Indicaties voor hemicraniëctomie bij CVA

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az turnhout
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a.z. vesalius
Algemeen Ziekenhuis St.-Dimpna
zuyderland
Former Orbis Medisch en Zorgconcern
Ziekenhuis Oost-Limburg

Overzicht

- Procedure hemicraniëctomie (HC), fossa posterior decompressie (FPD)
- Evidence, outcome?
- Ethische aspecten
- Enkele specifieke complicaties
- Cranioplastie
- Besluit

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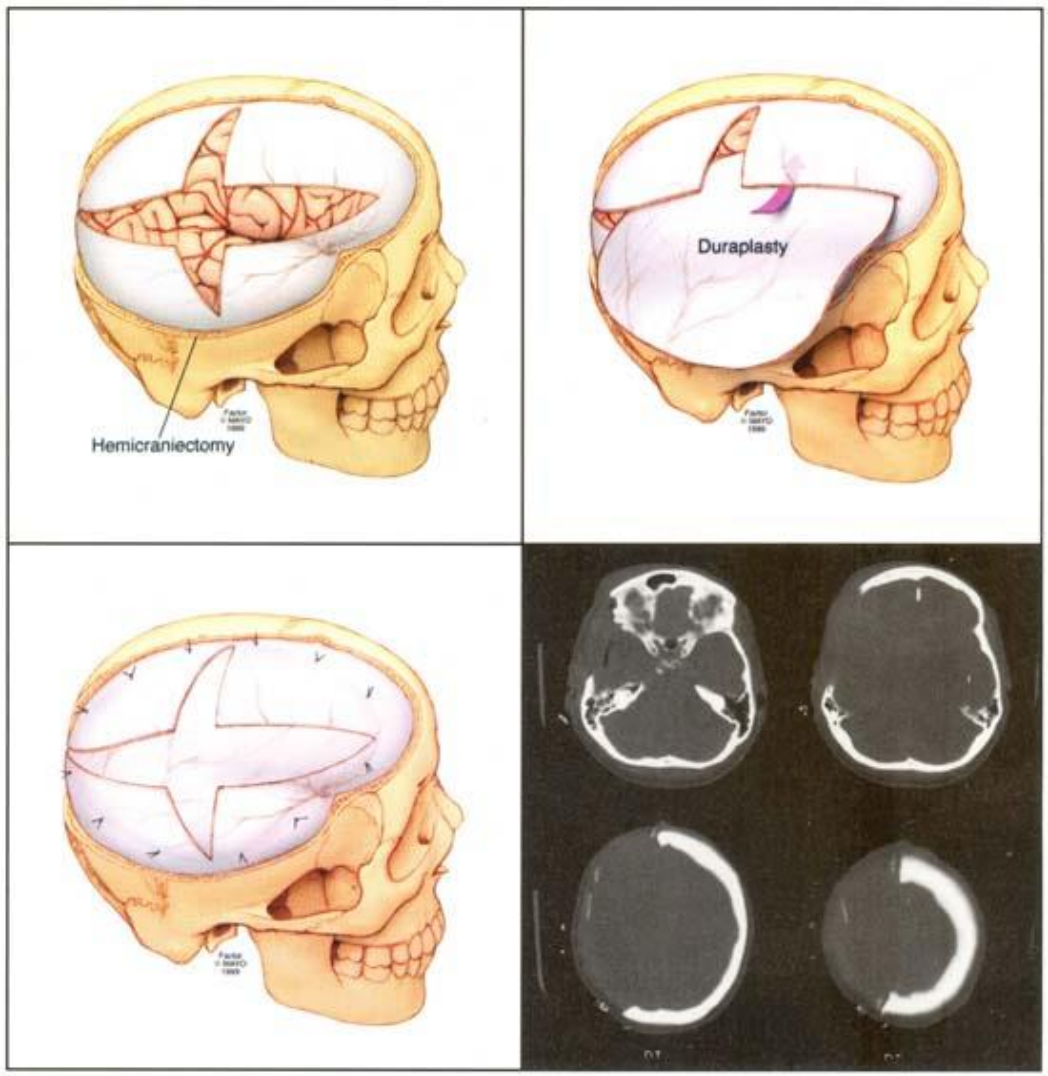
Procedure HC



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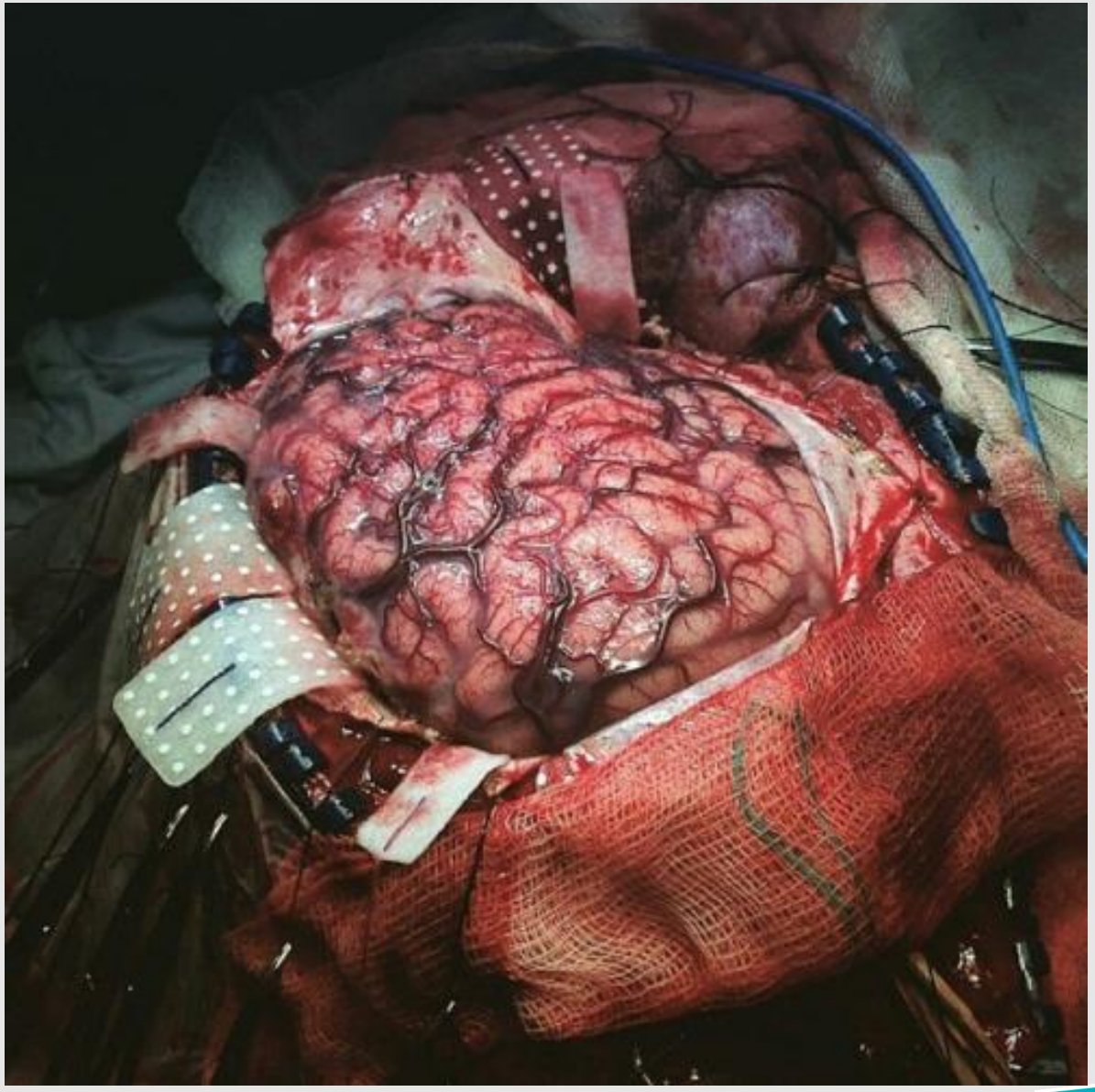

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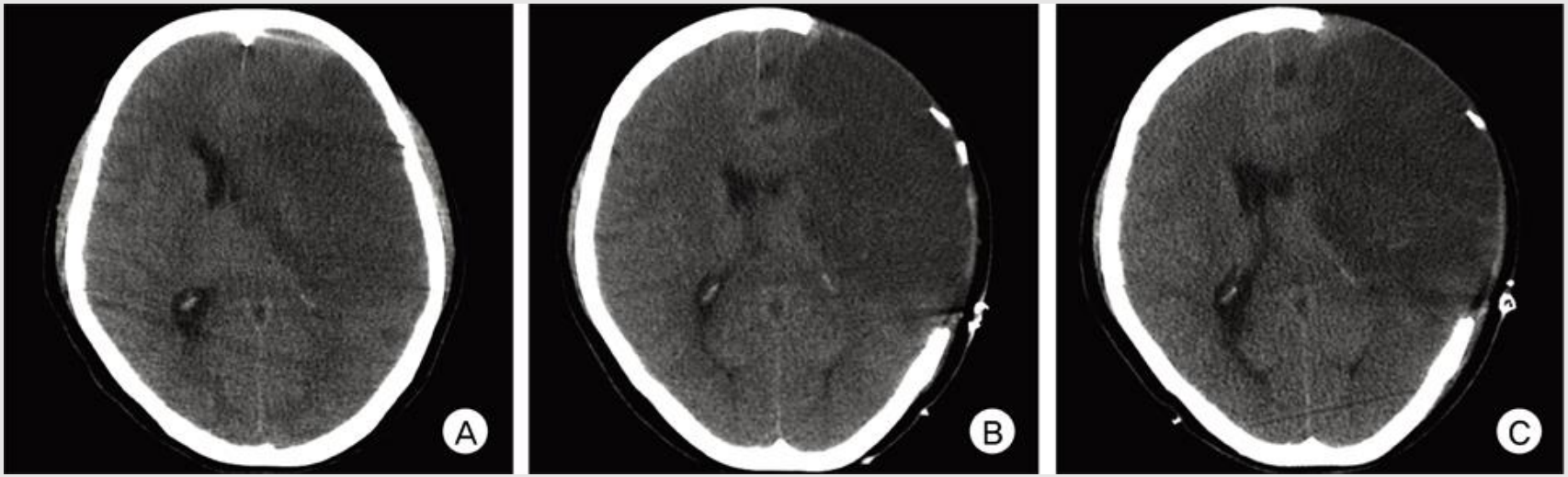
Size does matter …



Go big or go home

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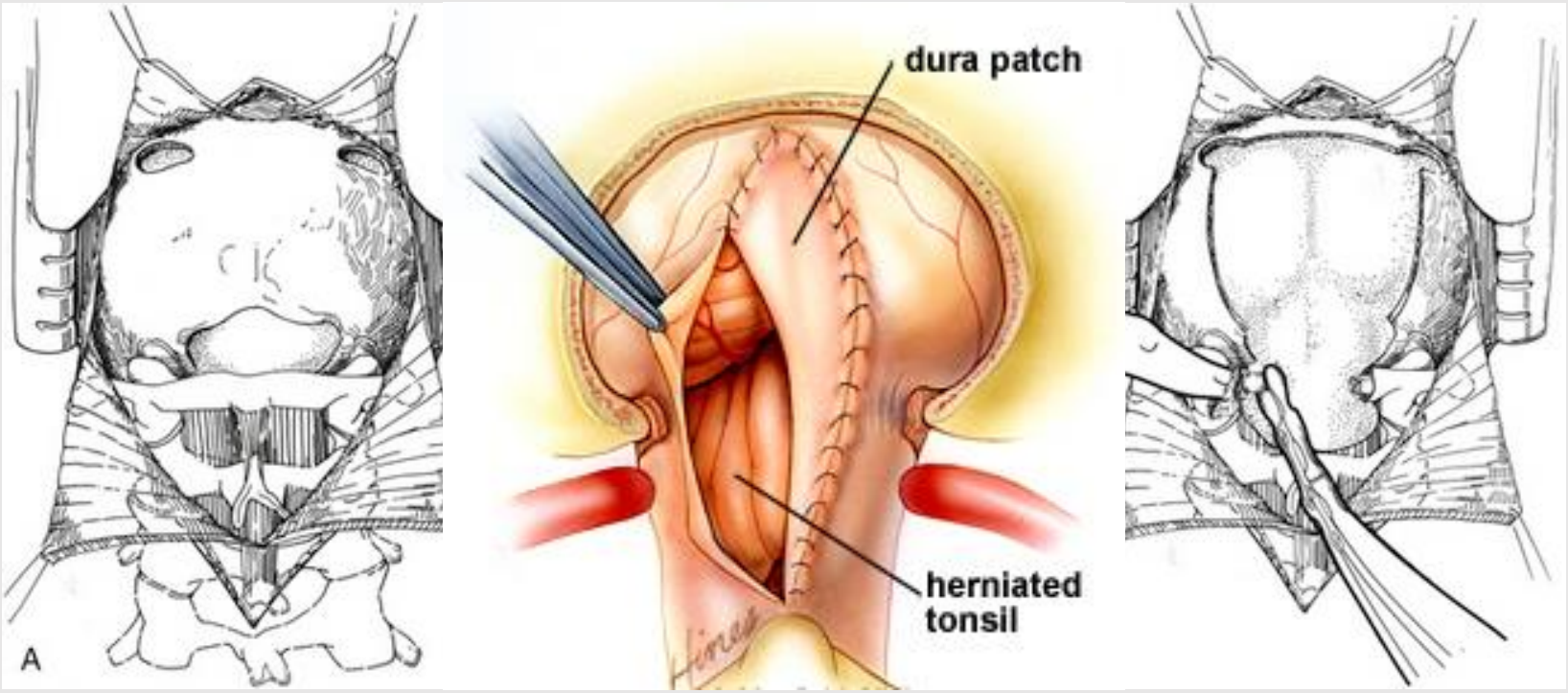
Procedure FPD



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Evidence FPD

Journal of Neurology
April 1999, Volume 246, Issue 4, pp 257–264

Surgical and medical management of patients with massive cerebellar infarctions: results of the German-Austrian Cerebellar Infarction Study

Authors Authors and affiliations

M. Jauss, D. Krieger, C. Hornig, J. Schramm, O. Busse, for the GASCIS study centers

Class I evidence, recommendations AHA, ASA, AAN, AANS, CNS:

- cerebellair infarct + BWZ-daling: FPD
- cerebellair infarct + BWZ-daling + hydrocefalie: EVD + FPD

Stop nagging and decompress

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Evidence HC

Modified Rankin Scale – mRS

Score	Description
0	No symptoms at all
1	No significant disability despite having symptoms; able to carry out all usual duties and activities
2	Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance
3	Moderate disability; requiring some help, but able to walk without assistance
~~4~~	~~Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance~~
5	Severe disability; bedridden, incontinent and requiring constant nursing care and attention
6	Dead

~~COMMUNICATIE?!?~~

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Evidence HC

Modified Barthel Index – mBI

ACTIVITY	BARTHEL SCORE			
	0	5	10	15
Feeding	Unable	Some help required e.g. needs help cutting, spreading butter etc.	Independent	
Bathing	Dependent	Can use a bath tub, shower or take a complete sponge bath unassisted		
Grooming	Needs help with personal care	Independent face/hair/ teeth/shaving (implements provided)		
Dressing	Dependent	Needs help but can do at least half unaided	Independent (including buttons, zips, laces etc.)	
Bowels	Incontinent or need to be given enemas	Needs help with an enema or suppository or occasional accident	Controls enema or suppository independently	
Bladder	Incontinent or catheterised and unable to manage alone	Occasional accidents or can not wait for the bed pan/get to the toilet in time	Can control bladder day and night	
Toilet use	Dependent	Needs some help, but can do some things alone	Independent (can get on and off, dress and wipe unassisted)	
Transfer (bed to chair and back)	Unable, no sitting balance	Major help (can sit up alone but needs to be lifted out of bed)	Minor help or supervision	Independent
Mobility (on level surfaces)	Immobile or <50 yards	Wheelchair independent, including corners; ≥50 yards	Walks with little help; ≥50 yards	Independent (but may use an aid, e.g. walking stick); ≥50 yards
Stairs	Unable	Needs help or supervision	Independent	

~~COMMUNICATIE?!?~~

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Evidence HC

Inclusie:

- BWZ-daling 1 punt NIHSS 1a (0 = nl, 1 = suf, 2 = stupor, 3 = coma)
- Unilateraal MCA ⅔ + gedeeltelijk BG
- 12h < symptomen < 36h (early decompression < 48h)

Exclusie:

- Premorbide mRS >= 2, BI < 95 bij <= 60j
- Premorbide mRS >= 1, BI < 95 bij > 60j
- GCS <= 6
- Bilat. mydriase
- Hemorrhagisch infarct

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Evidence HC

Sequential-Design, Multicenter, Randomized, Controlled Trial of Early Decompressive Craniectomy in Malignant Middle Cerebral Artery Infarction (DECIMAL Trial)

Katayoun Vahedi, MD; Eric Vicaut, MD, PhD; Joaquim Mateo, MD; Annie Kurtz, MS; Mikael Orabi, MD; Jean-Pierre Guichard, MD; Carole Boutron, BS; Gregory Couvreur, MD; François Rouanet, MD; Emmanuel Touzé, MD; Benoît Guillon, MD; Alexandre Carpentier, MD; Alain Yelnik, MD; Bernard George, MD; Didier Payen, MD, PhD; Marie-Germaine Bousser, MD; on behalf of the DECIMAL Investigators

Stroke 2007, N = 38, < 55j, mRS ≤ 3

Decompressive Surgery for the Treatment of Malignant Infarction of the Middle Cerebral Artery (DESTINY)

A Randomized, Controlled Trial

Eric Jüttler, MD; Stefan Schwab, MD, PhD; Peter Schmiedek, MD, PhD; Andreas Unterberg, MD, PhD; Michael Hennerici, MD, PhD; Johannes Woitzik, MD; Steffen Witte, PhD; Ekkehart Jenetzky, MD; Werner Hacke, MD, PhD; for the DESTINY Study Group*

Stroke 2007, N = 32, < 60j, mRS ≤ 3

Hemicraniectomy in Older Patients with Extensive Middle-Cerebral-Artery Stroke

Eric Jüttler, M.D., Ph.D., Andreas Unterberg, M.D., Ph.D., Johannes Woitzik, M.D., Ph.D., Julian Bösel, M.D., Hemasse Amiri, M.D., Oliver W. Sakowitz, M.D., Ph.D., Matthias Gondan, Ph.D., Petra Schiller, Ph.D., Ronald Limprecht, Steffen Luntz, M.D., Hauke Schneider, M.D., Ph.D., Thomas Pinzer, M.D., Ph.D., Carsten Hobohm, M.D., Jürgen Meixensberger, M.D., Ph.D., and Werner Hacke, M.D., Ph.D., for the DESTINY II Investigators*

NEJM 2014, N = 112, ≥ 61j, mRS ≤ 4

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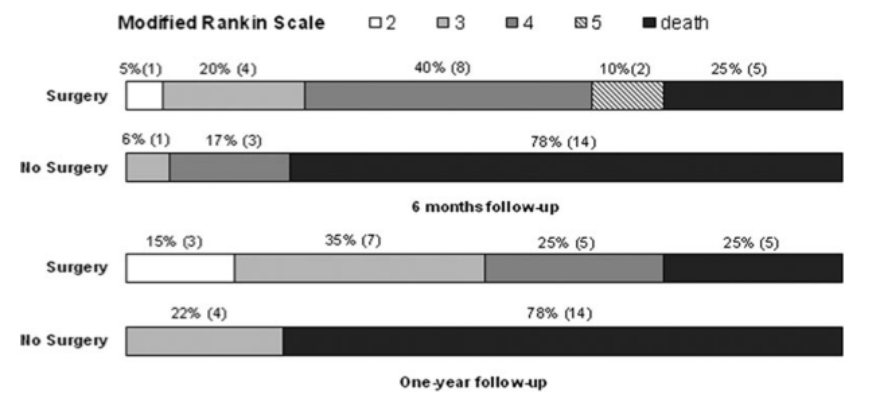
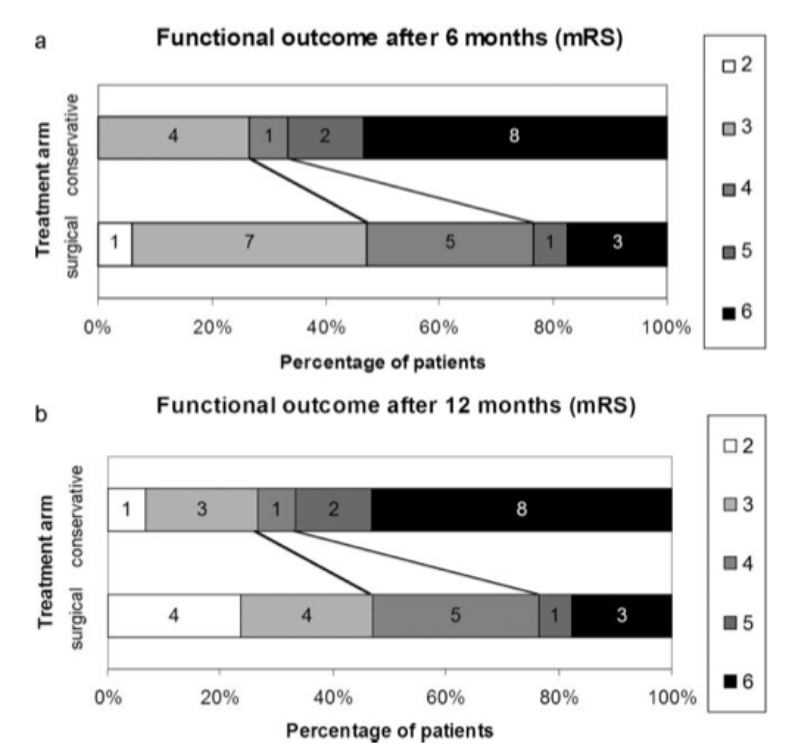
Evidence HC

DECIMAL + DESTINY I:





> 50% mortaliteitsreductie en > 50% ≤ mRS 3 overlevers

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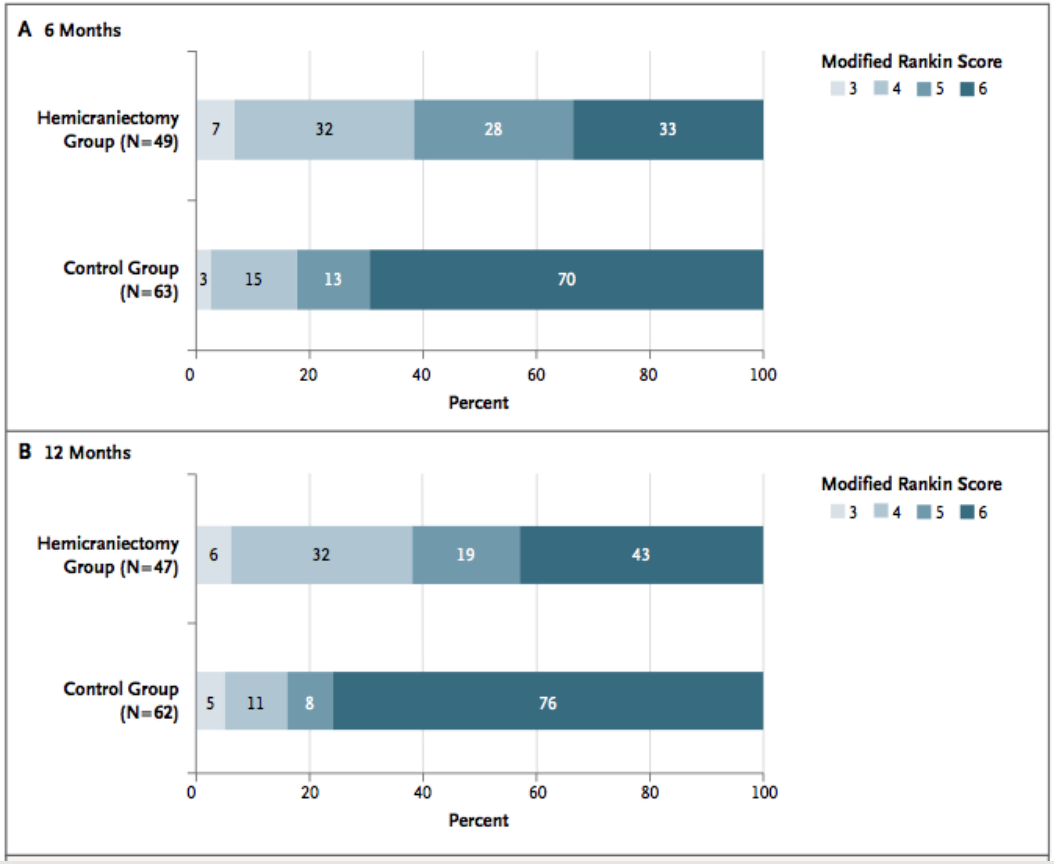
Evidence HC

DESTINY II:



> 40% mortaliteitsreductie en x 2 ≤ mRS 4

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Evidence HC

SCIENTIFIC REPORTS

OPEN

SUBJECT AREAS:
STROKE
OUTCOMES RESEARCH
NEUROLOGICAL DISORDERS

Decompressive craniectomy for the treatment of malignant infarction of the middle cerebral artery

XiaoCheng Lu[1]*, BaoSheng Huang[2]*, JinYu Zheng[1,3], Yi Tao[1], Wan Yu[4], LinJun Tang[1], RongLan Zhu[1], Shuai Li[1] & LiXin Li[1]

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Table 1 | Summary of results included in the meta-analysis

Study, publication year,location	Study type	groups	Age	Male (%)	Stroke onset to treatment (hours)	NIHSS	Hemisphere: Dominant (%)	Mean Follow-up (Months)
DESTINY,2007	RCT	Surgery (17)	43.2 (9.7)	8(47%)	12–36	21 (19–26)	9(53%)	12
Germany		Conservative (15)	46.1 (8.4)	7(47%)	12–36	24 (19–31)	11(73%)	12
DECIMAL, 2007	RCT	Surgery (20)	43.5 (9.7)	9(45%)	<30	22.5 (16–35)	12(60%)	12
France		Conservative (18)	43.3 (7.1)	9(50%)	<30	23.4 (17–38)	11(61%)	12
HAMLET, 2009	RCT	Surgery (32)	50.0 (8.3)	20(63%)	<96	23 (17–34)	12(38%)	12
Netherlands		Conservative (32)	47.4 (9.8)	18(56%)	<96	24 (20–36)	12(38%)	12
Zhao, 2012	RCT	Surgery (24)	63.5 (29–78)	6(25%)	<48	n.r.	9(37.5%)	12
China		Conservative (23)	64 (32–80)	7(30%)	<48	n.r.	9(39.1%)	12
Slezins, 2012	RCT	Surgery (11)	57.2 (49–67)	n.r.	<48	n.r.	n.r.	12
Latvia		Conservative (13)	65 (49–81)	n.r.	<48	n.r.	n.r.	12
DESTINY II, 2014	RCT	Surgery (49)	70 (62–82)	25(51%)	<48	20 (15–40)	16(33%)	12
Germany		Conservative (63)	70 (61–80)	31(49%)	<48	21 (15–38)	25(40%)	12
HeADDFIRST, 2014	RCT	Surgery (14)	52.3(45–59)	9(64%)	<96	21.5 (19–23)	5(36%)	6
America		Conservative (10)	57.9(45–66)	6(60%)	<96	19 (19–21)	5(50%)	6
HAMLET, 2014	RCT	Surgery (32)	50.0 (8.3)	20(63%)	<96	23 (17–34)	12(38%)	36
Netherlands		Conservative (32)	47.4 (9.8)	18(56%)	<96	24 (20–36)	12(38%)	36
Wang, 2006	R	Surgery (11)	61.6(14.5)	6(54.5%)	<24	12.3 (7.9)	2(18.2%)	6
Taiwan		Conservative (41)	66.7(13.2)	27(65.8%)	<24	18.2 (7.6)	23(56.1%)	6
Rahmanian, 2014	P	Surgery (30)	59.0(13.5)	11(36.7%)	<48	n.r.	12(40%)	3
Iran		Conservative (30)	62.1(11.0)	16(53.3%)	<48	n.r.	9(30%)	3
Yang, 2005	R	Surgery (10)	58.7(19.3)	5(50%)	<120	16.1 (1.9)	3(30%)	3
China		Conservative (14)	65.9(16.5)	10(71.4%)	<120	16.5 (2.4)	6(42.9%)	3
Yu, 2012	R	Surgery (58)	62.1 (12.4)	35(60.3%)	<48	16.2	19(32.8%)	6
Korea		Conservative (73)	72.6 (9.35)	36(49.3%)	<48	16.8	27(37%)	6
Rai, 2014	P	Surgery (36)	44.6 (12.2)	27(75%)	<148	19.0 (3.3)	16(44.4%)	12
India		Conservative (24)	57.1 (19.3)	16(66%)	<148	18.4 (3.8)	7(29.2%)	12
Tsai, 2012	P	Surgery (37)	65.5 (15.8)	18(48.6%)	<48	-	13 (35.1%)	6
China		Conservative (42)	75.9 (13.8)	22(52.4%)	<48	-	26 (61.9%)	6

Data are number (%), mean (SD) or median (range); R, retrospective; P, prospective; RCT, randomised controlled trials; n.r., not reported; NIHSS, National Institutes of Health stroke scale.

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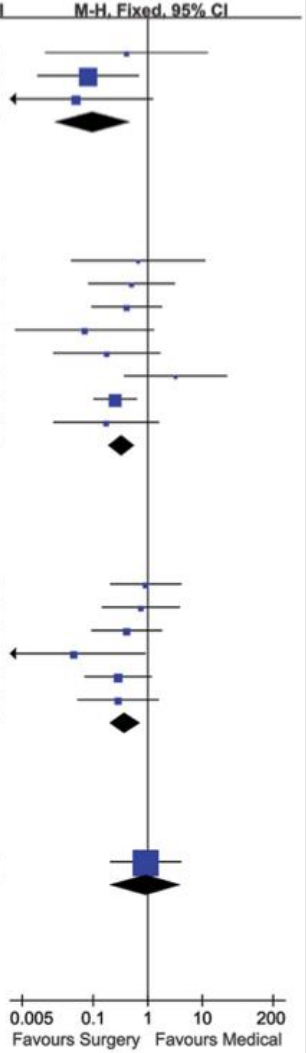
Study or Subgroup	Surgery Events	Surgery Total	Medical Events	Medical Total	Weight	Odds Ratio M-H, Fixed, 95% CI
1.1.1 three months follow-up						
Jeffrey 2014	5	6	4	4	8.5%	0.41 [0.01, 12.64]
Rahmanian 2014	21	30	29	30	65.5%	0.08 [0.01, 0.68]
Yang 2005	3	5	14	14	26.0%	0.05 [0.00, 1.25]
Subtotal (95% CI)		**41**		**48**	**100.0%**	**0.10 [0.02, 0.48]**
Total events	29		47			
Heterogeneity: Chi² = 0.87, df = 2 (P = 0.65); I² = 0%						
Test for overall effect: Z = 2.88 (P = 0.004)						
1.1.2 six months follow-up						
Jeffrey 2014	4	6	3	4	2.7%	0.67 [0.04, 11.29]
Jüttler 2014	46	49	61	63	7.3%	0.50 [0.08, 3.13]
Jüttler 2007	9	17	11	15	12.2%	0.41 [0.09, 1.81]
Tsai 2012	32	37	42	42	12.8%	0.07 [0.00, 1.30]
Vahedi 2007	15	20	17	18	10.0%	0.18 [0.02, 1.69]
Wang 2006	10	11	31	41	2.7%	3.23 [0.37, 28.41]
Yu 2012	39	58	65	73	42.0%	0.25 [0.10, 0.63]
Zhao 2012	19	24	22	23	10.4%	0.17 [0.02, 1.61]
Subtotal (95% CI)		**222**		**279**	**100.0%**	**0.34 [0.20, 0.59]**
Total events	174		252			
Heterogeneity: Chi² = 6.77, df = 7 (P = 0.45); I² = 0%						
Test for overall effect: Z = 3.85 (P = 0.0001)						
1.1.3 twelve months follow-up						
Hofmeijer 2009	16	21	14	18	11.7%	0.91 [0.20, 4.09]
Jüttler 2014	44	47	59	62	10.6%	0.75 [0.14, 3.87]
Jüttler 2007	9	17	11	15	17.9%	0.41 [0.09, 1.81]
Slezins 2012	6	11	13	13	18.6%	0.04 [0.00, 0.92]
Vahedi 2007	10	20	14	18	23.9%	0.29 [0.07, 1.18]
Zhao 2012	18	24	21	23	17.4%	0.29 [0.05, 1.60]
Subtotal (95% CI)		**140**		**149**	**100.0%**	**0.38 [0.20, 0.73]**
Total events	103		132			
Heterogeneity: Chi² = 4.16, df = 5 (P = 0.53); I² = 0%						
Test for overall effect: Z = 2.91 (P = 0.004)						
1.1.4 thirty-six months follow-up						
Geurts 2014	16	21	14	18	100.0%	0.91 [0.20, 4.09]
Subtotal (95% CI)		**21**		**18**	**100.0%**	**0.91 [0.20, 4.09]**
Total events	16		14			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.12 (P = 0.91)						



Test for subgroup differences: Chi² = 4.12, df = 3 (P = 0.25), I² = 27.2%

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Ethiek

Original Paper

Cerebrovascular Diseases

Cerebrovasc Dis 2015;40:286–292
DOI: 10.1159/000441194

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Published online: October 29, 2015

Retrospective Consent to Hemicraniectomy after Malignant Stroke among the Elderly, Despite Impaired Functional Outcome

Andreas Ragoschke-Schumm[a] Christina Junk[a] Martin Lesmeister[a] Silke Walter[a] Stefanie Behnke[a] Julia Schumm[b] Klaus Fassbender[a]

[a]Department of Neurology, Saarland University Medical Center, Homburg, and [b]Department of Cardiology, Horst-Schmidt Klinik, Wiesbaden, Germany

QOL, psycho-emotionele factoren, retrospective consent:

≤ 60: significant slechter vitality, emotional, significant hoger depressiviteit!

≤ 60: 30% retrospectief GEEN CONSENT!!!

> 60: 100% retrospectief consent

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Complicaties

- Hydrocefalie: +/- 40% hydrocefalie (tot 80% ventriculomegalie beschreven), 10-20% VP-shunt
- Epilepsie: +/- 50% ontwikkelt epilepsie post-DC:
  - 10% vroegtijdig
  - 40% laattijdig, gemiddeld na 7 maanden

    RF: later uitgevoerde DC, belangrijke temporaalkwab ischemie, recanalisatie geoccludeerde arterie
- "Sunken skin flap syndrome / syndrome of the trephined skull"
- Paradoxical herniation

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Complicaties

Sunken skin flap syndrome

Paradoxical herniation

Patm → Δ CSV pulsaties, Δ Perf
Hoofdpijn, frontaal, epilepsie

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Cranioplastie

JNS

CLINICAL ARTICLE

J Neurosurg 123:182–188, 2015

Complications following cranioplasty: incidence and predictors in 348 cases

Mario Zanaty, MD,[1] Nohra Chalouhi, MD,[1] Robert M. Starke, MD,[2] Shannon W. Clark, MD,[1] Cory D. Bovenzi, BS,[1] Mark Saigh, BA,[1] Eric Schwartz, BS,[1] Emily S. I. Kunkel,[1] Alexandra S. Efthimiadis-Budike, BS,[1] Pascal Jabbour, MD,[1] Richard Dalyai, MD,[1] Robert H. Rosenwasser, MD,[1] and Stavropoula I. Tjoumakaris, MD[1]

[1]Department of Neurological Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania; and [2]Department of Neurological Surgery, University of Virginia, Charlottesville, Virginia

- Mortaliteit: 3%
- Complicaties 31%:
  - Heringreep bloeding
  - SDH/EDH
  - Epilepsie
  - Hydrocefalie
  - Botluikinfectie/botluikresorptie

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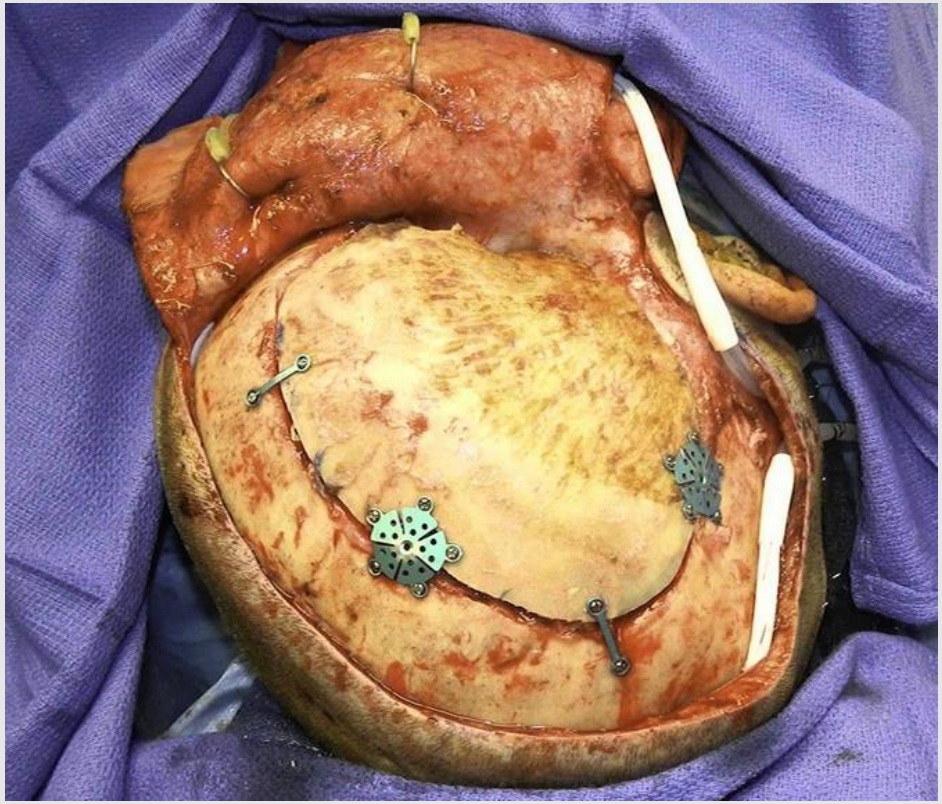

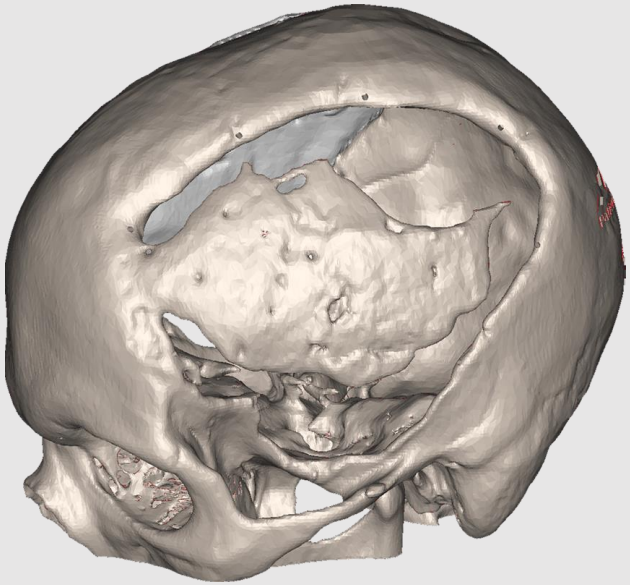

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Besluit: wat vertel ik aan een patiënt?

<60	>60

Zeker minder kans op overlijden

Zeker minder kans op matige + volledige hulpbehoevendheid (puur functioneel)	Zeker minder kans op volledige hulpbehoevendheid (puur functioneel)

Bij dominante hemisfeer onvoldoende gegevens over afasie-impact

QOL – depressie achteraf significant probleem, 30% geeft retrospectief geen consent	QOL redelijk, 100% geeft retrospectief consent

Noodzaak cranioplastie (lage mortaliteit, toch redelijke morbiditeit)

Studieresultaten na 1j, na 3j mogelijks geen enkel verschil meer?

Wilsbeschikking?

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Bedankt voor uw aandacht!

Ziekenhuis Oost-Limburg