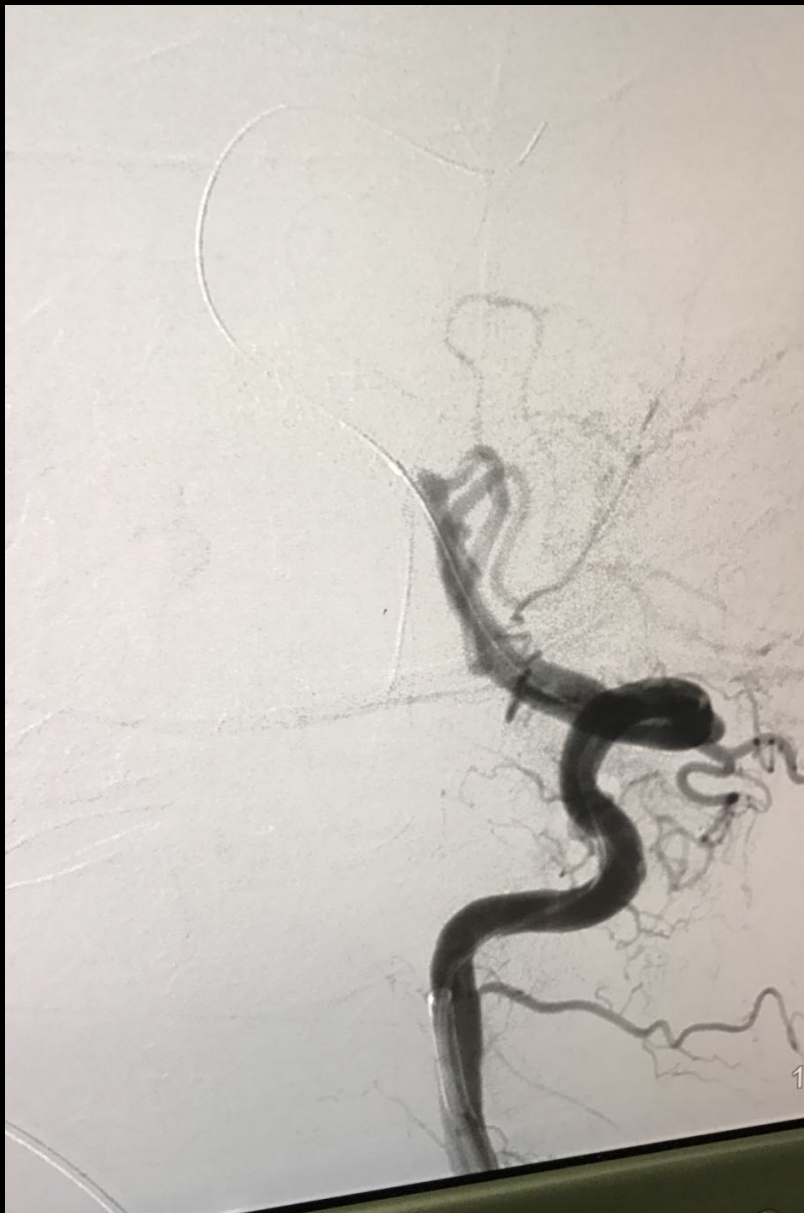


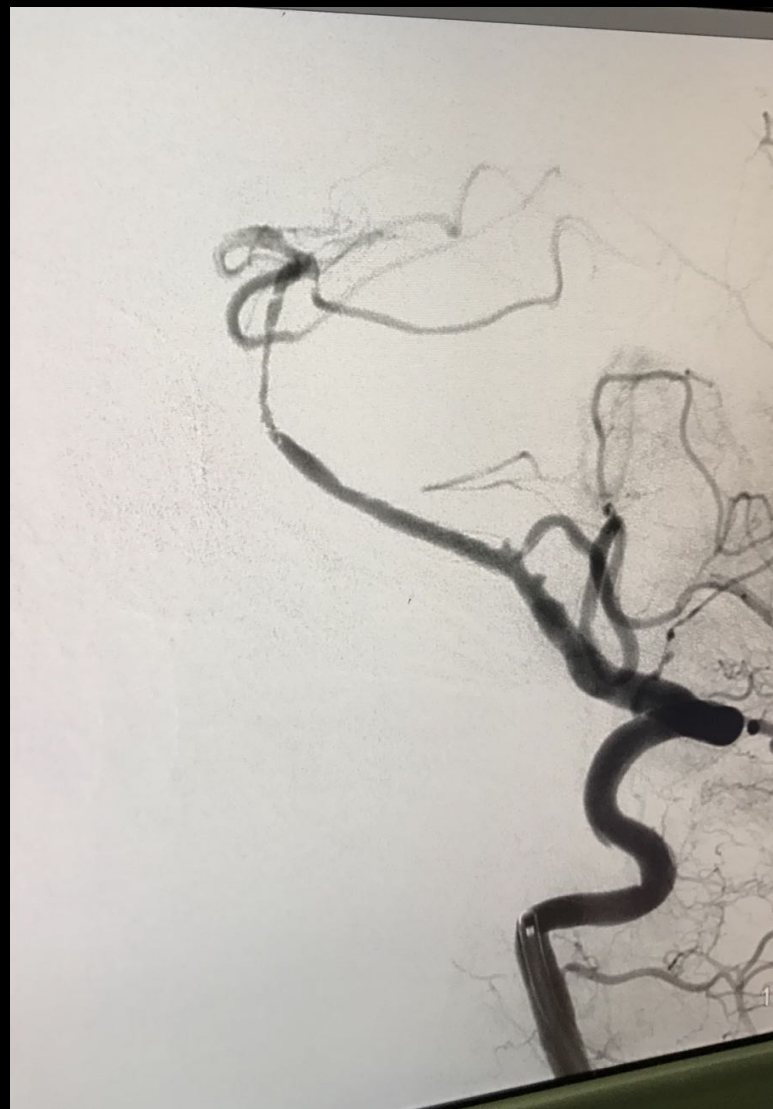
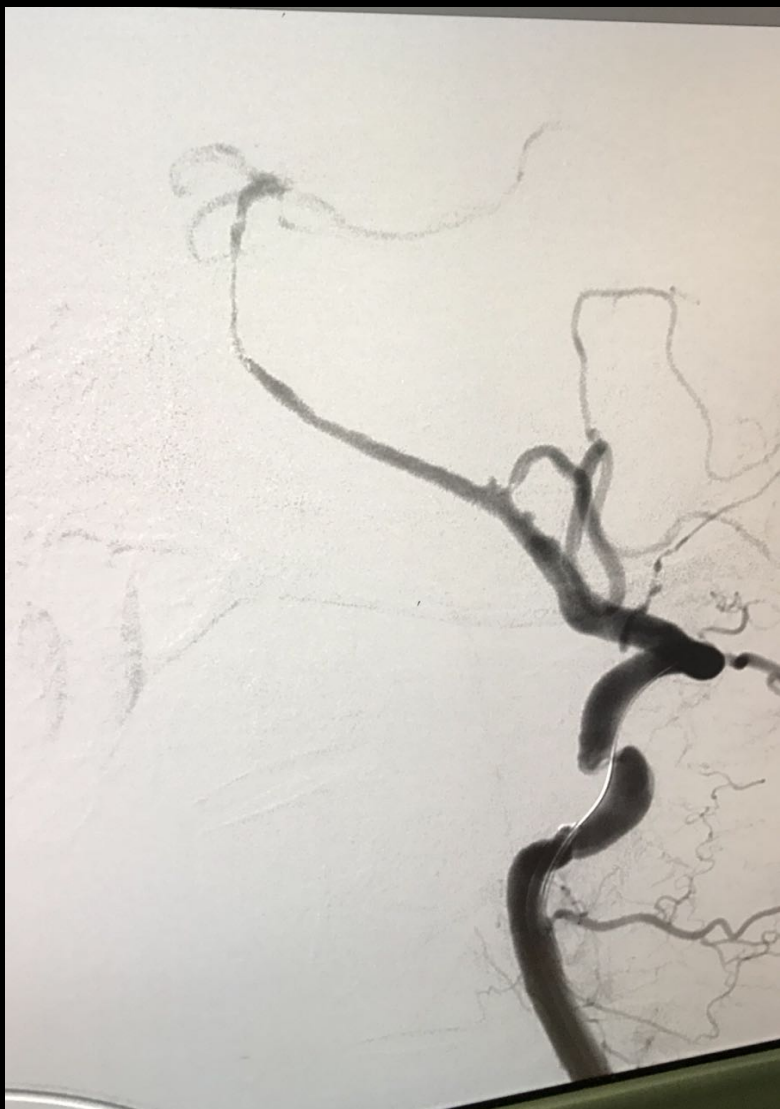


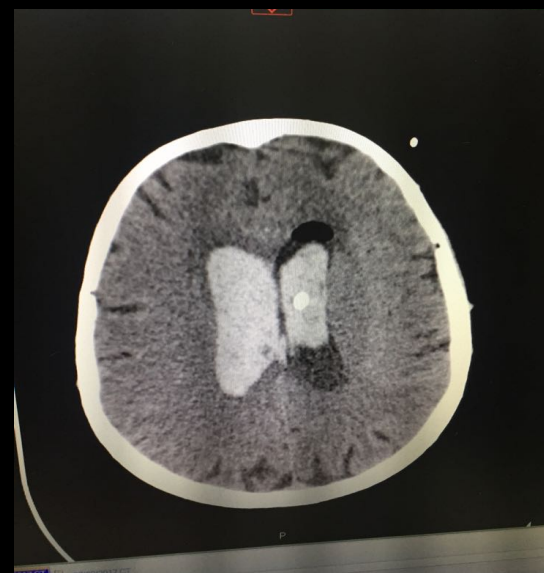
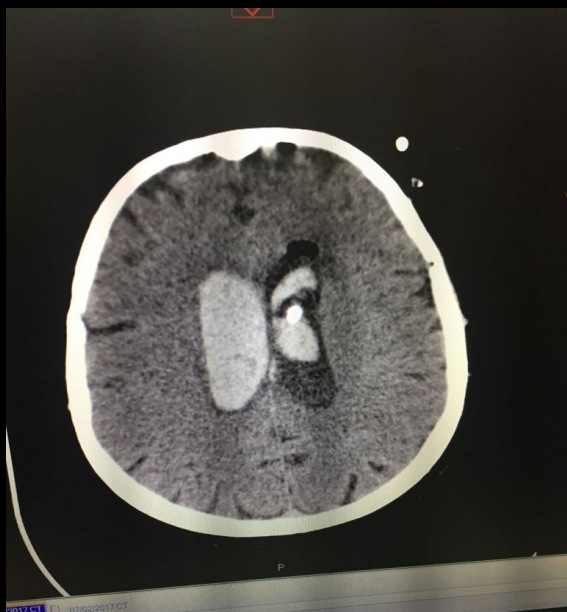


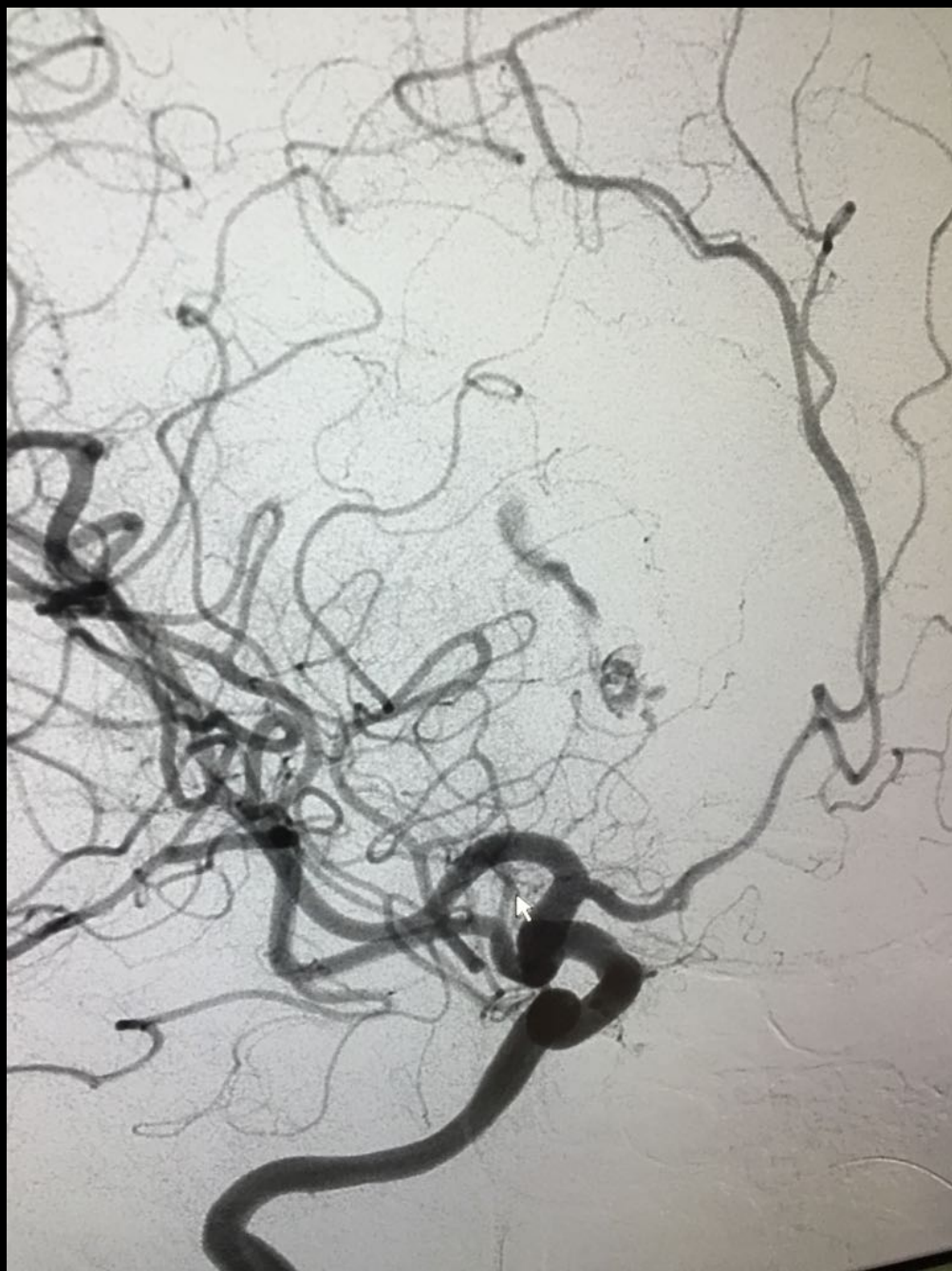


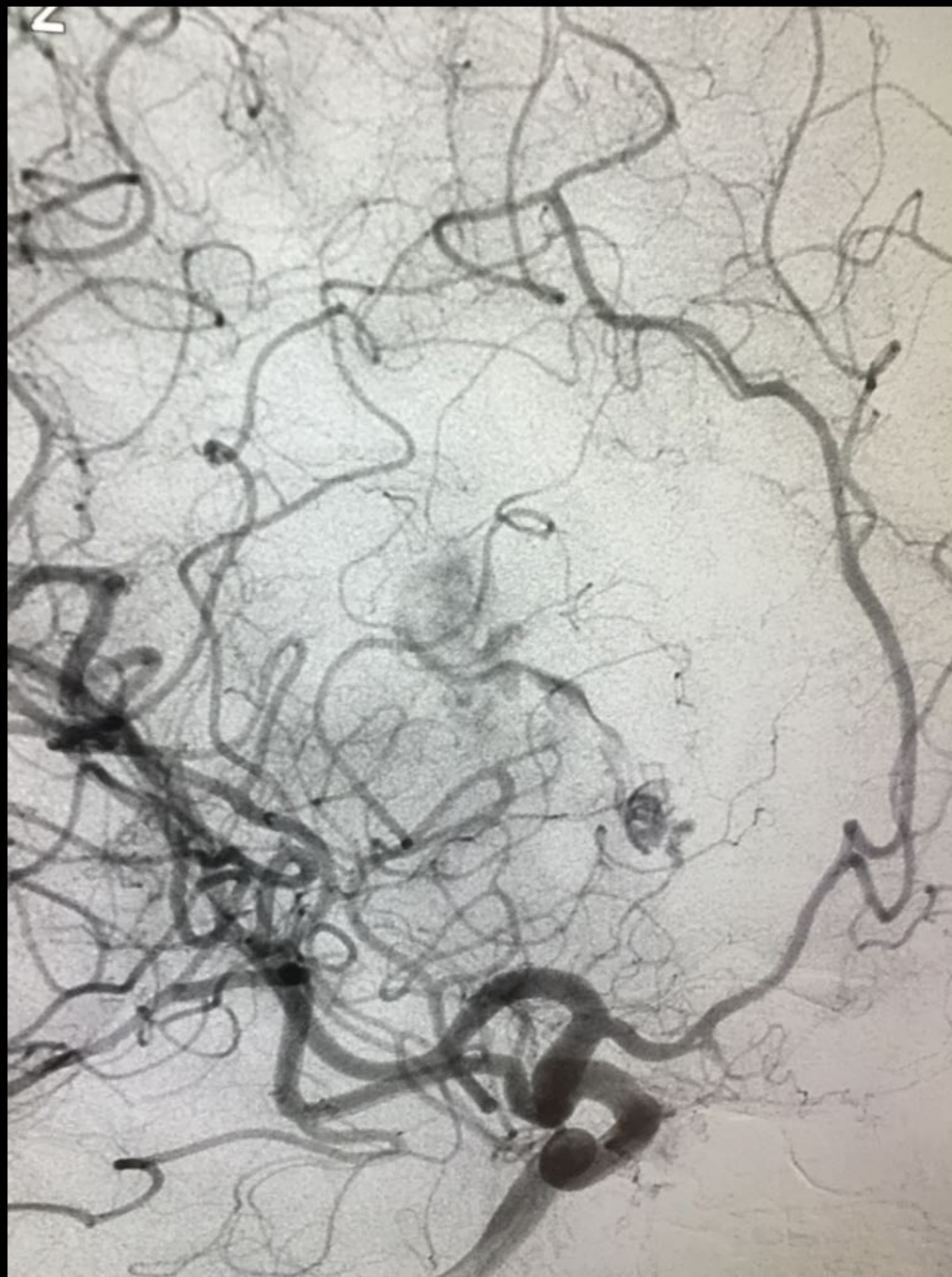


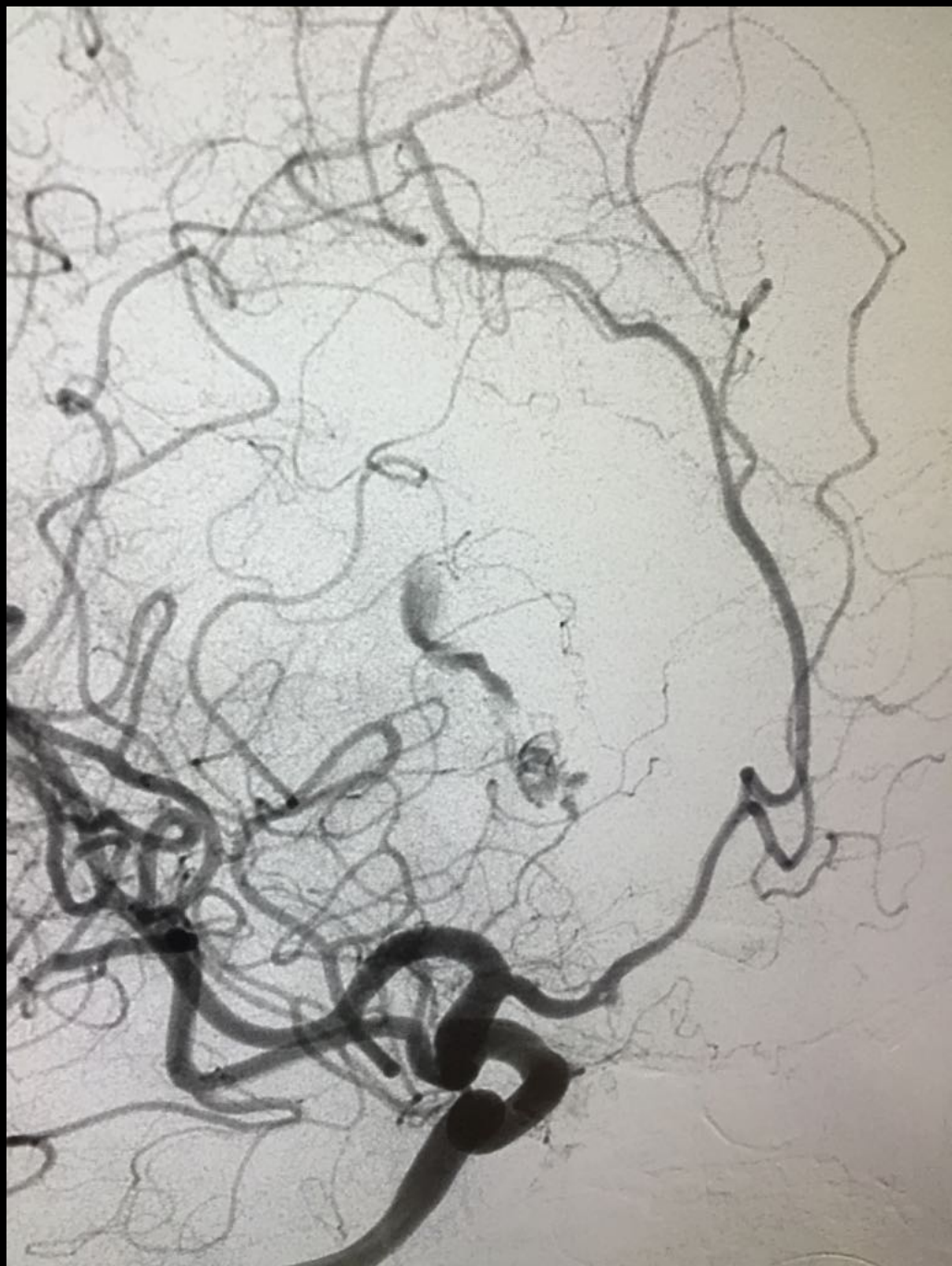


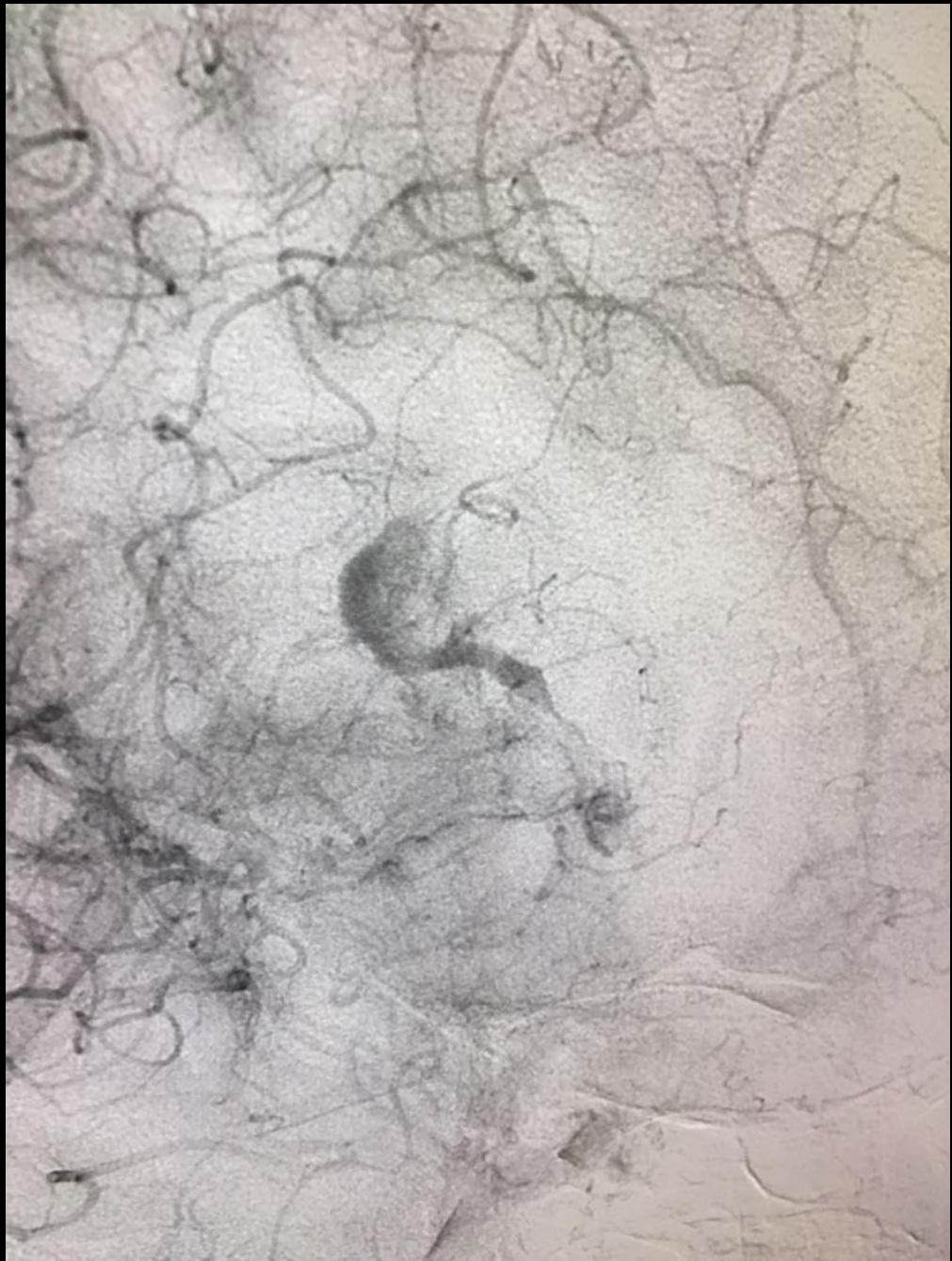




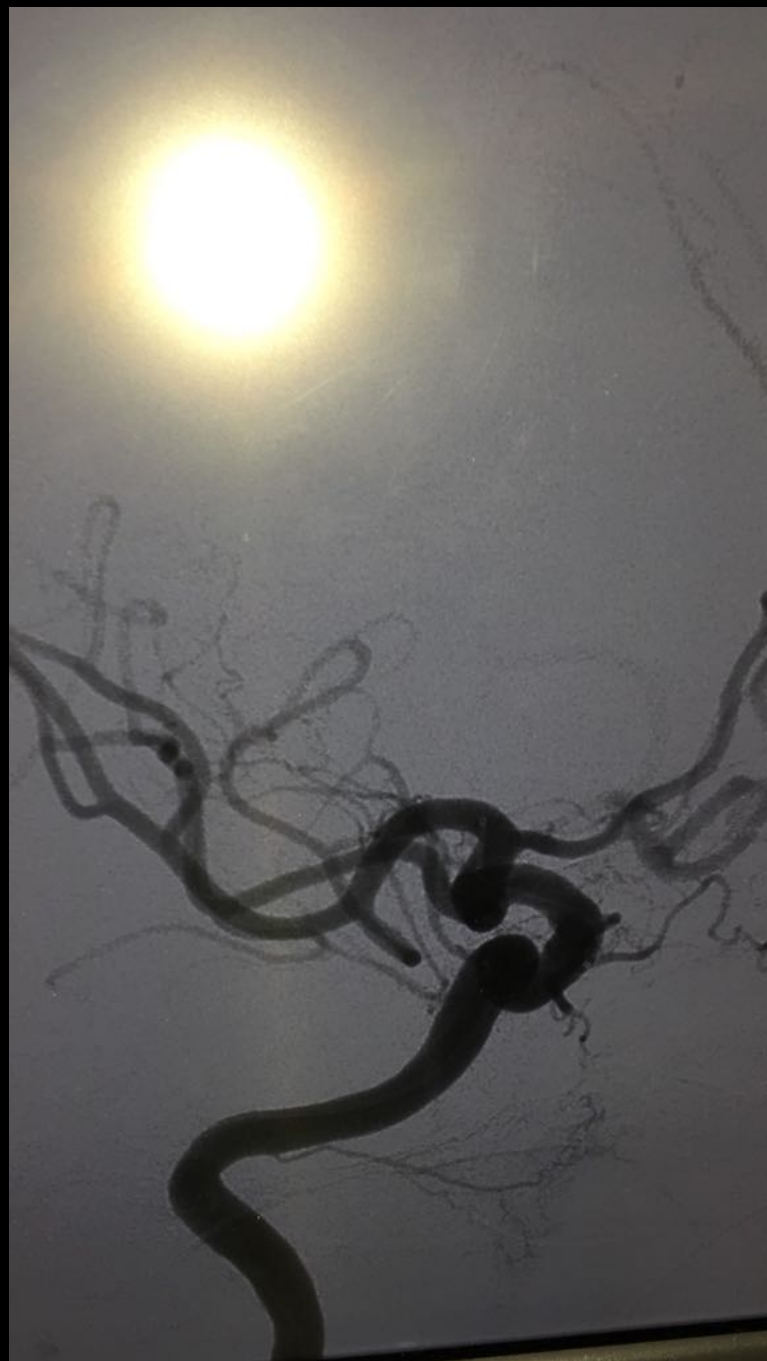












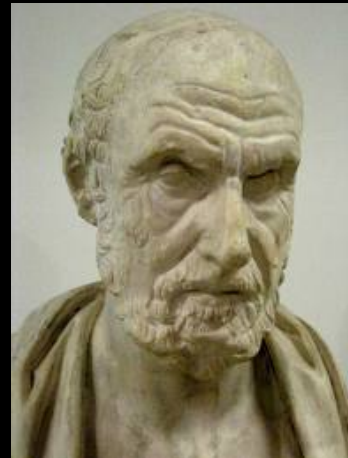
CONCLUSIONI

- Il trattamento endovascolare offre tassi di ricanalizzazione significativamente migliori;
- L'approccio meccanico sembra incrementare significativamente le probabilità di ricanalizzazione stabile;
- L'approccio meccanico è sicuro ed efficace nella rimozione dei coaguli, se utilizzato nelle appropriate finestre terapeutiche.



CONCLUSIONI

- Tuttavia, ulteriori validazioni andranno testate nella reale efficacia clinica del trattamento endovascolare.
- Aziende e ricerca devono superare ambizioni personali;
- Limitare gli studi sottodimensionati con scarsa numerosità e carenze strutturali;
- Stilare protocolli condivisi con i neurologi;
- Passare ad un sistema «Ippocratico».



Grazie per la cortese attenzione

