



**Figure S1.** Flow chart showing the inclusion of the patients with a posterior circulation stroke in the MR CLEAN Registry. Exclusion criteria were: no CTA available (n = 21), poor image quality (n = 16), preprocessing error (n = 42), or a non-occlusive thrombus or dissection (n = 2). In total, 187 patients were included.

**Table S1.** Baseline characteristics, treatment, and time data for included patients with posterior circulation stroke.

| Parameter                          | Posterior Stroke |
|------------------------------------|------------------|
| Clinical                           |                  |
| Age, years, median (IQR)           | 65.5 (20.8)      |
| Sex, F, no. [%]                    | 72/186 [38.7]    |
| NIHSS at baseline, median(IQR) [N] | 15 [22] (183)    |
| Prior Conditions                   |                  |
| Diabetes mellitus, no. [%]         | 32/184 [17.4]    |
| Hypertension, no. [%]              | 97/181 [53.6]    |
| Stroke, no. [%]                    | 30/183 [16.4]    |
| Atrial fibrillation, no. [%]       | 25/184 [13.6]    |
| Pre-Stroke mRS                     |                  |
| 0, no. [%]                         | 126/180 [70]     |
| 1, no. [%]                         | 19/180 [10.6]    |
| 2, no. [%]                         | 17/180 [8.4]     |
| 3, no. [%]                         | 7/180 [3.9]      |
| 4, no. [%]                         | 8/180 [4.4]      |

|   |                |
|---|----------------|
| 5, no. [%]                                    | 3/180 [1.7]    |
| Treatment                                     |                |
| IV Thrombolysis, no. [%]                      | 102/186 [54.8] |
| Time  |                |
| Stroke onset to IVT, minutes, median [IQR](N) | 98 [73] (93)   |

**Table S2.** Wilcoxon rank-sum test on pairwise differences between the Dice coefficient and the bias of the volume differences. The W-statistic and p-value are shown. The Polar UNet (with VBR) produced a significantly greater Dice coefficient relative to the other methods. The Polar UNet produced a significantly greater Dice coefficient relative to the BL-UNet (with VBR) and the BL-UNet. No method significantly improved the bias of the volume estimation other than the Polar-UNet (with VBR) over the Polar-UNet.

| Method 1           | Method 2              | Dice Coefficient |         | Bias |         |
|--------------------|-----------------------|------------------|---------|------|---------|
|                    |                       | W                | p-Value | W    | p-Value |
| BL UNet            | BL UNet (with VBR)    | 3039             | >0.05   | 3698 | >0.05   |
| BL UNet            | Polar Unet            | 2415             | <0.01   | 5392 | >0.05   |
| BL UNet            | Polar Unet (with VBR) | 2481             | <0.01   | 4361 | >0.05   |
| BL UNet (with VBR) | Polar Unet            | 2551             | <0.01   | 4832 | >0.05   |
| BL UNet (with VBR) | Polar Unet (with VBR) | 1367             | <0.01   | 3703 | >0.05   |
| Polar Unet         | Polar Unet (with VBR) | 2431             | <0.05   | 3153 | <0.01   |

**Table S3.** Bias and limits of agreement between the automatically and manually segmented thrombus volumes, respectively, for the BL-UNet and Polar-UNet with and without volume-based removal (VBR).

|        |            | Bias     | LoA              |
|--------|------------|----------|------------------|
| No VBR | BL-UNet    | -0.01 mL | -0.75 to 0.73 mL |
|        | Polar-UNet | -0.06 mL | -0.83 to 0.71 mL |
| VBR    | BL-UNet    | 0.06 mL  | -0.64 to 0.77 mL |
|        | Polar-UNet | -0.01 mL | -0.77 to 0.75 mL |

**Algorithm S1.** Inference procedure for the Polar U-Net.

```

1: Input: scan, max_iterations_per_slice
2: Initialize: starting_coordinates, scan_prediction
3: for slice_number in number_slices:
4:   for iteration in max_iterations_per_slice:
5:     Extract voi from scan given starting coordinates
6:     Predict angle, radius, action and segmentation from voi
7:
8:     if action == 'move':
9:       Do update starting coordinates using angle and radius
10:    else if action == 'segment':
11:      Add segmentation of voi to scan_prediction given coordinates
12:      Move one axial slice in caudal direction
13:    else if action == 'stop':
14:      Stop inference procedure
15:
16: return prediction

```