

Establishing a Programme of Competent CAS as an Essential Step Towards Routine Stroke Thrombectomy Service

B. Janus

Department of Cardiology, St. Luke Regional Multispecialty Hospital, Tarnow, Poland

A.Szwiec¹, W.Dziadek¹, J.Kowalewska², J.Miękisz³, R.Witkowski¹, Z.Cholewa⁵, B.Geslak⁴,
A.Witowska-Geslak⁵, B.Dziurda⁴, R.Dorosz², B.Plezia², J.Blicharz¹, M.Curylo⁴, A.Czech⁶,
P.Musialek⁷

¹Department of Cardiology, St. Luke Regional Multispecialty Hospital, Tarnow, Poland

²Department of Radiology, St. Luke Regional Multispecialty Hospital, Tarnow, Poland

³Department of Vascular Surgery, Szczeklik Hospital Tarnow, Poland

⁴Department of Neurology, St. Luke Regional Multispecialty Hospital, Tarnow, Poland

⁵Department of Anesthesia, St. Luke Regional Multispecialty Hospital, Tarnow, Poland

⁶Chief Executive Officer – St. Luke Regional Multispecialty Hospital, Tarnow, Poland

⁷Jagiellonian University, Department of Cardiac and Vascular Diseases, John Paul II Hospital,
Krakow, Poland

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BACKGROUND

Time-to-intervention plays a pivotal role in the clinical success of mechanical thrombectomy (MT) in individual patients. ESC Council on Stroke, consistent with neuroradiology guidelines, recommends 1 MT centre per 0.5-1.0 million inhabitants. Presently, in Lesser Poland (≈3.4 million inhabitants) there is only 1 operational stroke MT centre. This results in a severe under-treatment of large vessel occlusion (LVO) stroke patients in the region covered by our Institution (population of ≈1.2 million, transportation time to the Comprehensive Stroke Centre of ca. 1.5 hours).

OBJECTIVE

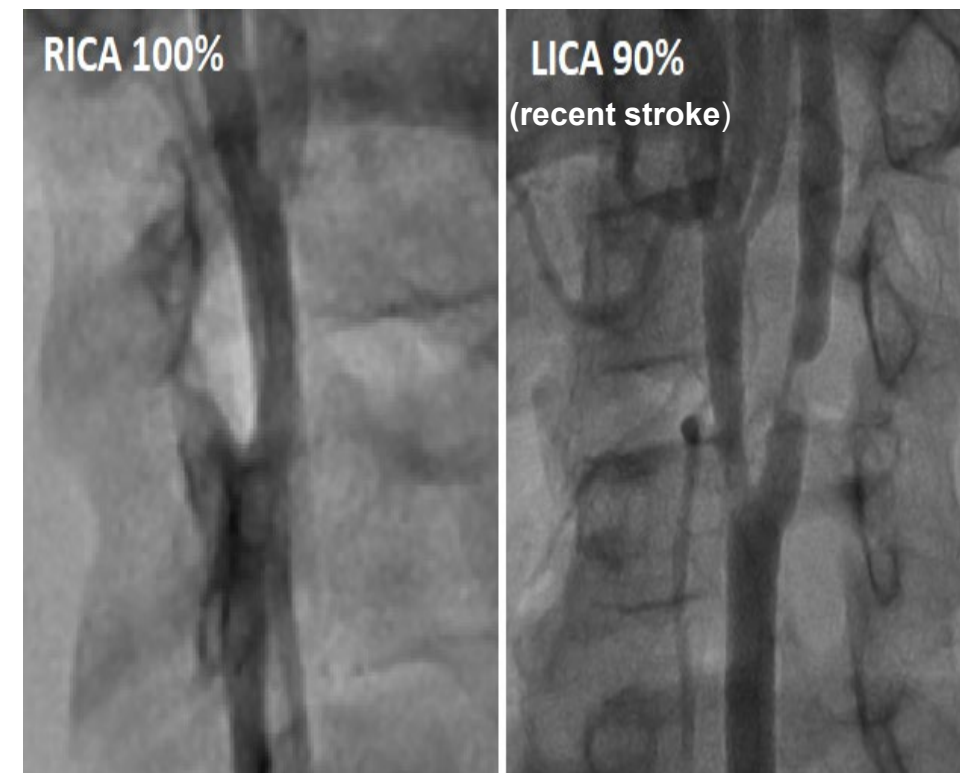
To establish a multi-specialty programme of competent carotid artery stenting (CAS) as a step towards routine stroke thrombectomy service in our Institution.

METHODS

A multispecialty task force (led by the hospital CEO and interventional cardiologist), involving local Neurology (with routine stroke iv. lysis management and some patients referred to a distant Comprehensive Stroke Centre), Radiology and Anesthesia, created – with support from the Polish Cardiac Society Board Representative for Stroke and Vascular Interventions – a local programme of competent, proctored CAS. With a view of further acute stroke interventions, there was a primary strategy of training in routine proximal neuroprotection use (transient flow reversal using MoMa or FlowGate balloon catheters). Contralateral ICA occlusion was not considered a contra-indication to proximal protection use. MicroNet-covered 2nd generation carotid stents were used routinely.

Number of pts.	32
Mean age	67.3
Male	23 (71.9%)
Neurological event 6 months before CAS	14 (43.7%)
Neurological event in the past	10 (31.2%)
Vascular risk factors:	
BMI >30 kg/m2	7 (21.9%)
Hypertension	30 (93.7%)
Previous myocardial infarction	10 (31.2%)
Previous CABG	2 (6.25%)
Cardiac failure	3 (9.4%)
Atrial fibrillation/flutter	4 (12.5%)
Type 2 diabetes mellitus	14 (43.7%)
Hypercholesterolemia	28 (87.5%)
Smoking	7 (21.9%)
Peripheral artery disease	9 (28%)
Coronary angiography before CAS	31 (100%)
PCI before CAS	14 (43.7%)
Procedure:	
Contralateral ICA occlusion	7 (21.9%)
Femoral access	32 (100%)
MoMa, FlowGate	28 (87.5%)
Mean flow reversal time	7min 14sec
Spider	4 (12.5%)
One C-Guard Stent	29 (90.6%)
TIA (< 24 h after CAS)	6 (18.7%)
Stroke, myocardial infarction, death at hospital and 30 day follow up	0

BASELINE ANGIOGRAM:

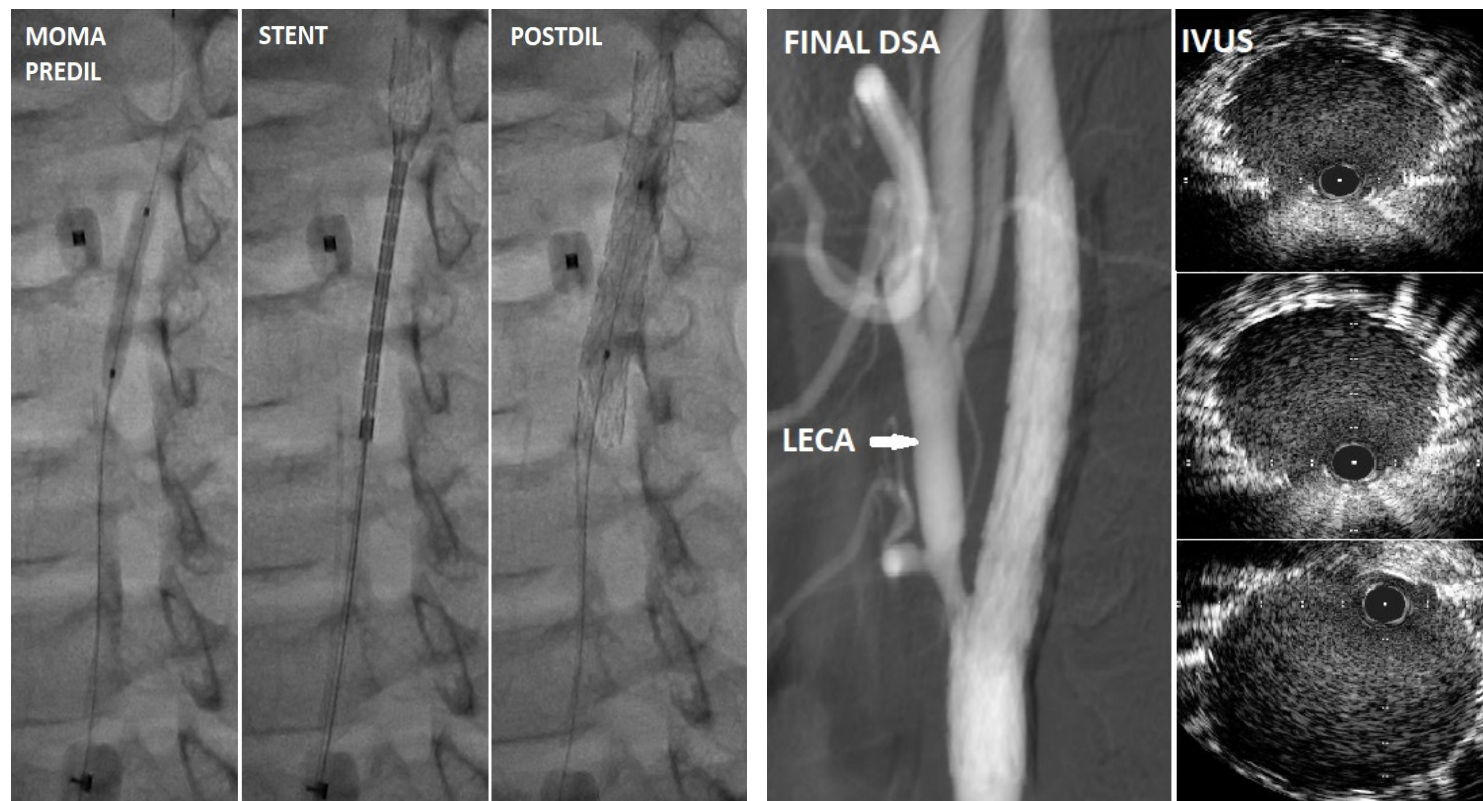


Patient enrolled in OPTIMA Study (NCT04234854)

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RESULTS

The operator team included a proctor, 3 interventional cardiologists (independent coronary operators) and 2 radiologists undergoing interventional training (with active participation in coronary procedures including sheath placement, vessel cannulation, balloon preparation, etc.) by interventional cardiologists. Following a 6-month period of preparations and theoretical training (major cardiovascular conferences with CAS lectures and case presentations, World Federation for Interventional Stroke Treatment – WIST seminars), 32 CAS procedures (100% proctored) were performed in 30 patients (71.9% men, 43.7% symptomatic) over a period of 16 initial months. The proctor scrubbed in the first 20 cases. Each procedure was preceded by discussion of strategy based on integration of non-invasive imaging (carotid Duplex Doppler and CT angiography, cerebral imaging with CT or MRI) and overall clinical information including routine neurologic and vascular surgery consultation to confirm treatment indications. This was followed by an invasive angiogram-based team discussion to crystallize the treatment strategy (type of neuroprotection, wires, predilatation vs no predilatation, stent size, balloons types and sizes, etc.). Mean age of the patients was 67.3 years (28.1% women). Coronary anatomy (and revascularization, if needed) was routinely performed prior to CAS (PCI – 43.7%). The vascular access was femoral in all cases. Proximal protection use was 87.5% (filter – 12.5%) with mean flow cessation/reversal time of 7min. 14sec. Contralateral ICA occlusion was present in 7 cases (21.9%) and it was not considered a contraindication to proximal protection (if proximal protection was considered to be indicated). Majority of lesions were pre-dilated (direct stenting rate 3%). The stent used were in a range 7 – 10mm/20 – 40mm and all were postdilated. The post-dilatation balloons used were in a range 5 – 8mm. Periprocedural stroke/death rate was 0% and 30-day stroke/death rate was 0%. Transient intolerance of flow reversal and/or TIA occurred in 6 procedures (18.7%). No peri-procedural or 30-day MI occurred. In the follow up 30-day Duplex Doppler showed 100% target vessel patency with normal in-stent velocities.



CONCLUSIONS

We have succeeded in establishing a close, effective, multi-specialty collaboration involving the key local stakeholders of stroke mechanical thrombectomy (MT). Our proctored programme of competent CAS has been safe and it has been yielding optimal procedural and clinical results; this, we believe, is an important step towards upgrading to a MT-capable stroke centre that is much needed to address the unmet need of LVO stroke patients in our Region. Access to simulator-based training (that we wish were available to us) would enable us to accumulate skills more efficiently, shortening the training path and allowing a smoother cathlab procedural course.