

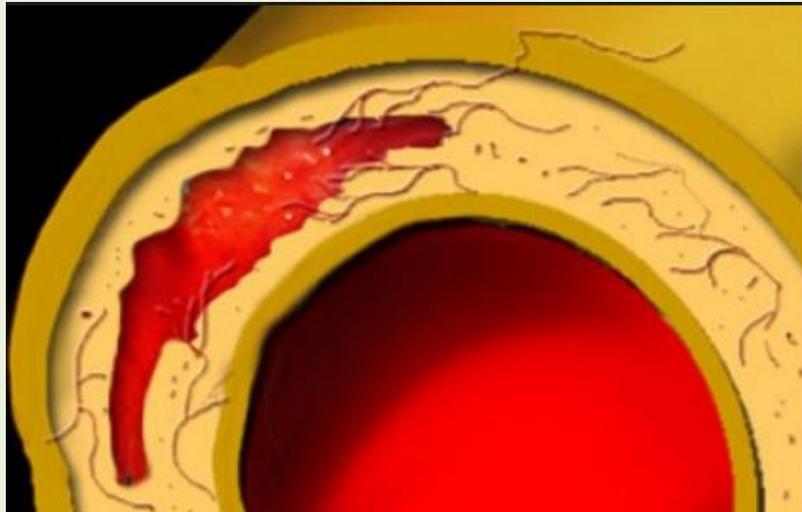
SIMI 2016

Complicaciones del tratamiento endovascular del Stroke



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- ★ Isquémicas
- ★ Hemorrágicas
- ★ Lesiones vasculares



Hemorragias relacionadas al tratamiento

- Sitio de punción arterial.
- Mucosas , otros sitios de punción.
- Intraquirúrgico, postquirúrgico.
- Transformación hemorrágica del infarto cerebral.
- Hemorragias cerebrales extra zona tto.
- Síndrome de reperfusión

Transformación hemorrágica sintomática

Definición NINDS:

“any CT-documented hemorrhage that was temporally related to deterioration in the patient’s clinical condition in the judgment of the clinical investigator, occurred within 36 hours from treatment onset.”

TABLE 1. Anatomic–Radiological Definitions of Cerebral Bleedings in NINDS and the ECASS Studies

NINDS definitions

HI: acute infarction with punctate or variable hypodensity/hyperdensity, with an indistinct border within the vascular territory

PH: typical homogeneous, hyperdense lesion with a sharp border with or *without* edema or mass effect

ECASS (1 and 2) definitions

HI: petechial infarction without space-occupying effect

HI1: small petechiae

HI2: more confluent petechiae

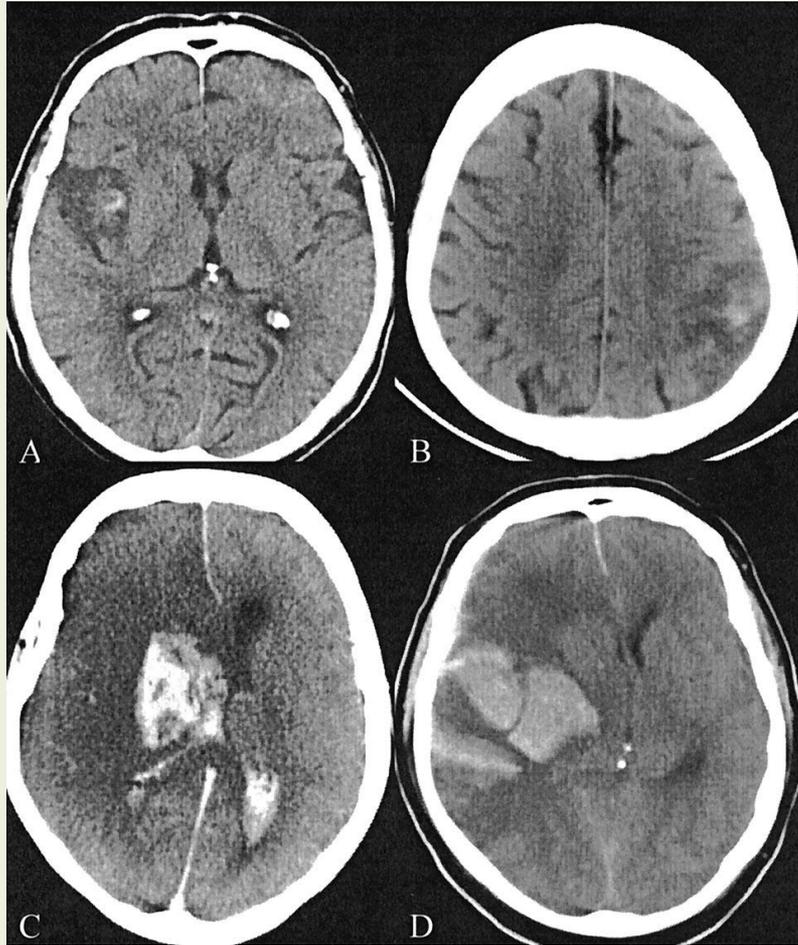
PH: hemorrhage (coagulum) *with* mass effect

PH1: <30% of the infarcted area *with* mild space-occupying effect

PH2: >30% of the infarcted area *with* significant space-occupying effect

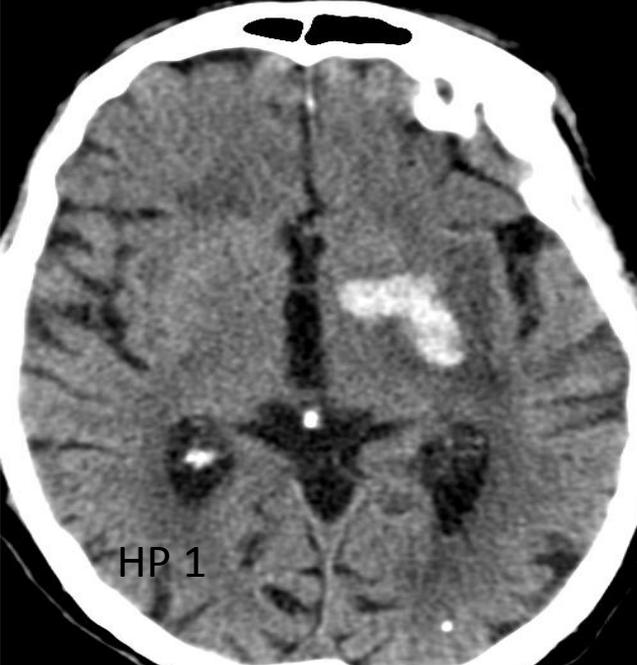
“Type 3” Post-Thrombolytic Hemorrhage Extracerebral Hematomas

Clasificación de la TH (ECASS)

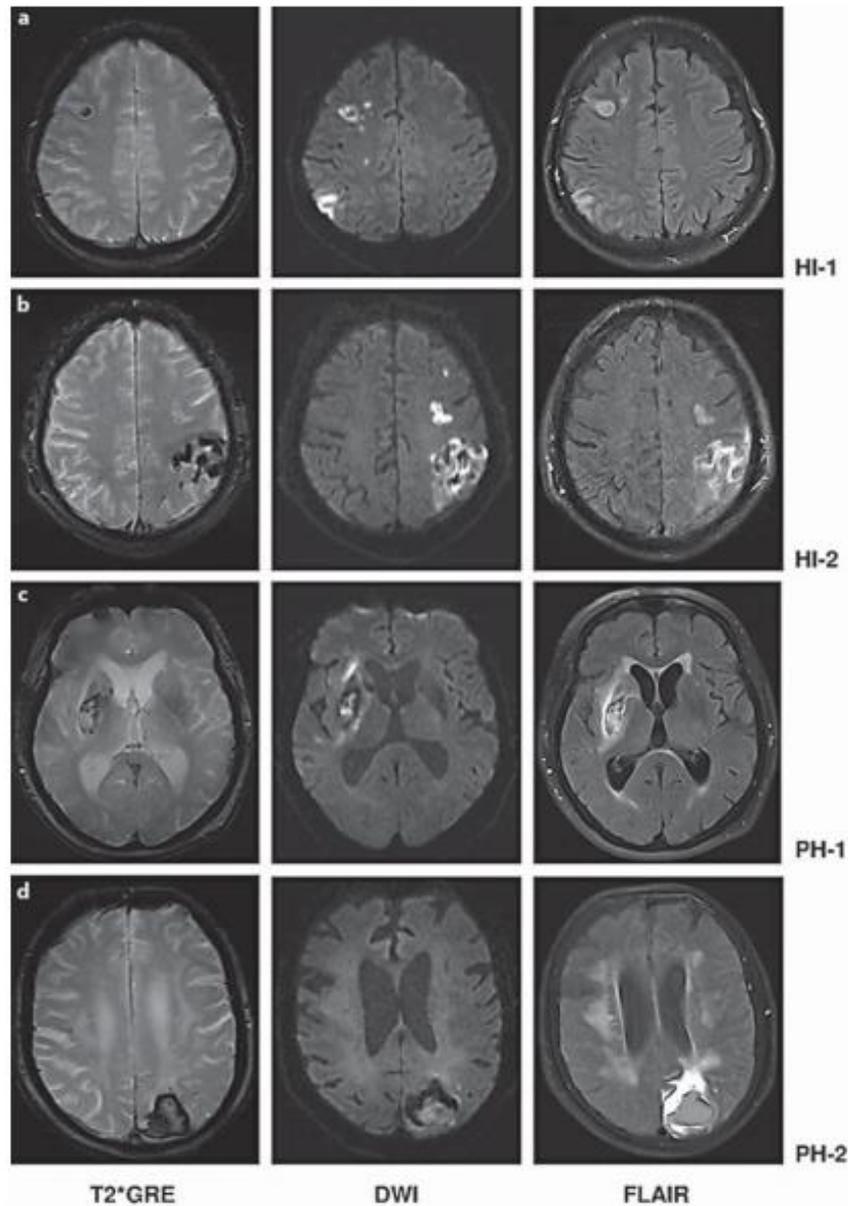


Stroke. 2001;32:1330-1335.

Christian Berger, MD; Marco Fiorelli, MD; Thorsten Steiner, MD; Wolf-Rüdiger Schäbitz, MD; Luigi Bozzao, MD; Erich Bluhmki, MD; Werner Hacke, MD; Rüdiger von Kummer, MD



Adaptación del Score por CT a la IRM



Cerebrovasc Dis Extra
2013;3:103–110
Lars Neeb a, b Kersten
Villringer a Ivana
Galinovica, et al.

Frecuencia de TH ECASS II

TABLE 1. Frequencies of Different Types of Hemorrhage in the Placebo and rtPA Groups

	Placebo (n=384)		rtPA (n=406)	
	No.	%	No.	%
HI-1	53	13.8	50	12.3
HI-2	11	2.9	28	6.9
PH-1	5	1.3	11	2.7
PH-2*	2	0.5	31	7.6
Total*	71	18.5	120	29.5

*Significant difference in frequency between placebo and rtPA group according to χ^2 test ($P < 0.05$).

Riesgo relativo según el tipo de H

TABLE 2. Comparison of Adjusted and Unadjusted ORs

	Deterioration After 24 h		Disability/Death up to 3 mo		Death up to 3 mo	
	OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>
Nonadjusted HT						
HI-1	0.6 (0.2–1.3)	0.2	1.4 (0.9–2.2)	0.09	0.9 (0.4–2.1)	0.9
HI-2	0.8 (0.2–2.6)	0.7	1.3 (0.7–2.6)	0.4	0.9 (0.3–3.2)	0.9
PH-1	4.2 (1.4–12.4)	0.01	1.2 (0.4–3.1)	0.8	2.6 (0.7–9.6)	0.1
PH-2	41 (16–104)	<0.0001	6.5 (2.5–17.0)	0.0002	20 (9–43)	<0.0001
Adjusted HI						
HI-1	0.2 (0.1–0.6)	0.003	0.7 (0.4–1.2)	0.2	0.2 (0.07–0.6)	0.004
HI-2	0.5 (0.2–1.9)	0.3	0.9 (0.4–1.9)	0.8	0.6 (0.2–2.5)	0.5
PH-1	3.5 (1.1–11.6)	0.04	0.6 (0.2–1.9)	0.4	1.0 (0.2–4.8)	0.9
PH-2	18 (6–56)	<0.0001	1.9 (0.7–5.7)	0.2	11.4 (3.7–36)	<0.0001
Treatment with rtPA	0.8 (0.5–1.3)	0.4	0.7 (0.4–0.9)	0.02	0.6 (0.3–1.2)	0.2
Hypodensity >33% on initial CT	2.6 (1.0–6.5)	0.047	2.8 (1.2–6.4)	0.01	8 (3.3–19.5)	<0.0001
Severe stroke syndrome at onset	1.1 (0.6–2.1)	0.7	4.1 (2.5–6.5)	<0.0001	4.3 (2.4–7.7)	<0.0001
Age	1.0 (0.9–1.0)	0.8	1.04 (1.02–1.05)	<0.0001	1.09 (1.05–1.13)	<0.0001

MRCLEAN REVASCAT SWIFTPRIME

Serious adverse events*		
Any serious adverse event	110 (47.2)	113 (42.3)
Symptomatic intracerebral hemorrhage		
Any type	18 (7.7)	17 (6.4)
Parenchymal hematoma†		
Type 1	0	2 (0.7)
Type 2	14 (6.0)	14 (5.2)
Hemorrhagic infarction‡		
Type 1	1 (0.4)	0
Type 2	1 (0.4)	1 (0.4)
Subarachnoid hemorrhage		
	2 (0.9)	0
New ischemic stroke in a different vascular territory§		
	13 (5.6)	1 (0.4)
Progressive ischemic stroke		
	16 (6.7)	17 (6.2)

Variable	Thrombectomy (N=103) no. (%)	Control (N=103)	Between-Group Difference (95% CI)	Risk Ratio (95% CI)
Safety variable				
Death				
At 90 days	19 (18.4)	16 (15.5)	-2.9 (-13.2 to 7.3)	1.2 (0.6 to 2.2)†
At ≤7 days	10 (9.7)	5 (4.9)	-4.8 (-11.9 to 2.2)	2.0 (0.7 to 5.6)
Intracranial hemorrhage				
Symptomatic‡				
SITS-MOST criteria	2 (1.9)	2 (1.9)	0.0 (-3.8 to 3.8)	1.0 (0.1 to 7.0)
ECASS II criteria	5 (4.9)	2 (1.9)	-2.9 (-7.8 to 2.0)	2.5 (0.5 to 12.6)
Asymptomatic§				
	17 (16.5)	11 (10.7)	-5.8 (-15.2 to 3.5)	1.5 (0.7 to 3.1)
Subarachnoid hemorrhage				
	5 (4.9)	2 (1.9)	-2.9 (-7.8 to 2.0)	2.5 (0.5 to 12.6)
Parenchymal hematoma¶				
Any	6 (5.8)	6 (5.8)		
Type 1	3 (2.9)	4 (3.9)		
Type 2	3 (2.9)	2 (1.9)		

Safety Endpoints

	Solitaire + IV t-PA (N=98)	IV t-PA (N=97)	Odds Ratio [95% CI]	P value
Primary Safety Variables				
Any Serious Adverse Event	35 (35.7%)	30 (30.9%)	1.24 [0.68, 2.25]	0.54
sICH at 27hrs*	1 (1.0%)	3 (3.1%)	0.32 (0.03, 3.16)	0.37
Additional Safety Variables at 27hrs †				
Parenchymal hematoma	5 (5.1%)	7 (7.2%)	0.69 (0.21, 2.26)	0.57
Type 1	4 (4.1%)	3 (3.1%)	1.33 (0.29, 6.12)	1.00
Type 2	1 (1.0%)	4 (4.1%)	0.24 (0.03, 2.18)	0.21
Subarachnoid Hemorrhage	4 (4.1%)	1 (1.0%)	4.09 (0.45, 37.23)	0.37

	-2.9 (-12.4 to 6.6)	1.2 (0.6 to 2.4)
	-1.0 (-9.2 to 7.3)	1.1 (0.5 to 2.5)
	-1.0 (-5.9 to 4.0)	1.3 (0.3 to 5.8)
	NA	NA

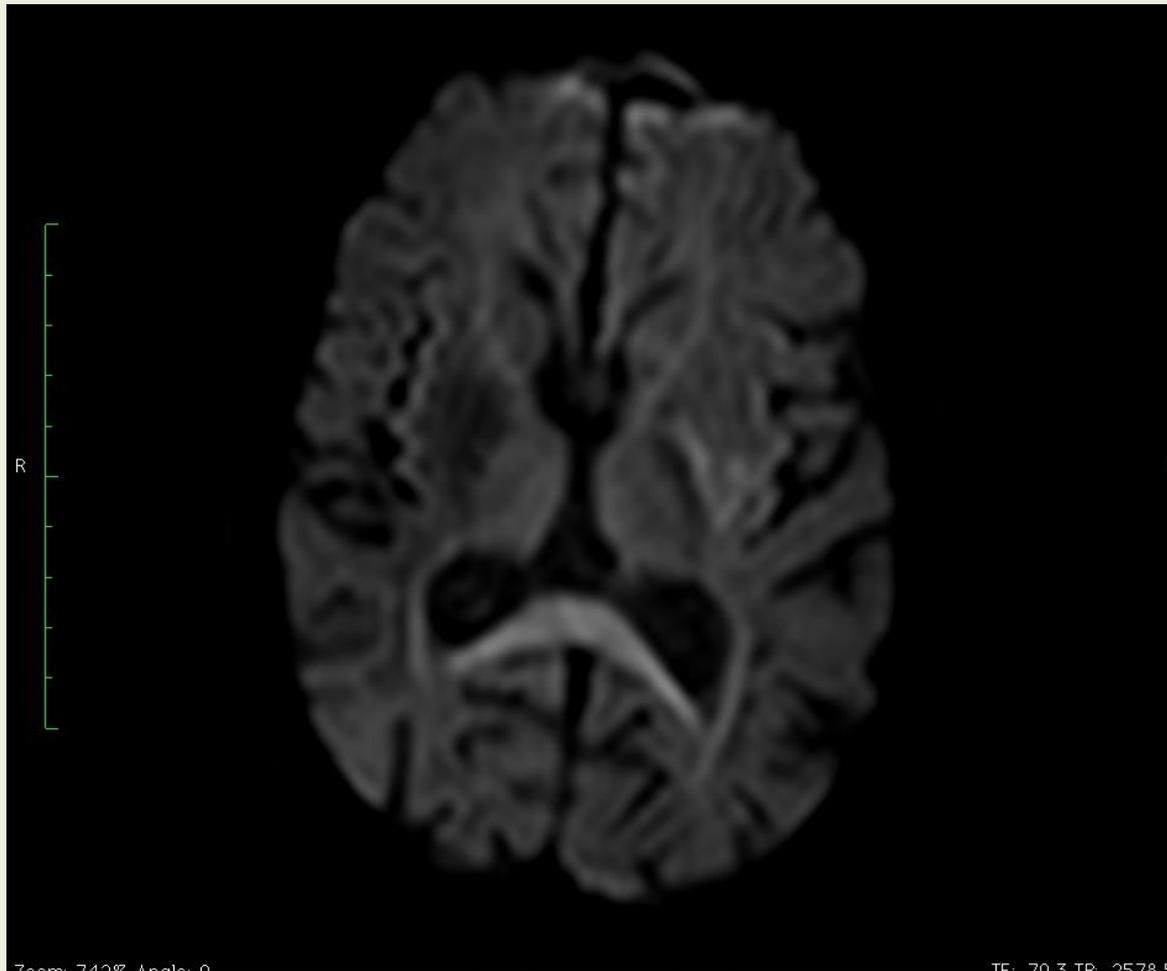
*Symptomatic intracranial hemorrhage is defined as any PH1, PH2, RH, SAH, or IVH (per core lab) associated with a decline in NIHSS ≥ 4 within 27hrs of randomization (24hrs of procedure)

All data based on independent adjudication by Core Lab or OEC

Frecuencia de efectos adversos de 3 estudios multicéntricos

	MRCLEAN		REVASCAT		SWIFTPRIME	
Muerte 90 días	18.9 (i)	18.4(c)	18.4 (i)	15.5(c)	9.2 (i)	12.4(c)
HP 1	0	0.7	2.9	3.9	4.1	3.1
HP2	6	5.2	2.9	1.9	1	4.1
H1	0.4	0				
H2	0.4	0.4				
HSA	0.9	0	4.9	1.9	4.1	1
ISQUEMIA	8.6	0.4	4.9			
HEMATOMA EXTRA	0	0.7	10.7			
DISECCION	1.7		3.9			

Paciente de 86a, Hemiparesia BC der.
Alteración DWI lenticular izq.



Angiografía digital y tratamiento, con reperusión

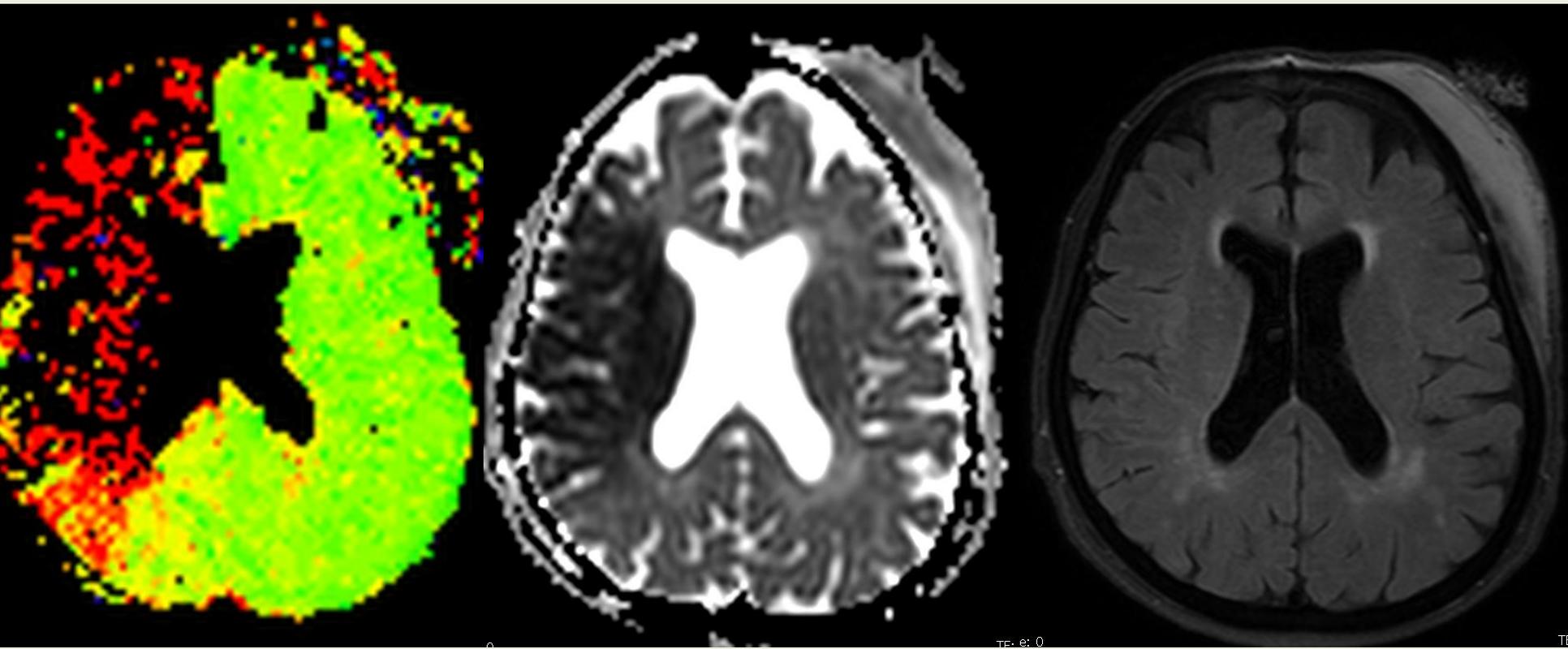


TAC control 36 hs pop



Síndrome de Reperusión

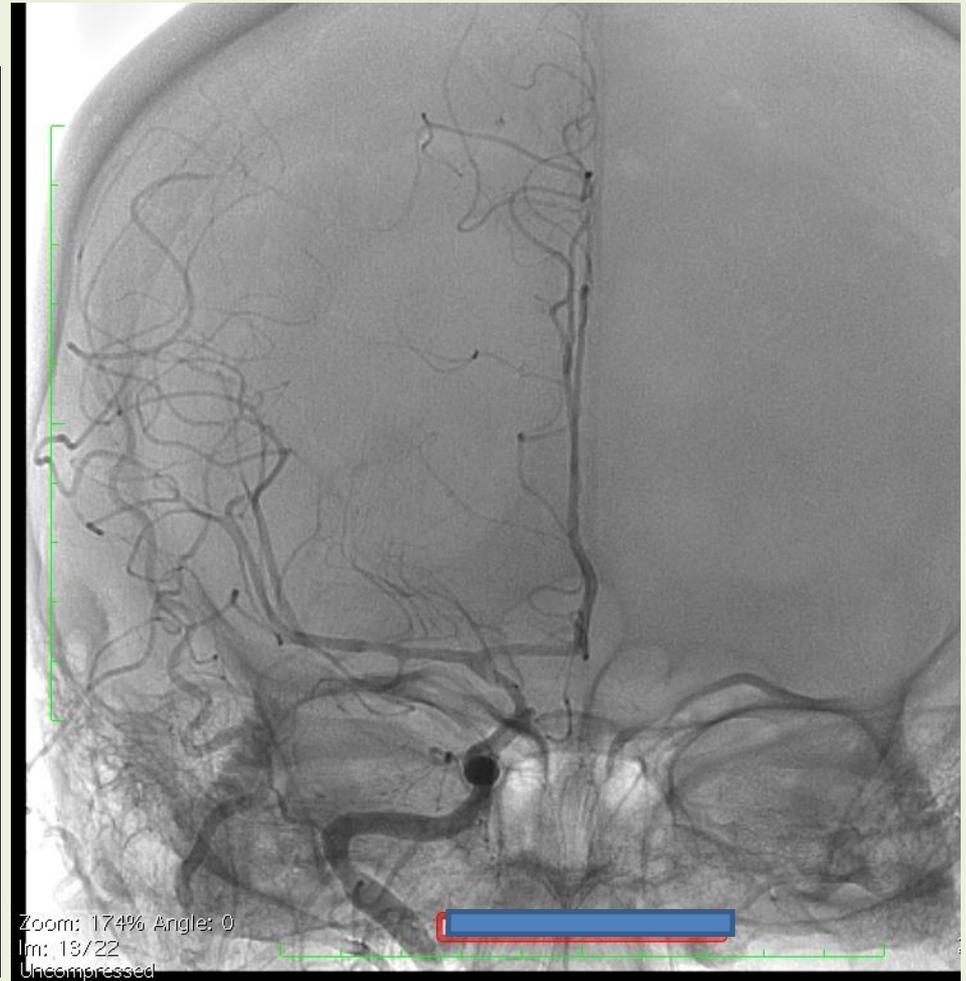
- Síntomas provocados por el aumento marcado del FSC ipsilateral (reperusión, hiperperusión)
- Tríada : Cefalea, foco motor, convulsiones.
- HTA pop.
- Alto grado de estenosis con poco flujo col.
- Vasoreactividad cerebral disminuida
- Evaluación preop de la RVC; Doppler TC perio.
- Prevención: Control pop HTA, drogas?



TE: 0

TE

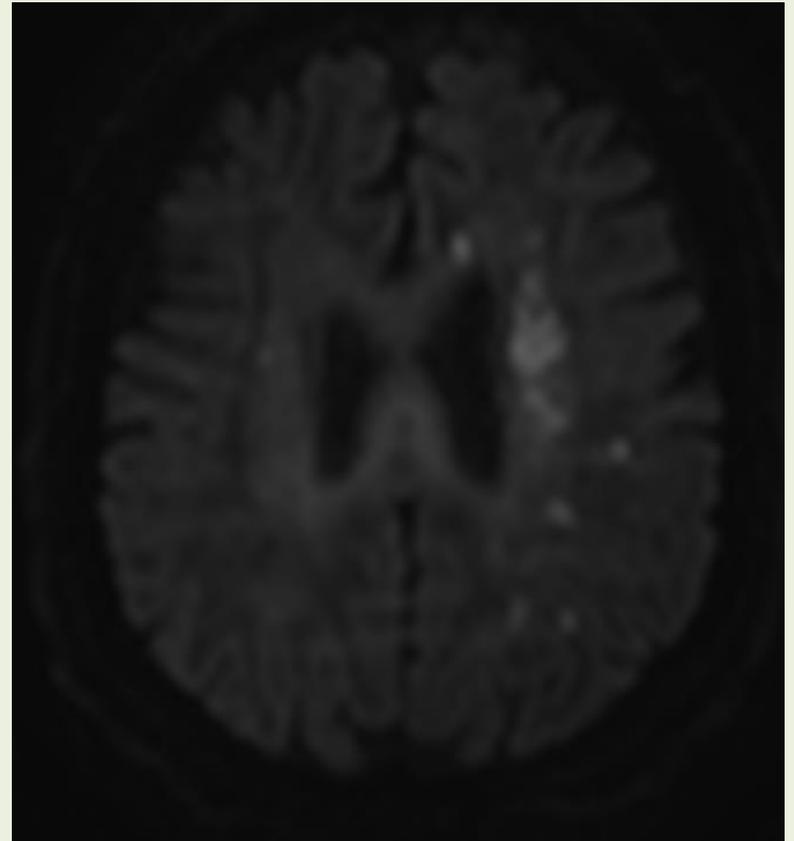
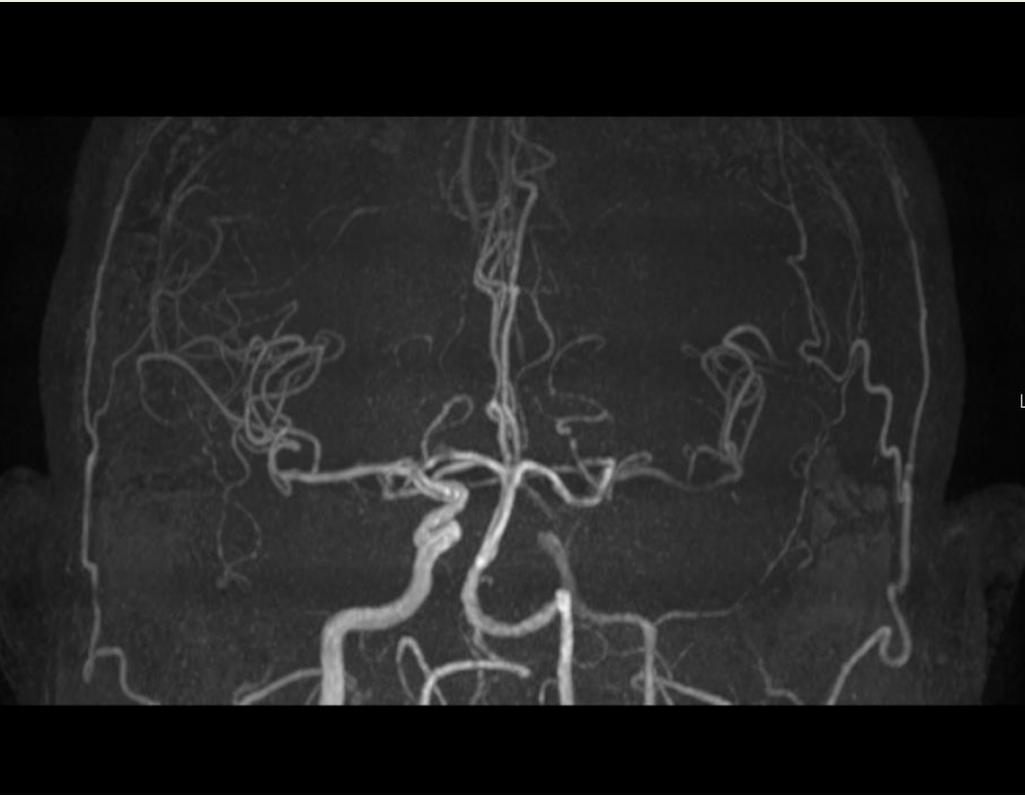
AD pre y post tratamiento



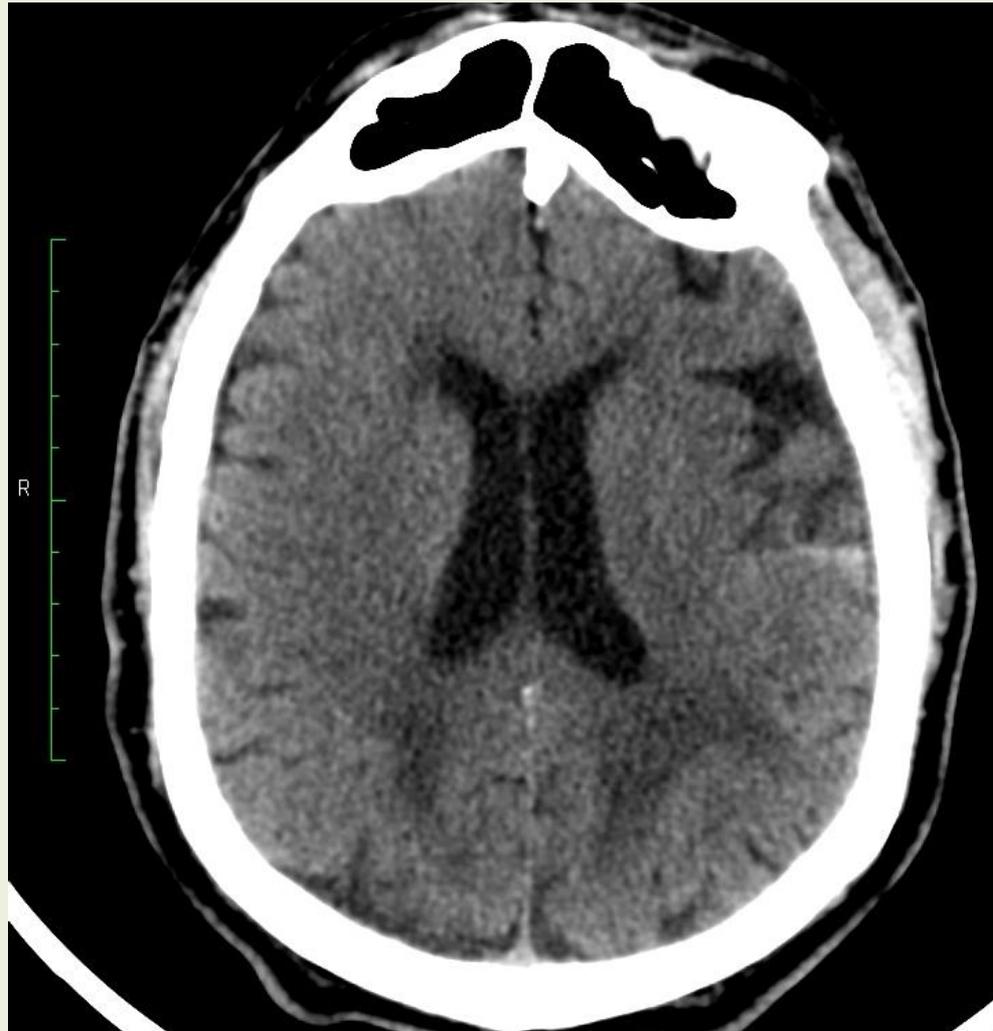
TAC cerebral 6hs pop



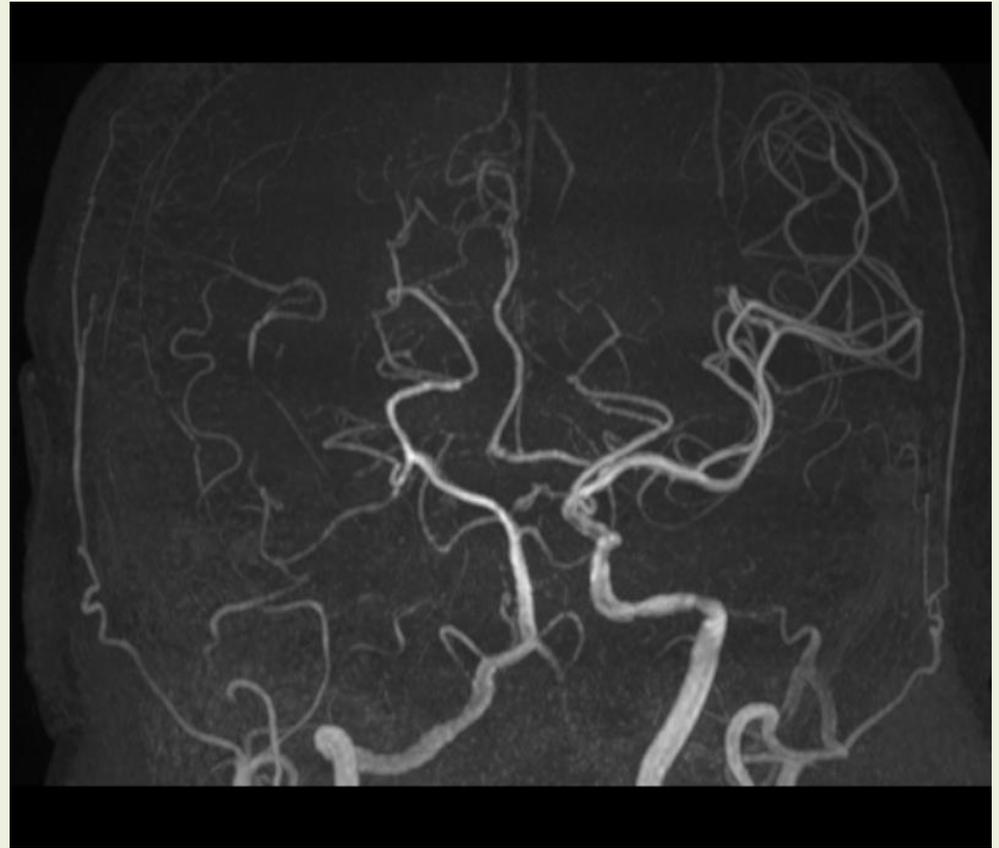
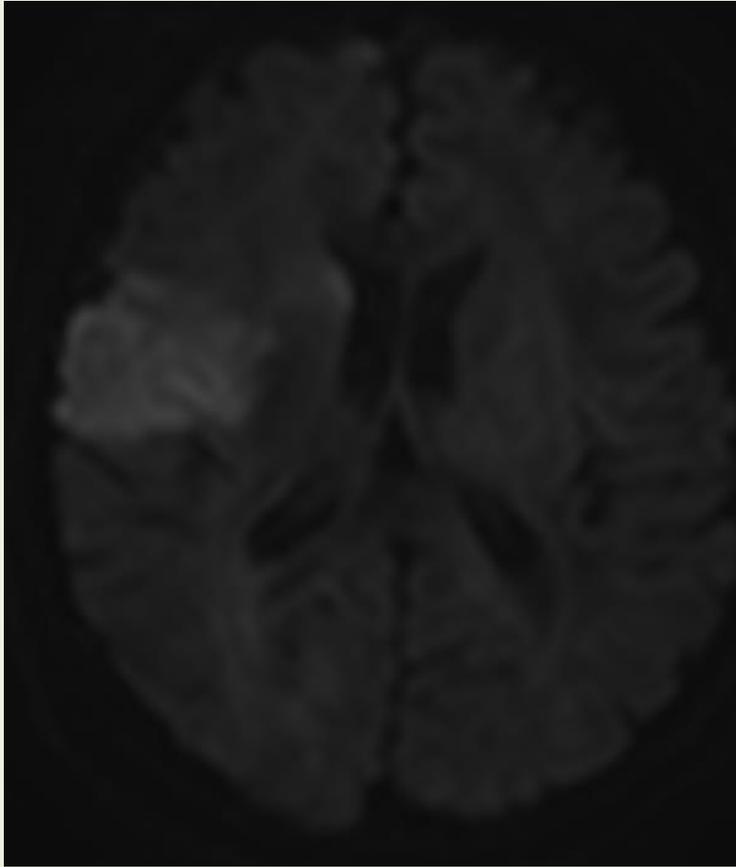
HSA post tratamiento



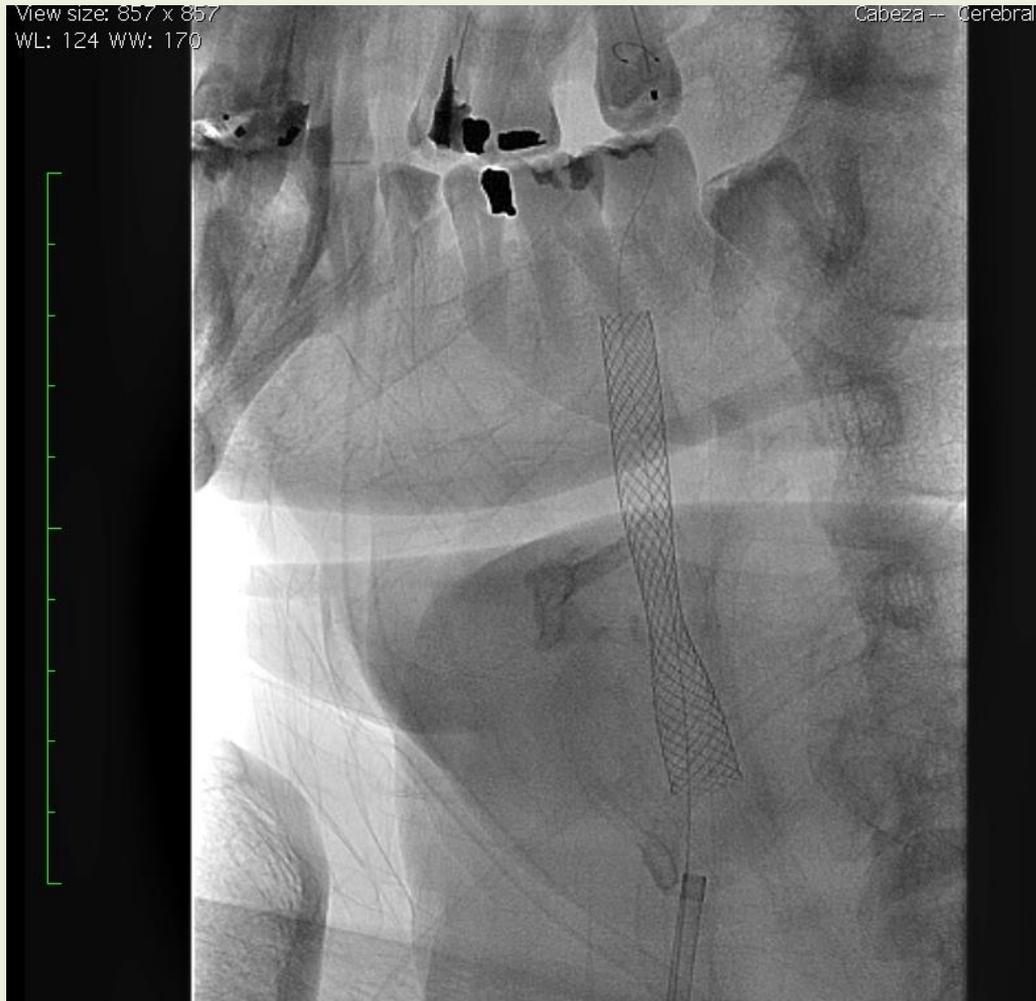
TAC control 24hs pop



Masc. 63a obsrucción carotidea aguda



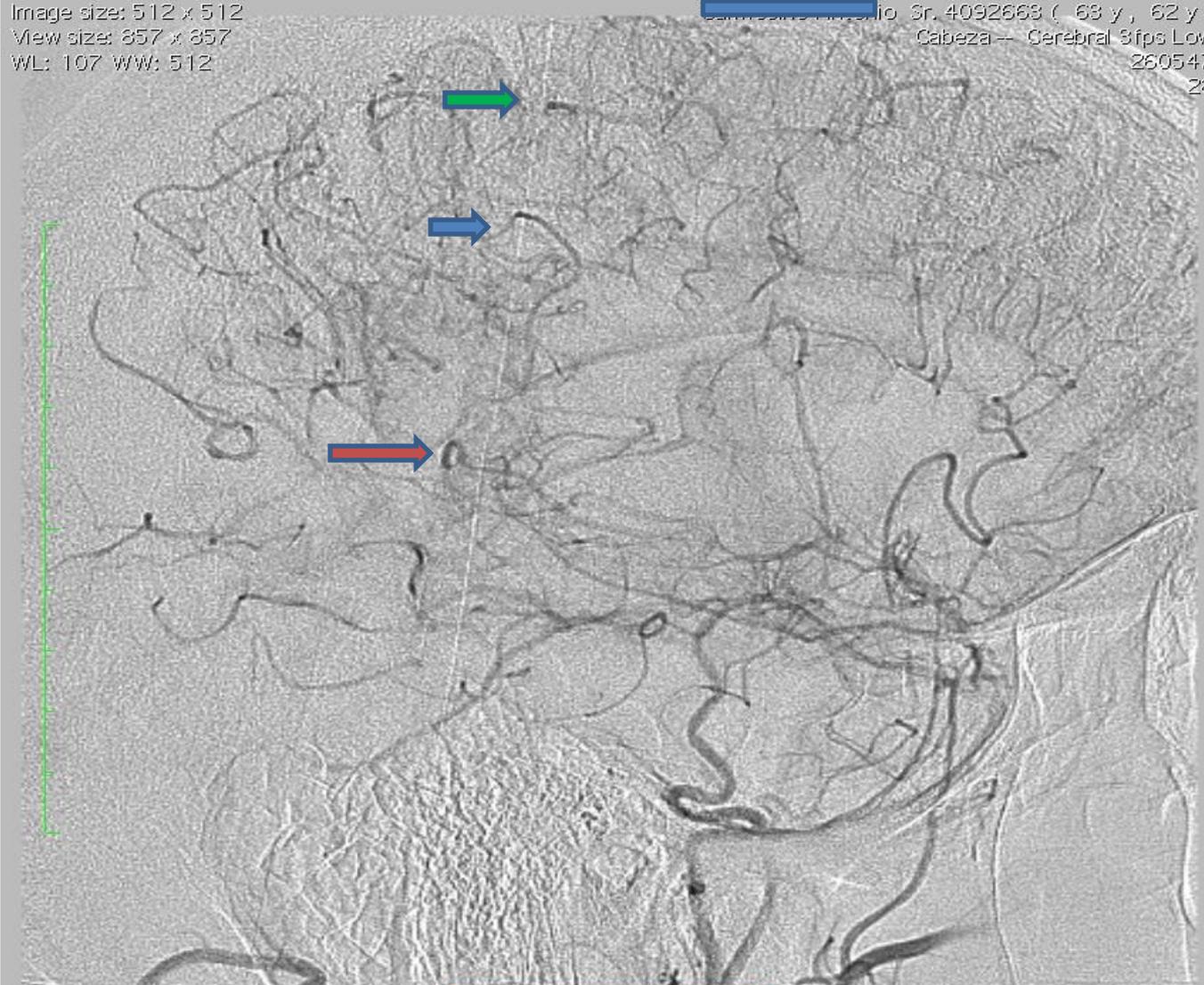
Permeabilización con stent



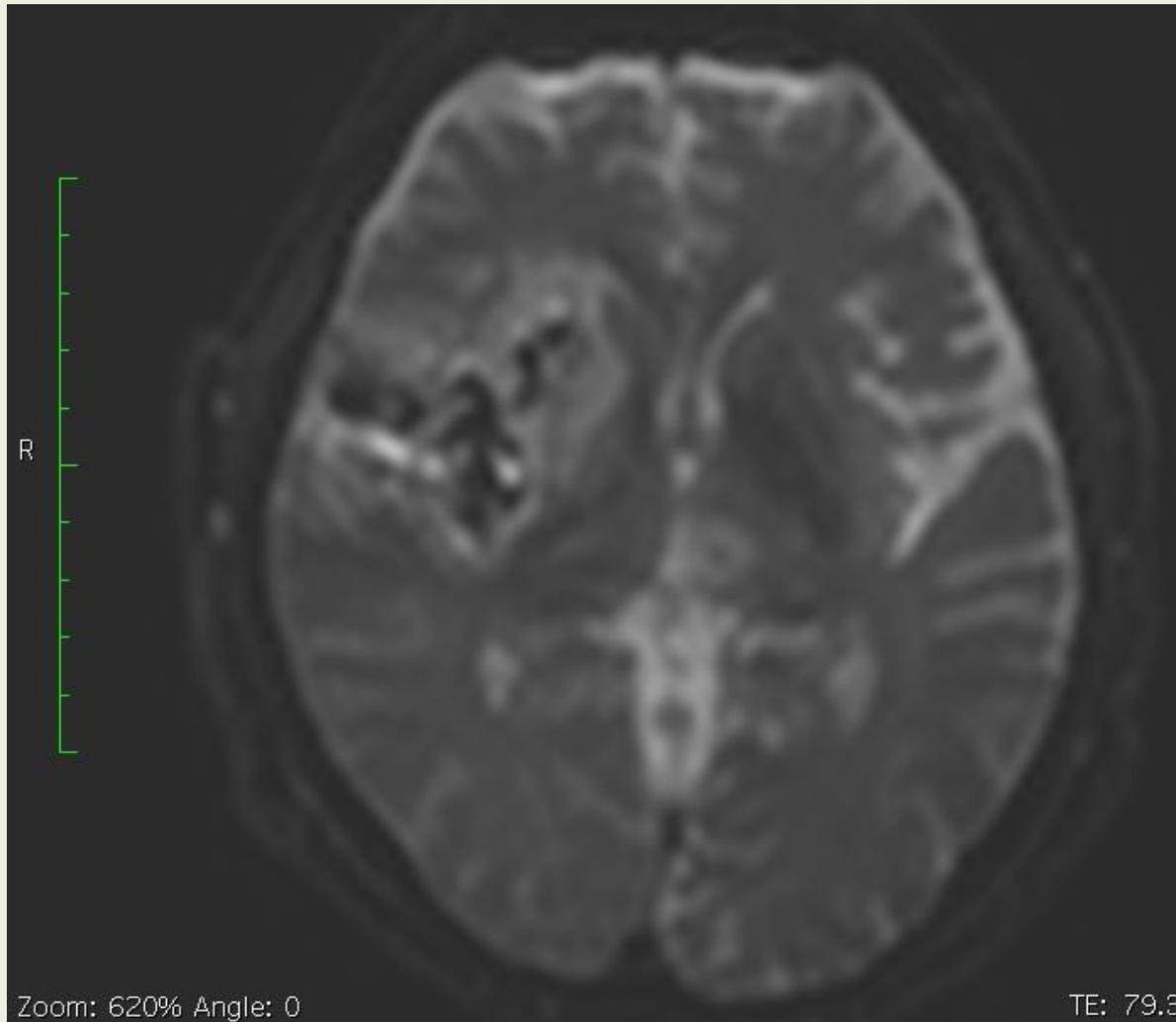
Embolias múltiples

Image size: 512 x 512
View size: 857 x 857
WL: 107 WW: 512

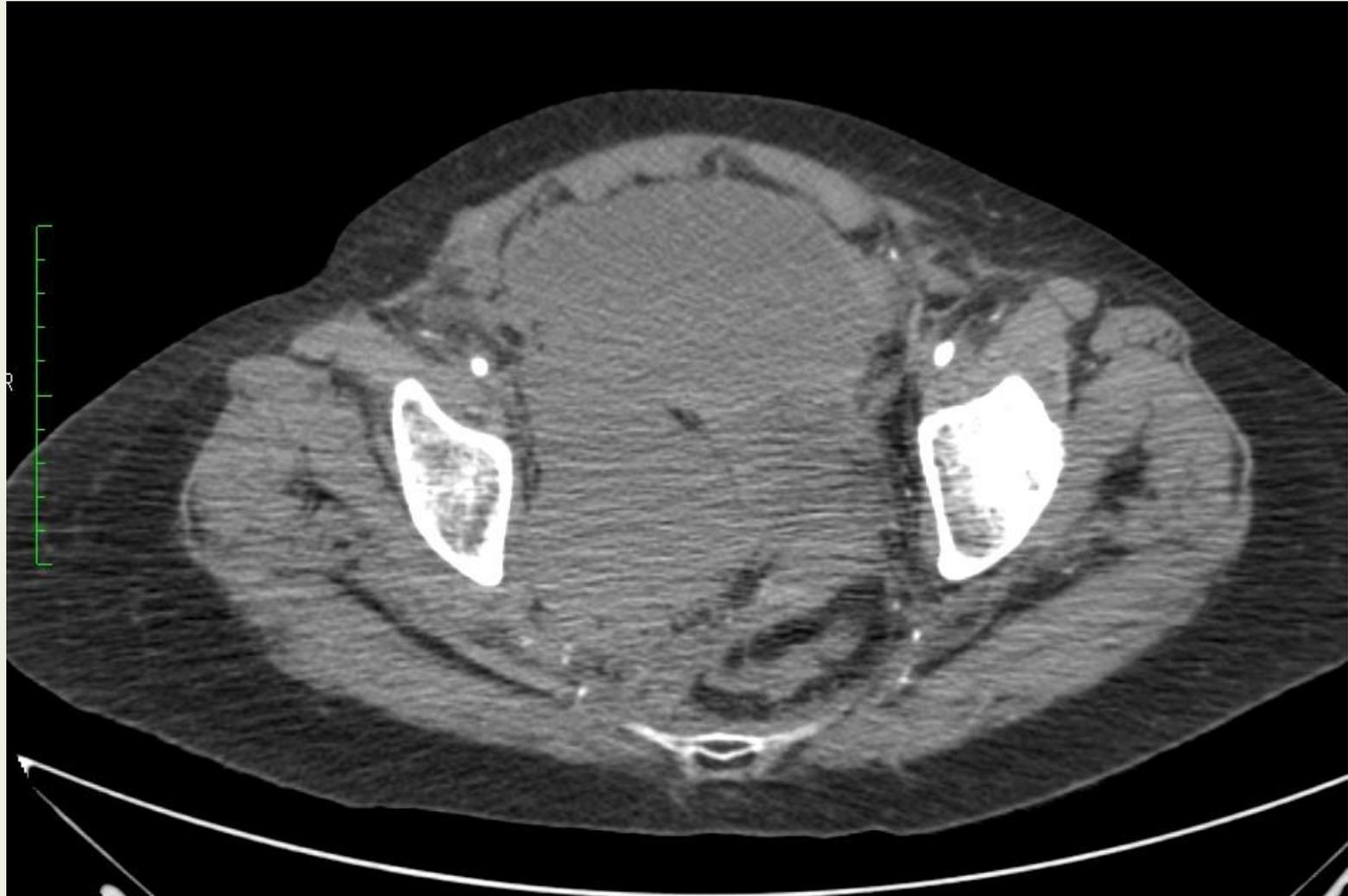
Camacho, Antonio Sr. 4092668 (68 y , 62 y)
Cabeza - Cerebral Sfps Low
260547
28



RMN 7 días op



Hematomas relacionados al sitio de punción



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Muchas Gracias

Arturo L. Trunzo
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