KRANKENHAUS
NORDWEST

Neurointerventionen
Rekanalisation

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saint 2009

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Rekanalisationsverfahren

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Inhalte

Diagnostik

- *CT*
- *MRT*

Materialien

- *Lyse*
- *Thrombektomie*
- *Stent*

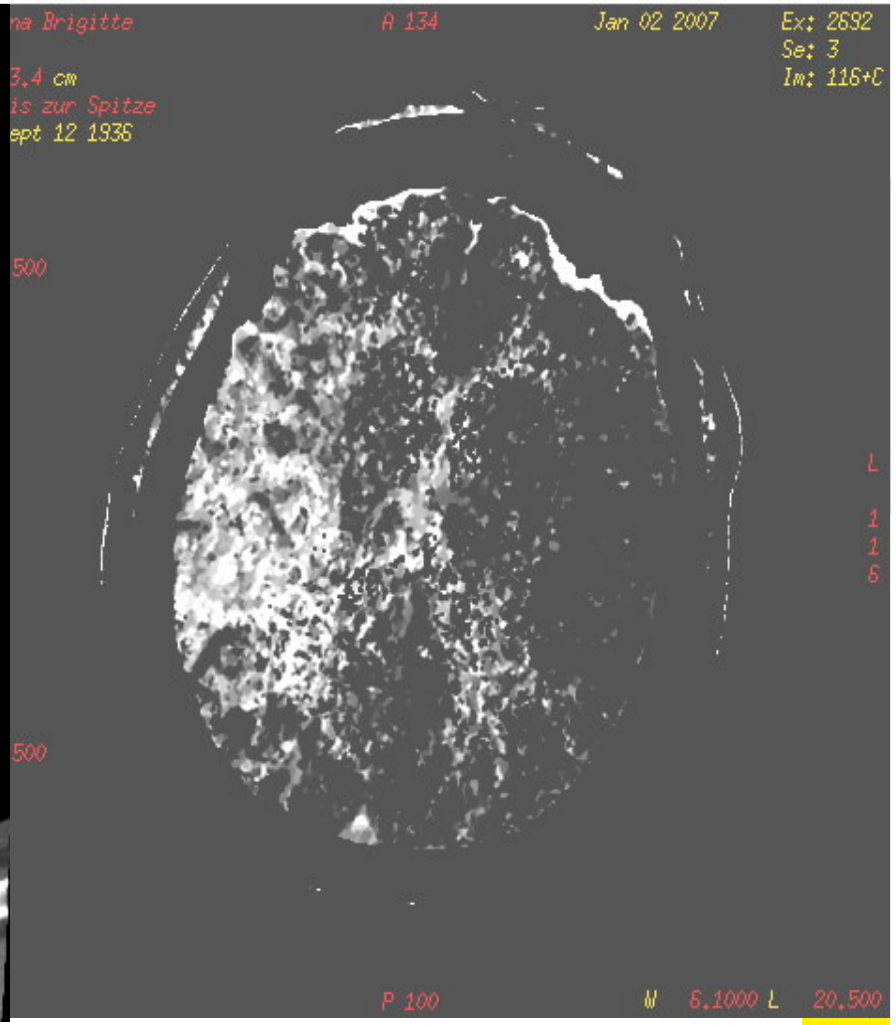
Akute Rekanalisation

- *Lyse*
- *Mechanische Rekanalisation*

Elektive Rekanalisation

- *PTA*
- *Stent*

Ct-Diagnostik



MR-Diagnostik

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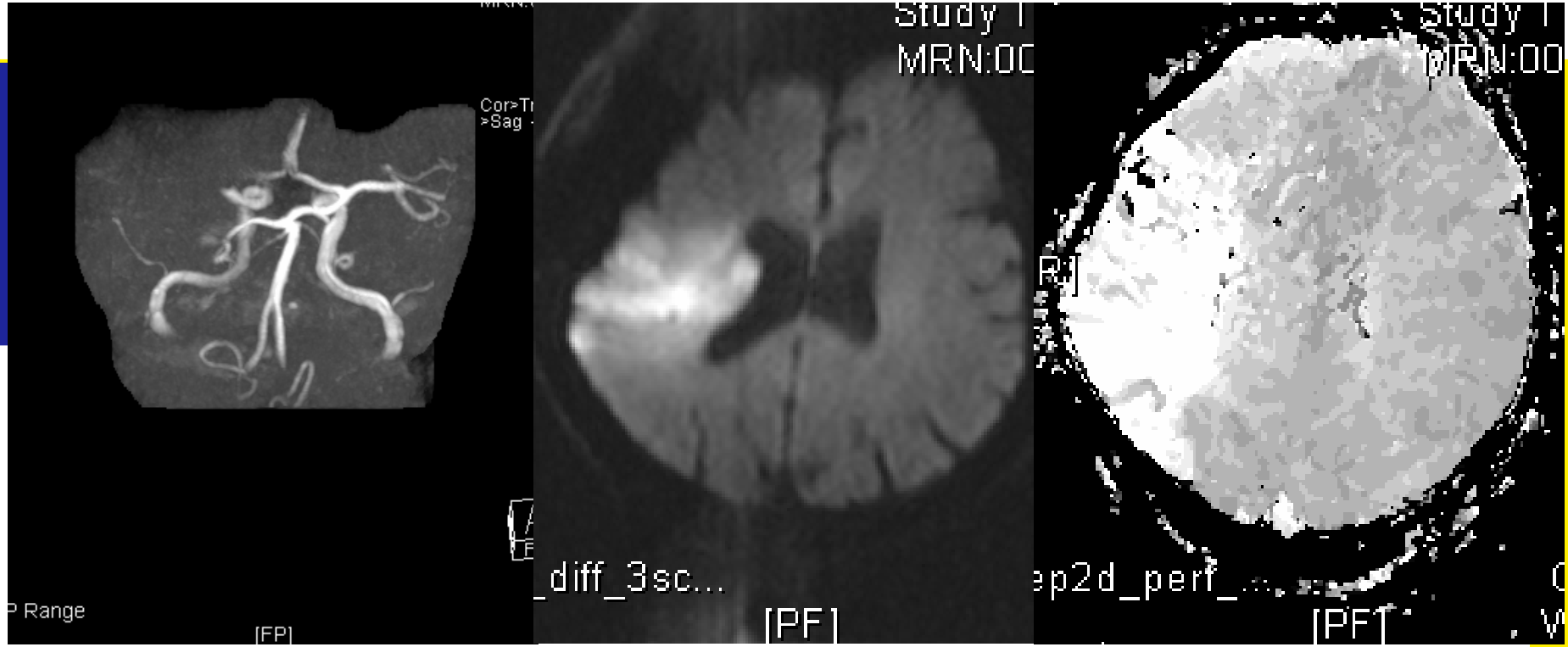

T Stent

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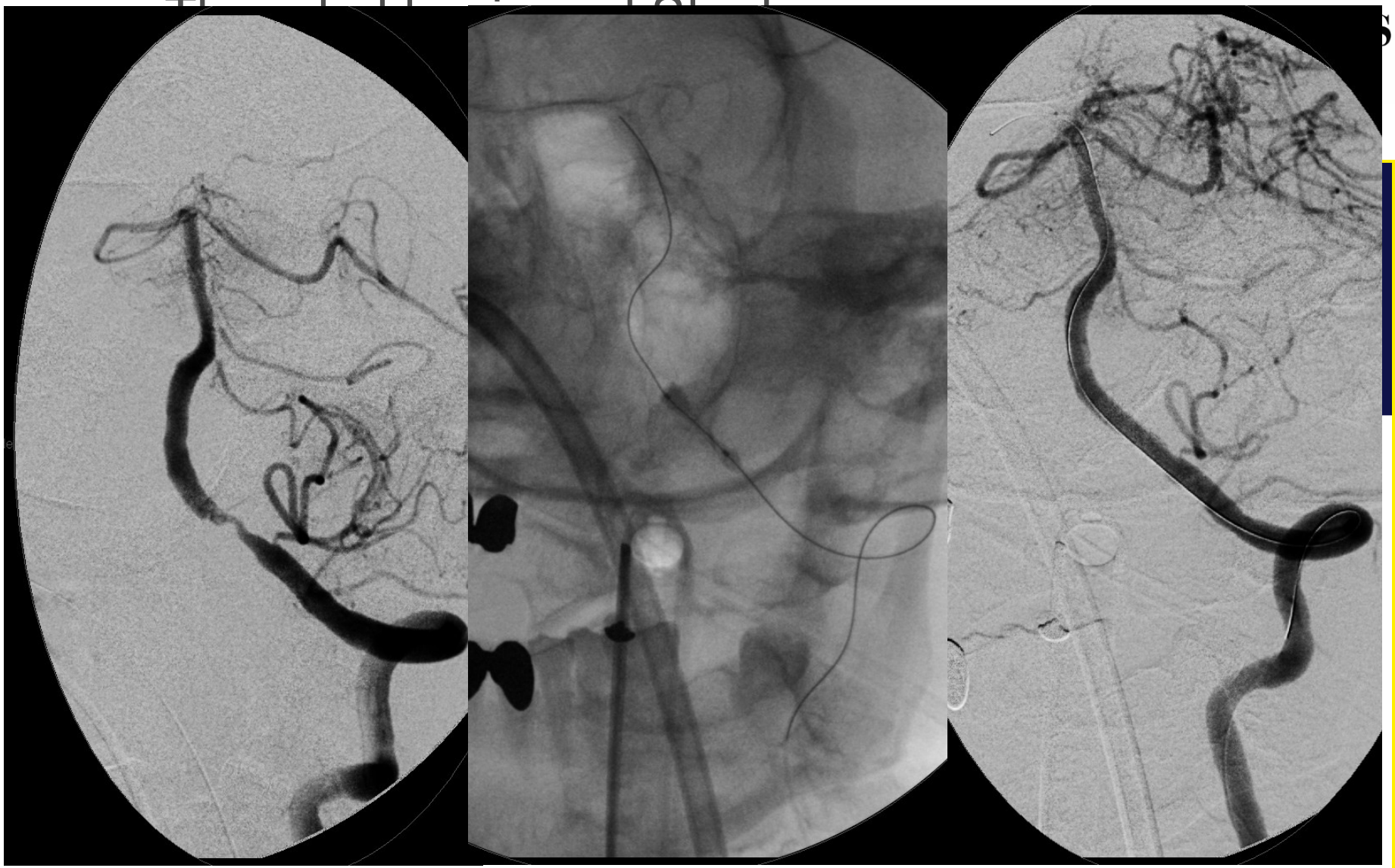
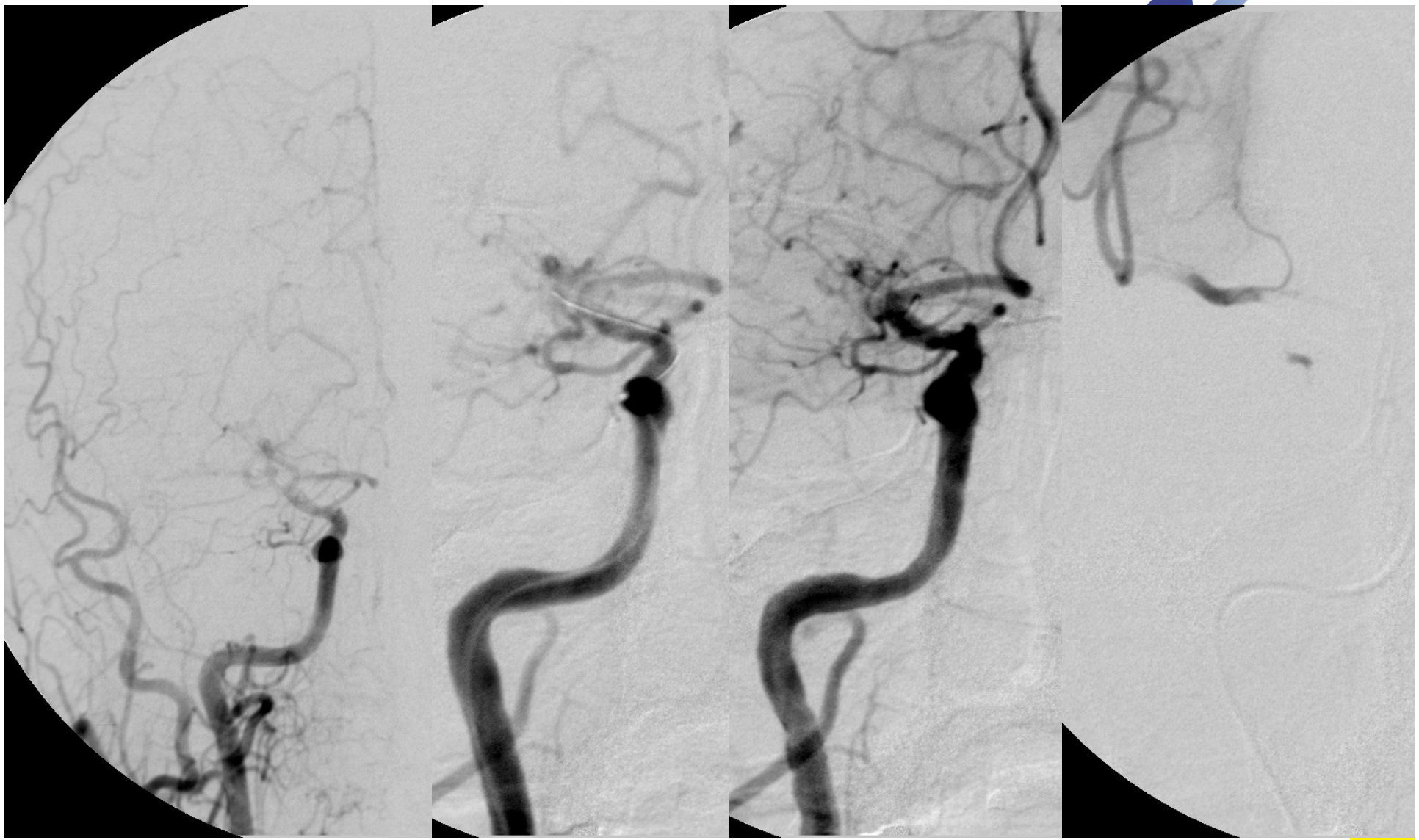


Thrombektomie und Stent



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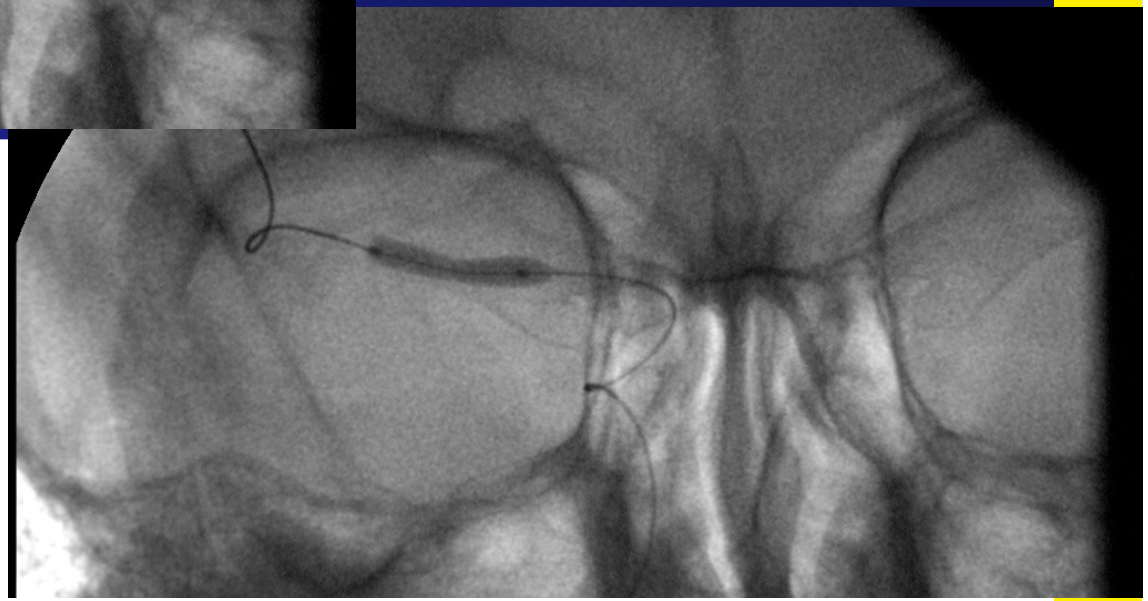

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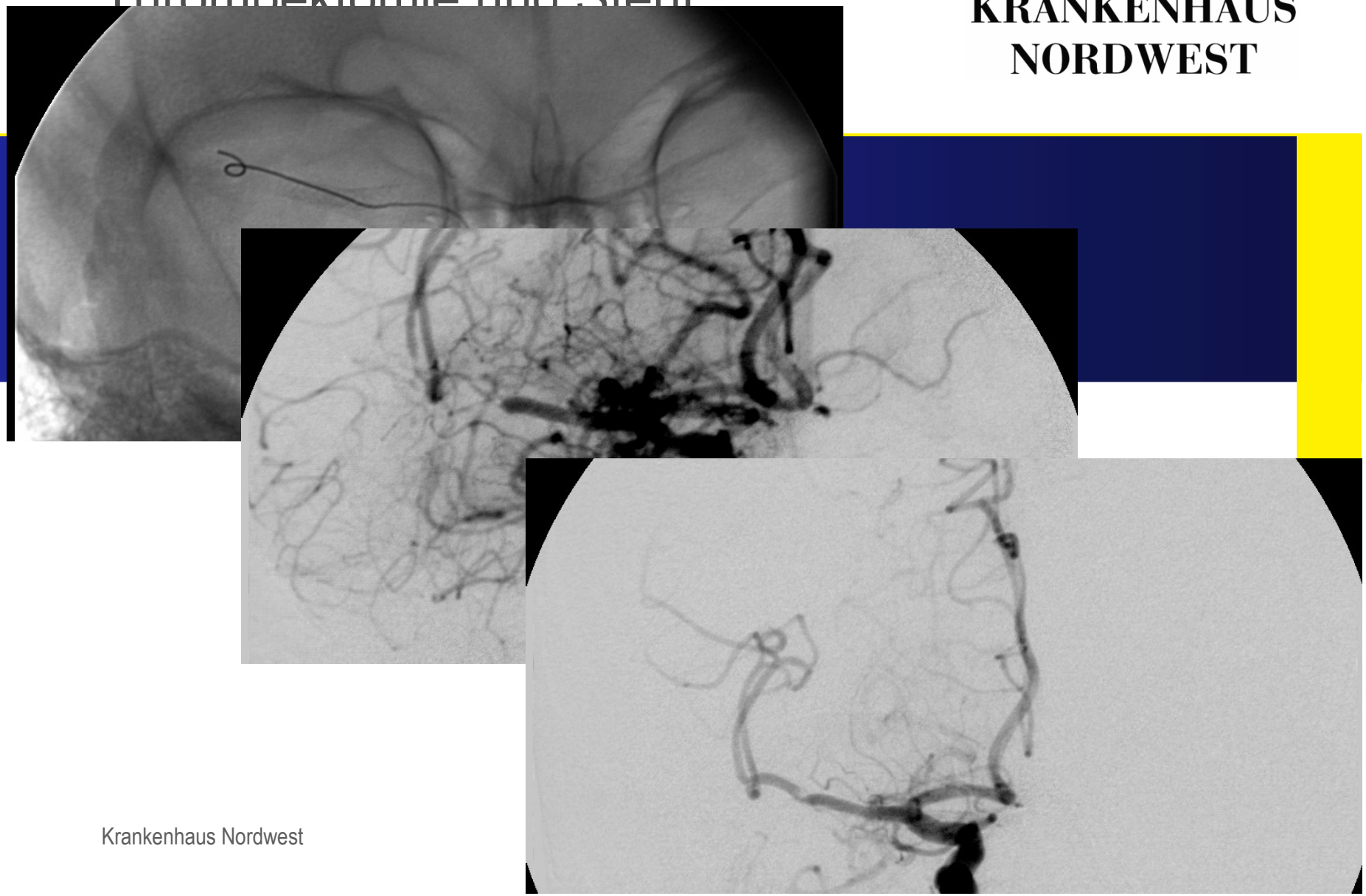
Thrombektomie und Stent



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Rekanalisation

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	Rekanalisation	NIHSS prä	Mod R Scale post	Mortality	
Mc Dougall et al	82%	17.6%	75%>2		Penumbra
Smith et al	69%		62%>2	34%	Merci
Eckert et al	Carotis T			63%	Bei Rekanalisation
Mattle et al.	Media		53% >2	15%	LIT 6h
	Media		23% >2	23%	IVT 3h
Lindsberg	Basilaris		24% >2	55%	LIT
	Basilaris		22% >2	50%	IVT

Mc Dougal et al. ISC 2008, 20-22

Smith et al. Stroke 2008, 1205-1212

Eckert et al. Cerebrovasc Dis 2003 258-263

Eckert et al Clinical Neuroradiology 2009 8-19

Mattle et al. Stroke 2008 379-383

Lindsberg et al. Stroke 2006 922-928

Rekanalisation

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Tobias Struffert, Martin Köhrmann, Tobias Engelhorn, Tim Nowe, Gregor Richter, Peter D. Schellinger, Stefan Schwab, Arnd Doerfler

Penumbra Stroke System as an “add-on” for the treatment of large vessel occlusive disease following thrombolysis: first results

Klinisches Outcome nach 90d

Letalität	3/12
mRs 4 und 5	4/12

Eur Radiol (2009) 19: 2286–2293

Rekanalisation- akut iv/lokal

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	IV (n=107)	IV–IA (n=53)	p†	Relative risk‡	p	Sensitivity analysis*			
						IV (n=61)	p†	Relative risk‡	p
Recanalisation	56 (52%)	46 (87%)	<0·0001	1·49 (1·21–1·84)	0·0002	32 (52%)	<0·0001	1·52 (1·18–1·96)	0·001
Early neurological improvement	42 (39%)	32 (60%)	0·01	1·36 (0·97–1·91)	0·07	24 (39%)	0·03	1·43 (0·97–2·09)	0·07
90-day favourable outcome	47 (44%)	30 (57%)	0·13	1·16 (0·85–1·58)	0·35	24 (39%)	0·07	1·34 (0·94–1·92)	0·10
90-day mortality	18 (17%)	9 (17%)	0·98	1·06 (0·51–2·20)	0·87	9 (15%)	0·75	1·34 (0·62–2·93)	0·46
Haemorrhagic complications									
Any	39 (37%)	15 (28%)	0·31	0·93 (0·56–1·56)	0·79	23 (38%)	0·29	0·86 (0·51–1·49)	0·61
Symptomatic	12 (11%)	5 (9%)	0·73	1·12 (0·44–2·89)	0·81	5 (8%)	1·00	1·35 (0·48–3·75)	0·57

Data are number (%) or relative risk (95% CI). Favourable outcome defined as an mRS score of 2 or less. Early neurological improvement defined as NIHSS score 0–1 at 24 h or a decrease of 4 or more points in NIHSS score at 24 h. IV–IA = intravenous–endovascular treatment. IV = intravenous treatment. *Restricted to IV-treated patients with occlusion confirmed by angiographic examination. †p for comparison between IV–endovascular vs IV (χ^2 test or Fisher's exact test). ‡Relative risk values calculated by comparing the rate of each outcome in the IV–endovascular group with each event in the IV group; values adjusted for prespecified confounders (eg, age, sex, hypertension, diabetes, a baseline NIHSS score of 16 points or more, or symptoms of cardioembolism) and for time to treatment from symptom onset of 150 min or longer.

Table 2: Efficacy and safety outcomes according to therapeutic group

Comparison of intravenous alteplase with a combined intravenous–endovascular approach in patients with stroke and confirmed arterial occlusion (RECANALISE study): a prospective cohort study

Lancet Neurol 2009; 8: 802–09
Published Online July 31, 2009
DOI:10.1016/S1474-4422(09)70182-6

Mikael Mazighi, Jean-Michel Serfaty, Julien Labreuche, Jean-Pierre Laissy, Elena Meseguer, Philippa C Lavallée, Lucie Cabrejo, Tarik Slaoui, Céline Guidoux, Bertrand Lapergue, Isabelle F Klein, Jean-Marc Olivot, Gai Raphaeli, Christiane Gohin, Elisabeth Schouman Claeys, Pierre Amarenco, on behalf of the REcanalisation using Combined intravenous Alteplase and Neurointerventional ALgorithm for acute Ischemic StrokE (RECANALISE) investigators

Rekanalisationsverfahren

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Materialien

- *rtPA (0,9mg/kg Kg) 50% intraarteriell*
- *Bridging (GP IIb/IIIa oder rtPA)*
- *Mikrodraht, drückgespülter Mikrokatheter, dauergespülter Führungskatheter*

Rekanalisationsverfahren

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Materialien

- *Zugelassene Stents*
- *Off lable use*

Dokumente zum Off-Label-Use:
Es wird zur Diskussion gestellt, ob der Berufsverband nicht ein offizielles Statement zum Thema Off-Label-Use zu den Themen „Coronarstents in intrakraniellen Gefäßen“, „Methohexital für den WADA- Test“ und „Intrathekale Applikation von Gd- DTPA“ abgeben sollte. Die nachfolgende Diskussion ergibt, dass aus verschiedenen Gründen von der Anwendung der Coronarstents in Hirngefäßen Abstand zu nehmen ist. Für

Selbstexpandierbarer Stent

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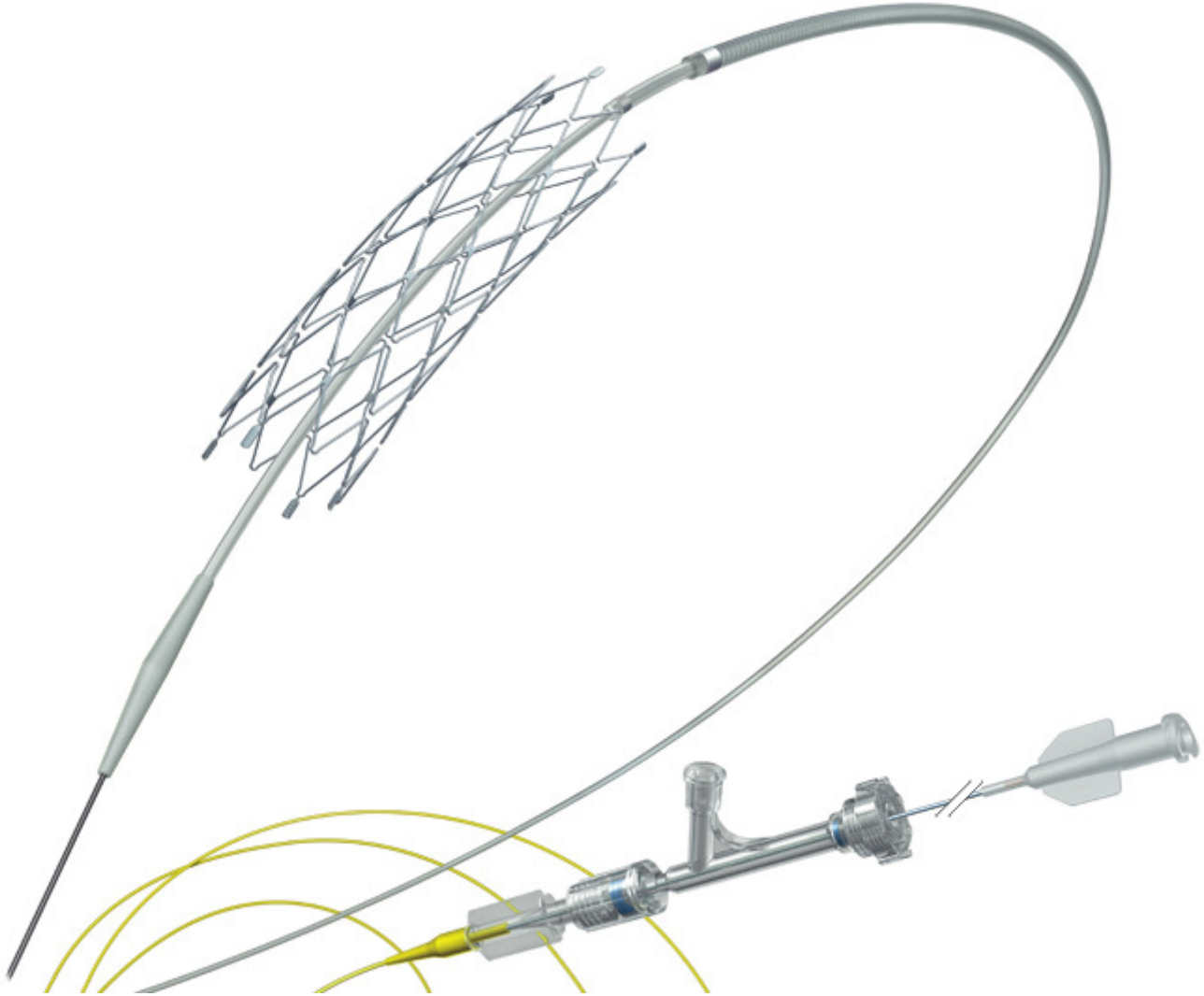

2009

Selbstexpandierbarer Stent

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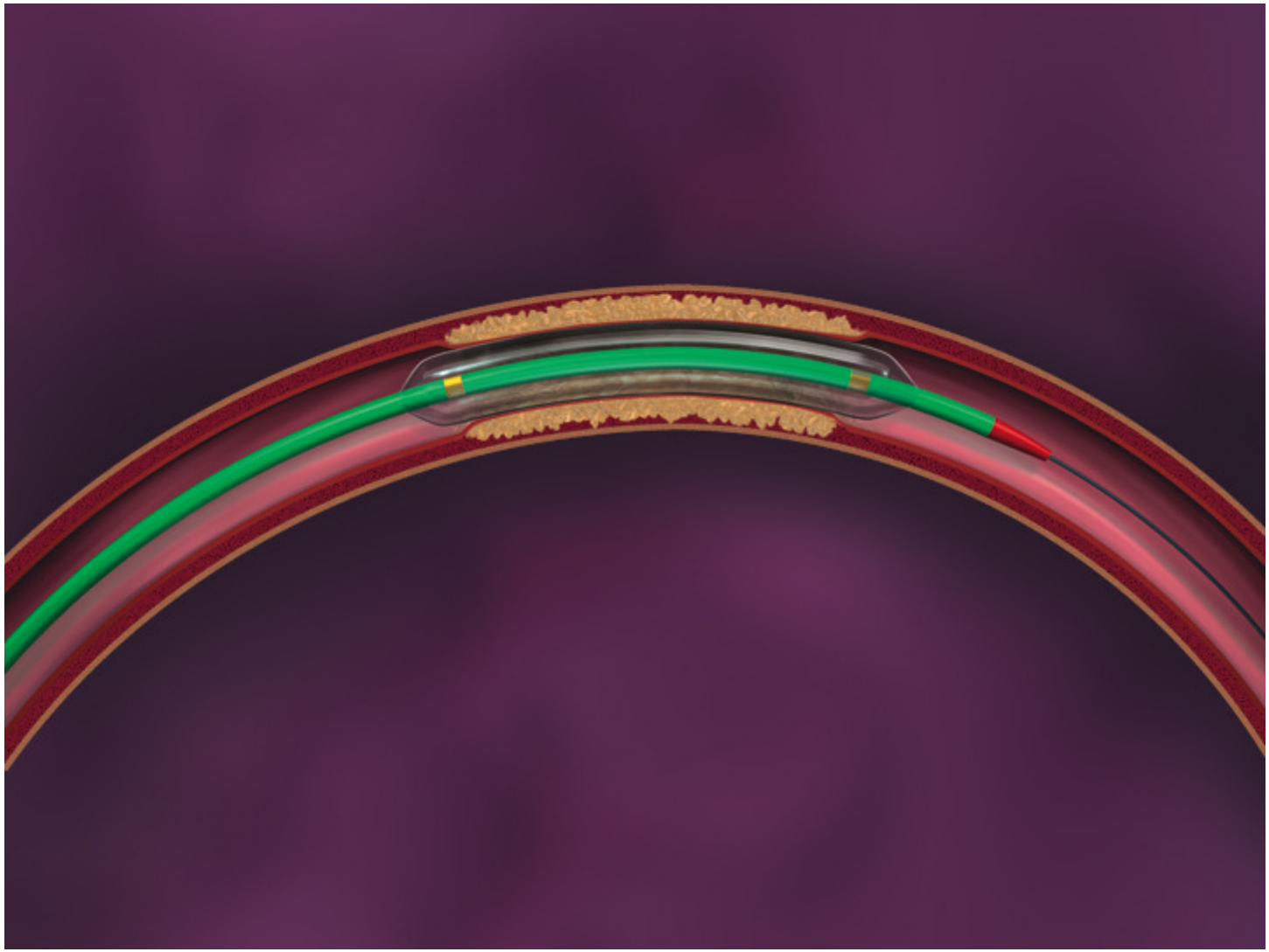

Selbstexpandierbarer Stent

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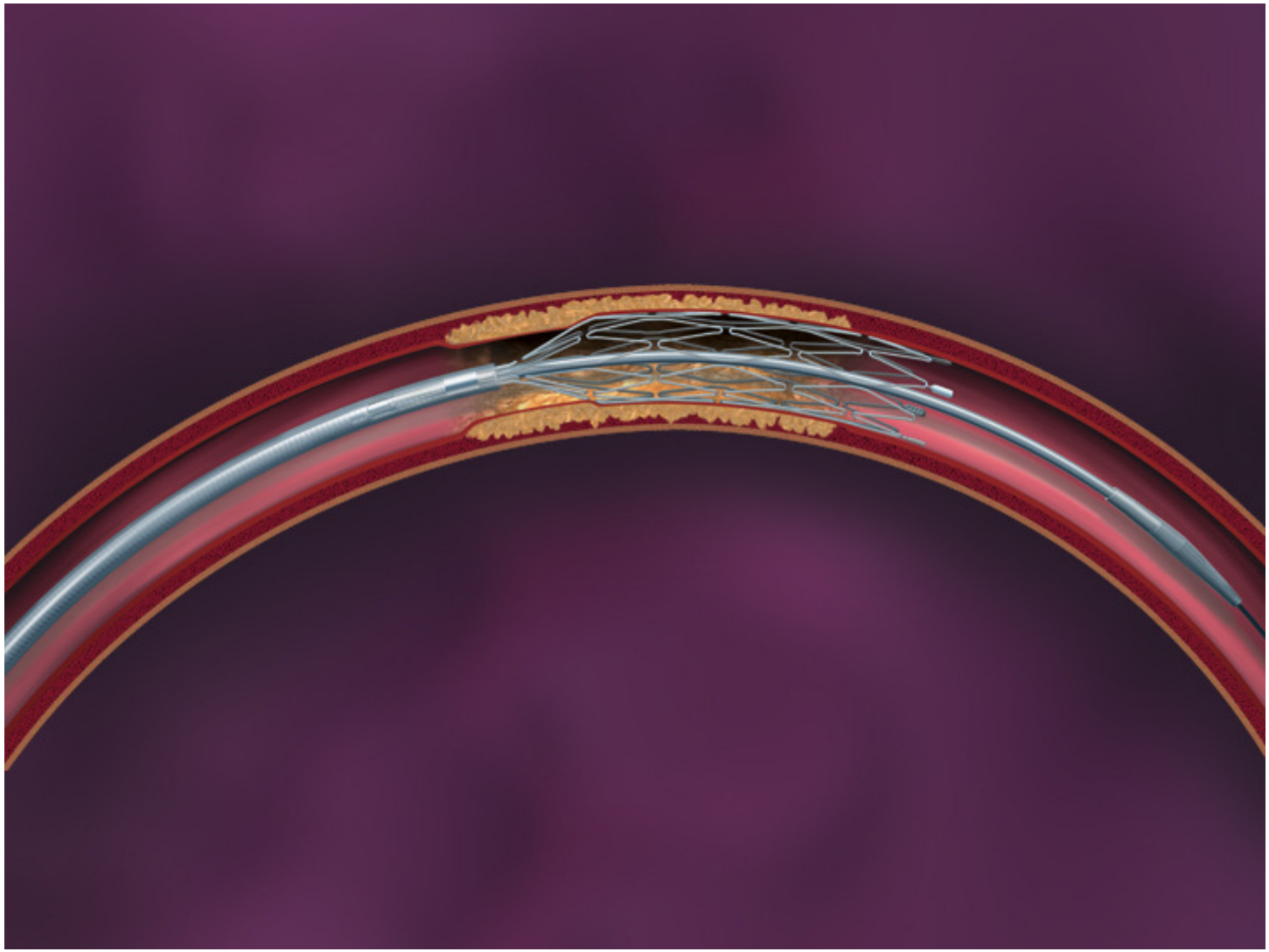

Selbstexpandierbarer Stent

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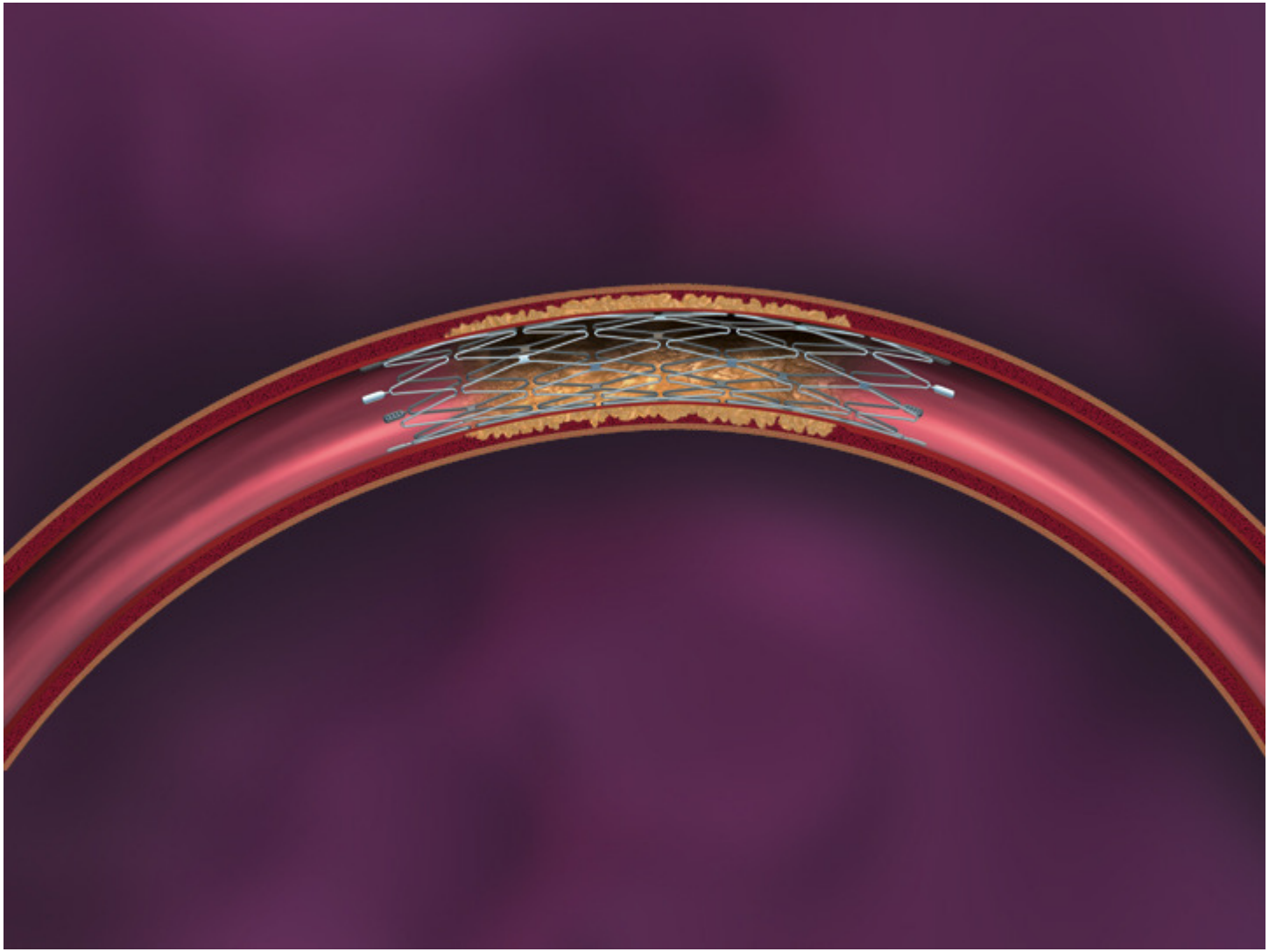

Ballonmontierter Stent

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Ballonmontierter Stent

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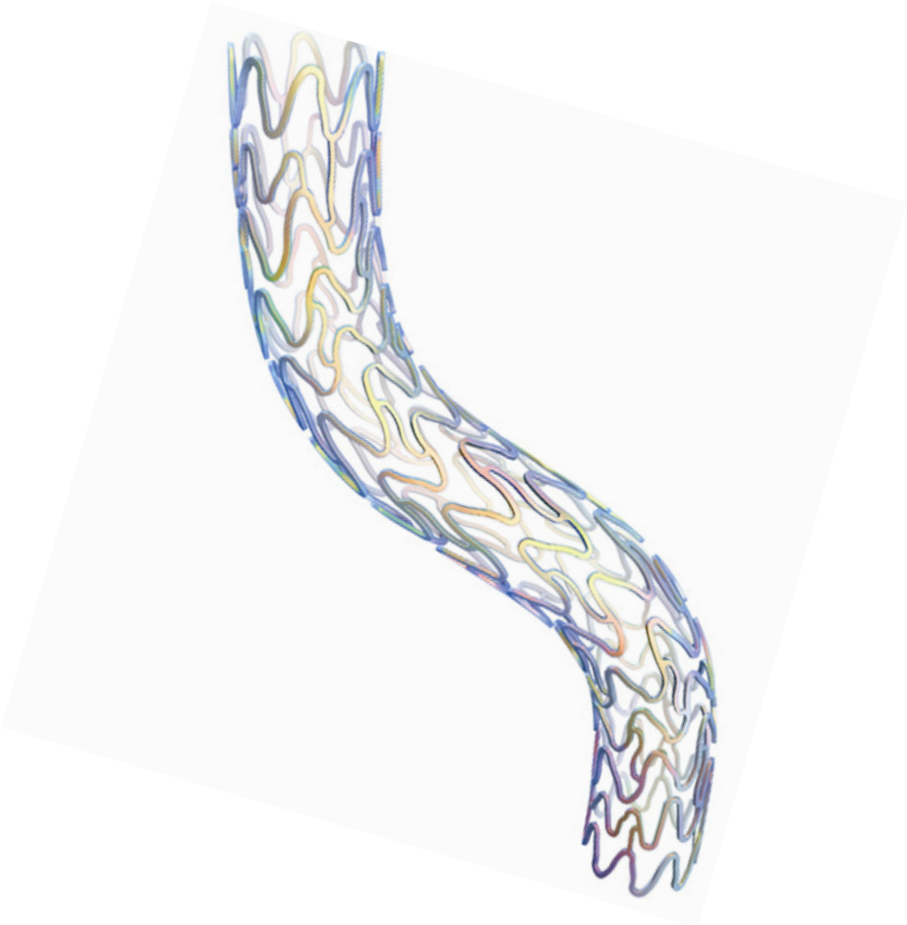

Rekanalisation- selbstexpandierbar

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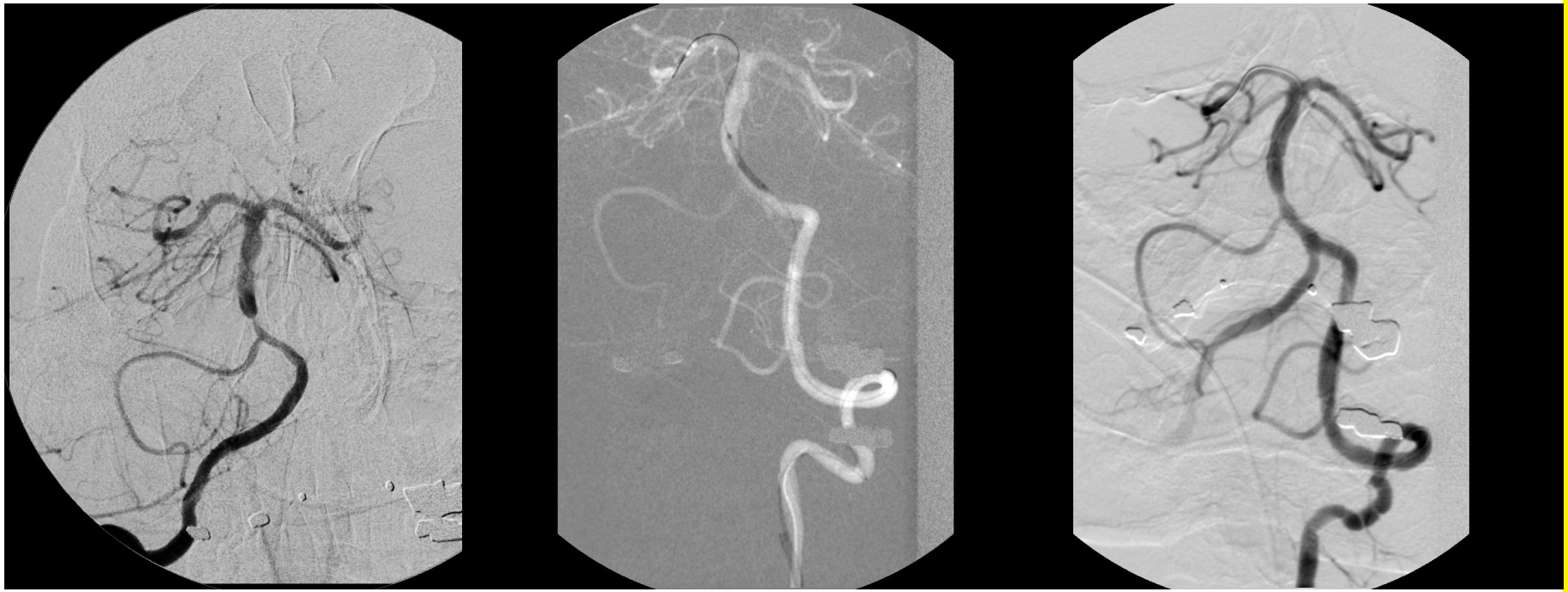

Rekanalisation- ballonmontiert

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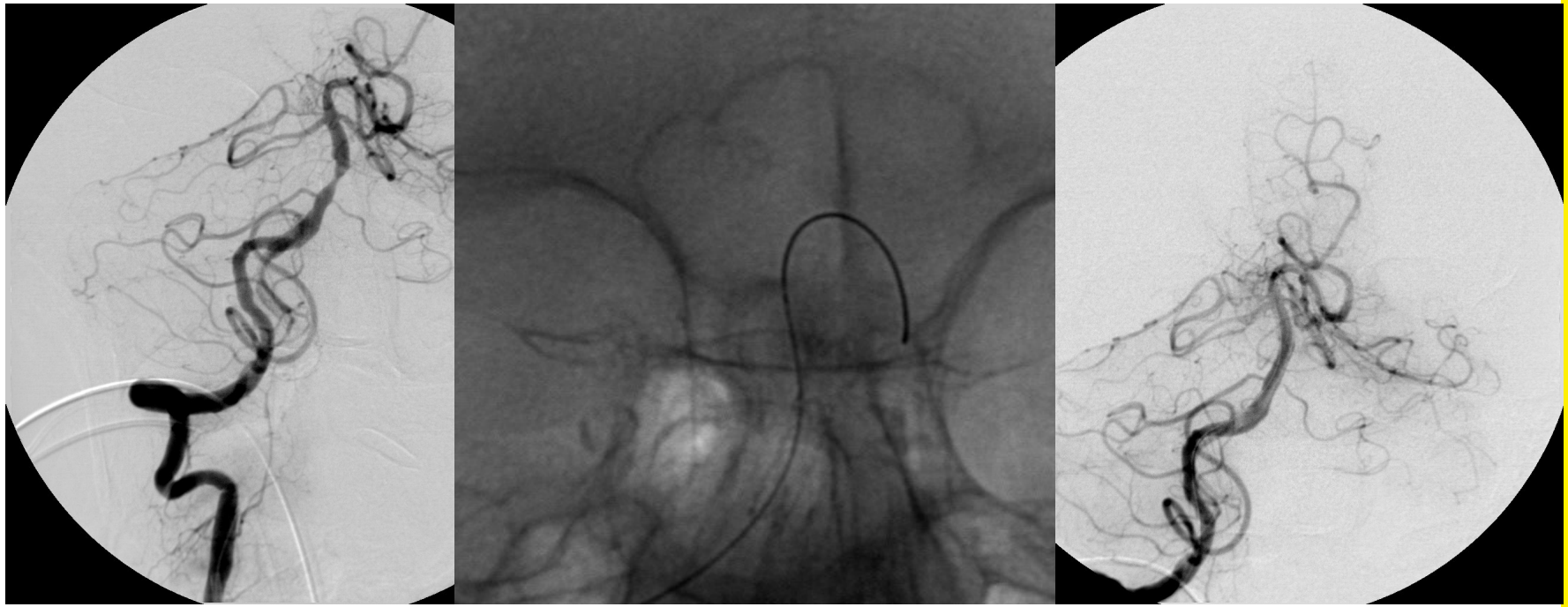

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Table 2. The Association Between Treatment Modality (Primary Angioplasty or Stent Placement) With Clinical and Angiographic Outcomes

	Treatment Group		Hazard ratio (95% CI)	
	Primary Angioplasty	Stent Placement	Unadjusted	Adjusted*
Binary restenosis				
Events/No. of patients	25/65	23/68	1.0 (0.58–1.8) $P=0.93$	1.1 (0.57–1.9) $P=0.85$
Median follow-up time in months [range]	12 [2–36]	8 [1–36]		
Any stroke				
Events/No. of patients	3/94	4/96	0.49 (0.11–2.3) $P=0.36$	0.54 (0.11–2.5) $P=0.44$
Median follow-up time in months [range]	16 [1–62]	12 [1–52]		
Stroke and/or death				
Events/No. of patients	6/94	8/96	0.49 (0.17–1.4) $P=0.19$	0.50 (0.17–1.5) $P=0.22$
Median follow-up time in months [range]	16 [1–62]	12 [1–52]		

*Adjusted by center, age and sex using using Cox proportional hazard analyses.

Comparison of Primary Angioplasty With Stent Placement for Treating Symptomatic Intracranial Atherosclerotic Diseases

A Multicenter Study

(*Stroke*. 2008;39:2505-2510.)

Farhan Siddiq, MD; Gabriela Vazquez, PhD; Muhammad Zeeshan Memon, MD; M. Fareed K. Suri, MD; Robert A. Taylor, MD; Joan C. Wojak, MD; John C. Chaloupka, MD; Adnan I. Qureshi, MD

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Table 2. Periprocedural Complications According to the Localization of the Treated Artery

	Anterior Circulation	Posterior Circulation	*P* Value	Odds Ratio (95% Confidence Interval)
Minor stroke	7/356 (1.9%)	16/387 (4.1%)	0.088	2.15 (0.90–5.15)
Major stroke	11/422 (2.6%)	21/421 (4.9%)	0.070	1.96 (0.95–4.06)
Death	9/422 (2.1%)	15/437 (3.4%)	0.248	1.63 (0.72–3.67)
Any stroke or death	28/422 (6.6%)	55/455 (12.1%)	0.006	1.94 (1.21–3.10)

A Systematic Review on Outcome After Stenting for Intracranial Atherosclerosis

Klaus Gröschel, MD; Sonja Schnaudigel, MD; Sara M. Pilgram, MD;
Katrin Wasser, MD; Andreas Kastrup, MD

(*Stroke*. 2009;40:e340-e347.)

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Patienten	Technische Erfolgsrate	Periprozedurale Komplikationen	6 Monat Komplikationen	Re-stenose
158	97%	7,50%	14%	34%

Current status of the management of symptomatic intracranial atherosclerotic disease: the rationale for a randomized trial of medical therapy and intracranial stenting

D Fiorella,[1] T N Turan,[2] C P Derdeyn,[3] M I Chimowitz[2]

J NeuroInterv Surg 2009;**1**:35–39. doi:10.1136/jnis.2009.000125

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Autor	Jahr	Zitat	n Patien-ten	postinterventionelle Verschlechterung in %	periinterven-tioneller Tod in %	M&M in %	Stent %	techn. Er-folg %	durchschnittl. Nachuntersuchungs-zeitraum in Monaten	rezidiv. Symptome in %	Restenose in %
Higashida	1993	[10]	8	13	25	37,5	0	100	12	0,0	
Clark	1995	[3]	16	6	0	6,3	0	32	22	0,0	0,0
Aymard	1997	[2]	9	0	11	11,1	0	67			
Mori	2000	[13]	8	0	0	0,0	75	75	10	0,0	0,0
Nahser	2000	[14]	20	5	0	5,0	0	100		6,3	13,8
Alazzaz	2000	[1]	8	0	0	0,0	0	100	4,0	12,5	
Gomez	2000	[6]	12	0	0	0		100	5,9	16,7	8,3
Gress	2002	[7]	25	16	4	4,0	0	100			
Gupta	2003	[8]	7	14	29	42,8		86			
Henkes	2005	[9]	9	0	0	0,0	100	100			
Kim	2005	[12]	19	5	0	5,3	100	100	17,0	21,1	0,0
du Mesnil de Rochemont	2006	[4]	13	0	0	0,0	100	100	25.8	0,0	0,0
Jiang	2007	[11]	79	5	1	6,3	94	94	27,0	6,3	18,8
Fiorella	2007	[5]	28	4	7	10,7	100	93			
Turk	2008	[15]	93						7,3	2,6	18,4
Wittkugel	2009		45	20	4,4	24,4	67	93	26,2	4,8	9,5

Wittkugel O et al. Langzeitergebnisse nach endovaskulärer… Fortschr Röntgenstr 2009; 181: 782 – 791

Zusammenfassung

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Sowohl in der Notfallsituation als auch elektiv ist eine interventionelle neuroradiologische Therapie von Gefäßstenosen möglich.

Bei elektiven Eingriffen sollte eine strenge Indikationsstellung erfolgen

Da zugelassene Materialien vorhanden sind, sollte ein off label use unterbleiben.

In der Notfalltherapie sind noch randomisierte Studien notwendig, um den umgehenden primären interventionellen Eingriff zu rechtfertigen.

Erste Studien zeigen den Nutzen der elektiven Stentbehandlung, prospektive randomisierte Studien fehlen

Restenoserate?

Vielen Dank für Ihre Aufmerksamkeit