

Bacterial colonization in orthopedic surgical tourniquets: A Multicenter study

Tiago Soares Baumfeld¹ , Eduardo Frois Temponi² , Luiz Lorentz Salzmann Lamego³ ,
Eduardo Louzada da Costa⁴ , Glauco Almeida Passos⁵ , Leandro da Silva Marinho⁶ 

1. Universidade Federal de Minas Gerais – UFMG, Belo Horizonte, MG, Brazil
2. Pontifícia Universidade Católica – PUC-MG, Belo Horizonte, MG, Brazil
3. Hospital Madre Tereza, Belo Horizonte, MG, Brazil
4. Hospital Unimed BH, Belo Horizonte, MG, Brazil
5. Hospital Felício Rocho, Belo Horizonte, MG, Brazil
6. Hospital da Baleia, Belo Horizonte, MG, Brazil

Correspondence: Tiago Soares Baumfeld. **Email:** tiago.baumfeld@gmail.com

Introduction: Reusable tourniquets are widely used in orthopedic surgeries in Brazil, but national data on their contamination are scarce. The objective of this study is to evaluate the prevalence and microbiological profile of contamination in reusable tourniquets in Brazilian hospitals.

Methods: Multicenter observational study conducted in six hospitals. Swabs were collected from 54 tourniquets immediately after surgical use and before disinfection, covering an estimated area of 10 cm². Samples were cultured and identified by automated methods. The bacterial load was described as the median and interquartile range (IQR), and comparisons between public and private hospitals were performed using Fisher's exact test and the Mann-Whitney test.

Results: The prevalence of contamination was 70.4% (38/54). The median global microbial load was 101 CFU per device (IQR: 0-153), corresponding to approximately 10.1 CFU/cm². The predominant microorganisms were coagulase-negative *Staphylococcus* (48.1%) and *Staphylococcus aureus* (18.5%), with isolation of *Pseudomonas aeruginosa*, *Bacillus* sp., and *Candida* sp. The contamination rate was 78.6% in public hospitals and 61.5% in private hospitals ($p = 0.081$), with no statistically significant difference in the median bacterial load between institutions ($p = 0.412$).

Conclusion: There is a high prevalence of contamination by clinically relevant pathogens in reusable tourniquets, regardless of the type of hospital. The results indicate systemic failures in reprocessing and suggest the need for high-level disinfection protocols or the adoption of disposable sterile devices to mitigate the risk of cross-contamination.

Keywords: Pain measurement; Cross infection; Orthopedic surgery.

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