
ORIGINAL ARTICLE**Effects of cyclic vs. non-cyclic deflation of pneumatic arterial tourniquet on haemodynamic and arterial blood gases in lower limb surgery: A prospective randomized study**

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Abstract

Background: Arterial tourniquet in extremity surgery is an essential tool because it prevents bleeding and improves visualization of the surgical field. Both, tourniquet inflation and deflation are associated with haemodynamic changes. *Aim and Objectives:* To compare the effects of cyclic versus non-cyclic deflation of pneumatic arterial tourniquet on the haemodynamic and systemic parameters. *Material and Methods:* Sixty patients of Society of Anaesthesiologists Physical Status (ASA PS) I and II classification, undergoing lower limb surgery using pneumatic tourniquet under spinal anaesthesia were randomly allocated equally into Group A (non-cyclic deflation) and Group B (cyclic deflation-Deflated thrice with progressive difference in deflation periods). Standard anaesthesia protocol was followed. On completion of surgery or once permissible tourniquet time was reached, tourniquet was deflated as per the method assigned for the patient. The haemodynamic parameters and Arterial Blood Gases (ABG) values were compared just before and after deflation in both the groups. *Results:* In Group A, there was a significant fall in Mean Arterial Pressure (MAP) after 3 minutes, requiring vasopressor ($p < 0.01$, highly significant). After tourniquet deflation, the ABG sample 2 had significant variation with respect to bicarbonate and lactate values. In Group A, mean bicarbonate value was statistically lower than that of Group B (22.76 ± 2.05 v/s 24.06 ± 1.22) ($p = 0.004$). The lactate value in Group A was statistically higher than in Group B (1.73 ± 0.43 v/s 1.35 ± 0.42) ($p = 0.001$). Also, lactate in sample 2 was significantly high compared to sample 1 (1.76 ± 0.40 v/s 1.49 ± 0.6) ($p < 0.05$). *Conclusion:* Cyclic deflation is better than non-cyclic deflation with respect to hemodynamic stability and release of metabolites into blood stream.

Keywords: Tourniquet, Spinal Anaesthesia, Orthopaedic Surgery, Deflation, Haemodynamics
