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ABSTRACT

BACKGROUND AND PURPOSE: The Embolus Retriever with Interlinked Cages (ERIC) device is a novel stent retriever for mechanical thrombectomy. It consists of interlinked cages and could improve procedural benchmarks and clinical outcome compared with classic stent retrievers. This study compares the rates of recanalization, favorable clinical outcome, procedural adverse events, and benchmarks between the ERIC device and classic stent retrievers.

MATERIALS AND METHODS: From 545 patients treated with thrombectomy between 2012 and 2015, 316 patients were included. The mean age was 69 ±13 years, the mean baseline NIHSS score was 17 ± 5, and 174 (55%) were men. The ERIC was used as the primary thrombectomy device in 59 (19%) patients. In a propensity score matched analysis including the NIHSS score, clot location, delay to groin puncture, neurointerventionalist, and anesthetic management, 57 matched pairs were identified.

RESULTS: Patients treated with the ERIC device compared with classic stent retrievers showed equal rates of recanalization (86% versus 81%, $P = .61$), equal favorable 3-month clinical outcome (mRS 0–2: 46% versus 40%, $P = .71$), and procedural adverse events (28% versus 30%, $P = 1.00$). However, in patients treated with the ERIC device, thrombectomy procedures were less time-consuming (67 versus 98 minutes, $P = .009$) and a rescue device was needed less often (18% versus 39%, $P = .02$) compared with classic stent retrievers.

CONCLUSIONS: Mechanical thrombectomy with the ERIC device is effective and safe. Rates of favorable procedural and clinical outcomes are at least as good as those with classic stent retrievers. Of note, the ERIC device might be time-saving and decrease the need for rescue devices. These promising results call for replication in larger prospective clinical trials.

ABBREVIATION: ERIC = Embolus Retriever with Interlinked Cages

The design of thrombectomy devices plays an important role in the efficacy of mechanical thrombectomy for acute ischemic stroke.[1] This is illustrated by the introduction of the stent retriever design, which was a driving factor for the positive results of the randomized controlled trials published in 2015.[2-6] These studies showed improved recanalization rates and, most important, improved clinical outcome with endovascular therapy compared with medical therapy alone for large-embolic acute ischemic stroke.[1] In contrast to these trials, the negative endovascular therapy trials published in 2013[7-9] mainly used older thrombectomy devices such as coil retrievers or mechanical clot disintegrators combined with aspiration systems.

Classic stent retrievers have a tubular design and were originally designed to support the endovascular coil treatment of wide-neck intracranial aneurisms by neck remodelling.[10] During mechanical thrombectomy for acute ischemic stroke, stent retrievers function by squeezing the clot against the vessel wall and, during a few minutes, interacting with the clot by entangling it in the meshed network of the stent and sometimes establishing temporary reperfusion of the affected territory. However, the tubular design also means that the clot rests on the surface of the stent retriever (Fig 1*A*) and may risk fragmentation or shearing off during thrombectomy, causing distal embolization, so-called clot migration. In addition, a large proportion of the surface area of the stent retriever is in contact with and possibly interacts with the endothelium of the vessel wall when deployed; this feature may lead to intimal injuries and/or induced vasospasm during retraction.[11]

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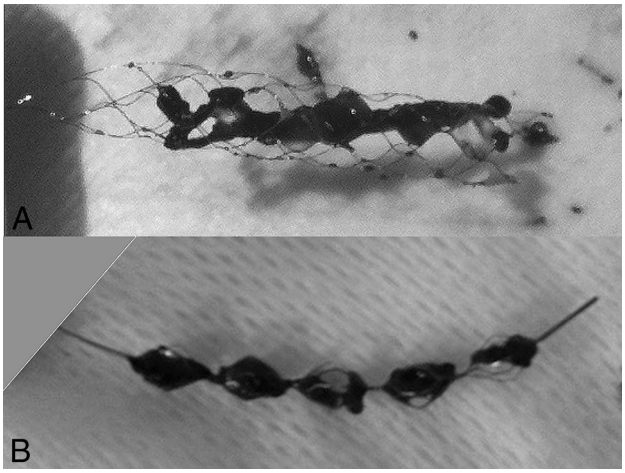

FIG 1. Figure illustrating the differences in clot retainment between the outside of classic stent retrievers (*A*) and inside the cages of the ERIC device (*B*).

Second-generation stent retrievers consisting of an interlinked cage design devised specifically for clot removal have recently been introduced. One of these second-generation stent retrievers is the Embolus Retriever with Interlinked Cages (ERIC; MicroVention, Tustin, California). Proposed advantages of the interlinked cage design compared with classic stent retrievers are the following: less fragmentation and shaving of the clot due to retention within or in-between the cages (Fig 1*B*), less contact and interaction of the stent retriever with the vessel wall, relying less on interaction with the clot, and the possibility of using a thinner delivery system (0.017-inch low-profile microcatheter), allowing improved access in challenging patient anatomy.[12]

Introduction of this new stent retriever design may improve procedural benchmarks and clinical outcome and ensure high rates of procedural success. In this retrospective study from a high-volume tertiary level stroke center, we aimed to examine the safety and efficacy of the ERIC device used as the primary thrombectomy device by comparing outcomes and procedural benchmarks with those of classic stent retrievers.

MATERIALS AND METHODS

This case-control study was approved by the Danish Health Authority (3–3013-1017/1) and the Danish Data Protection Agency (30–1148). All patients were treated within the Declaration of Helsinki.

The endovascular setup at our comprehensive stroke center in Copenhagen has previously been described.[13] Seven stroke neurologists and 5 neurointerventionalists cover a 24/7 stroke team service with 30-minute response time. Patients were predominantly referred from primary stroke centers where initial clinical assessment and diagnostic imaging were performed and IV rtPA was administered. Stroke severity was assessed according to the NIHSS. We retrospectively reviewed all patients referred to us for anterior circulation acute ischemic stroke from January 2012 to December 2015. Only patients treated with mechanical thrombectomy by using a stent retriever were included in this study. The ERIC device has been available at our center since July 2013. We included all patients treated with classic stent retrievers from 2012 to 2015 for the comparison group. This time period was chosen because patient flow was high and consistent during these 4 years and our clinical setup has not changed since 2012.

Clinical and interventional details were extracted from prospectively recorded patient charts. Patient comorbidity was assessed according to the Charlson comorbidity index.[14] Neuroimages were reviewed by 2 authors (H.S.-A. and M.H.). Clot location was defined on DSA and categorized into ICA bifurcation (ICA-T), MCA before the major bifurcation (MCA-M1) or after the major bifurcation (MCA–M2), or "other" clot location in case of distally located clots or intracranial carotid siphon occlusion without involvement of the bifurcation.

Neurointerventions

Right femoral access was predominantly used. A large-bore long-sheath or coaxial catheter was placed in the ipsilateral carotid artery (eg, Destination sheath, Terumo, Leuven, Belgium; Neuron Max 6F, Penumbra, Alameda, California; or Arrow 8–9F, Teleflex, Limerick, Ireland). A long standard guide catheter with JB1 or SIM2 configuration (Cook, Bloomington, Indiana) was used to guide the sheath or the large-bore coaxial catheter from the aortic arch into the carotid arteries. From a stable position in the proximal ICA or distal common carotid artery, a distal-access catheter (eg, Sofia, MicroVention; Navien guiding catheter, Covidien, Irvine, California; Fargo and Fargomax, Balt, Montmorency, France; or ACE 64 or 5MAX ACE reperfusion catheter, Penumbra) was advanced into the intracranial vasculature, usually in a triaxial fashion via a microcatheter to avoid unnecessary vessel stress. If necessary, an additional proximal balloon-guide catheter (eg, Cello balloon-guide catheter; Covidien) was placed through a large-bore sheath (8F or 9F) before the distal-access catheter was advanced through it.

After the clot location had been confirmed as initially seen on preprocedural CTA, a microcatheter (eg, Prowler Select Plus, Codman & Shurtleff, Raynham, Massachusetts; or Headway 17–21, MicroVention) following a guidewire (eg, Traxcess 0.014-inch, MicroVention; or Transcend platinum 0.014-inch, Stryker Neurovascular, Kalamazoo, Michigan) was navigated through the clot. The guidewire was then substituted for a stent retriever, which was deployed within the clot. In cases using the ERIC device, the largest possible number of cages was placed distal to the clot while still covering the entire clot with the device. Patients who were not treated with the ERIC device had been treated with classic stent retrievers from various companies (eg, Solitaire FR; Covidien, or pREset thrombus retriever, phenox, Bochum, Germany) (On-line Table 1). Thrombectomy was performed in combination with distal or proximal aspiration or a combination of both, and the choice of thrombectomy devices was left to the discretion of the neurointerventionalist. Furthermore, conscious sedation or general anesthesia, extracranial carotid stent placement, and periprocedural antithrombotic therapy were managed on a case-by-case basis.

Postprocedural Management

Patients were observed in a neurointensive care unit at least until 24-hour postprocedural follow-up NCCT had excluded major intracranial hemorrhages or risk of malignant infarction. Intracere-

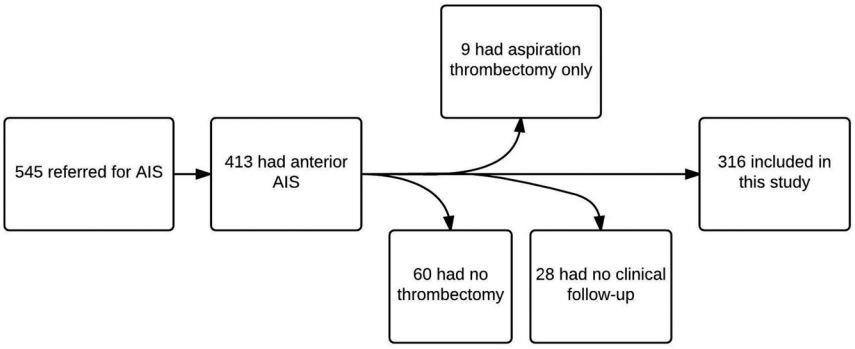

FIG 2. Flow chart of patient inclusion.

Table 1: Baseline characteristics[a]

Characteristics	*N* = 316
Age (mean) (yr)	68.7 ± 13; range 27–94
Sex (male)	174 (55%)
Diabetes	38 (12%)
Hyperlipidemia	100 (32%)
Hypertension	183 (58%)
Known atrial fibrillation	84 (27%)
Prior stroke	39 (12%)
CCI 0	158 (50%)
CCI 1–3	137 (43%)
CCI 4–10	21 (7%)
IV rtPA	223 (71%)
Clot location	
ICA-T	83 (26%)
M1	177 (56%)
M2	47 (15%)
Other	9 (3%)
NIHSS (mean)	16.9 ± 5; range, 0–28
Extracranial carotid stenting	64 (20%)
Onset to image (mean) (min)	97.8 ± 64; range, 10–517
Image to groin (mean) (min)	149.3 ± 62; range, 27–459
Onset to TICI (mean) (min)	325.0 ± 106; range, 102–900
General anesthesia	205 (65%)

Note:—CCI indicates Charlson comorbidity index.
[a] Data are No. (%) unless otherwise indicated.

bral hemorrhages were classified according to the European Cooperative Acute Stroke Study II criteria into hemorrhagic infarcts and parenchymal hemorrhages.[15] In cases where differentiation between residual contrast and hemorrhagic infarction was not possible on 24-hour NCCT, or on a subsequent NCCT within few days, the image was attributed to hemorrhagic infarction. Afterward, patients were discharged for neurorehabilitation, and follow-up was arranged at 3 months poststroke with clinical assessment according to the mRS.

Outcome Measures

The main outcome was favorable recanalization defined as a TICI score of 2b–3.[16] Secondary outcomes included the following: favorable clinical outcome defined as mRS 0–2 at 3 months, procedural adverse events defined as any untoward event occurring during neurointerventions, symptomatic intracerebral hemorrhages defined as any intracranial hemorrhage causing a clinical deterioration of ≥4 points on the NIHSS,[15] and procedural benchmarks (procedural duration [groin puncture to final image], number of thrombectomy passes, and need for >1 thrombectomy device).

Statistical Analysis

Variables are presented as means ± SD and range for continuous variables and number with percentage for categoric variables. Means were compared with the Student *t* test, and 95% confidence intervals of the difference in means are presented. Categoric variables were compared by means of the χ^2 or Fisher exact test when appropriate, and 95% CI of the OR is presented.

We performed a propensity score–matched analysis comparing patients treated with the ERIC device with patients treated with classic stent retrievers at our center in a 1:1 ratio,[17] with the "nearest available Mahalanobis metric matching within calipers defined by the propensity score" method.[18] The following covariates were used to calculate the propensity score by using a logistic regression model predicting treatment with the ERIC device: stroke severity, the neurointerventionalist in charge of the procedure, clot location, time from neuroimaging to groin puncture, and level of sedation during the procedure. Baseline variables were compared before and after matching to check for reduction of bias.

Due to the unevenly distributed time periods for the ERIC (July 2013 to December 2015) and the classic stent retriever group (January 2012 to December 2015), we planned a time-sensitivity analysis by using only patients treated within the same time period. Furthermore, our results were compared with multivariate regression analyses with backward elimination of covariates with nonsignificant associations to outcomes.

All analyses were performed by using SAS Statistical Software, Version 9.4 (SAS Institute, Cary, North Carolina).

RESULTS

We identified 545 patients with acute ischemic stroke referred for mechanical thrombectomy in the study period. Of these, 413 patients had anterior circulation stroke, and 69 patients not treated with a stent retriever and 28 patients with missing follow-up (referred from a nearby Swedish stroke center, On-line Table 2) were excluded (Fig 2).

Thus, 316 patients were included. Baseline variables including age, sex, comorbidities, cardiovascular risk factors, stroke severity, and clot location are found in Table 1.

We identified 59 patients treated with the ERIC device as the primary thrombectomy device and 257 patients treated with classic stent retrievers as the primary thrombectomy device. Propensity scoring identified 57 matched pairs, and we compared baseline characteristics before and after matching (Table 2).

The ERIC group showed equal rates of favorable recanalization (86% versus 81% [OR 95% CI, 0.54–3.96; $P = .61$]), favorable 3-month clinical outcome (46% versus 40%, [OR 95% CI, 0.59–2.61; $P = .71$]), and procedural adverse events (28% versus 30% [OR 95% CI, 0.41–2.06; $P = 1.00$]) compared with the classic stent retriever group and nonsignificantly fewer parenchymal intracerebral hemorrhages (7% versus 14% [OR 95% CI, 0.13–1.63; $P = .36$]), symptomatic intracerebral hemorrhages (5% versus

Table 2: Comparison of clinical and treatment characteristics before and after propensity score matching[a]

	Before Propensity Score Matching			After Propensity Score Matching		
	ERIC (*n* = 59)	Non-ERIC (*n* = 257)	*P* Value	ERIC (*n* = 57)	Non-ERIC (*n* = 57)	*P* Value
Age (yr)	70.0	68.4	.41	69.7	70.1	.87
Sex (male)	29 (49%)	145 (56%)	.31	29 (51%)	31 (54%)	.85
CCI 0	27 (46%)	131 (51%)	.44	27 (47%)	28 (49%)	.50
CCI 1–3	26 (44%)	111 (43%)		25 (44%)	27 (47%)	
CCI ≥4	6 (10%)	15 (6%)		5 (9%)	2 (4%)	
Known atrial fibrillation	15 (25%)	69 (27%)	.87	14 (25%)	17 (30%)	.67
IV rtPA	39 (66%)	184 (72%)	.43	38 (67%)	41 (72%)	.69
Clot location						
ICA-T	22 (37%)	61 (24%)	<.0001	22 (39%)	22 (39%)	.63
M1	19 (32%)	158 (61%)		17 (30%)	21 (37%)	
M2	13 (22%)	34 (13%)		13 (23%)	12 (21%)	
Other	5 (8%)	4 (2%)		Other: 5 (8%)	2 (3%)	
NIHSS	17.4	16.8	.36	17.4	17.5	.91
Extracranial carotid stenting	13 (22%)	51 (20%)	.72	13 (23%)	10 (18%)	.64
Onset to image (min)	92.3	99.0	.51	92.6	98.7	.65
Image to groin (min)	167.0	145.3	.04	167.0	150.5	.20
General anesthesia	34 (58%)	171 (67%)	.23	33 (58%)	32 (56%)	1.00
Neurointerventionalist						
1	38 (64%)	53 (21%)	<.0001	36 (63%)	28 (49%)	.51
2	15 (25%)	45 (18%)		15 (26%)	20 (35%)	
3	4 (7%)	59 (23%)		4 (7%)	6 (11%)	
4	0 (0%)	42 (16%)		0 (0%)	0 (0%)	
5	2 (3%)	58 (23%)		2 (4%)	3 (5%)	

Note:—CCI indicates Charlson comorbidity index.

[a] Data are No. (%) unless otherwise indicated.

Table 3: Comparison of procedural and clinical outcome after propensity score matching for primary and time-sensitivity analysis[a]

	Primary Analysis			Time-Sensitivity Analysis		
	ERIC (*n* = 57)	Non-ERIC (*n* = 57)	*P* Value	ERIC (*n* = 37)	Non-ERIC (*n* = 37)	*P* Value
TICI 2b–3	49 (86%)	46 (81%)		32 (86%)	30 (81%)	
OR (95% CI)	1.46 (0.54–3.96)		.61	1.49 (0.43–5.22)		.75
mRS 0–2	26 (46%)	23 (40%)		17 (46%)	14 (38%)	
OR (95% CI)	1.24 (0.59–2.61)		.71	1.56 (0.62–3.93)		.64
Mortality	11 (19%)	12 (21%)		7 (19%)	7 (19%)	
OR (95% CI)	0.90 (0.36–2.24)		1.00	1.17 (0.39–3.45)		1.00
Procedural duration (min)	67.4	98.0		74.1	90.8	
Mean difference (95% CI)	30.6 (8.0–53.2)		.009	16.6 (−7.8–41.1)		.18
No. of passes	2.5	3.1		2.5	3.4	
Mean difference (95% CI)	0.6 (−0.1–1.3)		.11	0.9 (−0.2–2.0)		.10
Several devices needed	10 (18%)	22 (39%)		7 (19%)	16 (43%)	
OR (95% CI)	0.34 (0.14–0.80)		.02	0.31 (0.11–0.87)		.04
Parenchymal hemorrhages	4 (7%)	8 (14%)		4 (11%)	2 (6%)	
OR (95% CI)	0.46 (0.13–1.63)		.36	1.50 (0.24–9.55)		.67
Symptomatic hemorrhages	3 (5%)	9 (16%)		3 (8%)	4 (11%)	
OR (95% CI)	0.30 (0.076–1.16)		.12	0.47 (0.08–2.74)		1.00
Distal embolism	1 (2%)	5 (9%)		1 (3%)	4 (11%)	
OR (95% CI)	0.19 (0.02–1.64)		.21	0.23 (0.02–2.16)		.36
Procedural adverse events	16 (28%)	17 (30%)		11 (30%)	13 (35%)	
OR (95% CI)	0.92 (0.41–2.06)		1.00	0.59 (0.22–1.63)		.80

[a] Data are No. (%) unless otherwise indicated.

16% [OR 95% CI, 0.076–1.16; $P = .12$]), and distal embolism (2% versus 9%, [OR 95% CI, 0.02–1.64; $P = .21$]) (Table 3). Procedural adverse events are presented in detail in On-line Table 3.

The ERIC group showed significantly shorter procedural durations (67.4 versus 98.0 minutes [95% CI, 8–53 minutes; $P = .009$]) and less frequent use of secondary/rescue devices (18% versus 39% [OR 95% CI, 0.14–0.80; $P = .02$]). The number of thrombectomy passes was not statistically different (2.5 versus 3.1 passes [95% CI, −0.1–1.3 passes; $P = .11$]) compared with the classic stent retriever group (Table 3).

Sensitivity Analyses

In the time-sensitivity analysis on 199 patients treated from July 2013 to December 2015, we only identified 37 matched pairs. This analysis still showed equal rates of favorable recanalization (OR 95% CI, 0.43–5.22; $P = .75$), clinical outcome (OR 95% CI, 0.62–3.93; $P = .64$), procedural adverse events (OR 95% CI, 0.22–1.63; $P = .80$), symptomatic intracerebral hemorrhages (OR 95% CI, 0.08–2.74; $P = 1.00$), and distal embolism (OR 95% CI, 0.02–2.16; $P = .36$) (Table 3). The procedural duration remained numerically shorter in the ERIC group, though this difference was no longer statistically significant (74.1 versus 90.8 minutes [95%

CI, −8–41]; $P = .18$). The number of thrombectomy passes remained statistically insignificant (2.5 versus 3.4 passes [95% CI, −0.16–1.95]; $P = .10$), and the significantly less frequent use of secondary/rescue device remained (OR 95% CI, 0.11–0.87; $P = .04$) (Table 3). The multivariate regression analyses confirmed that thrombectomy with the ERIC retriever was not associated with either favorable recanalization or favorable clinical outcome but predicted shorter procedural duration and less need for a secondary device (On-line Table 4).

DISCUSSION

This study examined the efficacy and safety of the ERIC device by comparing it with those of classic stent retrievers and identified equal rates of favorable recanalization and clinical outcome, equal procedural adverse events, and improvements in some procedural benchmarks. Possible drawbacks with the design of the classic stent retrievers are dependency on time-consuming interaction with the clot, which also may be problematic in white, platelet-rich clots,[19] and vulnerability of the clot during retraction because it is retained on the outside of the stent retriever. New generations of thrombectomy devices were designed to overcome these disadvantages. The interlinked cages design of the ERIC and similar devices captures the clot within and between the cages and relies less on interaction with the clot, possibly allowing faster and gentler clot removal. Additionally, the ERIC device has a slimmer profile and can be used through low-profile microcatheters. Although still unproven, stent retrievers designed specifically for clot removal such as the ERIC device may improve procedural benchmarks during thrombectomy and could have a positive effect on clinical outcome. Although previous studies[20,21] have suggested reasonable efficacy and safety with the ERIC device for mechanical thrombectomy, to our knowledge, our study is the first to compare procedural benchmarks and clinical outcome with classic stent retrievers.

The main finding of our study was equal rates of favorable recanalization between the ERIC group and the classic stent retriever group. Furthermore, our rate was comparable with the findings of 2 published case series both reporting 83% favorable recanalization with the ERIC device for thrombectomy.[20,21] The rates of favorable recanalization with classic stent retrievers are already high, and it is unlikely that any new device will provide more than the 80%–90% TICI 2b–3 seen in recent randomized controlled trials.[2-6] These high rates of favorable recanalization were, however, not reflected in equally high rates of favorable clinical outcome; this finding suggests that there may still be the potential for procedure-related improvement. Therefore, it may be more relevant to explore improvement in other procedural benchmarks than the rate of favorable recanalization. We identified a statistically significant shorter procedural duration and less frequent use of secondary endovascular devices with the ERIC compared with classic stent retriever devices. These factors both suggest slightly improved performance of the ERIC device compared with classic stent retrievers. These benchmark improvements were not directly reflected in improved 3-month clinical outcome in which we identified equal rates of favorable clinical outcome, but most interesting, the shorter procedural duration of 30 minutes and the 6% absolute difference in rates of favorable clinical outcome in favor of the ERIC group in our study correspond very well with previous data, suggesting that every 30-minute delay to reperfusion decreases the rate of favorable 3-month clinical outcome by 3%–8%.[22,23]

Although we identified an average of 30-minute shorter procedural duration in the ERIC group, the difference may be as little as 8 minutes as illustrated by the lower limit of the confidence interval. Furthermore, we saw a difference in delay to groin puncture between the 2 groups. Even though we attempted to adjust for this difference, Table 2 shows that a bias toward longer delay to groin puncture in the ERIC group may still exist after adjustment, though this was no longer statistically significant. If this time delay was better balanced, the difference in 3-month outcome between the 2 groups may have been even greater. Our rate of favorable clinical outcome (46%) was comparable with that in the 2 case series (33%–48%[20,21]).

Concerning the safety of mechanical thrombectomy with the ERIC device, we found equal rates of adverse events compared with classic stent retrievers. We observed only 1 patient with distal embolus after thrombectomy in the ERIC group and 5 patients in the classic stent retriever group. Although it is tempting to speculate that this finding might signify improved protection of the clot inside the device during retraction of the ERIC retriever, these numbers are too small and the results need be confirmed by large prospective studies.

In the ERIC group, we identified 6 patients with procedure-related intracranial hemorrhagic complications compared with 2 patients in the classic stent retriever group. Four of the 6 hemorrhages were related to thrombectomy with the ERIC retriever, 1 hemorrhage was caused by a microwire perforation, and 1 hemorrhage was related to thrombectomy with a classic stent retriever. Procedures in all 4 hemorrhages that appeared after thrombectomy with the ERIC device were performed in distal branches (distal MCA–M2/M3), where the risk of thrombectomy may be increased.[24] This finding suggests that even though the design of the ERIC device allows for low-profile microcatheters that may have easier access to distal branches, the risk-benefit must be carefully evaluated when performing thrombectomy beyond the MCA–M1/M2 branches.

Even though we identified a few more procedure-related hemorrhages in the ERIC group, most were clinically silent minor subarachnoid hemorrhages, and only 2 of the 6 hemorrhages in the ERIC group were symptomatic. One intracerebral hemorrhage appeared after MCA–M1 thrombectomy with a classic stent retriever used as a rescue device (expired day 5). The other intracerebral hemorrhage appeared after MCA–M3 thrombectomy with an ERIC 3 × 20 device, which led to coiling of the vessel. The patient deteriorated from NIHSS 18 to NIHSS 27 (3-month mRS = 4). The rate of symptomatic hemorrhage observed in this study was comparable with that in the 2 case series (0%–8%[20,21]). Although we identified slightly fewer symptomatic hemorrhages in the ERIC group, the rates represent very few cases, and the results need to be interpreted with caution. In the time-sensitivity analysis, we saw even rates of symptomatic hemorrhages between the 2 groups, further supporting the risks of thrombectomy with the ERIC device being equal to those in classic stent retrievers.

Limitations

This study represents experience from a single stroke center with a limited sample size, and results may vary from those in other centers. However, we identified very similar results compared with other studies.[20,21] Procedural details were recorded before clinical outcome was known, and this study was not designed at the time of clinical outcome assessment of patients. Only the clot location was available and not clot size/burden or clot composition, which may play an important role in the efficacy of a stent retriever.[19] Selection of devices for clot removal was based on the discretion of the neurointerventionalist; even though no specific criteria were used by our staff, our results may have been affected by selection bias. We observed a considerable reduction of bias after propensity score matching (Table 2), but important factors such as the individual interventionalist's skill, speed, and aggressiveness and time-delay to groin puncture, which may affect both the procedural success and clinical outcome, could have been better balanced. To obtain truly comparable groups, a randomized controlled trial would be needed. Although we do not believe that our setup has undergone major changes in the past 4 years, a potential learning curve may have affected our results favoring the ERIC stent. However, the time-sensitivity analysis for patients treated within the same time periods (July 2013 to December 2015) confirmed the results of our primary analysis but with a smaller sample size. Our results are further strengthened by the multivariate analysis of variables associated with outcomes also confirming the results of our primary analysis (On-line Table 4).

CONCLUSIONS

Mechanical thrombectomy with the ERIC device is effective and safe and is associated with at least equal rates of favorable procedural and clinical outcomes compared with classic stent retrievers. The interlinked cages design of the ERIC device showed improvement in procedural benchmarks, which did not translate into improved clinical outcome, possibly due to low statistical power. These promising results warrant further evaluation by larger prospective clinical trials.

Disclosures: Markus Holtmannspötter—*UNRELATED*: *Consultancy*: Sequent Medical, MicroVention, Covidien-Medtronic, Stryker; *Payment for Lectures Including Service on Speakers Bureaus*: Sequent Medical, MicroVention, Covidien-Medtronic; *Travel/Accommodations/Meeting Expenses Unrelated to Activities Listed*: Sequent Medical, MicroVention, Covidien-Medtronic, Stryker Neurovascular.

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