

# Atherectomy Adjuvant Balloon Angioplasty vs Balloon Angioplasty Alone in the Treatment of Peripheral Artery Disease

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## Purpose

Peripheral arterial disease (PAD) is a pervasive condition with an incidence of over 3,000,000 new diagnoses in the U.S. each year. Poorly controlled PAD may progress to Critical Limb Ischemia (CLI), a severe stage associated with risk of limb loss or amputation.<sup>2</sup> Two common options for endovascular intervention include percutaneous transluminal angioplasty (PTA) which involves balloon inflation to push plaque into the vessel wall and reestablish blood flow, and atherectomy (AT) which uses an additional device to disrupt plaque and remove it from the vessel wall. The purpose of this review study is to compare the technical success and primary patency rates of PTA+AT versus PTA alone in the treatment of PAD and CLI to determine which is the more effective treatment option.

## Methods

A literature review was done to compare technical success rates (TSR) and primary patency rates (PPR) between PTA+AT versus PTA alone. Among the 3 studies that met inclusion criteria, a total of 662 lesions were treated, of which 316 received PTA+AT while 346 of the cases received PTA only.<sup>3,5,6</sup> TSR was defined as <30% stenosis and PPR was defined as no additional intervention needed to retain vessel patency within 12 months.

## Clinical Relevance

This review compares endovascular treatment options for patients with Peripheral Arterial Disease and Critical Limb Ischemia. The results show that percutaneous transluminal angioplasty with atherectomy had significantly higher technical success rates than percutaneous transluminal angioplasty alone but no significant difference in primary patency rate.

## Results/Discussion

For comparison of TSR, PTA+AT performed significantly better than PTA alone (96.2% vs 87.6%  $p < .00001$ ).<sup>3,5,6</sup> When comparing PPR, there was no significant difference between PTA+AT vs PTA alone (89.2% vs 86.4%  $p = 2.67$ ).<sup>3,5,6</sup>

Intervention	# of Cases	TSR	PPR
PTA + AT	316	96.2%	89.2%
PTA Alone	346	87.6%	86.4%

The results of this review indicate that PTA+AT has a higher TSR compared to PTA alone, but no significant difference in PPR at 12 months post-intervention.<sup>3,5,6</sup> To fully determine the clinical significance of these results, further research should investigate long-term patency rates and complication rates.

## References

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## Future Directions

We propose that more research should be done to determine longer term PPR results between the two interventions. A longer study to determine 5 or even 10 year PPR results could lead to increased strength in this studies results.