


## Benefits and harms of using a tourniquet in total knee arthroplasty

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Otoni Lima de Oliveira Filho<sup>1</sup>, Arthur Lucena Valle<sup>2</sup>, Pedro Henrique Cirne Borba<sup>3</sup>, Rafael Cavalcanti Pereira<sup>4</sup>, Maria Clara Fernandes Fabrício<sup>5</sup> and Maine Virginia Alves Confessor<sup>6</sup>

### ABSTRACT

The use of a tourniquet is important to combat bleeding during total knee arthroplasty (TKA). The initial equipment, invented in 1817 by Petit and improved in 1904 by Cushing, consists of a device that compresses blood vessels, controlling the flow of blood to one extremity, while the 1904 technique consists of a pneumatic compression monitored by the microcontroller and the inflatable cuff of the device.

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<sup>1</sup> Graduating in Medicine at UNIFACISA, Campina Grande, PB, Brazil.

E-mail: [otoni.filho@maisunifacisa.com.br](mailto:otoni.filho@maisunifacisa.com.br)

<sup>2</sup> Graduating in Medicine at UNIFACISA, Campina Grande, PB, Brazil.

<sup>3</sup> Graduating in Medicine at UNIFACISA, Campina Grande, PB, Brazil.

<sup>4</sup> Graduating in Medicine at UNIFACISA, Campina Grande, PB, Brazil.

<sup>5</sup> Graduating in Medicine at UNIFACISA, Campina Grande, PB, Brazil.

<sup>6</sup> Professor UNIFACISA, Campina Grande, PB, Brazil. Doctoral student in Biology Applied to Health - UFPE, Recife, PB, Brazil. Master in Biology - UC, Coimbra, Portugal.

E-mail: [maine\\_alves@hotmail.com](mailto:maine_alves@hotmail.com)



## INTRODUCTION

The use of a tourniquet is important to combat bleeding during total knee arthroplasty (TKA). The initial equipment, invented in 1817 by Petit and improved in 1904 by Cushing, consists of a device that compresses blood vessels, controlling the flow of blood to one extremity, while the 1904 technique consists of a pneumatic compression monitored by the microcontroller and the inflatable cuff of the device. The objective of this study is to identify advantages and disadvantages of the use of tourniquets during TKA. The method consisted of using the descriptors "*total knee arthroplasty*", "*tourniquets*", "*knee arthroplasty*" and "*tourniquets*" in the PubMed and VHL databases, using the Boolean operator *AND*, selecting 34 articles published in the last 5 years. The results showed that the use of the tourniquet in TKA showed an increase in stability and durability of the prosthesis after the procedure and less blood loss. However, its application resulted in greater postoperative pain, reduced range of motion, significant edema, and a higher probability of thromboembolic events. In the use of pneumatic tourniquets, pressures between 75-120 mmHg demonstrated milder complications, although they were less efficient in controlling bleeding compared to pressures of 150 mmHg. It is concluded that the tourniquet's hemorrhage control benefit is not sufficient to inhibit its harmfulness in relation to the patient's prognosis. However, in cases of exacerbated bleeding, the pneumatic tourniquet can be an effective alternative, since it appeared to be more advantageous due to its ability to control the pressure more efficiently during the procedure.



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