

## Could obesity be a risk factor for complications of osteoarthritis elective knee surgery?

*Stefania Fozzato<sup>1</sup>, Gabriele Napoletano<sup>2</sup>, Antonello Ciccarelli<sup>3</sup>*

<sup>1</sup>Trauma Surgery Department I.R.C.C.S. Orthopedic Institute Galeazzi, Milan, Italy; <sup>2</sup>Department of Anatomical, Histological, Forensic and Orthopedic Sciences, "Sapienza" University of Rome, Rome, Italy; <sup>3</sup>Department of Movement, Human and Health Sciences University of Rome Foro Italico, Rome, Italy

### To the Editor,

As it is well-documented from daily clinical practice as well as scientific literature, preoperative obesity is associated with worse clinical outcomes in patients undergoing knee arthroplasty for osteoarthritis in terms of pain, disability, and complications than in non-obese counterparts (1,2).

It is therefore of utmost importance to raise awareness through counseling in such patients, since it must be borne in mind that a thorough informed consent process requires doctors to discharge their professional duty to illustrate and start a discussion on the risks, benefits and possible alternatives to any given procedure, including prognostic options that may be of any benefit (2). Outlining, explaining and discussing possible alternatives is a key element of the awareness-building process; patients may not be able to assess risks in abstract terms and should therefore be able to rely on a frame of reference and contextualization in order to make a truly informed decision. Such dynamics make it even more essential to refer to validated and official guidelines, in order to avoid incurring medico-legal consequences which may lead to malpractice, negligence-based charges; in fact, especially under civil statutes, the onus would be on healthcare professionals to prove adherence to evidence-based practices and guidelines, if a claim is filed following adverse outcomes (3). The operators of the sector are well aware that the most important predictive factors of post-operative complications are an ASA classification equal to or higher than 3, a long, drawn-out

surgery, advanced age and obesity with a significant body-mass index (BMI).

Among other things, the analysis of cases involving total knee arthroplasty (PTG) showed a 7% revision rate in morbidly obese patients, as opposed to 2% in non-obese patients ( $P < 0.001$ ), with a significantly higher risk of perioperative infections (1). Periprosthetic joint infections (PJI), especially when affecting the hip and knee, constitute a relatively frequent complication in orthopedic prosthesis implants, with a 0.5-2% reported incidence. PJIs are mainly due to prolonged surgical time, the need for subsequent operations and the long hospitalization time.

The management of a periprosthetic infection is complex, expensive and requires a long hospitalization, a multidisciplinary effort by various professionals, at least one further revision surgery and prolonged antibiotic therapy. In recent years, various advantages have been associated with the use of telemedicine, and the relevance of such novel and innovative approaches has been highlighted during the COVID-19 pandemic in fields such as psychiatric care, in addition to orthopedics (4) among others; in fact, telemedicine has ultimately proved a valid tool as social-distancing restrictions were put in, simplifying the doctor-patient relationship.

Overall, perioperative complications as described above may entail higher morbidity and mortality rates. Pathogens can reach the prosthesis from the blood stream, by hematogenous dissemination, by direct inoculation, as a result of surgery or through the surgical wound, by exogenous dissemination.

Therefore, in the presence of an obese and diabetic patient, a careful preoperative assessment of specific individual risks of infection needs to be carried out with no exceptions.

Although a condition of obesity does not represent an absolute contraindication to knee arthroplasty in a morbidly obese subject with severe arthritic changes and necrosis of the proximal tibia, adequate preparation for the surgery itself is certainly necessary in order to minimize the specific risks related to morbid obesity in such a context (1).

The diagnosis of periprosthetic joint infection is confirmed in the case of fistula communicating with the implant or by the identification of the same microorganism from at least two culture samples.

Other elements that contribute to confirming such a diagnosis are: the elevation of serum inflammation indices (CRP and ESR), of leukocyte esterase, of synovial alpha-defensin and the increase of neutrophil granulocytes of the synovial fluid, as well as the isolation of a microorganism in a single sample (5).

In light of such considerations, it is evident that the success of any therapeutic intervention involves the eradication of the infection with a completely healed wound, no recurrence, no subsequent surgery for infection after reimplantation and no PJI-related mortality events up to two years after definitive PJI surgery.

Given the complexity of the types of infections that affect prosthetics in the orthopedic field, there are several critical aspects associated with their laboratory diagnosis. In particular, the preanalytical phase and the paths that biological samples follow, including the patient's clinical-anamnestic information, can lead to misdiagnosis and an inappropriate therapeutic approach, which may jeopardize the patient's chances of recovery and unduly burden the healthcare system overall.

**Conflict of Interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

## References

1. Pozzobon D, Ferreira PH, Blyth FM, Machado GC, Ferreira ML. Can obesity and physical activity predict outcomes of elective knee or hip surgery due to osteoarthritis? A meta-analysis of cohort studies. *BMJ Open*. 2018 Feb 27;8(2):e017689. doi: 10.1136/bmjopen-2017-017689.
2. Mora R, Soldini A, Raschellà F, Paparella F, Belluati A, Basile G. Primitive synovial chondromatosis of the hip joint. *Ital J Orthop Traumatol*. 1992;18(2):231-9. PMID: 1289289.
3. Montanari Vergallo G, Zaami S. Guidelines and best practices: remarks on the Gelli-Bianco law. *Clin Ter*. 2018 Mar-Apr;169(2):e82-e85. doi: 10.7417/T.2018.2059.
4. Basile G, Accetta R, Marinelli S, et al. Traumatology: adoption of the Sm@rtEven application for the remote evaluation of patients and possible medico-legal implications. *J Clin Med*. 2022 Jun 23;11(13):3644. doi: 10.3390/jcm11133644.
5. Signorini L, Dolci M, Favi E, et al. Viral genomic characterization and replication pattern of human polyomaviruses in kidney transplant recipients. *Viruses*. 2020 Nov 9;12(11):1280. doi: 10.3390/v12111280.

---

## Correspondence:

Received: 29 June 2023

Accepted: 5 September 2023

Gabriele Napoletano, MD

Department of Anatomical, Histological, Forensic and Orthopedic Sciences

"Sapienza" University of Rome, 00161 Rome, Italy

E-mail: gabriele.napoletano@uniroma1.it