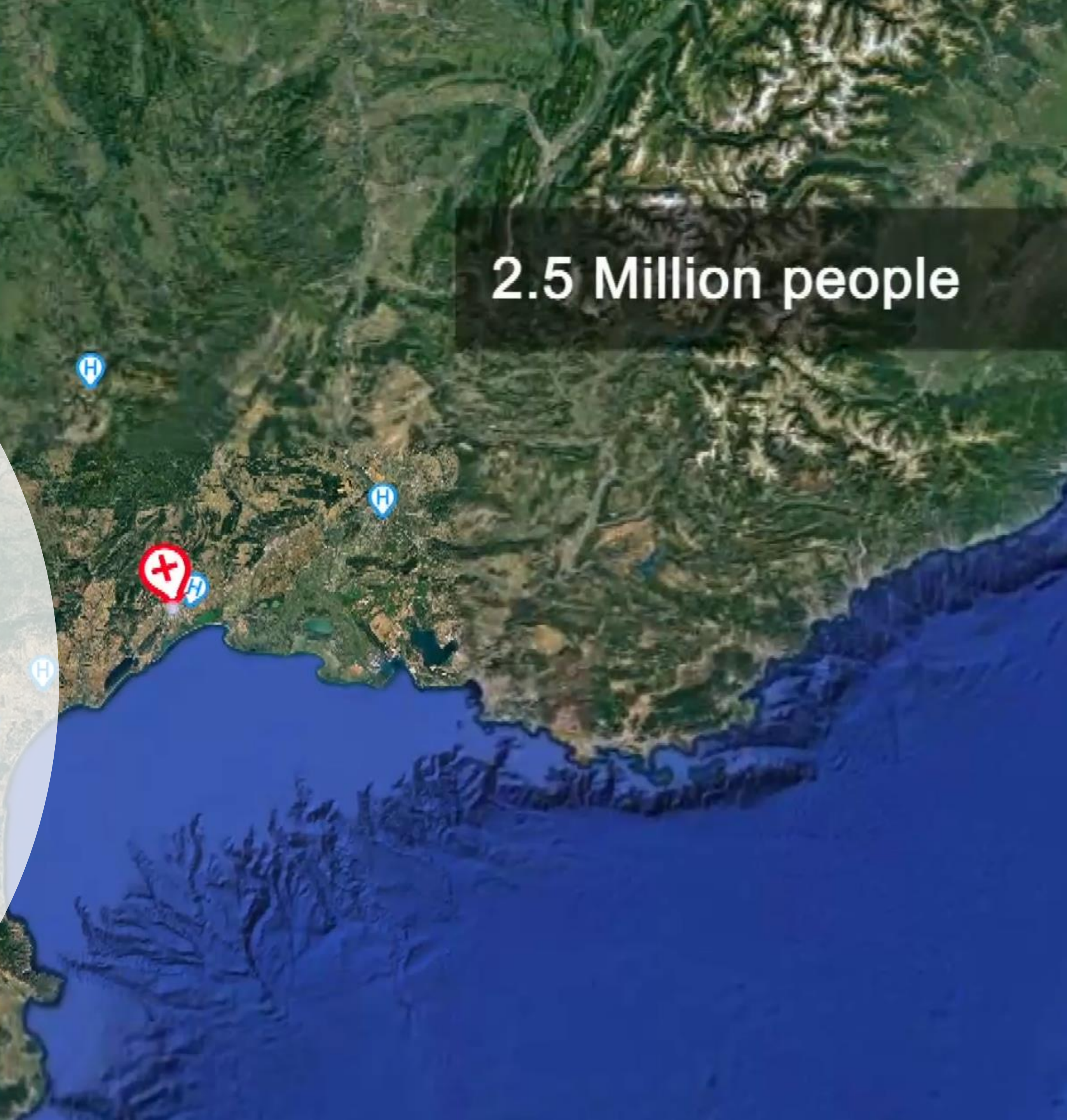
Posterior Circulation & Large Vessel Stroke Occlusion

ECMINT – 2019

Pr Vincent COSTALAT and Montpellier Team

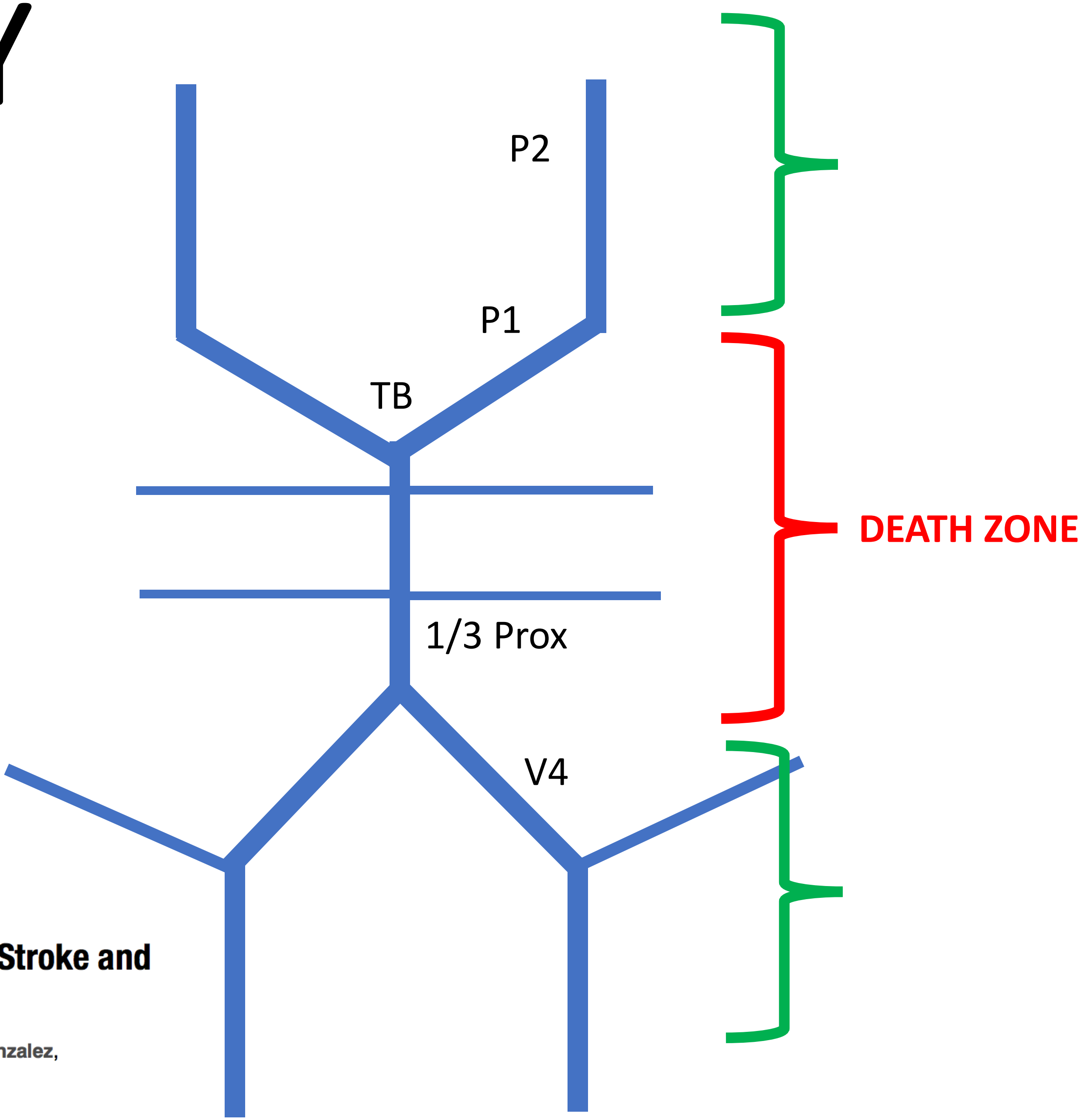

CHU
GUI DE CHAULIAC



- 2000 Incracranial Procedures
- 450 Thrombectomy in 2019
- 460 Aneurysms
- 16 Clinical beds
- 7 Practitionners full time

NATURAL HISTORY

LOCATION	mRS 3-6	Mortality
P2 Occlusion	76%	0%
P1 Occlusion	87%	25%
Top **B**alisar	81%	50%
1/3 Part of **BA**	- %	- %
V4 Occlusion	47%	25%



Significance of Large Vessel Intracranial Occlusion Causing Acute Ischemic Stroke and TIA

Wade S. Smith, Michael H. Lev, Joey D. English, Erica C. Camargo, Maggie Chou, S. Claiborne Johnston, Gilberto Gonzalez, Pamela W. Schaefer, William P. Dillon, Walter J. Koroshetz, and Karen L. Furie

Originally published 15 Oct 2009 | https://doi.org/10.1161/STROKEAHA.109.561787 | Stroke. 2009;40:3834–3840

Table 3. Univariate and Multivariate Model of Good and Mortal Outcome for Stroke and TIA

	Good Outcome (mRS ≤2)			Mortality		
	Mean (SD) or N (%)	Univariate OR (*P* Value)	Multivariate OR* (*P* Value)	Mean (SD) or N (%)	Univariate OR (*P* Value)	Multivariate OR† (*P* Value)
BA (N=14)	3 (21%)	0.23 (0.024)	0.40 (0.243)	7 (50%)	6.96 (<0.001)	2.69 (0.175)
VA (N=16)	10 (63%)	1.40 (0.481)	1.19 (0.790)	4 (25%)	2.22 (0.175)	3.12 (0.142)
P1 (N=8)	1 (13%)	0.12 (0.048)	0.14 (0.084)	2 (25%)	2.19 (0.341)	0.53 (0.663)
P2 (N=9)	2 (22%)	0.24 (0.078)	0.34 (0.208)	0 (0%)	…	…
BA or ICA (N=57)	11 (19%)	0.18 (<0.001)	0.44 (0.039)	22 (39%)	2.36 (<0.001)	1.60 (0.215)

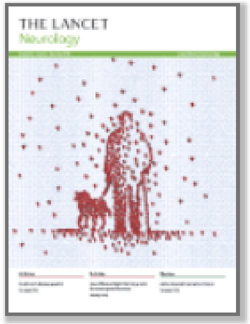
RATIONALE : ETIOLOGY

- ATHERO-EMBOLIC = 50 %
- CARDIOEMBOLIC = 30 %
- DISSECTION = 5%
- ICAD = 15 %

RATIONALE : LITTERATURE DATA

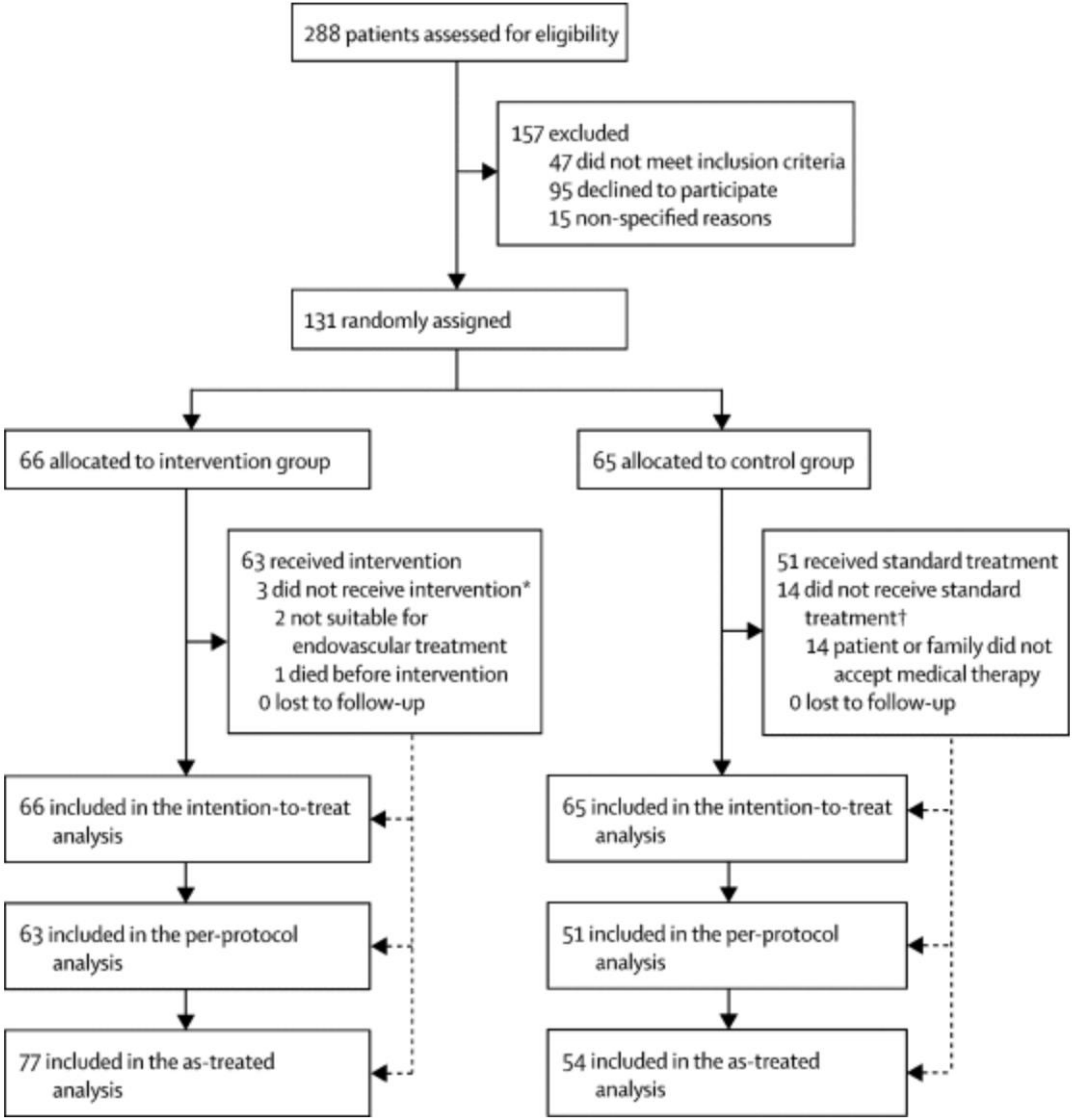
- RCT ?
  - BASICS
  - BEST …..
  - RETROSPECTIVE ?

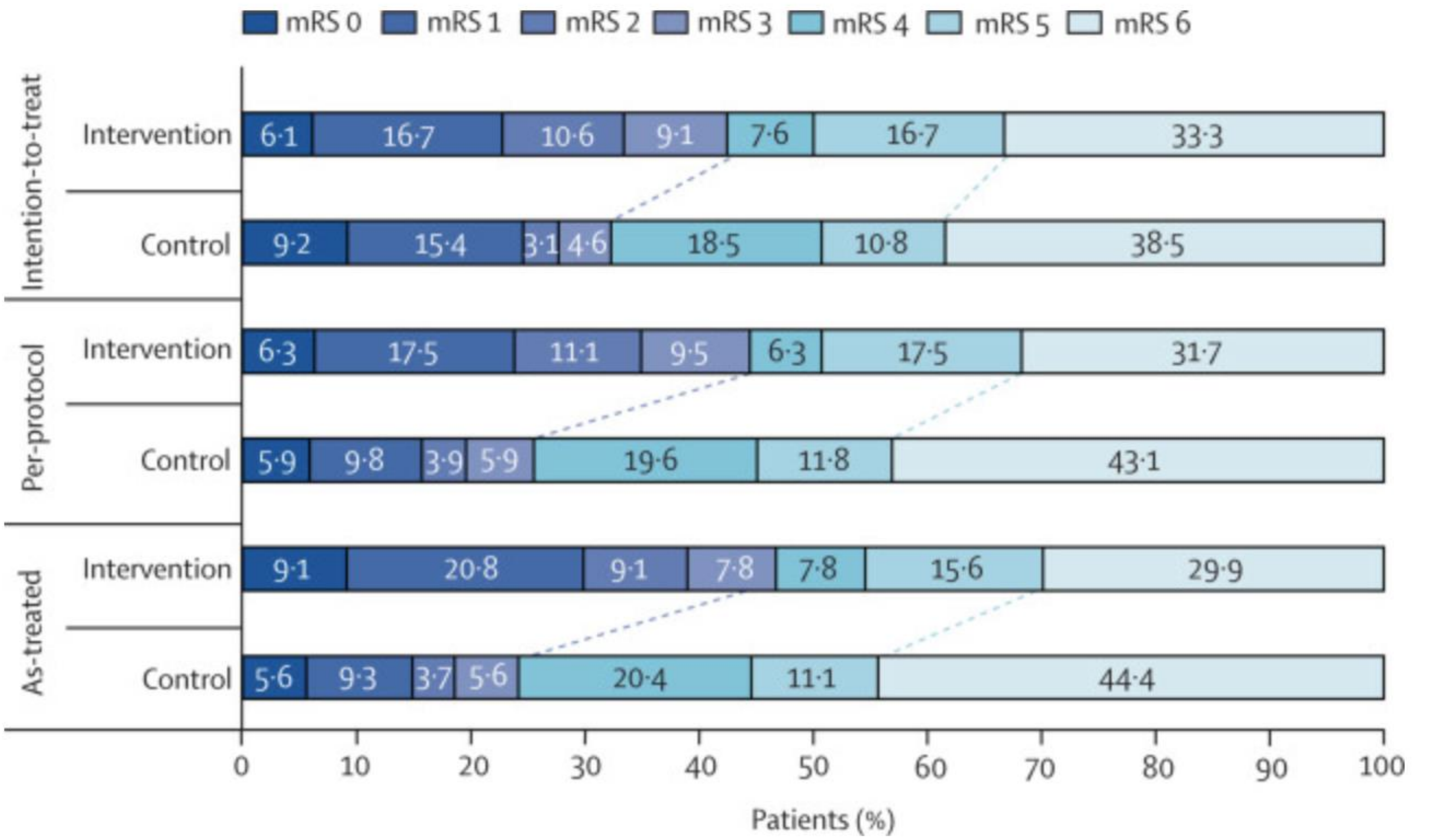
THE LANCET
Neurology
Available online 9 December 2019
In Press, Corrected Proof



Articles

Endovascular treatment versus standard medical treatment for vertebrobasilar artery occlusion (BEST): an open-label, randomised controlled trial

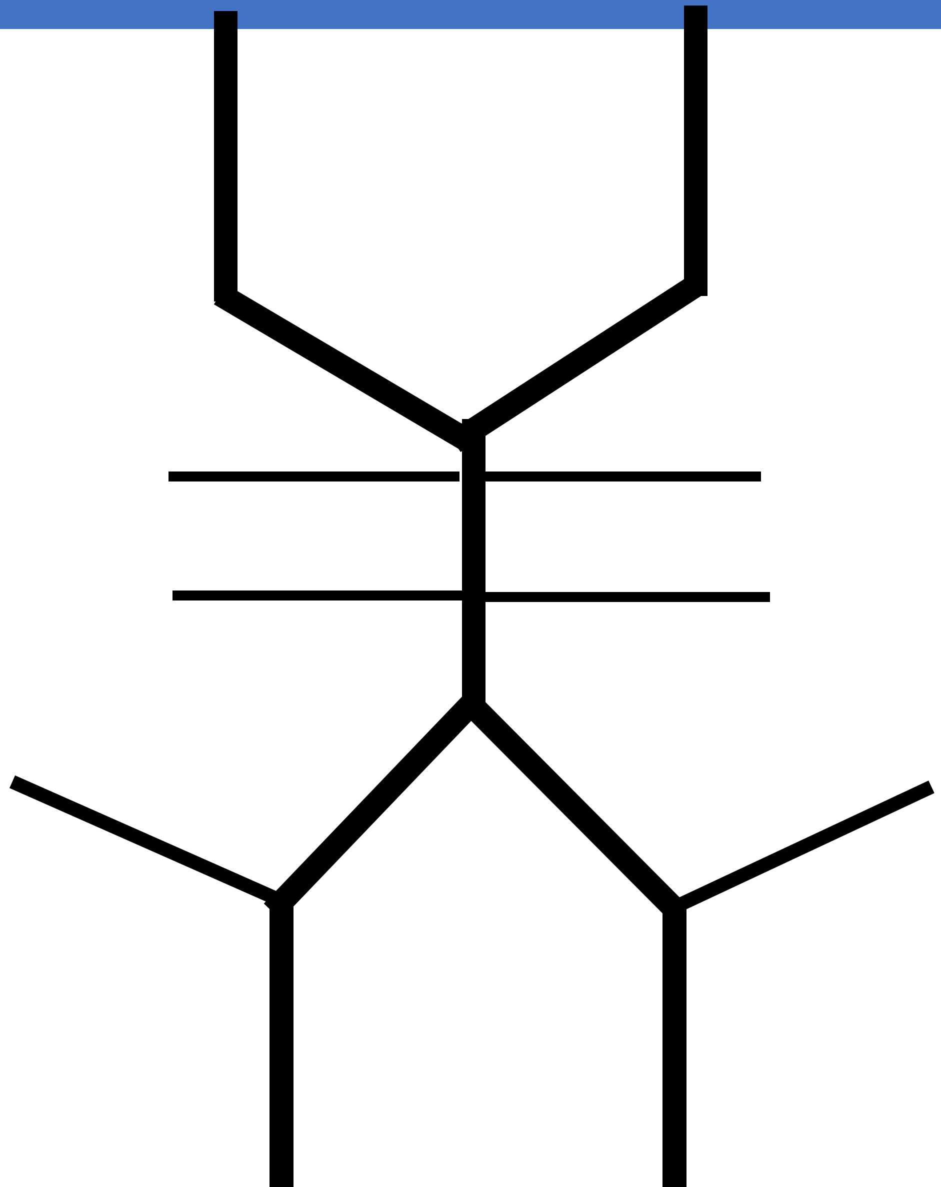

288 patients assessed for eligibility
157 excluded
47 did not meet inclusion criteria
95 declined to participate
15 non-specified reasons
131 randomly assigned
66 allocated to intervention group
65 allocated to control group
63 received intervention
3 did not receive intervention*
2 not suitable for endovascular treatment
1 died before intervention
0 lost to follow-up
51 received standard treatment
14 did not receive standard treatment†
14 patient or family did not accept medical therapy
0 lost to follow-up
66 included in the intention-to-treat analysis
65 included in the intention-to-treat analysis
63 included in the per-protocol analysis
51 included in the per-protocol analysis
77 included in the as-treated analysis
54 included in the as-treated analysis


mRS 0
mRS 1
mRS 2
mRS 3
mRS 4
mRS 5
mRS 6
Intention-to-treat
Per-protocol
As-treated
Intervention
Control
Intervention
Control
Intervention
Control
6·1
16·7
10·6
9·1
7·6
16·7
33·3
9·2
15·4
3·1
4·6
18·5
10·8
38·5
6·3
17·5
11·1
9·5
6·3
17·5
31·7
5·9
9·8
3·9
5·9
19·6
11·8
43·1
9·1
20·8
9·1
7·8
7·8
15·6
29·9
5·6
9·3
3·7
5·6
20·4
11·1
44·4
0
10
20
30
40
50
60
70
80
90
100
Patients (%)

RATIONALE : PATIENT SELECTION ?

- ASPECT SCORE
- MRI

A PRAGMATIC APPROACH BY LOCATION



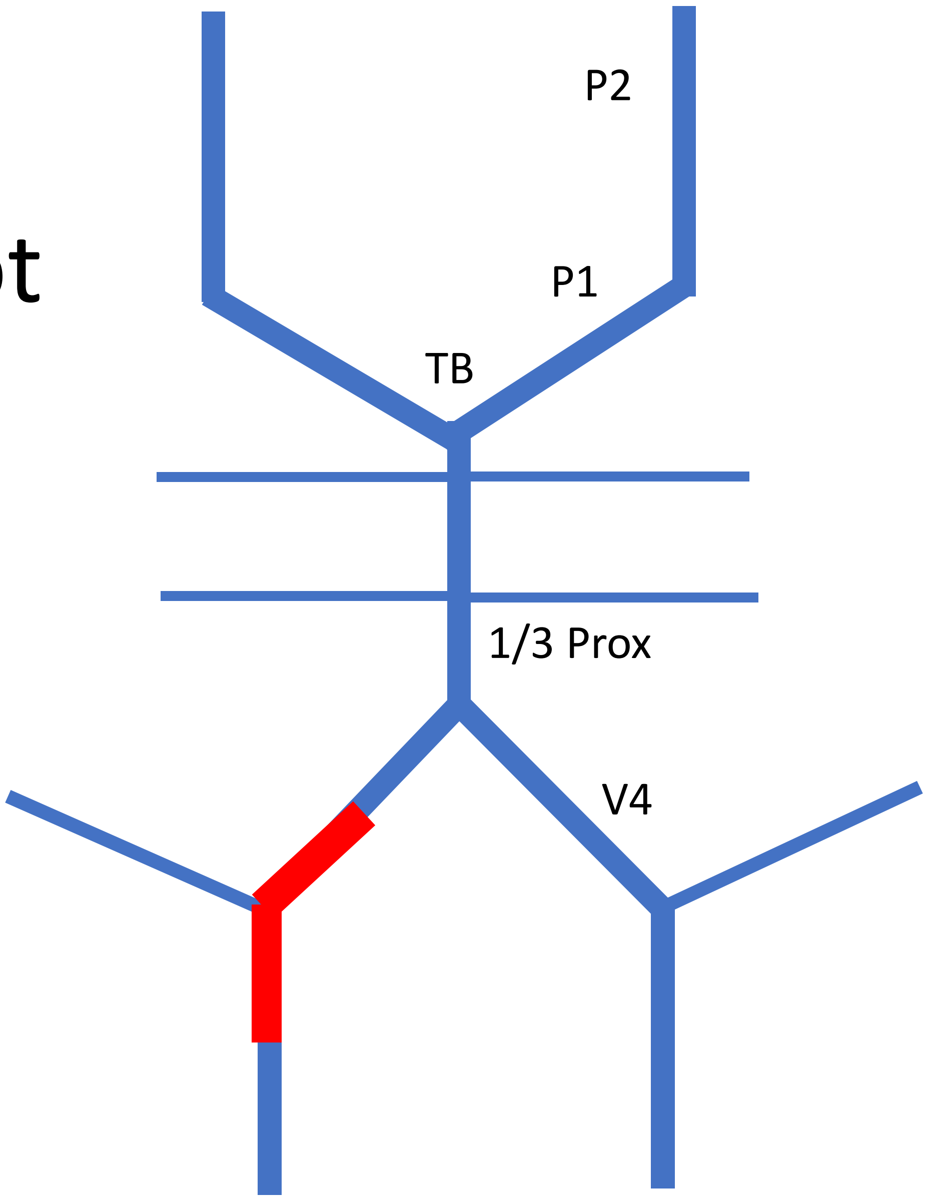
Occlusion of V4

- Clinical Presentation may vary a lot

- PICA Stroke Symptoms ++ (Low NIHSS)
- +/- Distal Embolic Stroke
- Controlateral V4

Hypoplastic

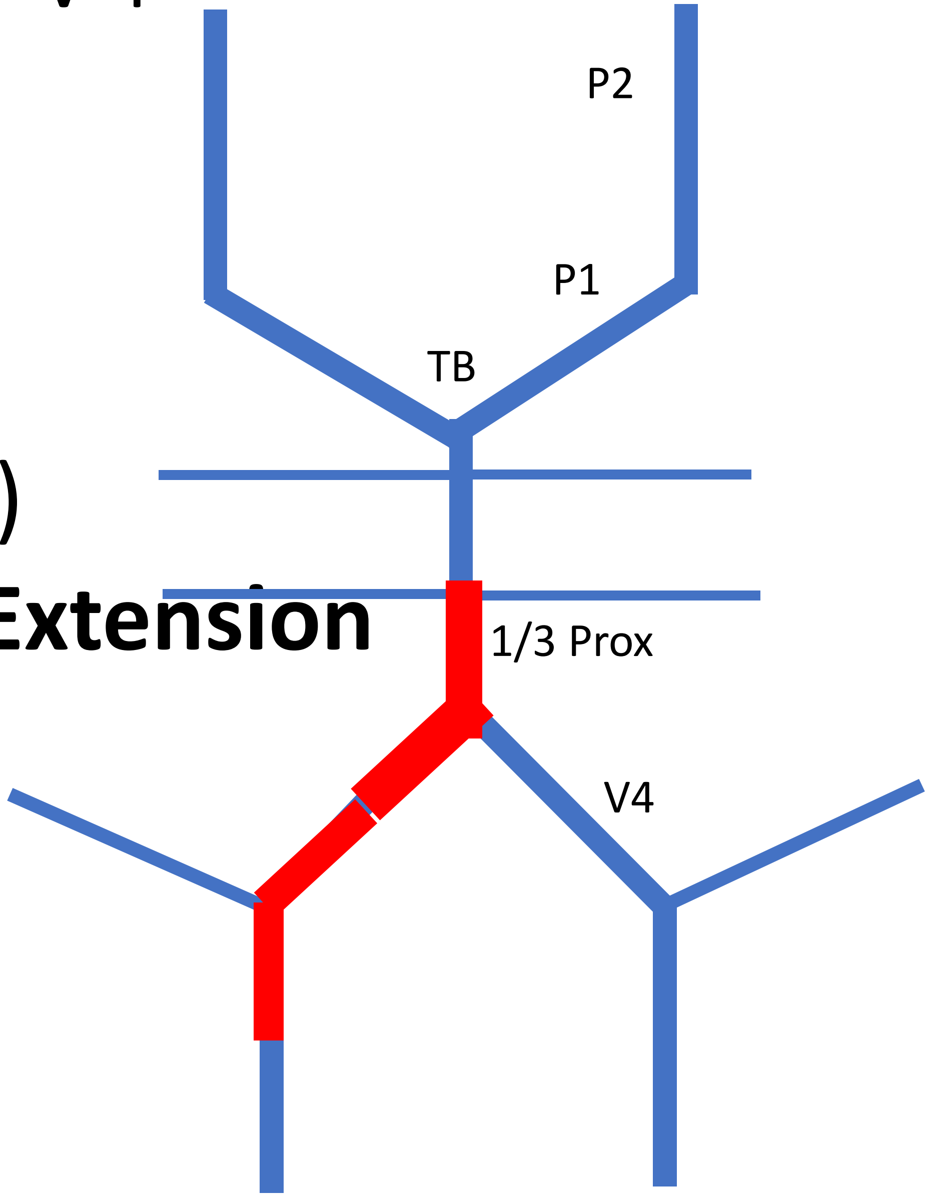
(Massive presentation)



TREATEMENT Occlusion of V4

- PICA Symptoms Only
  And Controlateral V4
  And Infarcted PICA (no brain to save)

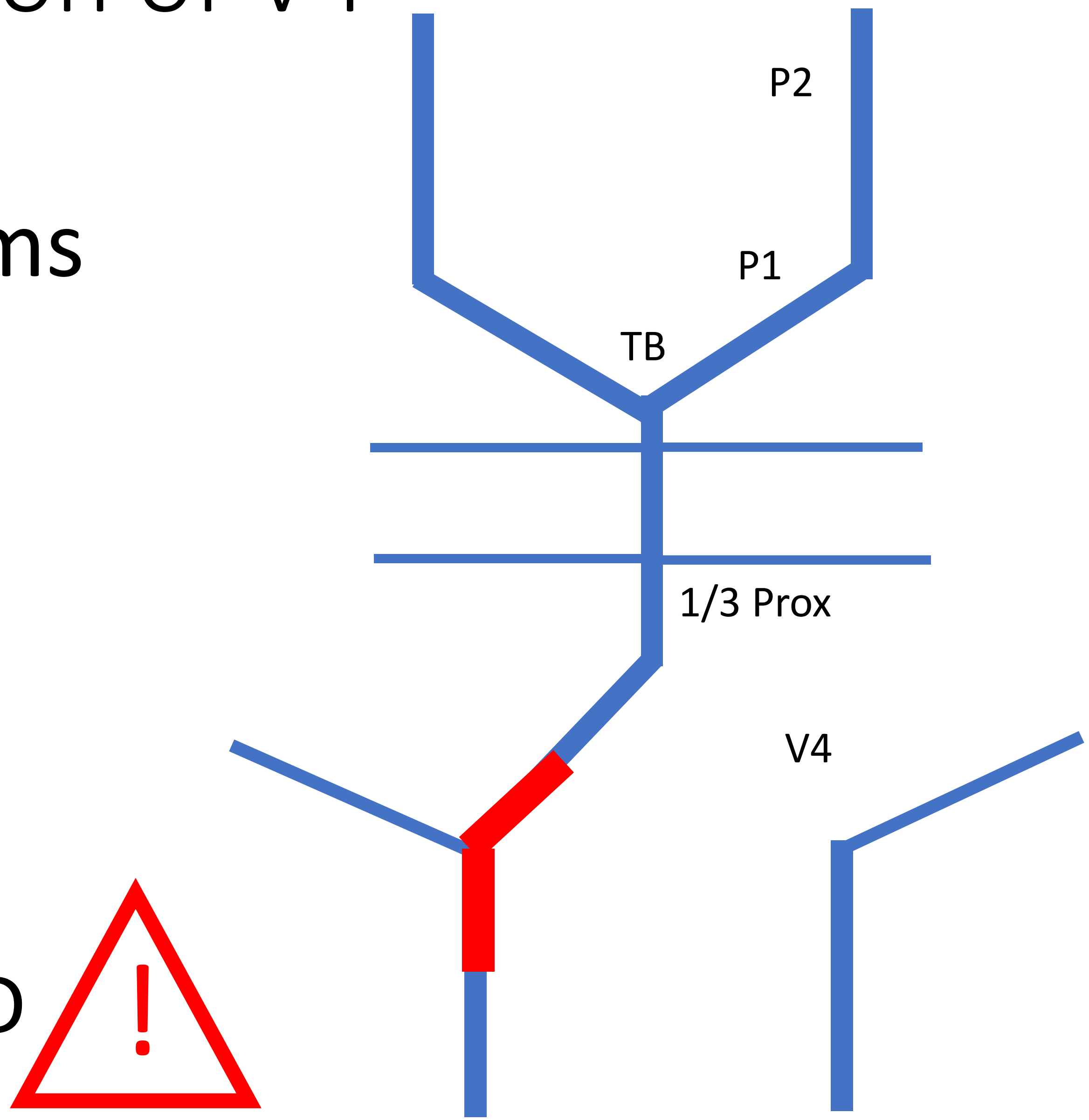
- **Medical First line = To Control Clot Extension**
  - IV lithics (rare risk of SICH and Death)
  - Or Heparin and Antiplatelet
  - Rescue Thrombectomy
    - (Thrombus Extension or Migration)



TREATEMENT Occlusion of V4

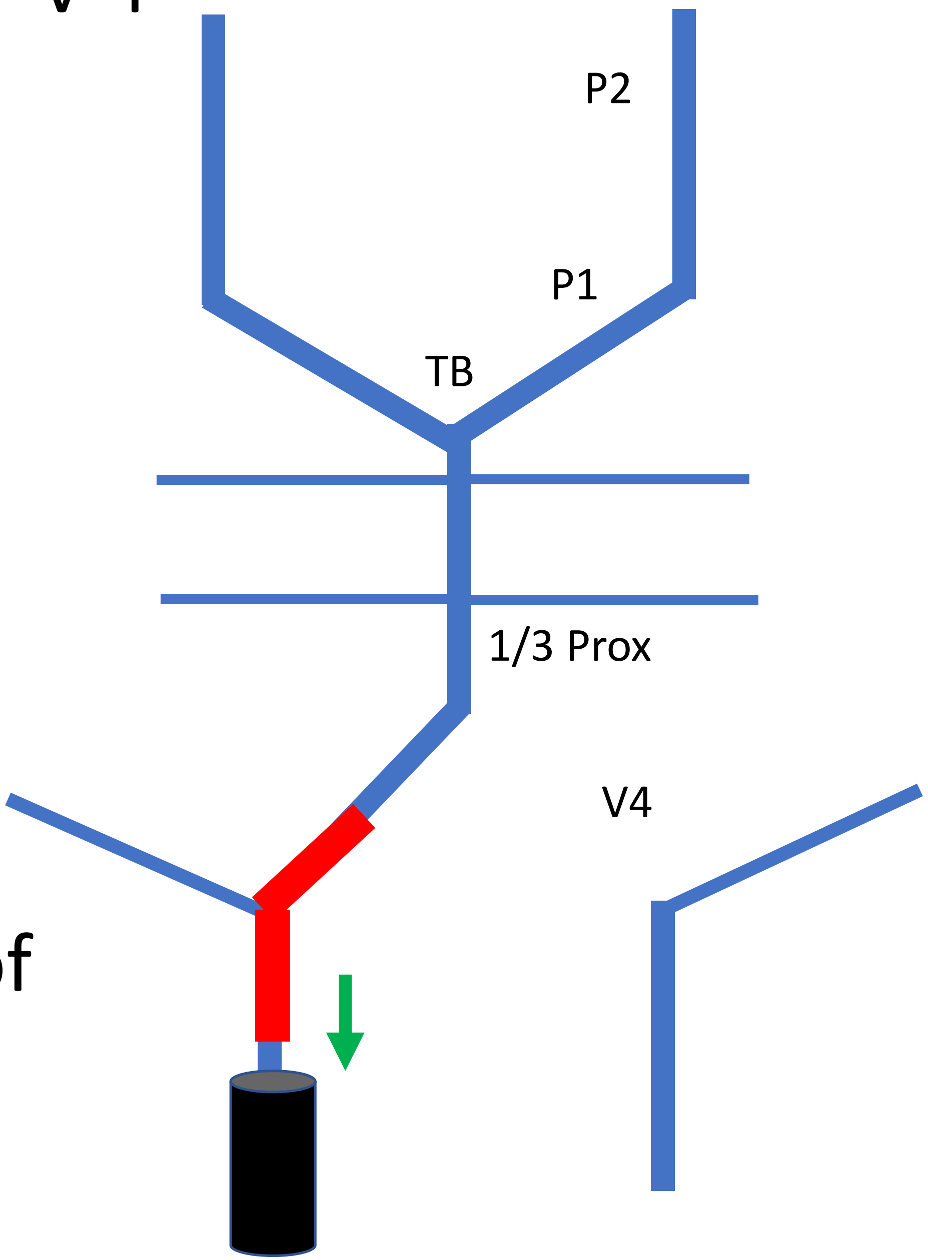
- Not limited to PICA Symptoms
- No Controlateral V4
- No Infarct in PICA Territory

- **Endovascular First Line**
  - Radial or Femoral
  - Large Bore Catheter
  - Start ASPIRATION First line
  - Dissection & Underlying ICAD



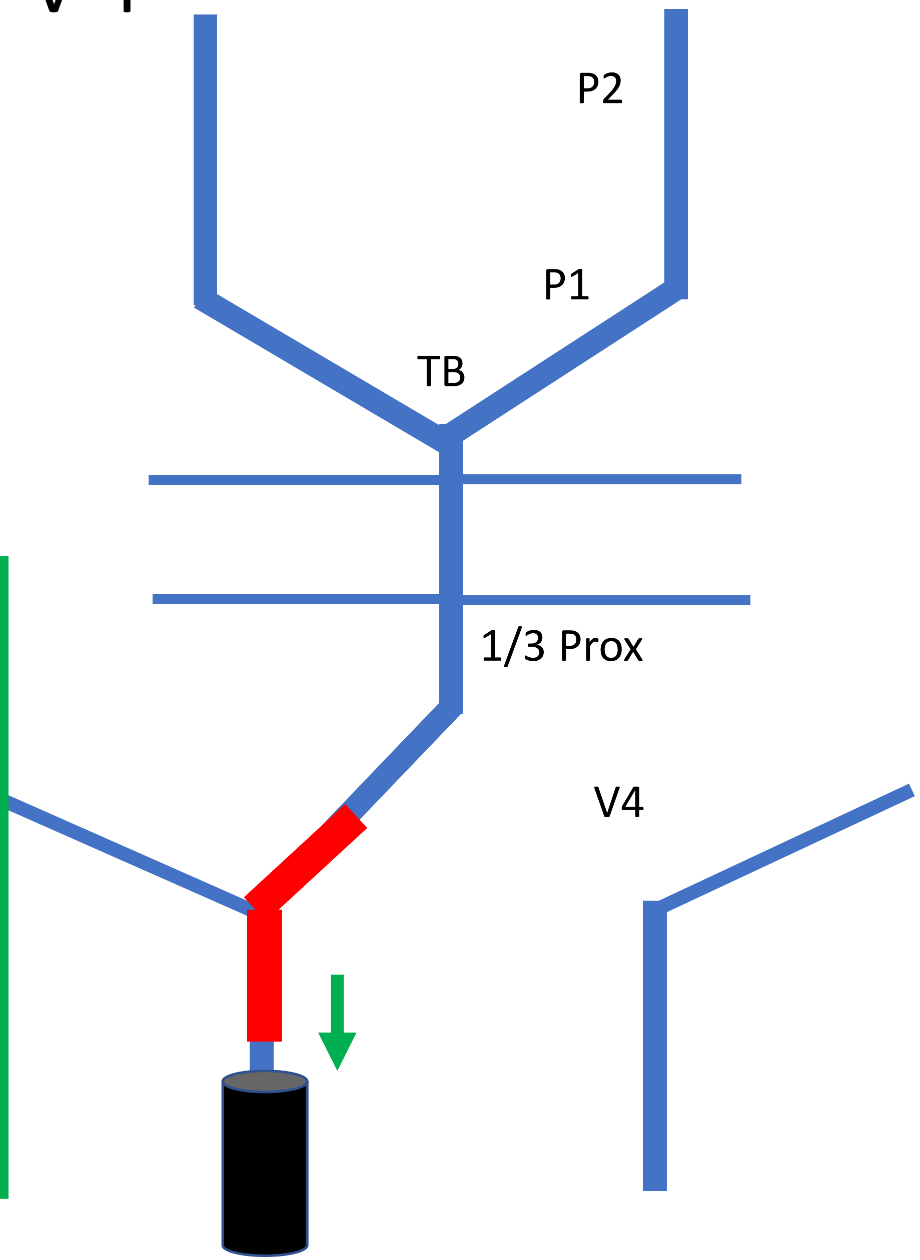
TREATEMENT Occlusion of V4

- **Endovascular First Line**
  - **Radial** or Femoral
  - Large Bore Catheter
  - **Start ASPIRATION First line**
    - Very Efficient From 8/6 F Guiding
    - Or Intermediate Catheter 6 F
    - No Side Branches Full transmission of the flow reversal to the thrombus



TREATEMENT Occlusion of V4

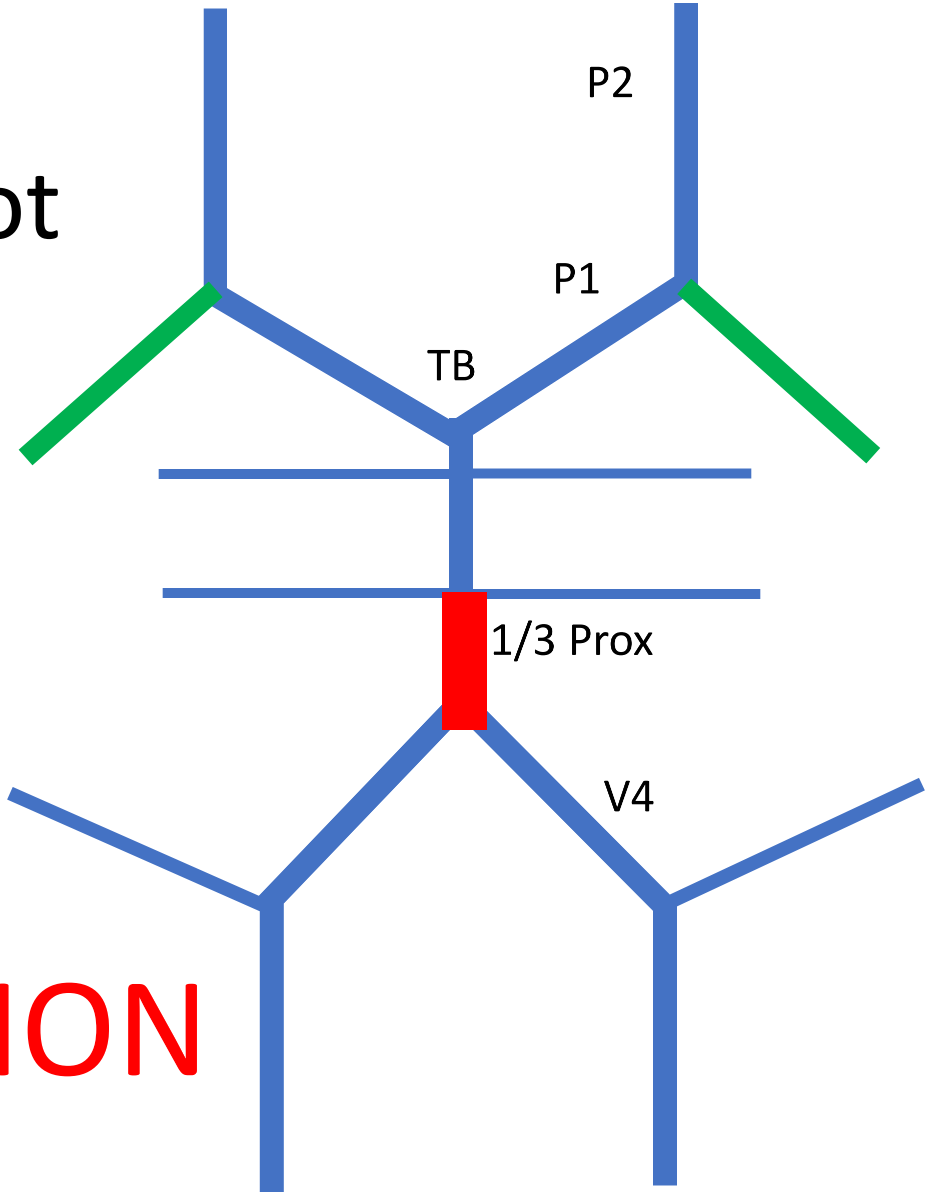
- **Endovascular First Line**
  - Start ASPIRATION First line
  - **If Failure Maximalist Approach**
  - **If ICAD = CORONARY STENT**
    Mounted Balloon 6-8 ATM
  - **If Dissection = LASER CUT STENT**
    Risk of Haemorrhage +++
    + Gp2b3a Inhibitor Full Dose



Occlusion of 1/3 Prox BA

- Clinical Presentation may vary a lot

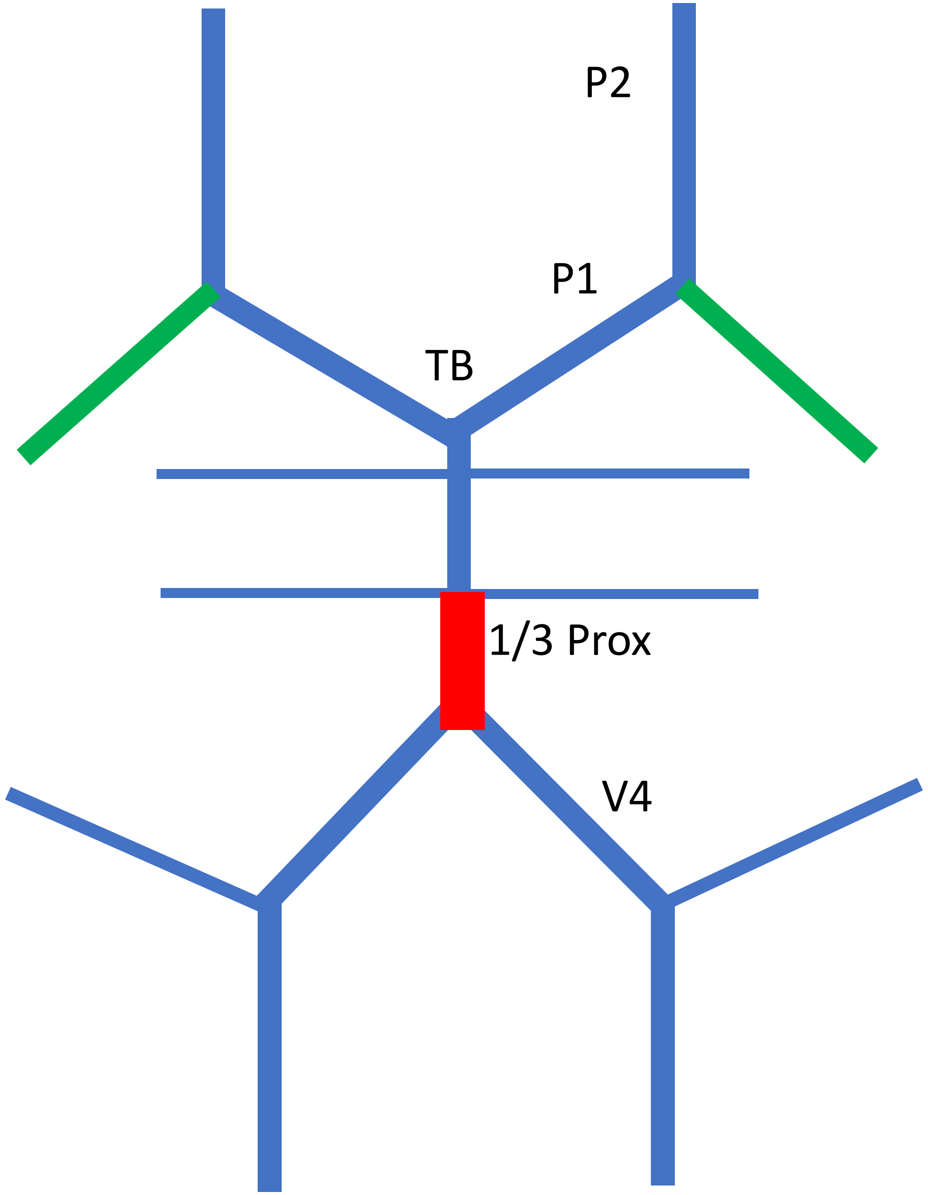
- **SEVERE PRESENTATION**
    - Diplopia Loss of Consciousness
    - Motor Deficit
- MILD Symptoms – Dizziness / Motor Deficit..
    - Pcom and Perforators involvments



⚠ TYPICAL ICAD LOCATION

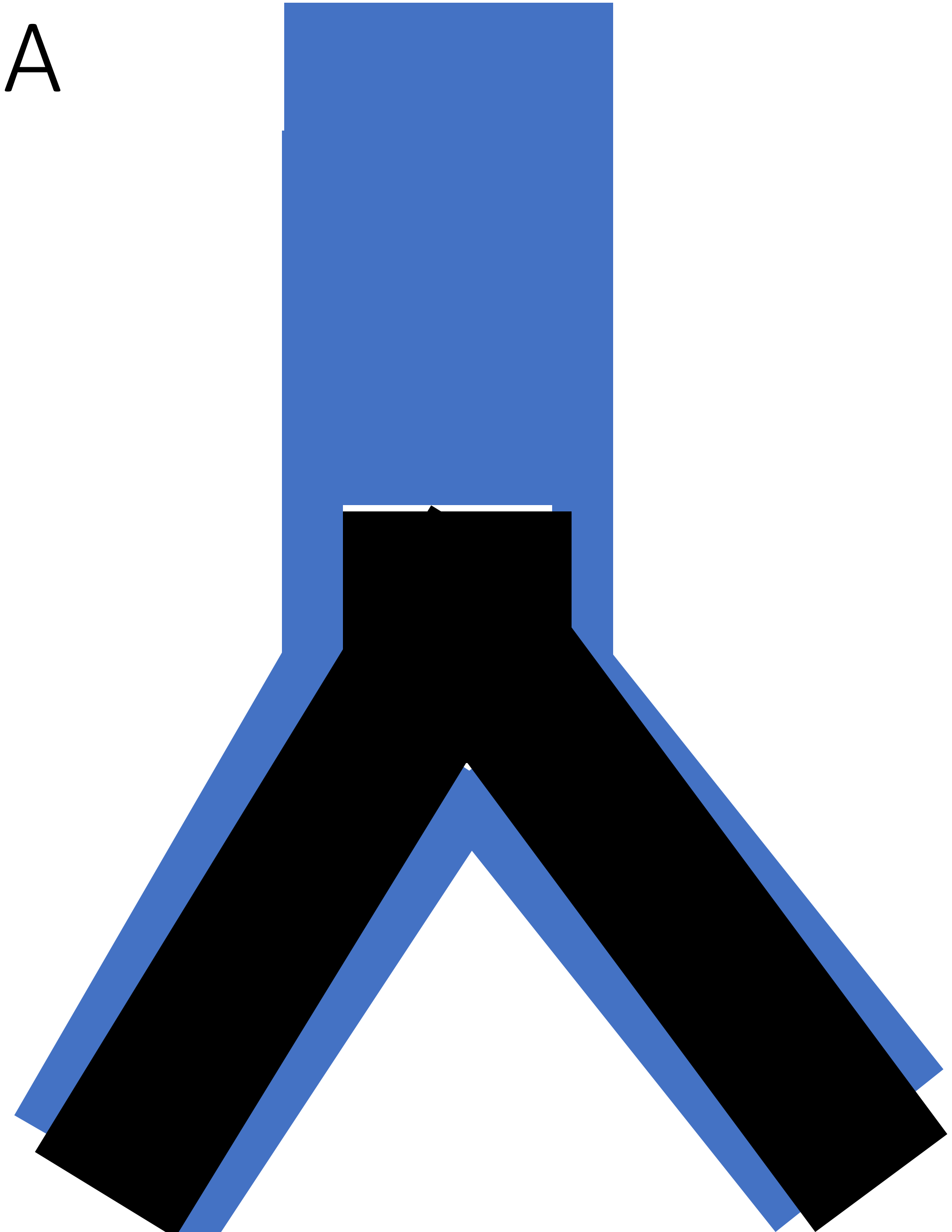
TREATEMENT 1/3 Prox BA

- ALWAYS ENDOVASCULAR !
  - ICAD LOCATION++++
  - Check for
    - Age
    - Cardiovascular Risk Factors
    - Vertebral Stenosis



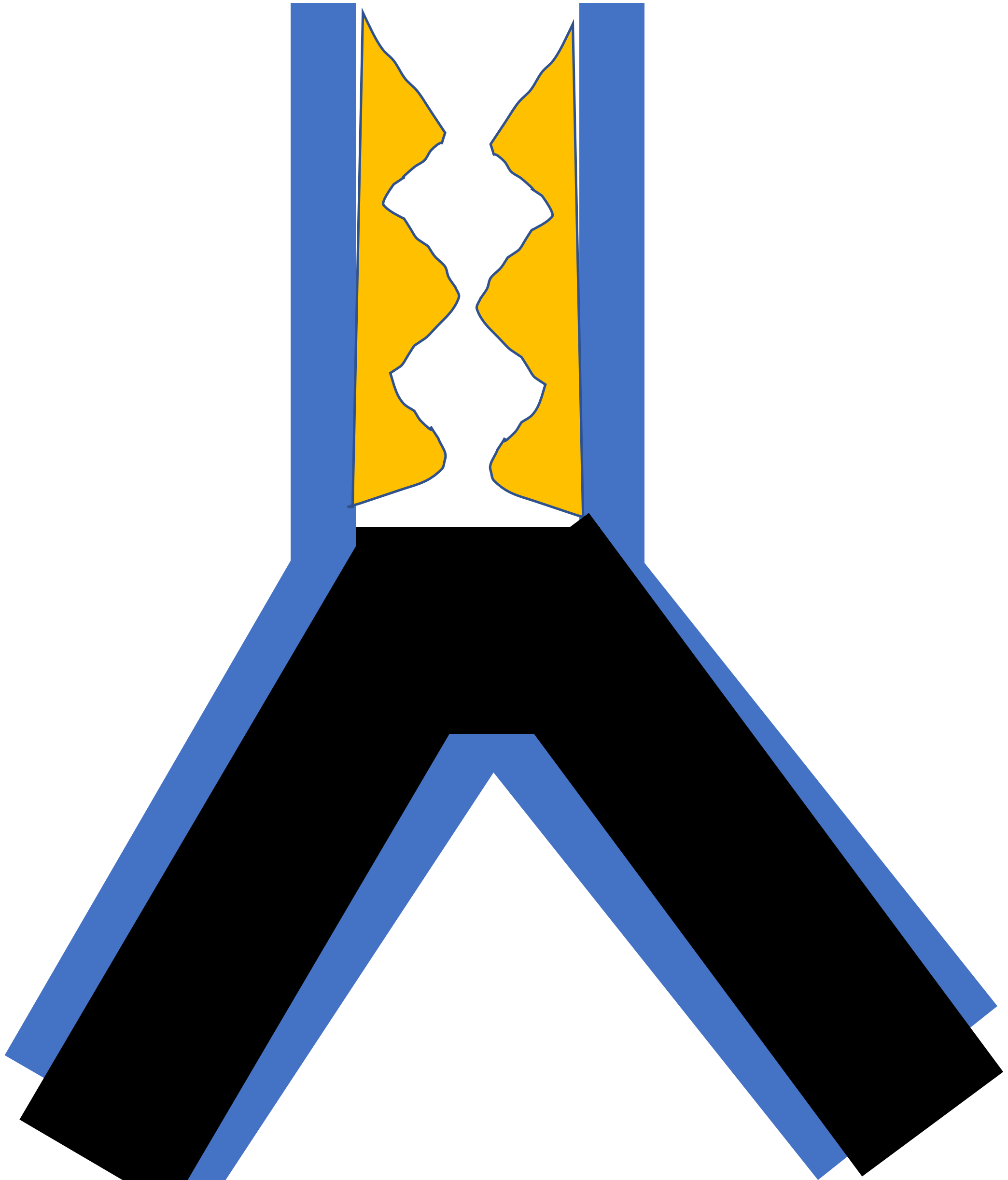
TREATEMENT 1/3 Prox BA

- ALWAYS ENDOVASCULAR !
  - ICAD LOCATION++++
  - Check for
    - Age
    - Cardiovascular Risk Factors
    - Vertebral Stenosis



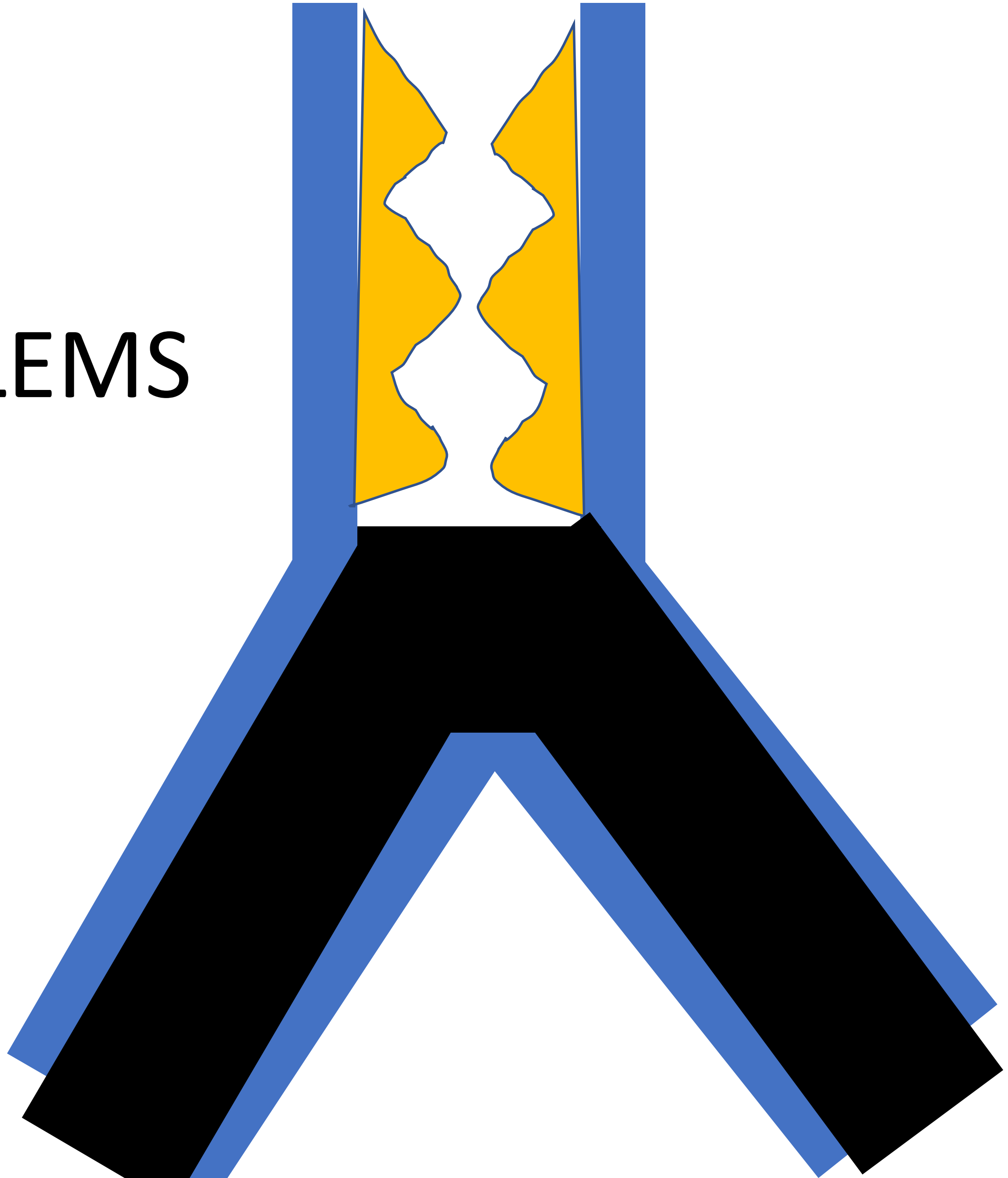
TREATEMENT 1/3 Prox BA

- ALWAYS ENDOVASCULAR !
  - ICAD LOCATION++++
  - Check for
    - Age
    - Cardiovascular Risk Factors
    - Vertebral Stenosis



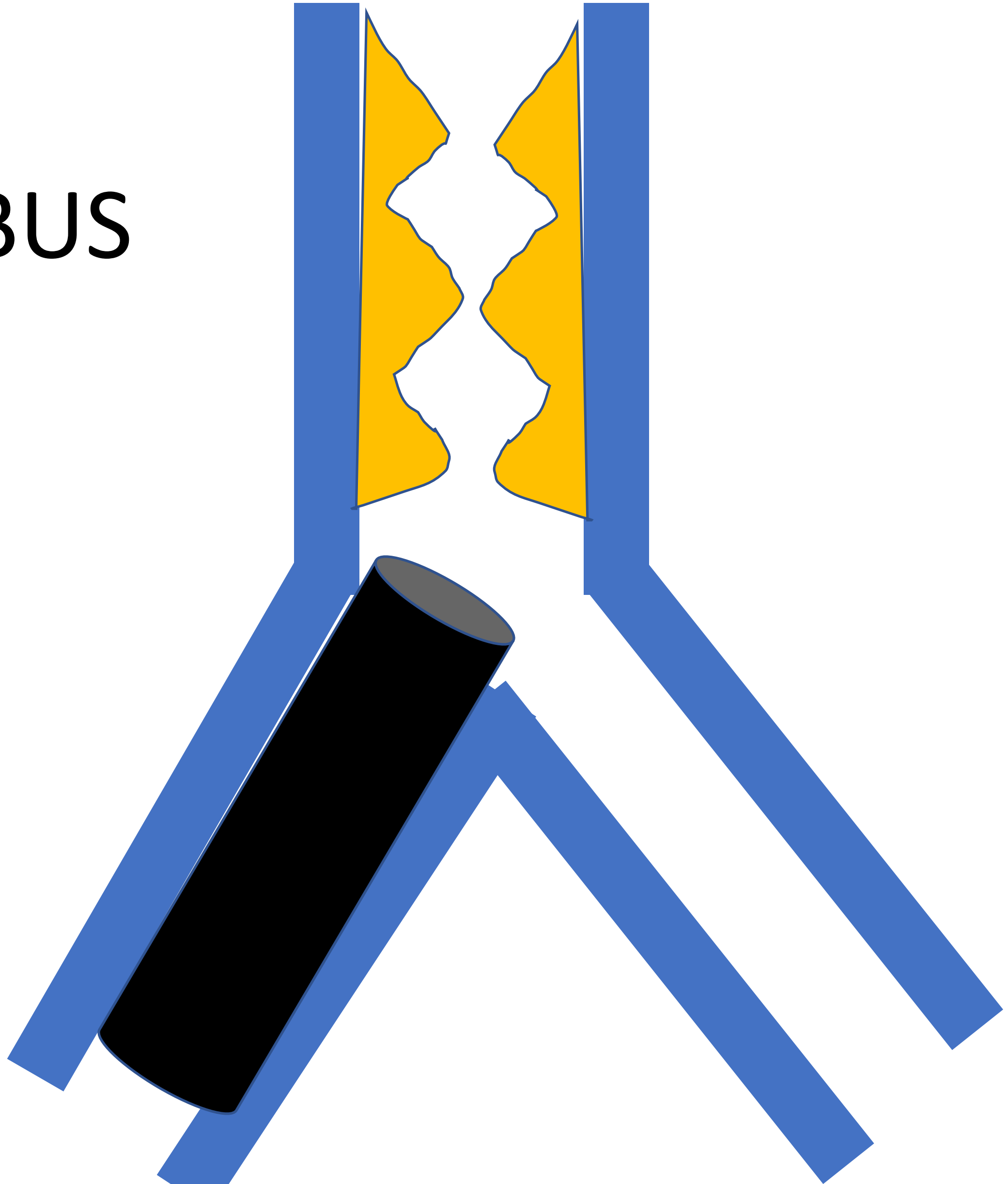
TREATEMENT 1/3 Prox BA

- ICAD SUSPICION = TWO PROBLEMS
  - THROMBUS + STENOSIS



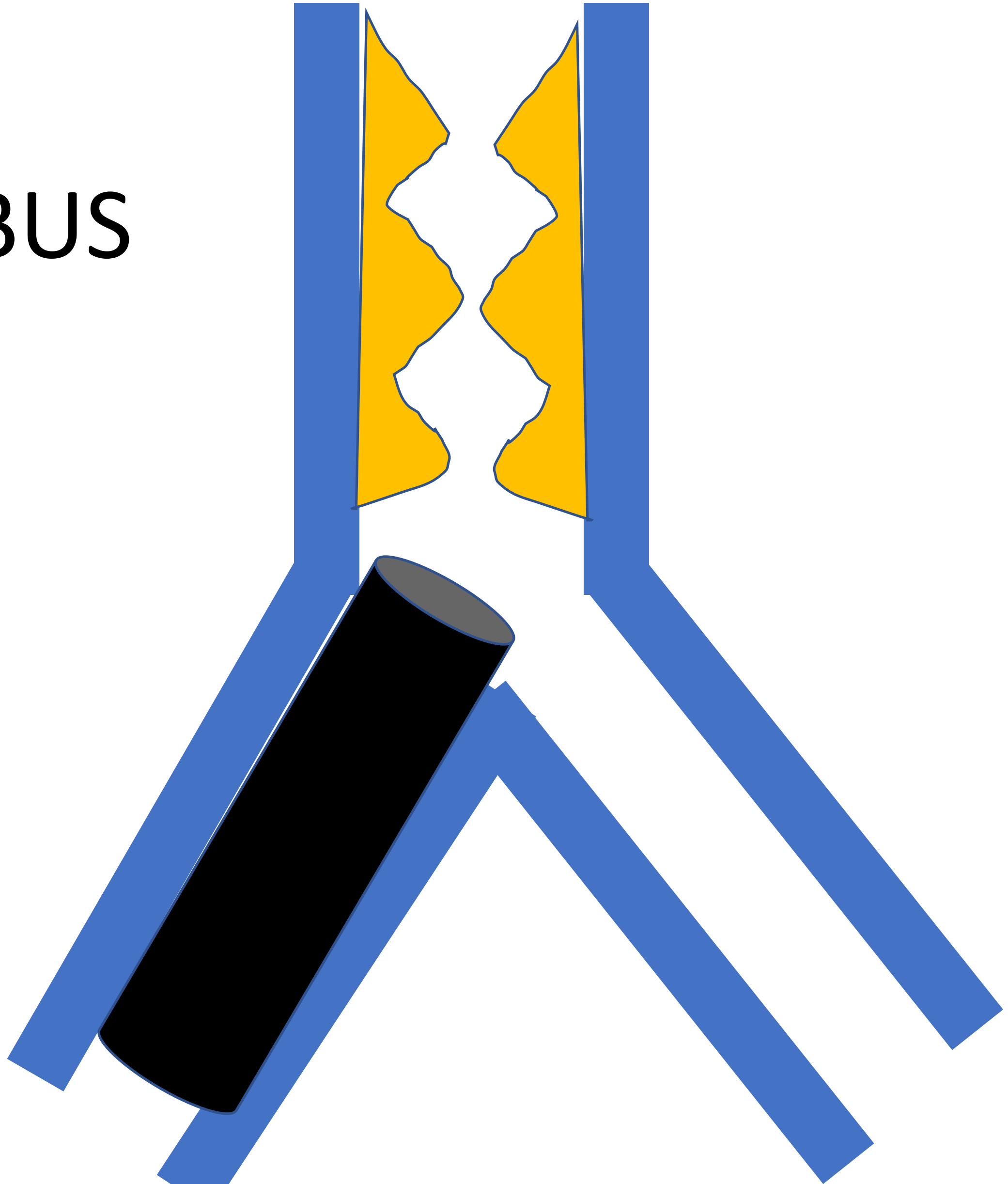
TREATEMENT 1/3 Prox BA

- STEP ONE = SOLVE THE THROMBUS
  - Contact Aspiration



TREATEMENT 1/3 Prox BA

- STEP ONE = SOLVE THE THROMBUS
  - Or Contact Aspiration + SR



TREATEMENT 1/3 Prox BA

- **STEP 2 = QUICK RUN =**

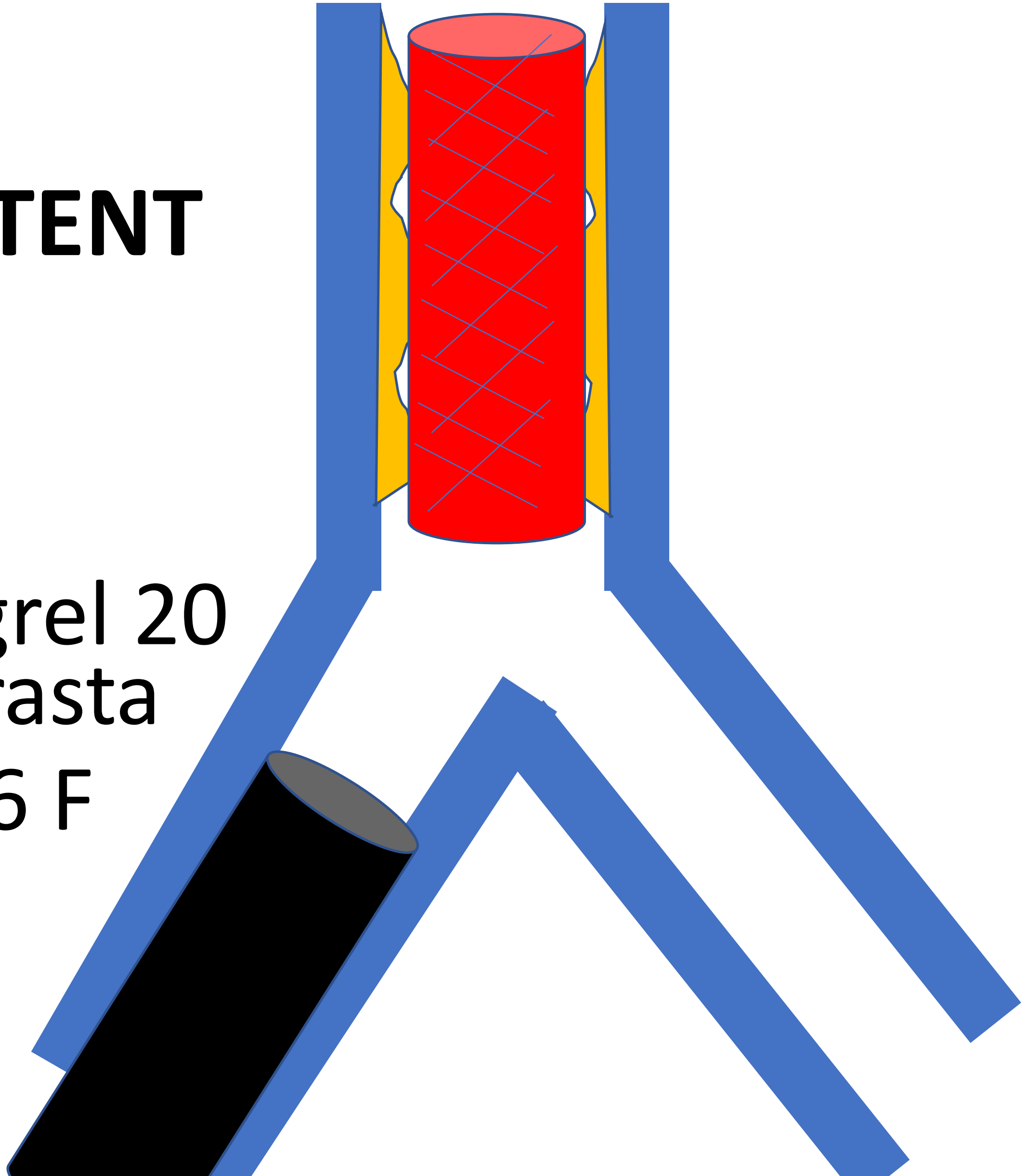
CONFIRM YOUR HYPOTHESIS !

TREATEMENT 1/3 Prox BA

- **STEP 3 = MOUNTED BALLON STENT**

- **Anti Gp2B3A inhibitors Full Dose**
  - Maintenance 17 Hours
  - Bridging Loading Dose of Plasugrel 20 mg 4 hours before Stopping Agrasta

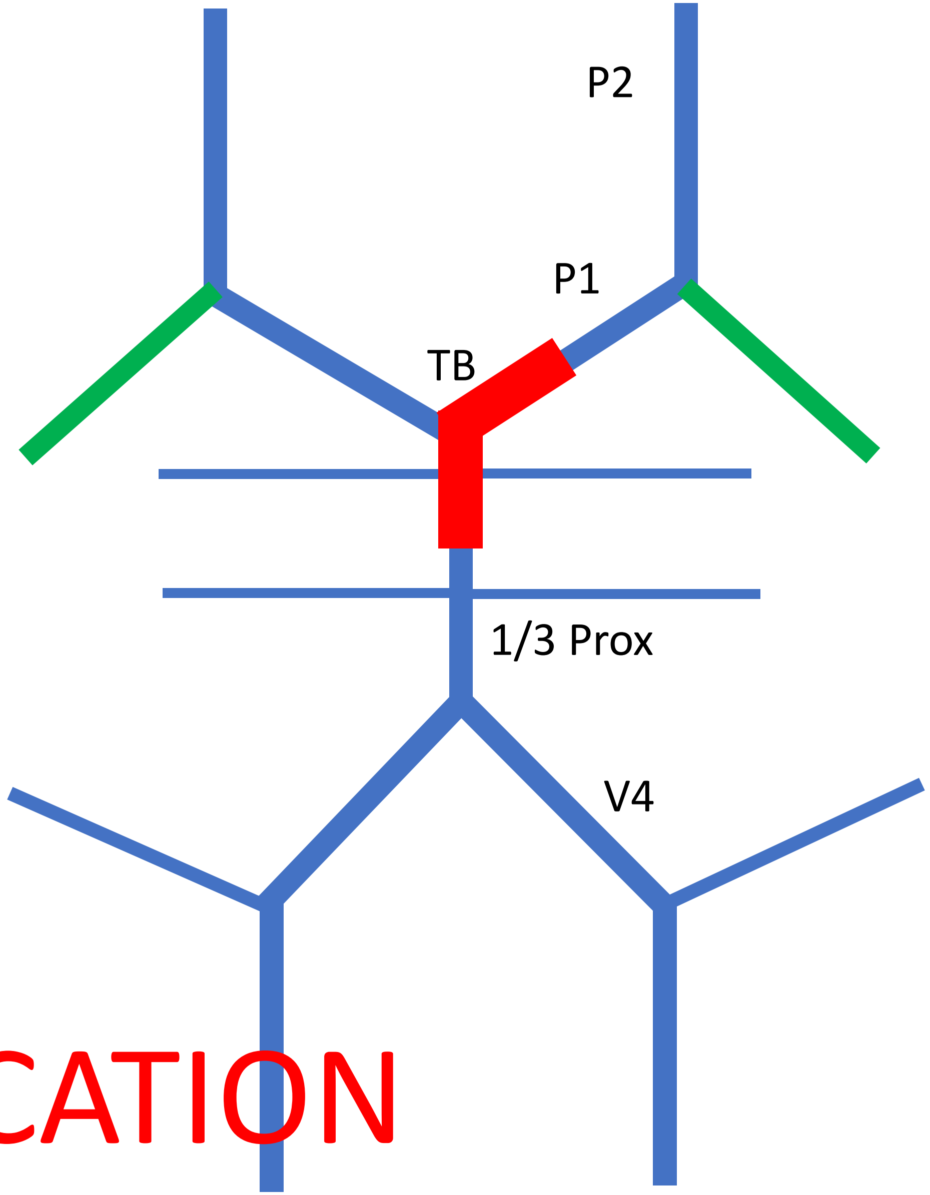
- Intermediate Support NAVIEN 5/6 F 115 cm



Occlusion of P1/TOP BASILAR 1/3 DISTAL

- Clinical Presentation :

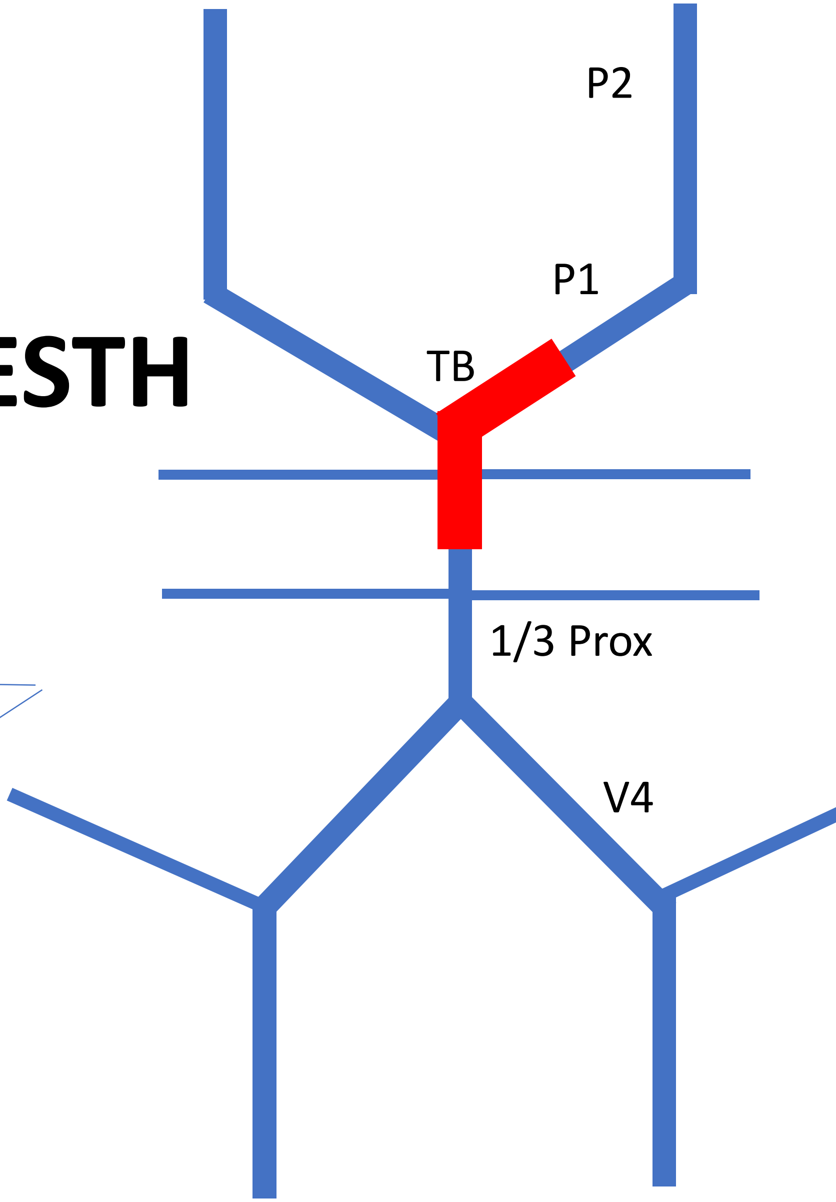
- **ALWAYS SEVERE AND MASSIVE**
  - Diplopia Loss of Consciousness ++
  - Motor Deficit+++
  - Perforator occlusion of Reticule
  - No Pcom Supply
- MILD Symptoms – Dizziness / Motor Deficit..
  - ONLY IF PARTIAL OCCLUSION !!!



! TYPICAL EMBOLIC LOCATION

Occlusion of P1/TOP BASILAR 1/3 DISTAL

- **EVT DEPENDS ON THROMBUS LENGTH – GENERAL ANESTH**



  - MAXIMALIST APPROACH

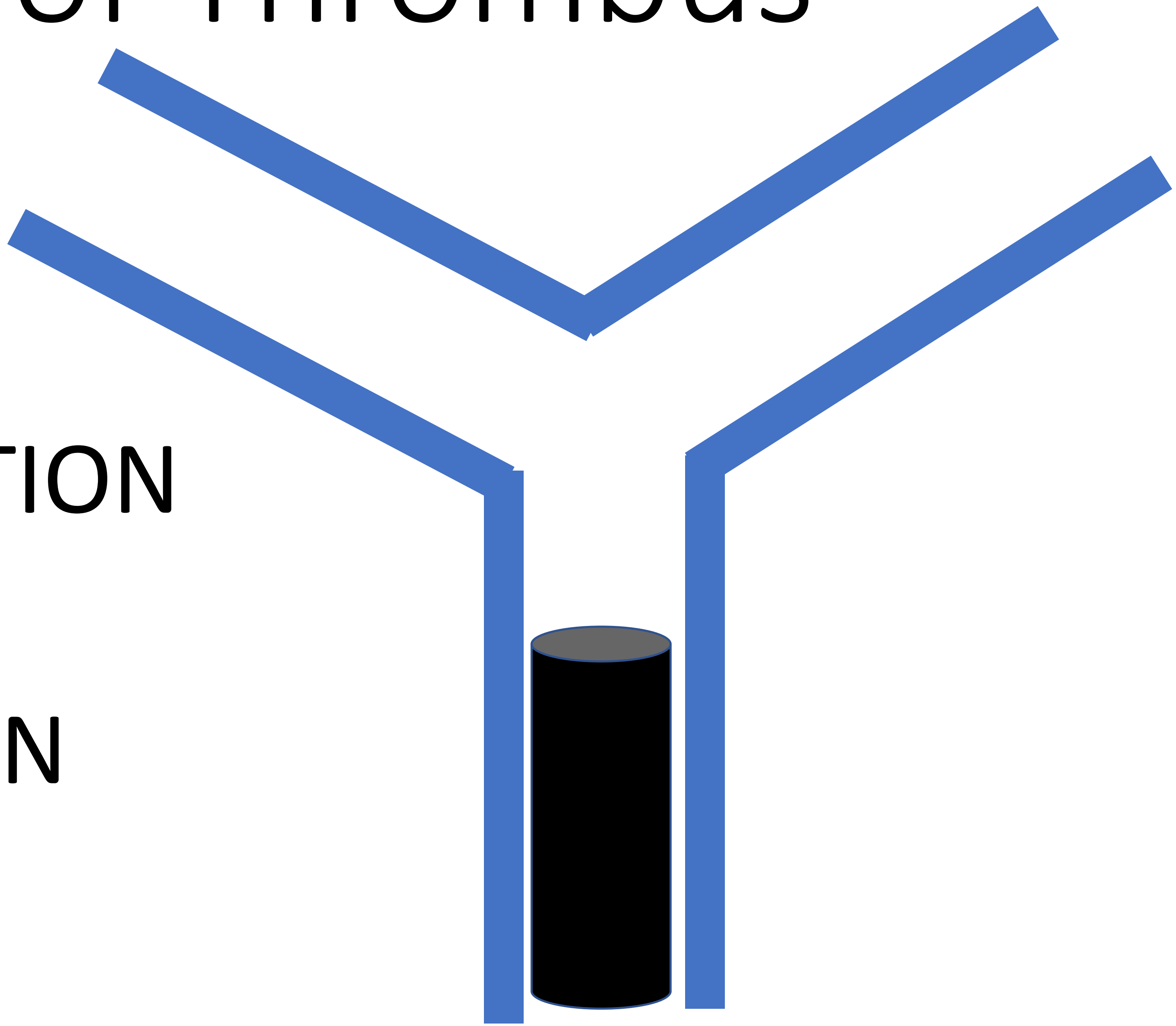
  - Or CONTACT ASPIRATION

Short Length of Thrombus

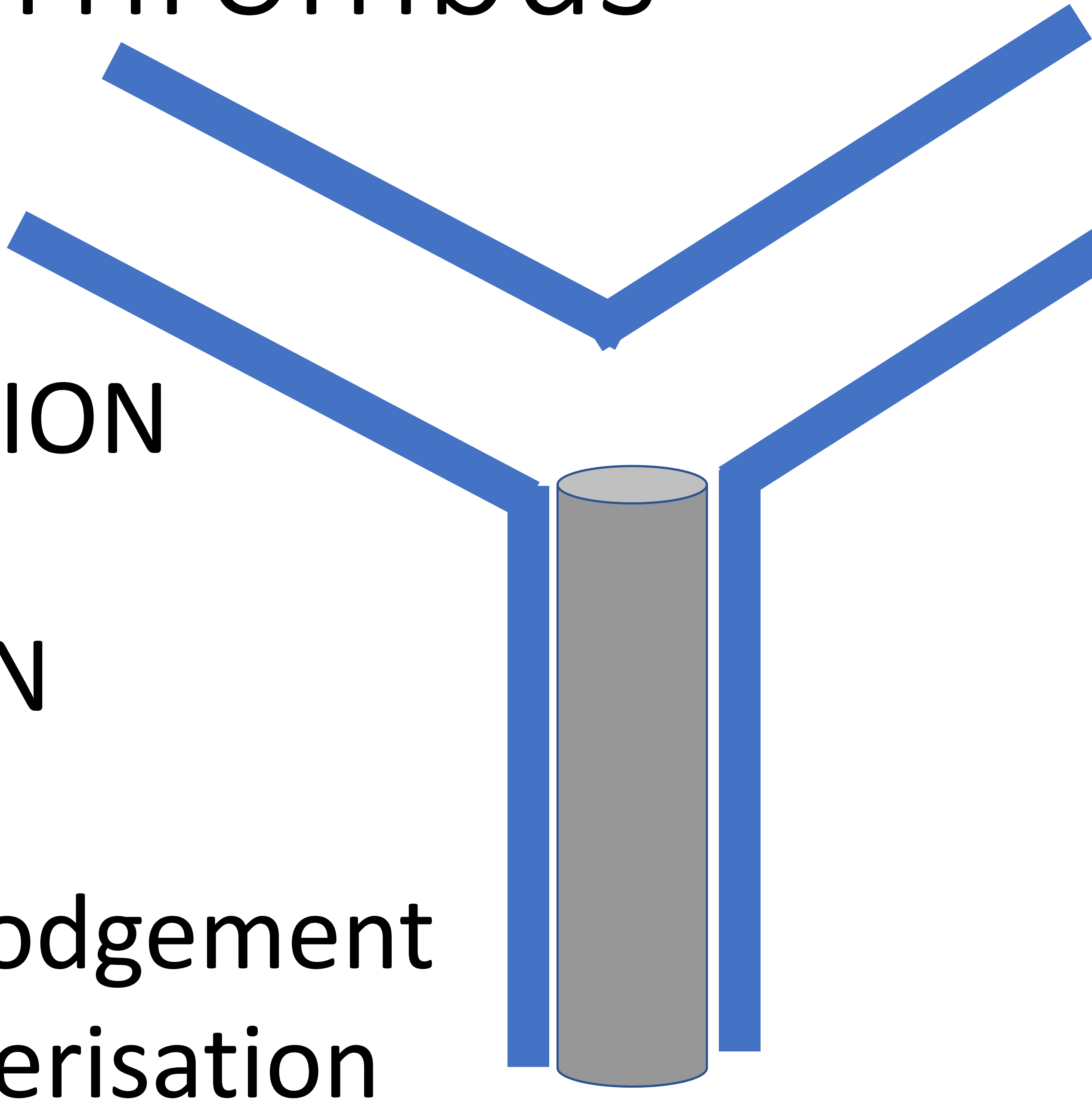
CONTACT ASPITATION

=

FULL INGESTION



Short Length of Thrombus



CONTACT ASPITATION

=

FULL INGESTION

Limited Risk of Clot Dislodgement

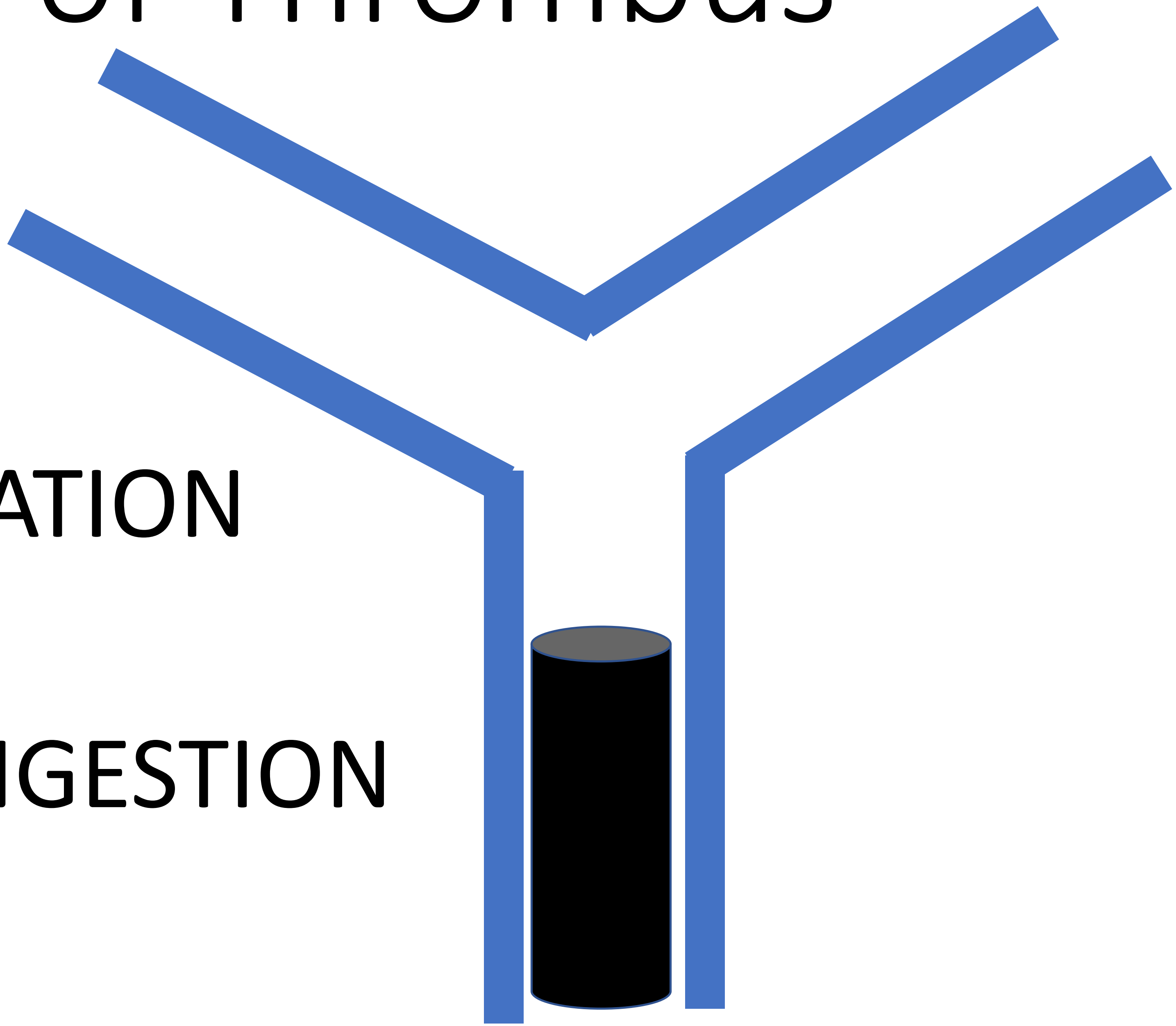
Quick No Distal Catheterisation

LONG Length of Thrombus

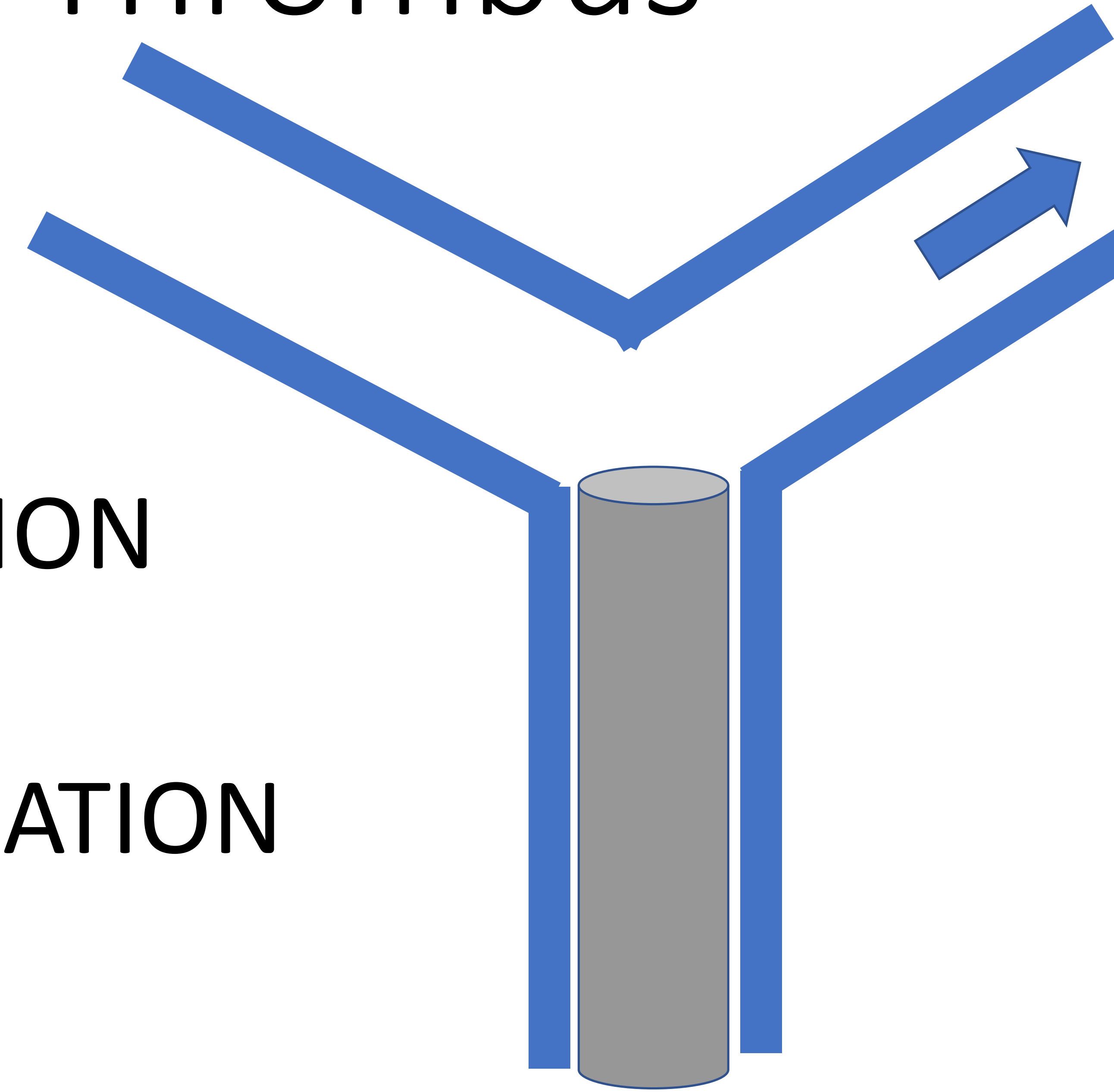
CONTACT ASPITATION

=

RISK OF PARTIAL INGESTION



LONG Length of Thrombus



CONTACT ASPITATION

=

RISK OF DISTAL MIGRATION

LONG Length of Thrombus

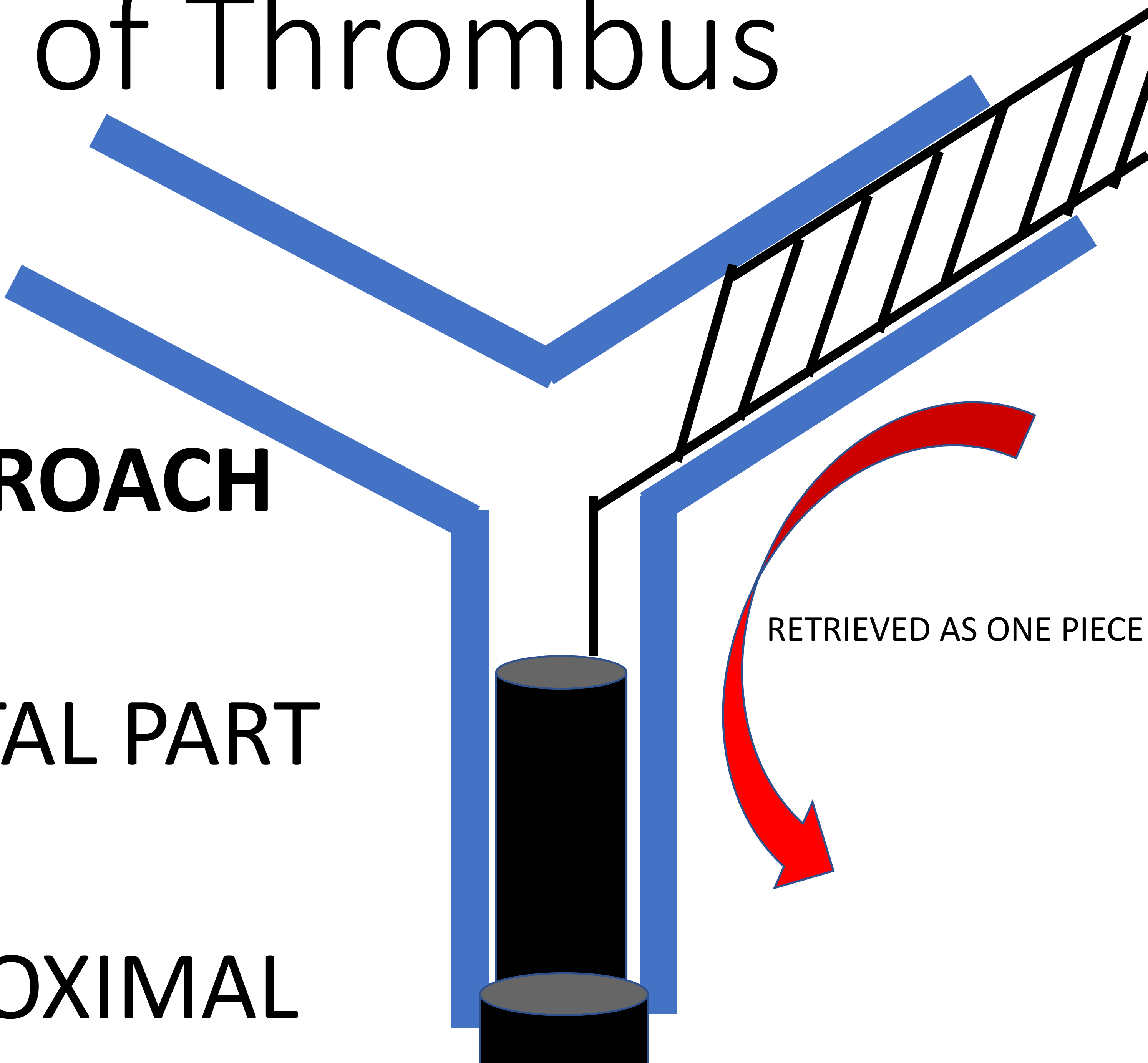
MAXIMALIST APPROACH

=

SECURING THE DISTAL PART

+

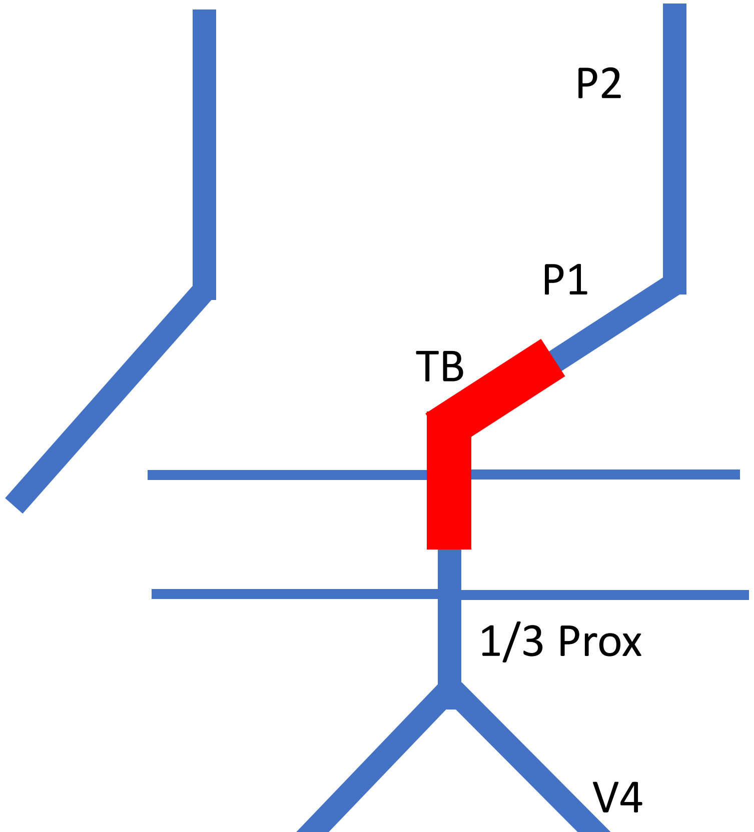
ASPIRATION OF PROXIMAL



Maximalist Approach in TOP

LOOK CTA WHAT P1 SEGMENT INVOLVEMENT AND ANATOMIC VARIATIONS

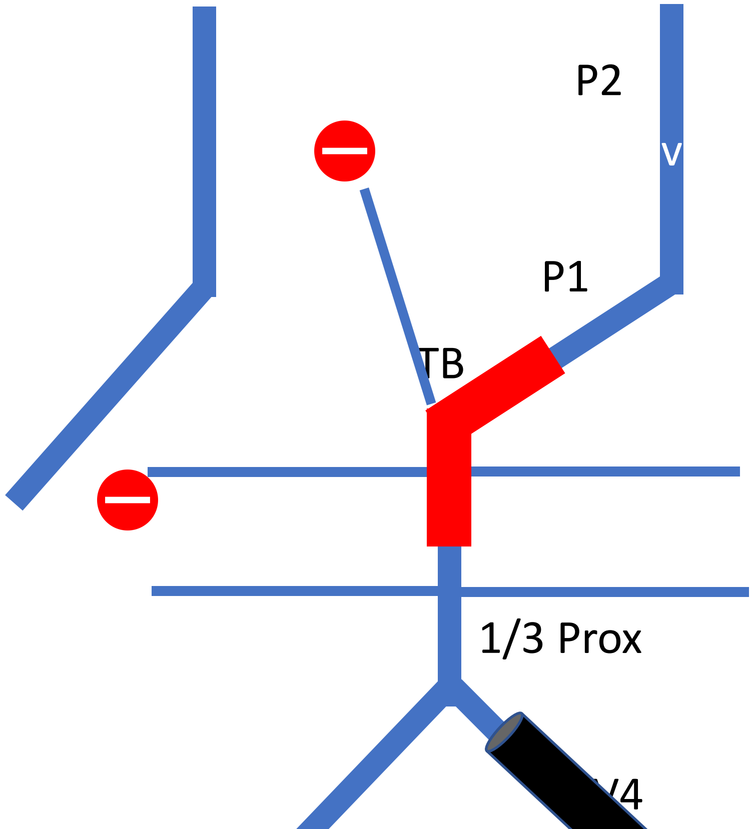
P1 Hypoplasia not seen may lead to <u>ASCA Catheterisation</u>



Maximalist Approach in TOP

LOOK CTA WHAT P1 SEGMENT INVOLVEMENT AND ANATOMIC VARIATIONS

P1 Hypoplasia not seen may lead to
ASCA
Catheterisation
Or BA perforators

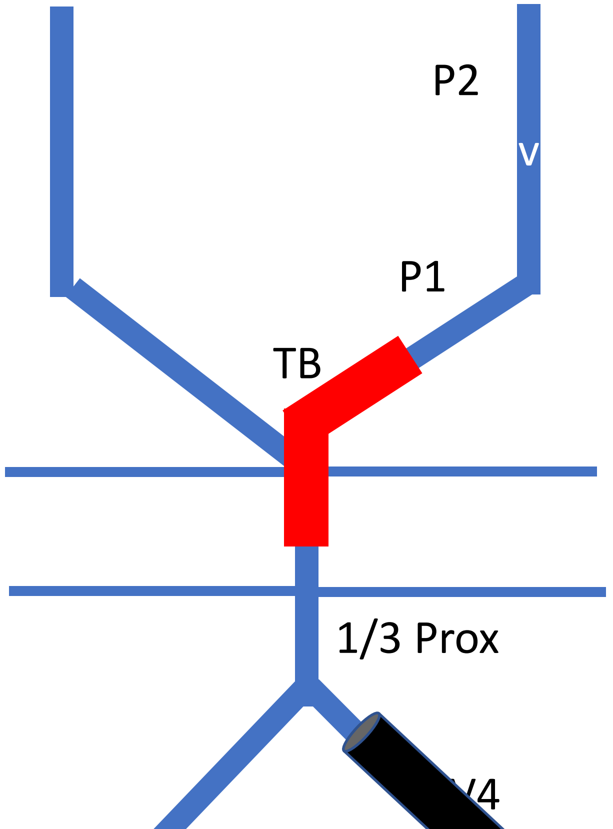


Perforation +++
Thrombus Dislodgment

Maximalist Approach in TOP

LOOK CTA WHAT P1 SEGMENT INVOLVEMENT AND ANATOMIC VARIATIONS

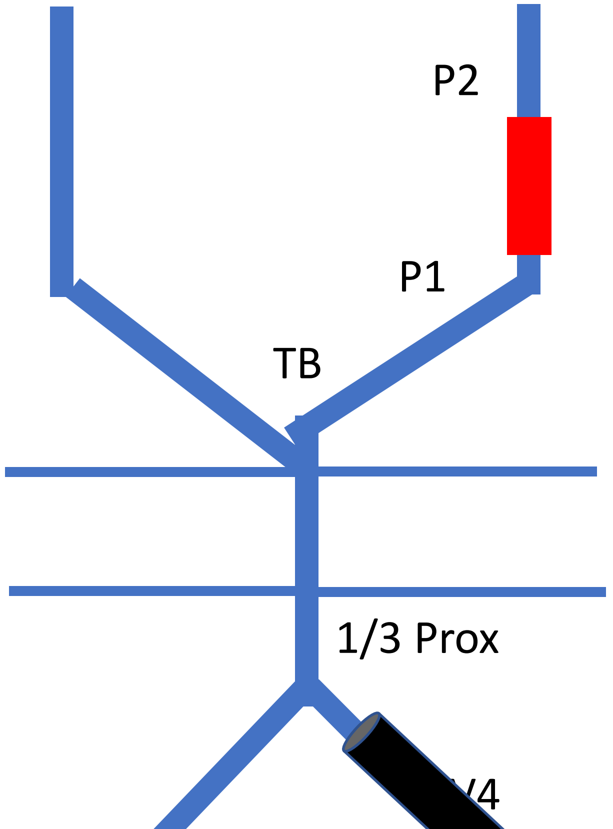
Wrong P1 Cath May Increase the risk of Failed Attempt or thrombus Migration



Maximalist Approach in TOP

LOOK CTA WHAT P1 SEGMENT INVOLVEMENT AND ANATOMIC VARIATIONS

Wrong P1 Cath May Increase the risk of Failed Attempt or thrombus Migration ….



Young Patient with BA Occlusion….

- History of acute headache
- Before Stroke Symptoms
- Think about Intracranial Dissection !

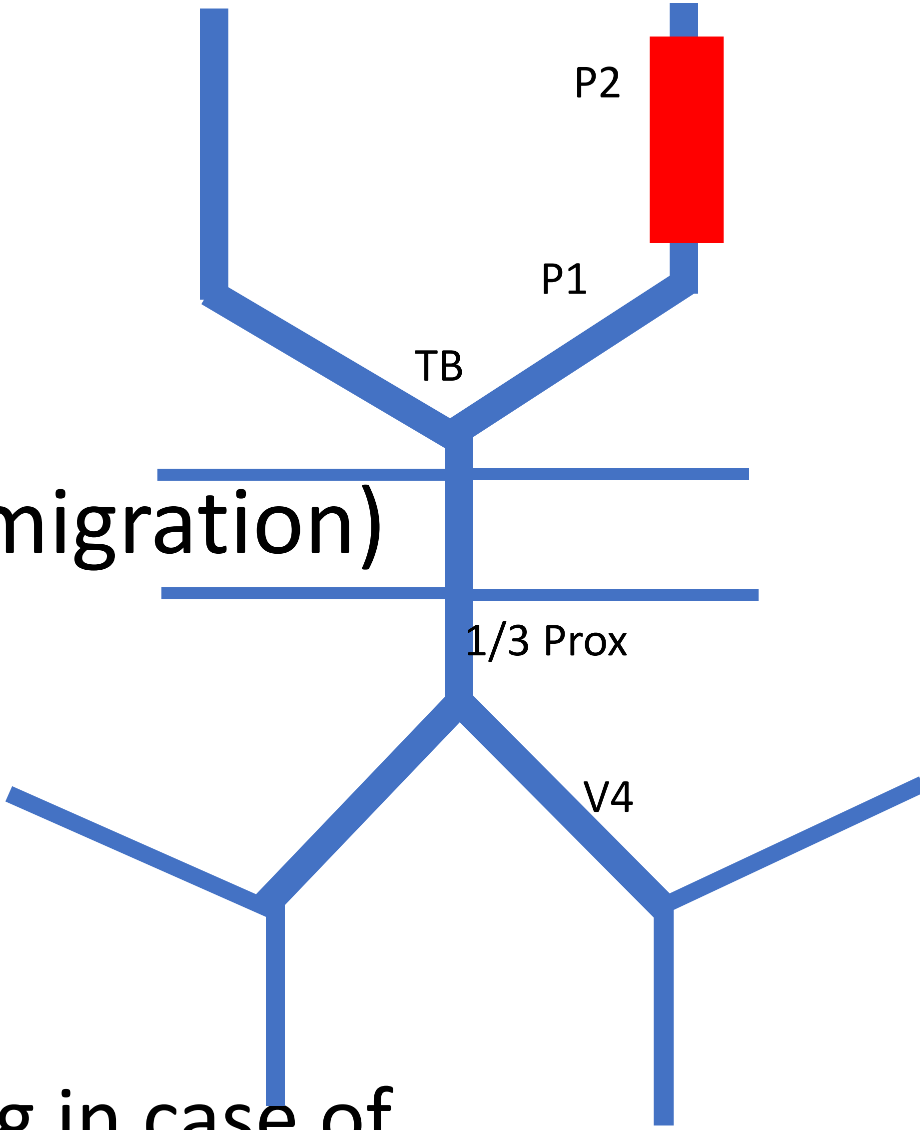
Occlusion of P2

- **Clinical Presentation :**

Hemianopsia – Low NIHSS (2)

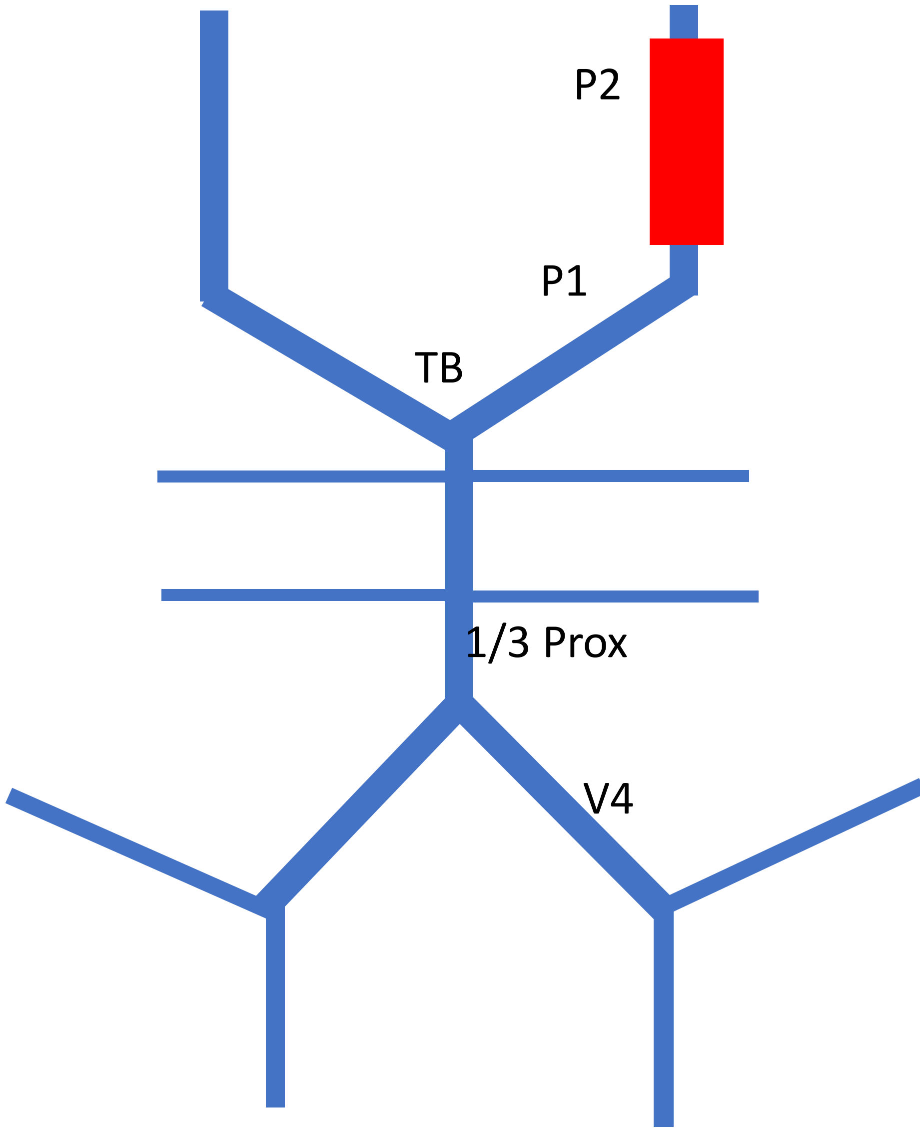
Initially severe and Dramatic Recovery (migration)

- **Indication of Reperfusion**
- Advanced Brain Imaging Useful
  - TO demonstrate Brain to be saved
  - Out of Guideline , no level of evidence
  - And Potential Risk of dramatic Worsening in case of procedural complication
  - PATIENT INFORMATION AND DECISION



Occlusion of P2

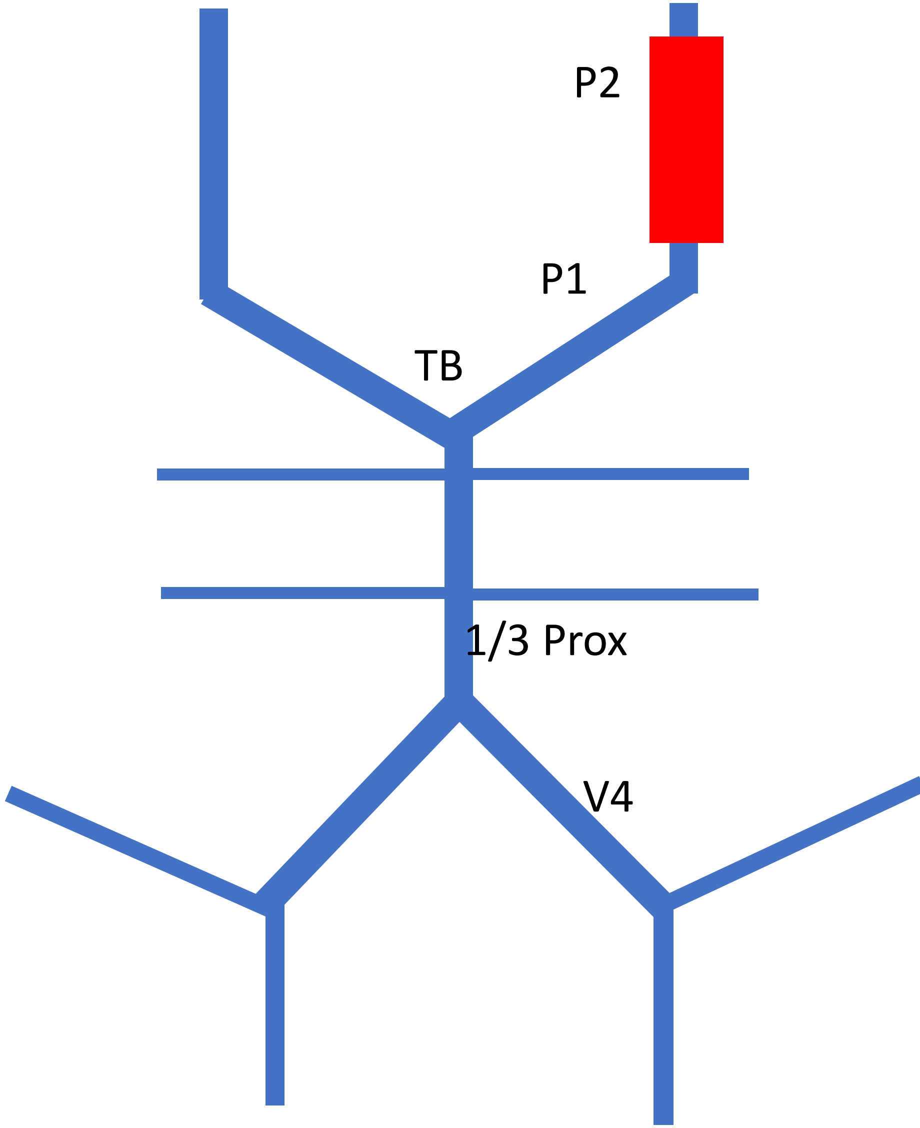
- **Indication of Reperfusion**



Occlusion of P2

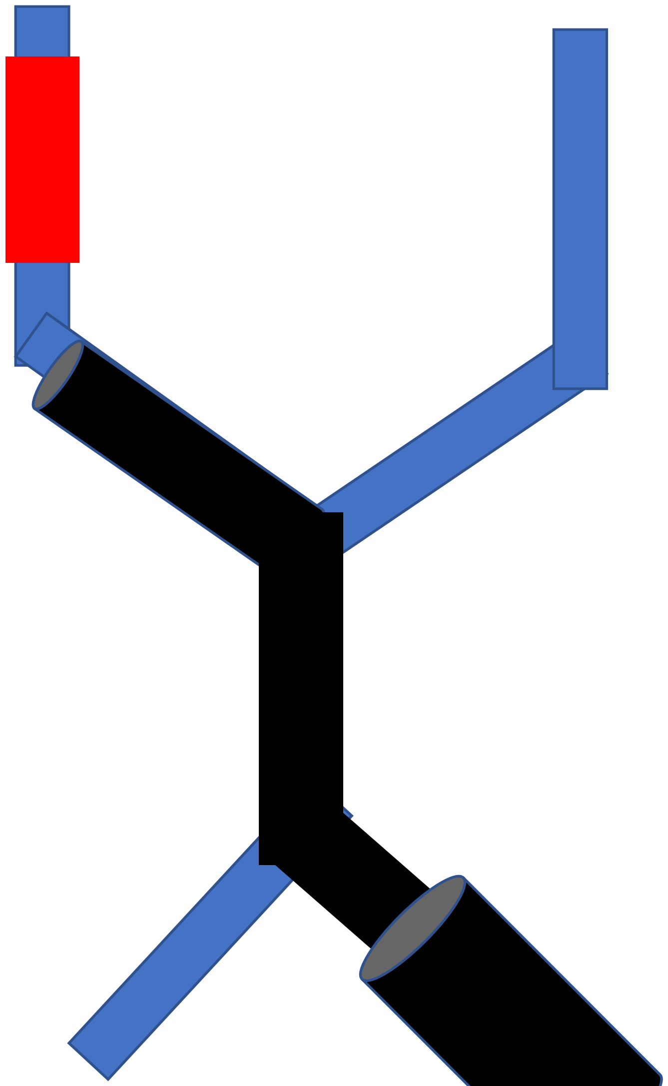
- **TREATMENT**

- **MAXIMALIST APPROACH**
- **Under GA**
- **NO COMPLICATION ALLOWED !**



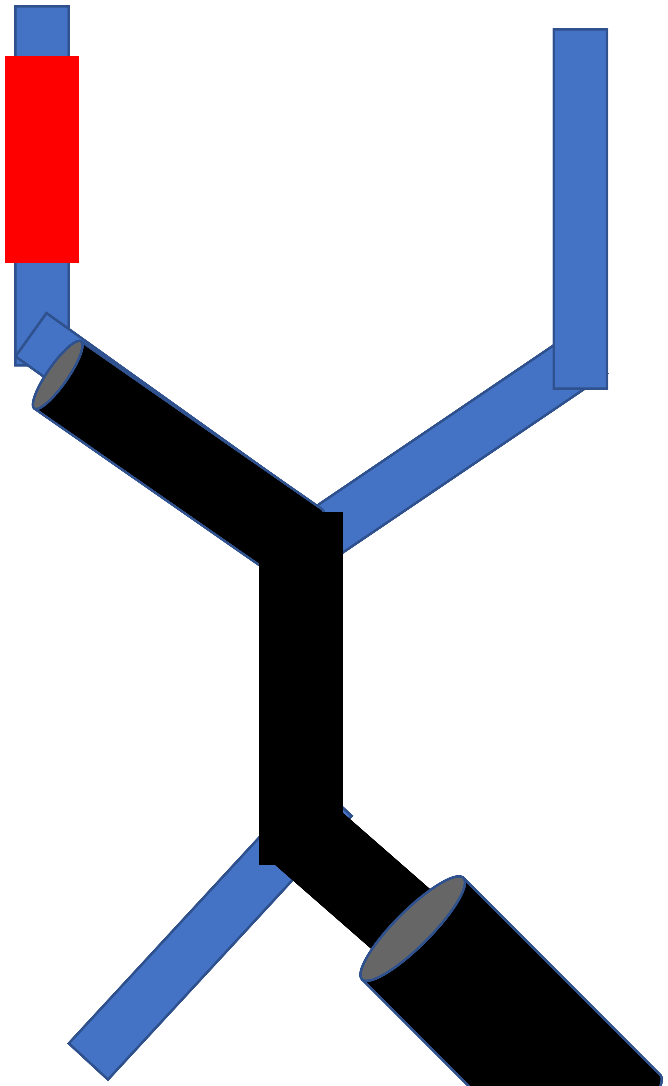
Occlusion of P2 HOW ?

- **Intermediate 5F After the TOP BASILAR**
- **“Solumbra”**
  - **never cross the top BA with the Thrombus**
- **Or Contact Aspiration 3 MAX**
- **Under GA**
- **Milrinone BEFORE Deploying the Stent**
  - **Stent 3 mm**
  - **Stent 4 mm half Unsheat**
  - **Low Profile 4 mm “Preset Light”**



Occlusion of P2 HOW ?

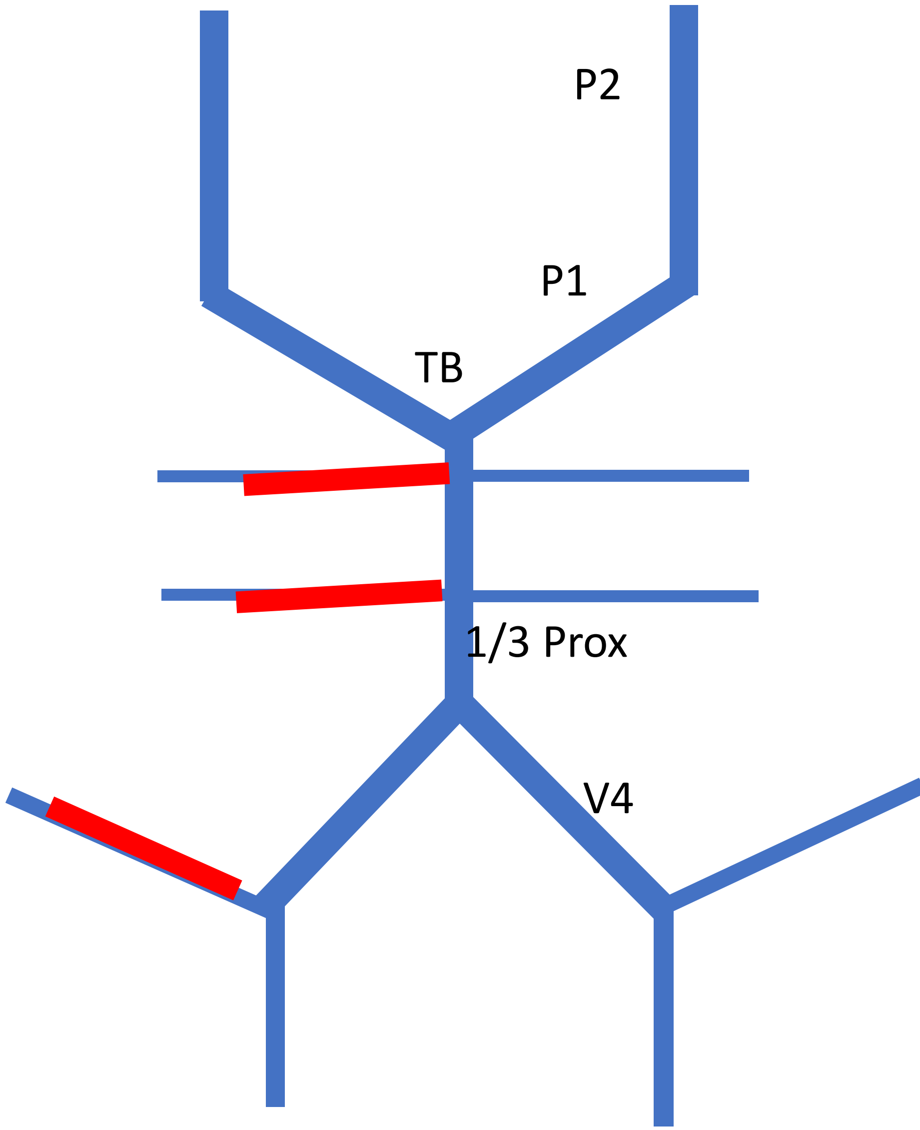
- **Intermediate 5F After the TOP BASILAR**
- **Penumbra 8 MAX**
- **Sofia 5 F**
- **Microcatheter 0.17**
- **Preset Light**



UNSOLVED ....

- **ASCA ??**
- **AICA ??**
- **PICA ??**

- **IA lithics ? Low profile stents ?**



THANK YOU !