

# Comparison of different inflation times on the angiographic image after balloon angioplasty in the femoropopliteal segment: a prospective randomized clinical trial

Maxime Elens <sup>1</sup>, Arnaud Colle <sup>2</sup>, Robert Verhelst <sup>2</sup>, Parla Astarci <sup>2</sup>

Affiliations + expand

PMID: 33829742 DOI: 10.23736/S0021-9509.21.11633-7

## Abstract

**Background:** Endovascular balloon angioplasty is a common practice to treat femoropopliteal arterial lesions. The precise balloon inflation duration to obtain the best lesion dilatation is unclear. The aim of this study was to assess angiographic images after 3- and 5-minute balloon inflation in femoropopliteal de-novo atherosclerotic lesions.

**Methods:** We randomly assigned 61 femoropopliteal arterial lesions to undergo balloon angioplasty for 3 and 5 minutes. The primary endpoint was the rate of favorable angiographic images after balloon angioplasty. The correlation between angiographic image and degree of calcification was studied. The secondary endpoint was the need of additional ballooning or stenting of the dilated lesion.

**Results:** Thirty-two (52%) lesions were randomized to a 3-minute inflation time and 29 (48%) lesions to a 5-minute inflation time. Median lesion length was  $83 \pm 32$ mm in the 3-minute group and  $89 \pm 31$ mm in the 5-minute inflation group ( $P=0.47$ ). After deflation, vessel recoil was significantly higher in the 3-minute group compared to the 5-minute group ( $P=0.04$ ), in mild to moderate calcified lesions, 18 (56%) and 9 (31%) cases, respectively. The angiographic result after balloon angioplasty was significantly more favorable ( $P=0.007$ ) in the 5-minute group with 20 (69%) cases compared to 10 (31%) cases in the 3-minute group. An increase of vessel recoil of 62% has been seen in severe calcified lesions in the 5-minute group. Additional intervention rate was significantly higher ( $P=0.007$ ) in the 3-minute group compared to the 5-minute group.

**Conclusions:** A prolonged inflation time of 5 minutes has an overall better angiographic image in the femoropopliteal segment and especially in non- or mildly calcified lesions.