

Risk factors and intraoperative complications during revision of shoulder arthroplasty: A retrospective study

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Introduction

Over the last decade, the rate of the of shoulder arthroplasty has risen exponentially, and this has entailed an increasing number of reoperations. Revision shoulder arthroplasty (RSA) is technically complex, with often more consequent complications. Few data are published on the occurrence and risk factors of these complications. The objective of this study was to evaluate 1) The prevalence of intraoperative humeral fractures during shoulder arthroplasty revision and 2) To identify their risk factors.

Materials and Methods

Between 2008 and 2020; 89 patients having undergone revision shoulder arthroplasty were included in a monocentric retrospective study. In all of these patients, the glenoid and/or humeral implant had been changed. Five groups of patients were enrolled:

1. Fracture prevalence in the study population (10/89)
2. Fracture occurrence according to age (3/89 patients ≤ 70 yo & 7/89 patients ≥ 70 yo)
3. Fracture occurrence according to infection (7/89 patients)
4. Fracture occurrence according to stem length (10/89 long stems & 0/89 short stems)
5. Fracture occurrence according to humeral stem cementation (6/89 cemented and 4/89 uncemented stems).

Results

Out of 89 patients with an average mean age of 69.5 years (28-99), 10 fractures (11.2%) occurred at revision. All fractures (100%) occurred during stem extraction (long (n=10), short (n=0), cemented (n=6) or uncemented (n=4)). The risk of intraoperative fracture was associated with long primary stem ($p=0.0001$) and statistically insignificant at advanced age ($p=0.41$); infection of the primary prosthesis ($p=0.07$); female sex ($p=0.58$) and cemented primary stem ($p=0.378$).

Discussion/Conclusion

As described in the current literature, we observe a strong correlation between the length of the primary stem and to a lesser extent between age, female sex, infection, cementation of the primary stem and the following complications: intraoperative fractures and / or preventive humerotomy (corticotomy).

This is probably explained by the fact that these risk factors contribute on the one hand to the reduction of the bone stock and on the other hand to making technicality more difficult, particularly during the humeral component removal.

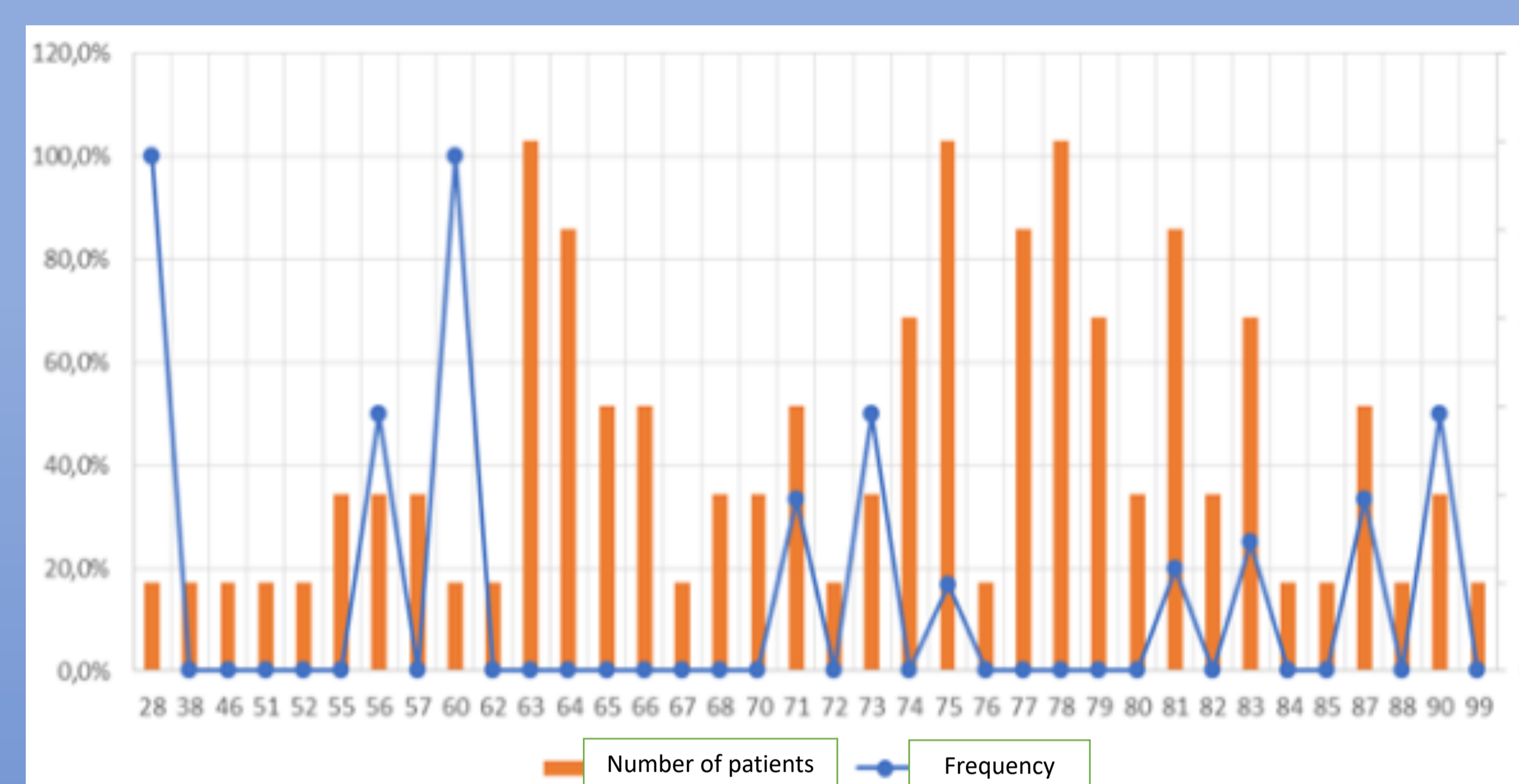
Conclusion

Intraoperative humeral fracture is a frequent phenomenon during shoulder arthroplasty revision. The main favoring factor was essentially the length of the primary stem.

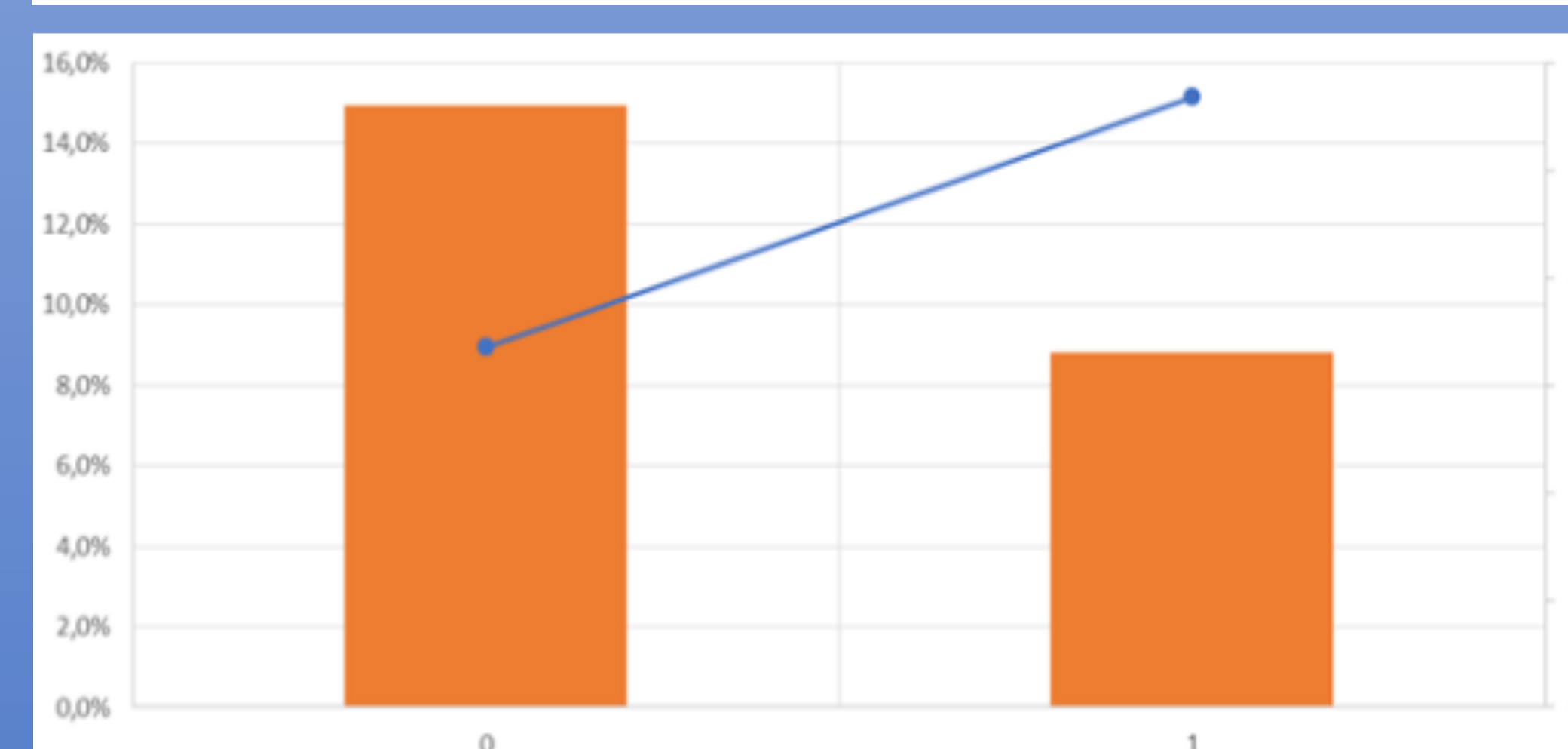
Revision shoulder arthroplasty requires an understanding and the evaluation of these risk factors.

References:

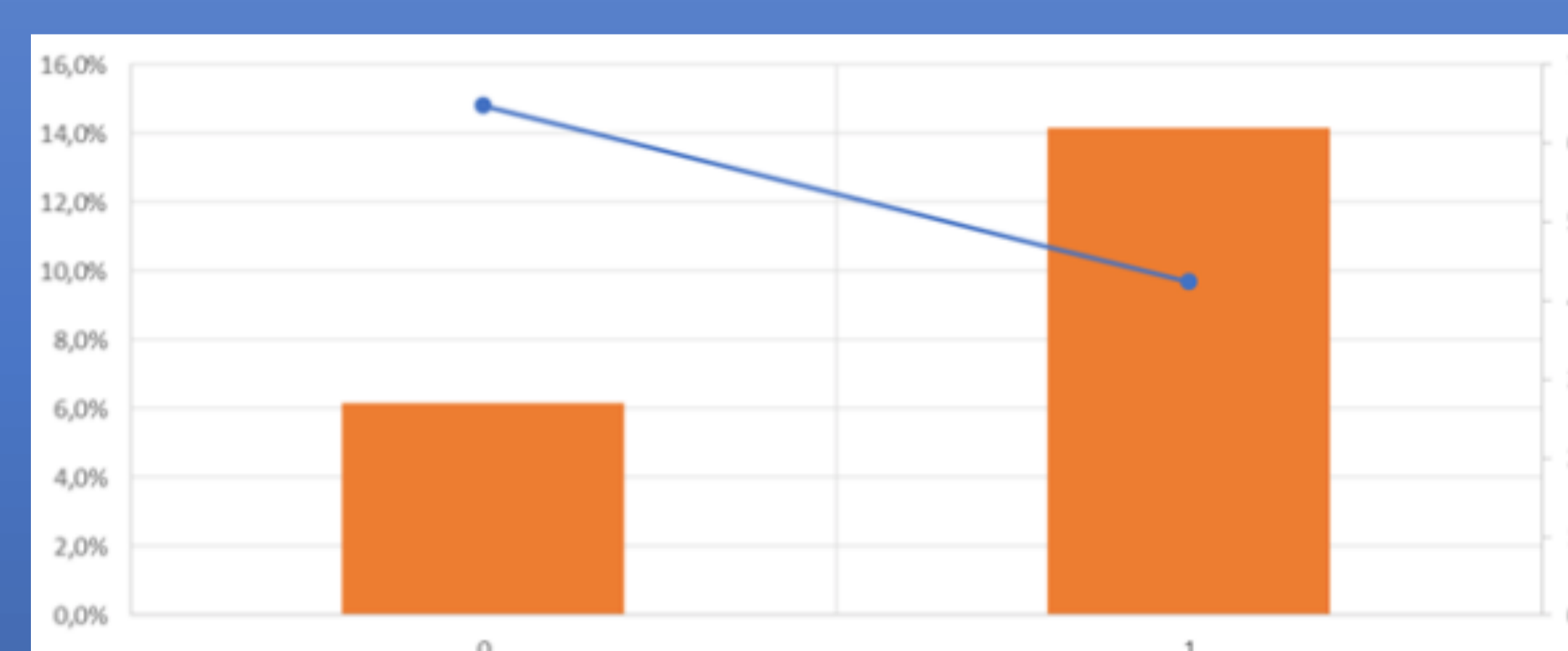
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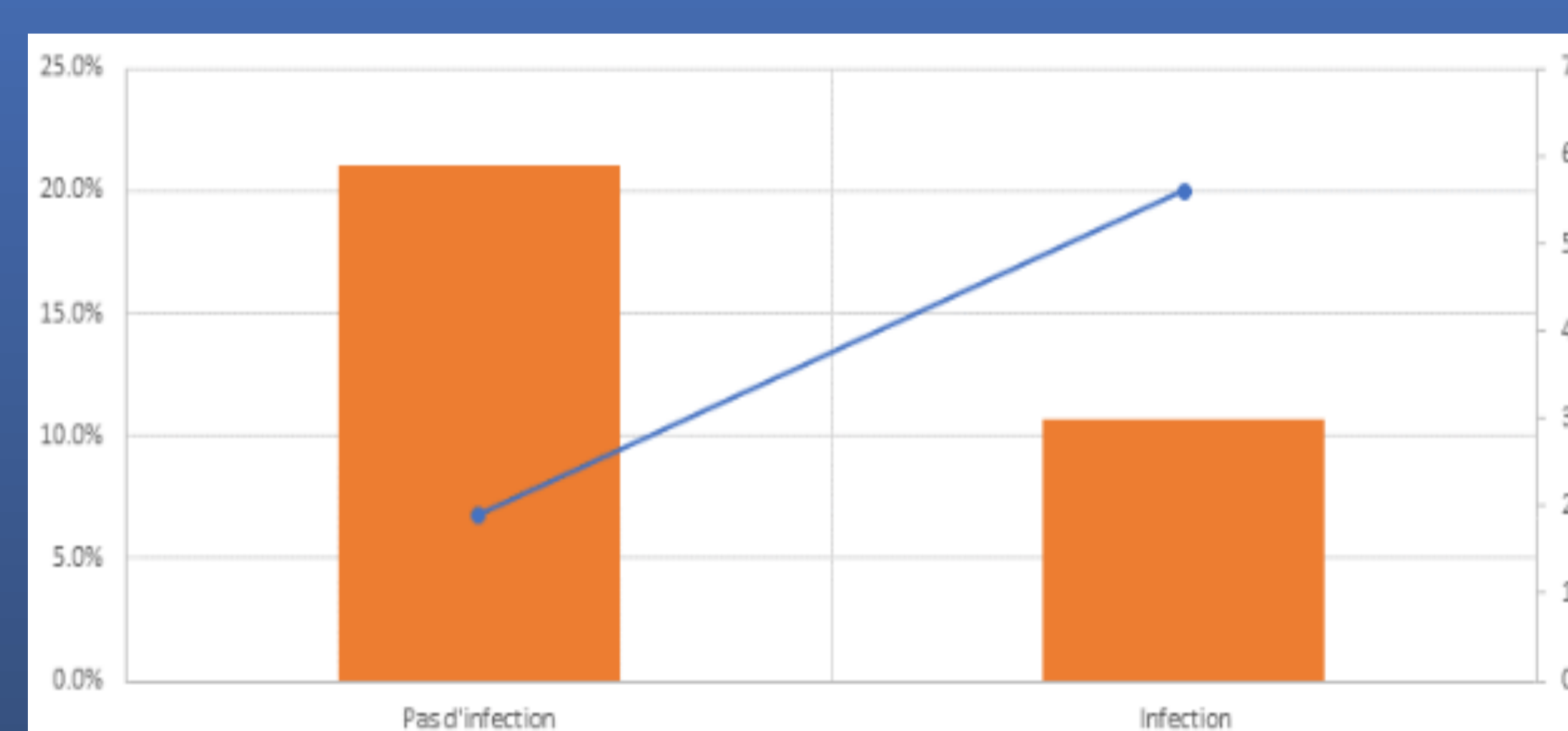
Risk of fracture and number of patients according to age



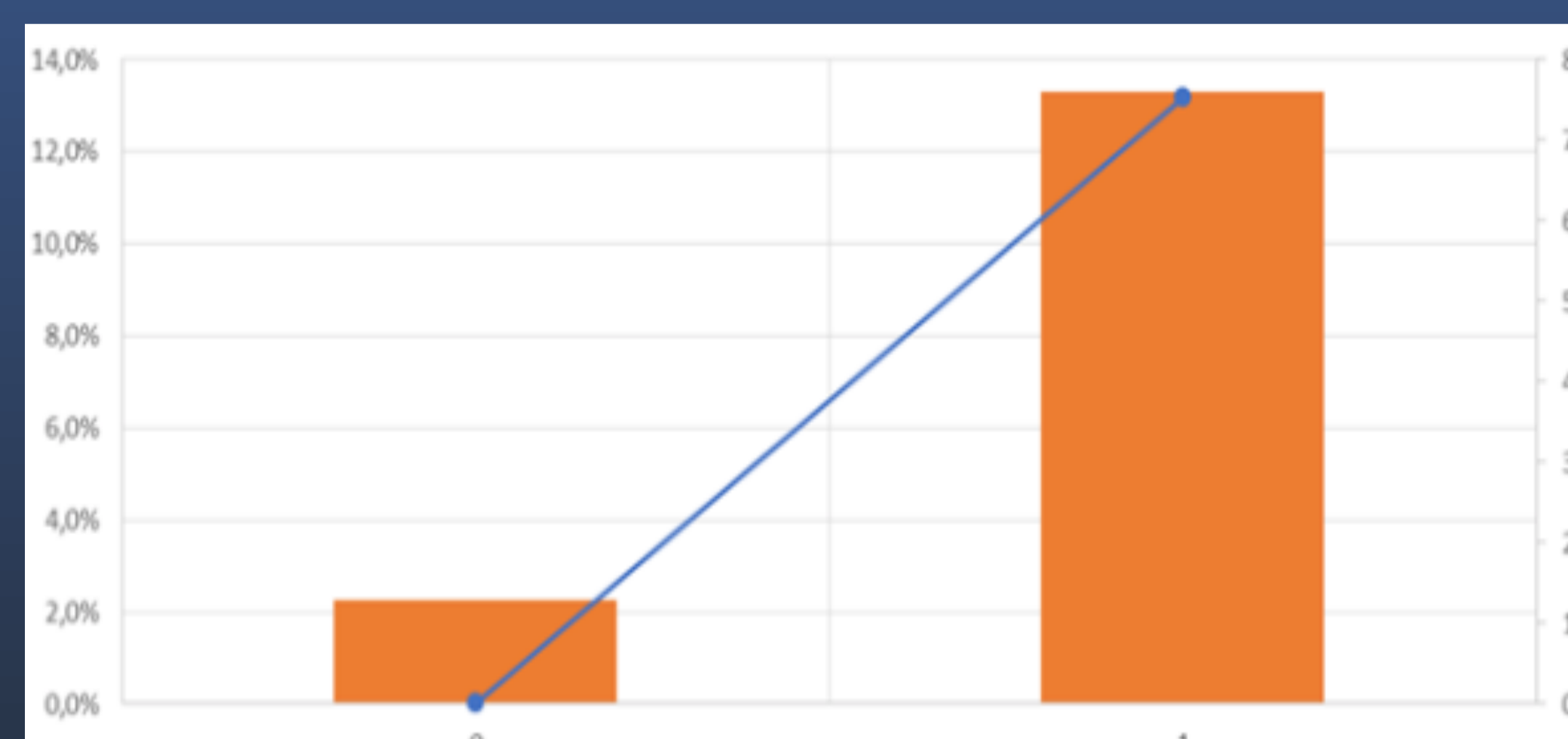
Regarding gender, the female population(1) included a higher fracture frequency than in men(0) (15.2% vs 8.9%) without this being statistically significant (p-value 0.5810 OR 1.48)



The patients who had a cementation (7/10) during the initial prosthesis also had more fractures (p-value 0.4835 OR 0.6161)



Risk of fracture and number of patients depending on the presence of infection



Fractures were only present in patients who had long stem (10/10) in their primary prosthesis (13.2% vs 0%). Only association that was statistically significant ($p = 0.0001$)