

Summary:

PTA of infrapopliteal arteries:

The aim of our study is to evaluate the outcome and the efficacy of infrapopliteal PTA in the patients with chronic critical lower limb ischemia and patients with diabetic foot syndrome. This is a retrospective evaluation of infrapopliteal PTA performed in one centre – IKEM (Institute for Clinical and Experimental Medicine) Prague, Czech republic. A total number of 1092 patients/ 1416 lower limbs/ 3045 arteries had been treated by PTA since 1985 till 2005 in our institute. We retrospectively evaluated interventions performed till the end of 2003. These patients have at least 12-month clinical follow-up. Our group consisted of 799 followed lower limbs. We tried to determinate factors influencing limb salvage.

Between years 1985 and 2003 infrapopliteal PTA was performed in 782 patients (966 lower limbs, 1985 arteries). Males 657, females 309, average age 66.7 ± 8.9 y.o. Eighty three % of interventions were performed in patients with diabetes. Forty % of procedures PTA of the SFA or popliteal artery was performed as an additional measure. In 96 patients, the intervention was performed in both lower limbs. In 89 patients the procedure had to be repeated - rePTA. Interval between first PTA and rePTA varied from 21 days to 6 years.

Indications (PTA performed till the end of 2004):

Indications	Patients with DM		Patients without DM		Total	
Disabling claudications	29	3.0 %	31	16.0 %	60	5.2 %
Rest pain	82	8.5 %	67	35.6 %	149	12.8 %
Phlegmone	27	2.8 %	3	1.6 %	30	2.6 %
Non-healing ulcer	173	17.7 %	26	13.8 %	199	16.9 %
Gangrene	572	58.8 %	57	30.4 %	629	54.0 %
Non-healing amputations	80	8.3 %	3	1.6 %	83	7.1 %
Other	9	0.9 %	2	1.0 %	11	0.9 %
Total	972		189		1161	

No. of infrapopliteal fully patent arteries before PTA (PTA performed till the end of 2004):

	No patent artery		One patent artery		Two patent arteries		Three patent arteries	
No. of patients	906	78 %	217	18.7 %	36	3.1 %	2	0.2 %

Our primary technical success of infrapopliteal arteries PTA was defined as minimally one fully patent artery after PTA with max. of 50 % residual stenosis. Primary technical success in our study was 84 % of arteries intended to treat. Technical success in stenosed arteries was 90.2 – 94.4 %, for occluded arteries was 33 – 50.4 %.

Final anatomical results after infrapopliteal PTA in % (PTA performed till the end of 2004):

	Fully patent	Stenosis < 50 %	Stenosis > 50 %	Anatomical improvement, but no continuous flow	Artery occluded	PTA not performed
Anterior tibial artery	48.7	2	0.5	13.3	3.7	31.8
Fibular artery	47.9	2,6	0.6	9.4	3.8	35.7
Posterior tibial artery	22.9	2,3	0.2	10.9	2.1	61.6

One year limb salvage was defined as from no tissue loss up to maximally transmetatarsal amputation so that functional limb was preserved for walk. Secondary one-year lower limb salvage in our whole group was 83.5 % and was statistically significantly affected by number of continually patent arteries after PTA and moreover by anatomical conditions of distal peripheral arteries i.e. the plantar and dorsal pedal arteries. In case of the stenosis or occlusion of the arteries, the prognosis was worse.

One-year lower limb salvage according indications for PTA (PTA performed till the end 2003):

	No. of patients	Primary lower limb salvage	High amputation	Secondary lower Limb salvage
Gangrene	452	325 / 71.9 %	88 / 19.5 %	364 / 80.5 %
Non-healing ulcer	130	107 / 82.3 %	15 / 11.5 %	115 / 88.5 %
Rest pain	96	68 / 70.9 %	18 / 18.8 %	78 / 81.2 %
Phlegmone	17	15 / 88.2 %	2 / 11.8 %	15 / 88.2 %
Non-healing amputations	51	41 / 80.4 %	9 / 17.6 %	42 / 82.4 %
Disabling Claudications	43	40 / 93.0 %		43 / 100 %
Other	10	8 / 80.0 %		10 / 100 %
Total	799	604 / 75.6 %	132 / 16.5 %	667 / 83.5 %

One-year lower limb salvage according to the number of patent arteries after PTA (PTA performed till the end of 2003):

	No. of patients	Primary lower limb salvage	High amputation	Secondary lower limb salvage
No patent artery	73	42 / 57.5 %	27 / 37.0 %	46 / 63.0 %
One patent artery	358	264 / 73.7 %	64 / 17.9 %	294 / 82.1 %
Two patent arteries	281	225 / 80.1 %	35 / 12.5 %	246 / 87.5 %
Three patent arteries	87	73 / 83.4 %	6 / 6.9 %	81 / 93.1 %

Conclusion:

- We consider infrapopliteal PTA as a method of the first choice in patients with critical lower limb ischemia.
- Infrapopliteal PTA is a highly effective therapy for lower limb salvage.
- Secondary lower limb salvage was not (statistically) influenced by sex, age, inheritance of DM, intervention on in-flow artery, ischemic heart disease, hypertension, smoking, obesity, dialysis, number of patent arteries before operation.
- Secondary lower limb salvage is statistically significantly affected by number of continually patent arteries after PTA and by anatomical conditions of the distal peripheral arteries – a plantar and dorsal pedal arteries – if these arteries are stenosed or occluded the prognosis is worse.
- The limb salvage rate is positively influenced by the number of patent arteries after PTA.
- Infrapopliteal interventions are nearly equally effective in patients with various co morbidities even hemodialyzed patients and diabetics should not be excluded from indications to PTA.
- It is justified to attempt to perform PTA on all calf arteries.
- Even in patients with all infrapopliteal arteries occluded the attempt to perform PTA is justified. There is only a small number of patients absolutely unsuitable or contraindicated to undergo PTA.
