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New Stent Retriever Technology Versus Standard Devices for Anterior Large Vessel Thrombectomy: A Multicenter Study

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ABSTRACT

Background and Purpose: Guidelines recommend stent retrievers (SRs) for treating large vessel occlusion (LVO) stroke. We assessed noninferiority of the iNtercept (iVascular) SR with a self-expanding basket on a pusher wire versus contemporary SRs (CSRs) using propensity score (PS) matching analysis.

Methods: We analyzed data from the ROSSETTI multicenter registry of patients with anterior circulation LVO to compare procedural (recanalization rates according to the modified Thrombolysis In Cerebral Infarction (mTICI) score and procedural complications), clinical (modified Rankin Scale at 90 days), and safety (symptomatic intracranial hemorrhage, mortality at 90 days) outcomes of patients treated with iNtercept or CSRs (Solitaire, Trevo, and EmboTrap) as a first-line strategy, with or without balloon-guide catheter (BGC + SR, BCG − SR) after PS matching. Non-inferiority of iNtercept was established if the prespecified lower bound of the 95% confidence interval was over −10%.

Results: A total of 164 and 132 patients treated first-line by iNtercept were matched to 656 and 132 patients treated first-line by CSR + BGC and CSR − BGC, respectively. After matching, successful reperfusion (mTICI2b/3) after first-line strategy was achieved in 53.7% and 54.8% in the iNtercept versus CSR + BGC groups, respectively (absolute difference, −0.1%), and 53.8% and 51.3% in the iNtercept versus CSR − BGC, respectively (2.6%). Final reperfusion rates and favorable 90-day outcomes were similar. iNtercept

had fewer sICH, procedural complications, and emboli in a new territory than CSR + BGC, and fewer procedural complications than CSR − BGC.

Conclusions: This multicenter registry with PS matching demonstrated the non-inferiority of iNtercept to approved CSRs for successful reperfusion in LVO acute ischemic stroke.

1 | Introduction

Mechanical thrombectomy (MT) is the standard treatment for acute ischemic stroke caused by large-vessel occlusion (LVO) in the anterior circulation [1, 2]. One main reason for MT's benefit is the use of contemporary stent retrievers (CSRs), which outperform older-generation devices through higher recanalization rates with excellent safety [3, 4]. While similar in function, thrombectomy devices have distinct properties and mechanisms that may impact technical and clinical outcomes [4, 5]. Research has focused on devices requiring fewer passes [6] to achieve higher recanalization rates [7] to improve outcomes. Devices should ideally achieve complete recanalization in a single pass [8], a goal achieved in up to 50% of cases with current technologies [3].

Solitaire (Medtronic, CA, USA) is a second-generation nitinol SR with a single-layer, overlapping parametric, closed-cell structure and peak-to-peak connections [9]. It was used in the major randomized controlled trials (RCTs) in 2015 that proved MT's efficacy over best medical management, and it has gone through four design iterations since the first generation. Trevo (Stryker, CA, USA) is also a second-generation nitinol SR with a single-layer, closed-cell structure, with the major differences from Solitaire being a non-overlapping design, braided tungsten/platinum wire, and a sodium hyaluronate coating. Trevo was used in the 2015 RCTs and improved clinical outcomes versus the first-generation thrombectomy devices, such as the Merci [10]. The EmboTrap Revascularization Device (Cerenovus, Johnson & Johnson Medical Devices, CA, USA) is a dual-layer segmented SR designed to entrap clots and stay opposed to the vessel wall during retrieval. The main design difference of this device is the closed cell inner channel within the outer cage and closed cell distal mesh at the tip [11]. EmboTrap has not been studied in any RCT but has shown high reperfusion rates in a single-arm, prospective, multicenter study [12].

Using the ROSSETTI prospective multicenter registry, we aimed to compare recanalization, functional, and safety outcomes of the iNtercept device versus the three most studied SRs (Solitaire, Trevo, and EmboTrap).

2 | Methods

2.1 | Patient Population

We used data from the ROSSETTI registry (ClinicalTrials.gov identifier: NCT04886687), a prospective, multicenter, observational registry including 17 comprehensive stroke centers from Spain, pooling data of adult patients for whom MT was indicated for acute ischemic stroke caused by LVO. The registry began in June 2019 and incorporated recent device technologies. Inclusion criteria were age ≥ 18 years, confirmed anterior LVO, time from last seen well to treatment < 24 h, baseline National Institutes of Health Stroke Scale (NIHSS) score ≥ 2, premorbid modified Rankin Scale (mRS) score ≤ 2, and SR endovascular approach as first-line strategy. We defined two groups: iNtercept group

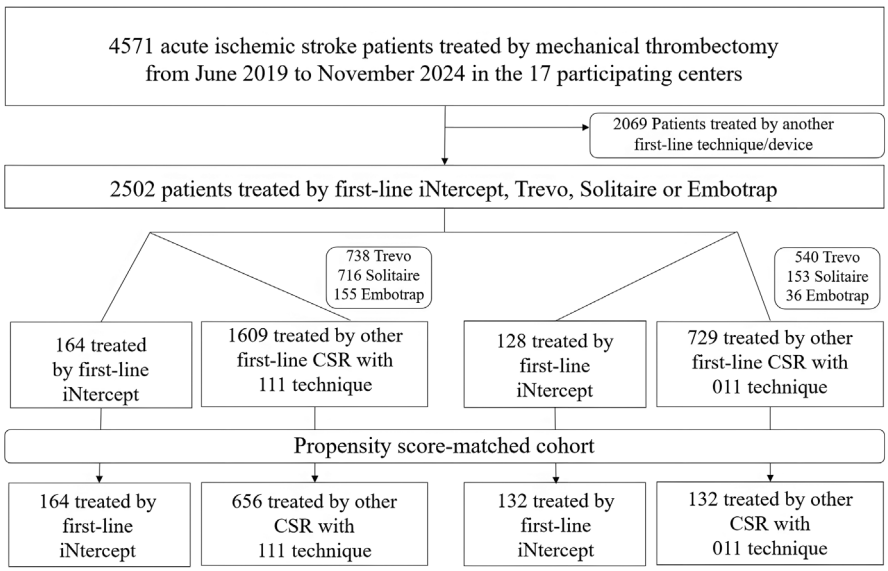

FIGURE 1 | Flowchart of the study. CSR: contemporary stent retriever; 111 technique: balloon guide catheter + aspiration catheter + stent retriever; 011 technique: aspiration catheter + stent retriever.

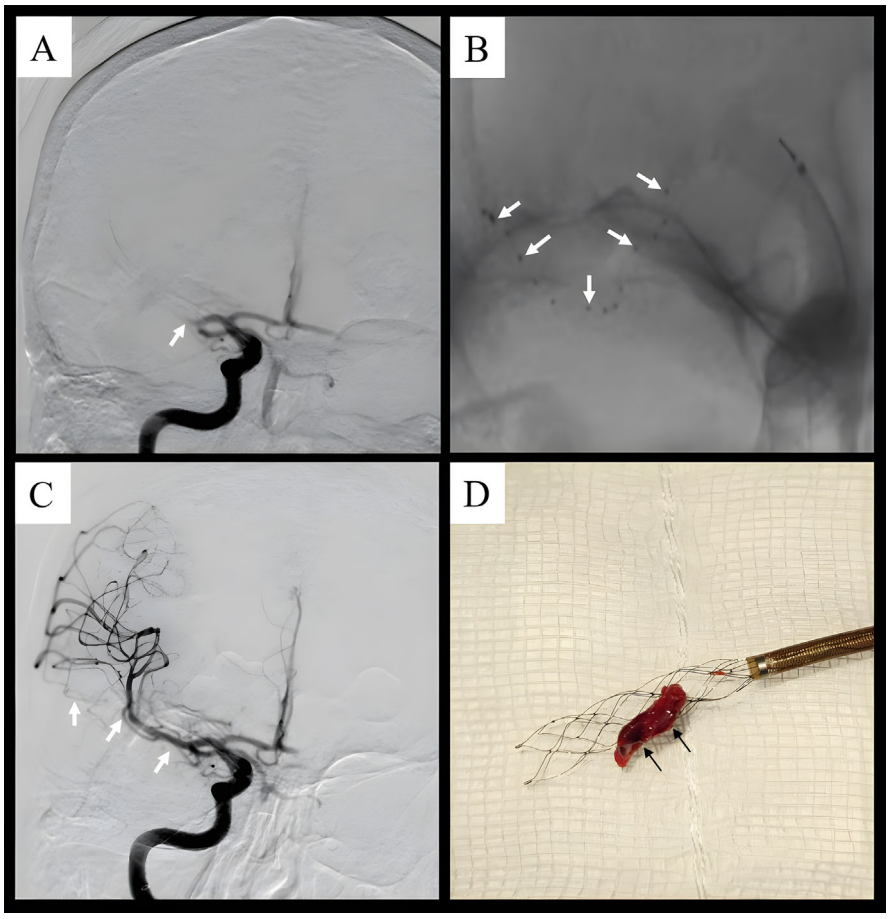

FIGURE 2 | Illustrative case using the iNtercept device. (A) Digital subtracted angiography, antero-posterior projection, depicting a right M1 occlusion of the middle cerebral artery (arrow). (B) Unsubtracted view, antero-posterior projection, showing the iNtercept device (arrows) in place covering the thrombus. (C) Digital subtracted angiography, anterio-posterior projection, showing a complete recanalization of the middle cerebral artery after 1 pass (modified Thrombolysis in Cerebral Infarction 3) (arrows). (D) Retrieved blood clot trapped within the iNtercept (arrows).

and CSR group (treated with Solitaire, Trevo, or Embotrap). All centers received institutional review board approval, and patients or representatives signed informed consent forms. Informed consent was obtained from all patients concerning any analysis conducted using data from the Rossetti registry. Exclusion criteria involved patients with additional intracranial LVO in the anterior or posterior circulation and tandem occlusions. Study data were prospectively collected using an online questionnaire. The type of SR, including iNtercept or other CSRs, was at the operator's discretion. At the time of analysis, 2502 patients met the inclusion and exclusion criteria of the 4571 patients in the ROSSETTI registry (Figure 1). As this study is observational, adherence to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) criteria [13] was enforced.

2.2 | INtercept Device

The SR iNtercept (iVascular, Barcelona, Spain) is a self-expanding nitinol stent retriever featuring an integrative basket design with a closed-cell structure and large surface area, ensuring effective clot insertion and retention. Its axial slit configuration allows the device to adapt to varying vessel diameters, maintaining performance across diverse anatomical scenarios. The basket is connected to a tapered pusher wire reinforced with a coil, offering strong pushability with excellent flexibility. iNtercept incorporates gold markers along the complete basket to provide real-time visualization.

When collapsed, the markers align in a straight line; when expanded, they form a spiral, allowing instant assessment of device expansion, clot interaction, and accurate positioning. All sizes up to 6 mm in diameter are compatible with a 0.027" microcatheter. A tapered distal sheath covers the basket tip to reduce contact with the vessel wall, minimizing endothelial damage and facilitating smooth introduction into the microcatheter.

2.3 | MT Procedure

MT was performed by certified interventional neuroradiologists with the patient under conscious sedation or general anesthesia in accordance with local practice. The use of balloon guide (BGC) catheters was also left to the operator's discretion. Therefore, patients were categorized according to the use of BGC + DAC + SR technique (111 technique) versus no BGC + DAC + SR technique (011 technique) (Figure 1). An illustrative example of iNtercept use is shown in Figure 2.

TABLE 1 | Baseline characteristics according to the first-line strategy before and after propensity score matching in patients treated with iNtercept and contemporary stent retrievers used in combined balloon-guide catheter technique.

Characteristics	Before matching			After matching		
	First-line iNtercept ($n = 164$)	First-line CSR devices ($n = 2338$)	ASD, (%)	First-line iNtercept ($n = 164$)	First-line CSR devices ($n = 656$)	ASD, (%)
Age, years	75.0 ± 11.2	73.9 ± 13.0	10.1	74.9 ± 11.1	75.9 ± 12.2	0.3
Women	81 (49.4)	1164 (49.8)	0.8	81 (49.4)	322 (49.1)	0.5
Current stroke event						
National Institute of Health Stroke Scale score at admission	16 (11–20)	16 (11–20)	1.8	16 (11–20)	16 (10–20)	3.7
Alberta Stroke Program Early CT Score at admission	9 (8–10)	9 (7–10)	38.8	9 (8–10)	9 (8–10)	1.1
Site of occlusion						
M1 segment of middle cerebral artery	104 (63.4)	1409 (60.3)	6.6	104 (63.4)	405 (61.8)	0.3
M2 segment of middle cerebral artery	42 (25.6)	544 (23.3)	5.3	42 (25.6)	177 (27.0)	0.3
Terminal internal carotid artery	18 (11.0)	385 (16.5)	17.6	18 (11)	73 (11.2)	0.6
Prior use of intravenous thrombolysis	48 (29.3)	602 (25.8)	7.7	48 (29.3)	182 (27.8)	3.2
Endovascular treatment						
General anesthesia	18 (11.0)	626 (26.8)	50.6	18 (11)	65 (9.9)	3.3
Onset to groin puncture time, min	259 (157–545)	263 (171-513)	1.6	259 (157–545)	265 (170–520)	4.0
Groin puncture to first run, min	8 (5–13)	6 (4-10)	5.0	8 (5–13)	6 (4–10)	2.3
Mechanical thrombectomy, min	28 (14–50)	24 (13-44)	12.5	28 (14–50)	26 (14–48)	3.8
Groin puncture to revascularization, min	37 (23–65)	33 (20-56)	13.9	37 (23–65)	35 (21–59)	5.4

Note: Values are expressed as number (percentage), mean ± standard deviation, or median (25th–75th percentiles). Values were calculated after handling missing data using multiple imputation procedure.

Abbreviations: ASD, absolute standardized difference; CSR, contemporary stent retriever; n, number of participants.

2.4 | Clinical and Radiological Assessment

NIHSS at baseline and 24 h were assessed by stroke neurologists, and functional outcome at 90 days by the mRS. Radiological data, including baseline Alberta Stroke Program Early Computed Tomography Score (ASPECTS) and the mTICI score, were prospectively collected by interventional neuroradiologists.

2.5 | Endpoints

The primary efficacy endpoint was the proportion of patients achieving successful revascularization (mTICI 2b–3) after the first pass (FPR). Secondary angiographic efficacy endpoints were the proportion of patients achieving FPR-mTICI 2c-3 and FPR-mTICI 3 after the first-line MT strategy, as well as the proportion of patients achieving mTICI 2b–3, mTICI 2c-3, and mTICI 3 at the end of the MT. Secondary clinical efficacy endpoint included the proportion of patients achieving favorable functional outcome, defined as an mRS score ≤ 2 at 90 days. Secondary safety endpoints included the proportion of patients with symptomatic intracranial hemorrhage (sICH); the proportion of procedural complications, including vessel dissection, vessel perforation, or vessel spasm; and the proportion of emboli in a new vascular territory.

2.6 | Statistical Analysis

We compared the outcomes between the 2 study groups (first-line thrombectomy by iNtercept vs. CSR devices) after considering the potential confounding factors by using the propensity score (PS)–matching method as primary analysis. The PS was estimated using a nonparsimonious multivariable logistic regression model, with study group as the dependent variable and prespecified confounders (Table 1) as covariates. Missing values in baseline characteristics and outcomes were treated by the multiple imputation procedure. We assessed the noninferiority of iNtercept versus CSR by estimating the 1-sided 95% CI of the absolute difference in successful reperfusion rate after first-line strategy (primary end point) using a generalized estimating equation model (binomial distribution, identity link function). Noninferiority was established if the lower limit of 95% CI was $> -10\%$ (the prespecified margin) [14]. We also reported the relative treatment effect sizes (relative risk for iNtercept versus CSR) by using a log-link function in generalized estimating equation models. Finally,

TABLE 2 | Baseline characteristics according to the first-line strategy before and after propensity score matching in patients treated with iNtercept and contemporary stent retrievers used in combined non-balloon-guide catheter technique.

Characteristics	Before matching			After matching		
	First-line iNtercept ($n = 128$)	First-line CSR devices ($n = 729$)	ASD, %	First-line iNtercept ($n = 132$)	First-line CSR devices ($n = 132$)	ASD, %
Age, years	75.1 ± 11.2	72.7 ± 12.5	20.7	75.1 ± 11.2	75.6 ± 11.9	4.7
Women	65 (50.8)	363 (49.8)	1.2	67 (50.7)	68 (51.4)	1.7
Current stroke event						
National Institute of Health Stroke Scale score at admission	16 (10–20)	16 (11–20)	2.6	16 (10–20)	16 (10–20)	7.5
Alberta Stroke Program Early CT Score at admission	9 (8–10)	8 (7–10)	49.0	9 (8–10)	9 (8–10)	0.1
Site of occlusion						
M1 segment of middle cerebral artery	79 (61.7)	467 (64)	7.5	79 (59.7)	79 (59.7)	1.2
M2 segment of middle cerebral artery	36 (28.1)	163 (22.2)	11.6	36 (27.2)	34 (25.7)	3.8
Terminal internal carotid artery	17 (13.3)	109 (14.8)	4.3	17 (12.9)	19 (14.4)	3.2
Prior use of intravenous thrombolysis	48 (37.5)	251 (34.3)	4.4	48 (36.4)	47 (35.5)	0.4
Endovascular treatment						
General anesthesia	14 (10.8)	170 (23.2)	39.8	14 (10.6)	15 (11.4)	2.7
Onset to groin puncture time, min	272 (165–561)	297 (185–545)	4.5	272 (165–561)	285 (171–506)	1.8
Groin puncture to first run, min	9 (5–14)	6 (4–11)	0.5	9 (5–14)	7 (4–12)	0.0
Mechanical thrombectomy, min	32 (15–52)	34 (20–55)	15.9	32 (15–52)	35 (21–60)	6.0
Groin puncture to revascularization, min	41 (25–71)	42 (28–68)	14.6	41 (25–71)	43 (29–72)	6.4

Note: Values are expressed as number (percentage), mean ± standard deviation, or median (25th–75th percentiles). Values were calculated after handling missing data using multiple imputation procedure.

Abbreviations: ASD, absolute standardized difference; CSR, contemporary stent retriever; n, number of participants.

we compared secondary outcomes using generalized estimating equation models (binomial distribution, log-link function) for binary outcomes. We also used a mixed ordinal logistic regression model for the overall degree of disability at 90 days, with a shift analysis of 90-day mRS after pooling mRS 5 and 6, and a linear mixed regression model for times from groin puncture to clot contact and successful reperfusion (after applying a log-transformation). No correction for multiple comparisons was applied, and results for all secondary outcomes are reported only using effect size estimates with their 2-sided 95% CIs. All statistical analyses were performed using R (version 4.5.0, R Foundation for Statistical Computing, Vienna, Austria, https://www.R-project.org).

3 | Results

3.1 | Study Population

From June 2019 to November 2024, a total of 2502 patients with anterior circulation acute ischemic stroke were treated using first-line SR devices (iNtercept, Solitaire, Trevo, or EmboTrap) at 17 participating comprehensive stroke centers in the ROSSETTI registry (Figure 1). A first-line iNtercept device was used in 164 patients. No significant technical issues were reported regarding the use of iNtercept. After handling missing data by multiple imputation and using PS, 164 patients treated with iNtercept were matched to 656 patients treated with other CSR in combined BGC technique (mean number of matched sets obtained in the 20 imputed data sets). Similarly, 132 patients treated with iNtercept were matched to 132 patients treated with other SR devices in the non-BGC combined technique.

Tables 1 and 2 show baseline characteristics after handling missing values for study groups before and after PS matching when CSRs were used in combined 111 or 011 technique. Before matching, several meaningful differences were found; greatest differences (absolute standardized difference > 30%) were in admission ASPECTS (higher scores in iNtercept group) and general anesthesia (higher rate in CSR group). After PS matching, there were no differences between-group differences in baseline characteristics.

3.2 | Primary Outcome

In the PS-matched cohort, the primary outcome (successful reperfusion mTICI 2b-3 after the first pass) was achieved in 53.7%

TABLE 3 | Evaluation of iNtercept versus other contemporary stent retriever devices as first-line endovascular therapy for successful reperfusion (modified Thrombolysis in Cerebral Infarction 2b-3) rates after the first-pass strategy.

	Unadjusted analysis	Matched-propensity score analysis
First-pass recanalization with iNtercept	53.7% (46.0% to 61.1%)	53.7% (46.0%–61.1%)
First-pass recanalization with other SR devices in combined 111 technique	57.2% (55.2%–59.2%)	54.8% (50.4%–59.1%)
Absolute risk difference (one-sided 95% CI)	−3.6 (−10.2 to ∞)	−0.1 (−8.5 to ∞)
First-pass recanalization with iNtercept	53.8% (45.0%–62.4%)	53.8% (45.0%–62.4%)
First-pass recanalization with other SR devices in combined 011 technique	53.0% (49.4%–56.6%)	51.3% (40.3%–62.1%)
Absolute risk difference (one-sided 95% CI)	0.7 (−7.2 to ∞)	2.6 (−9.0 to ∞)

Note: Values are expressed as percentages (95% CIs) unless otherwise indicated. 111 technique: balloon guide catheter + aspiration catheter + stent retriever; 011 technique: aspiration catheter + stent retriever.
Abbreviations: CI, confidence interval; SR, stent retriever.

(95% CI, 46.0%–61.1%) in the iNtercept group and 54.8% (95% CI, 50.4%–59.1%) in the other CSR devices group used in combined BGC technique (controls: absolute difference, −0.1%; 1-sided 95% CI, −8.5% to ∞). The mTICI 2b-3 after the first pass was achieved in 53.8% (95% CI, 45.0%–62.4%) in the iNtercept group and 51.3% (95% CI, 40.3%–62.1%) in the other CSR devices group used in combined non-BGC technique (controls: absolute difference, 2.6%; 1-sided 95% CI,−9% to ∞). We demonstrated noninferiority of iNtercept versus CSR devices for primary outcome, evidenced by the lower limit of the 1-sided 95% CI of absolute difference being greater than prestated absolute margin of noninferiority (−10%) (Table 3).

3.3 | Secondary Angiographic Efficacy Outcomes

As shown in Table 4, in the PS-matched cohort, patients treated with iNtercept had similar reperfusion rate to those treated by other CSR devices. The matched relative risks (RRs) for iNtercept versus CSR devices group in combined BGC technique were 1.006 (95% CI, 0.772–1.312) for perfect reperfusion at the end of the first-line strategy and 0.994 (0.941–1.049), 1.024 0.916–1.143), and 0.928 (95% CI, 0.774–1.110) for successful (mTICI 2b), near-perfect (mTICI 2c), and perfect (mTICI 3) reperfusion at the end of the procedure, respectively. The corresponding values for iNtercept group versus the CSR devices group used in combined non-BGC technique are summarized in Table 4.

3.4 | Secondary Clinical Efficacy Outcomes

The proportion of patients achieving favorable functional outcome, defined as an mRS score ≤ 2 at 90 days, was 54.1% of iNtercept patients and 50.6% of control patients treated with combined BGC technique. In group comparison, 53.4% of iNtercept patients had favorable outcome versus 57.6% of control patients treated with combined non-BGC technique. PS-matched analyses showed comparable clinical outcome with matched RR of 1.069 (95% CI, 0.877–1.302) and 0.927 (95% CI, 0.692–1.242), respectively (Table 4).

3.5 | Secondary Safety Outcomes

Compared to combined BGC technique, iNtercept had fewer sICH (1.2% vs. 6.5%; OR 0.189; 95% CI, 0.044–0.813), procedural complications (6.7% vs. 15.7%; OR 0.427; 95% CI, 0.233–0.783), and emboli in new territory (4.9% vs. 10.8%; OR 0.451; 95% CI, 0.217–0.936). Procedural complications (7.6% vs. 17.1%; OR 0.442; 95% CI, 0.219–0.891) were also lower than in the combined non-BGC technique (Table 4).

4 | Discussion

The modern era of MT requires devices and strategies to achieve fast, complete, and safe revascularization [15]. We demonstrated the noninferiority of iNtercept compared with CSR as a first-line strategy for successful reperfusion, both in the first pass (> 50% for mTICI 2b-3; around 40% for mTICI 2c-3; around 30% for mTICI 3) and at the end of the procedure (> 90% for mTICI 2b-3; around 70% for mTICI 2c-3; around 45% for mTICI 3). Our results are consistent with recent evidence. Zaidat et al. [4]. conducted the MASTRO I meta-analysis to compare the outcomes between the three SRs included in our comparative analysis to iNtercept. The pooled rates of FPR-mTICI 2c-3 were 40.1%, 23.1%, and 32.4% for EmboTrap, Trevo, and Solitaire, respectively; however, no statistically significant differences were found. The pooled rates of FPR-mTICI 2b-3 (50.8% for EmboTrap, 42.1% for Trevo, and 41.0% for Solitaire; $p = 0.430$) and FPR-mTICI 3 (53.1% for EmboTrap, 47.0% for Trevo, and 46.5% for Solitaire; $p = 0.879$) were comparable when used as first-line therapy [4]. Therefore, the authors found that EmboTrap had numerically higher rates of recanalization; however, no statistically significant differences were observed. With respect to the final angiographic scores, our data also agreed with those reported by others. Among the 31 studies with sufficient data, the pooled mTICI**??** 2b-3 rates were 86.6% for EmboTrap, 82.8% for Trevo, and 81.7% for Solitaire.

The final reperfusion rates provided by CatchView were very similar to those provided by iNtercept. However, the rate of FPR-2c-3 was higher for iNtercept (40.2% and 36.9%, respectively,

TABLE 4 | Comparison of angiographic and clinical outcomes in patients with acute ischemic stroke treated by contemporary stent retrievers according to the first-line device in the propensity score-matched cohort.

	First-line iNtercept ($n = 164$)	First-line other CSR devices with 111 technique ($n = 656$)	RR value (95% CI)	First-line iNtercept ($n = 132$)	First-line other CSR devices with 011 technique ($n = 132$)	RR value (95% CI)
Angiographic efficacy outcomes						
First-pass recanalization						
Successful recanalization (mTICI 2b-3)	88 (53.7)	358 (54.8)	0.983 (0.835; 1.156)	71 (53.8)	68 (53)	0.998 (0.834; 1.196)
Near-perfect recanalization (mTICI 2c-3)	66 (40.2)	268 (40.8)	0.985 (0.797; 1.219)	49 (36.9)	40 (32.9)	1.122 (0.862; 1.459)
Perfect recanalization (mTICI 3)	50 (30.5)	199 (30.3)	1.006 (0.772; 1.312)	37 (28.4)	31 (24.8)	1.144 (0.834; 1.568)
Final recanalization						
Successful recanalization (mTICI 2b-3)	150 (91.5)	604 (92.0)	0.994 (0.941; 1.049)	119 (90.1)	122 (92.6)	0.973 (0.909; 1.042)
Near-perfect recanalization (mTICI 2c-3)	118 (72.0)	461 (70.3)	1.024 (0.916; 1.143)	89 (67.2)	81 (61.8)	1.088 (0.940; 1.259)
Perfect recanalization (mTICI 3)	78 (47.6)	336 (51.3)	0.928 (0.774; 1.110)	58 (43.9)	56 (41.6)	1.056 (0.839; 1.329)
Clinical efficacy outcomes						
Favorable outcome (modified Rankin Scale score at 90-day 0–2)	89 (54.1)	332 (50.6)	1.069 (0.877; 1.302)	71 (53.4)	73 (57.6)	0.927 (0.692; 1.242)
Safety outcomes						
Symptomatic intracerebral hemorrhage	2 (1.2)	42 (6.5)	0.189 (0.044; 0.813)	1 (1.2)	6 (6.5)	0.135 (0.018; 1.024)
Procedural complications	11 (6.7)	103 (15.7)	0.427 (0.233; 0.783)	10 (7.6)	25 (17.1)	0.442 (0.219; 0.891)
Emboli in a new vascular territory	8 (4.9)	71 (10.8)	0.451 (0.217; 0.936)	8 (6.4)	15 (10.2)	0.637 (0.306; 1.324)

Note: Values are expressed as number (percentage) unless otherwise indicated. 111 technique: balloon guide catheter + aspiration catheter + stent retriever; 011 technique: aspiration catheter + stent retriever.
Abbreviations: CI, confidence interval; CSR, contemporary stent retriever; mTICI, modified Treatment in Cerebral Infarction; n, number of participants; RR, relative risk.

compared to other SR used in the combined BGC and non-BGC techniques, respectively) than for CatchView (27%) [14]. On the other hand, in a PS-matched analysis, Ducroux et al. [16]. reported an FPR-mTICI 2c-3 rate of approximately 20% for the ERIC and other SR groups (Trevo and Solitaire), which is about half the rate observed for iNtercept in the present analysis. The final recanalization score rate was also slightly lower in the ERIC group than in the iNtercept group. Tigertriever is a relatively novel operator-adjustable clot retriever enhancing control options. The TIGER (Treatment With Intent to Generate Endovascular Reperfusion) trial [17] evaluated its effectiveness versus Trevo and Solitaire, showing first pass and MT end rates like iNtercept in our study.

Regarding safety outcomes, iNtercept had fewer sICH, procedural complications, and emboli in new territory than other CSRs, with comparable functional outcomes at 90 days. Only 1.2% of patients treated with iNtercept had sICH, similar to the TIGER trial [17] (1.7%) and lower than Solitaire (7.7%) [4], EmboTrap (3.9%) [4], Trevo (4.6%) [4], CatchView (7.7%) [14], and ERIC [16] (5.6%). The rate of emboli in new territory was similar to EmboTrap (6%) [4], Trevo (5.3%) [4], and Solitaire (7.7%) [4]. Between 45% and 58% of patients treated with SR had good clinical outcomes at 3 months [4, 14, 17].

The strength of this study lies in comparing the technical and clinical outcomes of the new SR iNtercept design with those of the three most studied SRs through a contemporaneous, multicentric registry cohort. Although direct comparisons are challenging due to different study designs, the results highlight iNtercept's non-inferiority as a first-line strategy for MT. Factors likely contributing to this include iNtercept's improved stent visibility for better clot placement, smaller microcatheters leading to lower complication rates, and a nitinol laser-cut closed-cell design that allows controlled foreshortening and flexible stent opening. This analysis provides a compelling real-world comparison of the safety and efficacy of iNtercept SR versus CSR. It introduces new tools to our daily practice and presents additional alternatives for the endovascular treatment of acute ischemic stroke. However, there are limitations. The registry was nonrandomized, and clinical outcomes and angiographic results lacked independent adjudication, which may have partially influenced the accuracy of these outcomes. The observational design precludes causal inferences. Additionally, some covariates had missing data, including PS calculation and outcomes. Although we used multiple imputations, missing data could introduce bias. Despite PS matching to balance baseline characteristics, residual confounding may persist due to unmeasured variables (e.g., clot characteristics, operator experience), which could influence the outcomes evaluated in this study.

In conclusion, this study demonstrated the non-inferiority of iNtercept to approved CSRs for successful reperfusion in LVO acute ischemic stroke. The comparable efficacy and better safety outcomes of iNtercept suggest that it is a viable first-line recanalization device. The findings should be validated in an RCT comparing iNtercept directly against individual CSRs, with independent adjudication of outcomes. Additionally, future research could explore cost-effectiveness and real-world usability, as these factors influence clinical adoption.

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Conflicts of Interest

The authors declare no conflicts of interest.

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