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Clinical effects of knee arthroplasty

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Osteoarthritis (OA) is a rheumatological disease of gradual origin that can cause pain, joint stiffness, and decreased functionality and that affects elderly individuals in a greater proportion. This event is characterized by the involvement of cartilage, bone, and muscles that can be affected by the disease. Its development can be caused by the imbalance between tissue degradation and repair, which can be aggravated by several factors, the main ones being genetic predisposition, tissue overload, aging, obesity, and previous injuries[1,2].

In addition, arthroplasty is a surgical procedure in which the compromised joint is replaced by an artificial prosthesis, which can be partial or total, and its main objective is to reduce painful symptoms, restore function, and increase joint mobility. This technique is indicated in cases of severe pain, impairment of functionality, instability, and decreased range of motion in the joint[3].

When reading the article entitled "Functional and biochemical improvement following total knee arthroplasty in early postoperative period" by Erden et al.[4], we identified some evidence that deserves to be highlighted and that were not cited and discussed, mainly in clinical application. The first is the absence of a measure of clinical effect and not just a probabilistic effect in multiple comparisons of groups such as Cohen's d[5]. This clinical effect measure is based on the difference in magnitude of the investigated parameter and its variability. Cohen's d values of less than 0.5 reveal a small clinical impact, probably with less utility. Values between 0.5 and 0.08 are considered moderate, and values above 0.8 imply a strong clinical effect[5]. Cohen's d would help healthcare professionals to identify which parameters are more or less expected to improve after the arthroplasty and how to expect these results in patient monitoring.

Anyway, we made these estimates based on the information provided by Erden et al.[4] in Tables 1, 2, and 3. It is evident that the main outcome to be modified with knee arthroplasty is the WOMAC questionnaire (d=-3.27), followed by pain when walking (d=-2.52), valgus angle (d=-1.55), misalignment (d=-1.37), and pain at rest (d=-1.31). As for IL-6, the reduction effect is also great (d=-0.82), but lower than the biomechanical and functional measures.

On the contrary, despite not showing a statistical difference, TNF-α showed a reduction of moderate clinical magnitude (d=-0.55); this may be caused by the insufficient sample size for the probabilistic significance of the outcome and/or the effect of this variable can be perceived in a larger temporal space. In view of this, we believe that the biochemical effects of arthroplasty are slower to be identified than the biomechanical and functional ones.

So, we understand that clinicians need to know that WOMAC is the clinical measure of greatest change after knee arthroplasty because it is a composite indicator for pain, stiffness, and functionality and that biochemical measures may not be useful in the postoperative period of up to 6 weeks.

AUTHORS' CONTRIBUTIONS

JCPB: Formal Analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. **MLCS:** Formal Analysis, Methodology, Visualization, Writing – original draft, Writing – review & editing. **EABR:** Formal Analysis, Writing – original draft, Writing – review & editing. **GBS:** Formal Analysis, Writing – original draft, Writing – review & editing. **JML:** Conceptualization, Formal Analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – Original draft, Writing – review & editing.

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REFERENCES

1. Abramoff B, Caldera FE. Osteoarthritis: pathology, diagnosis, and treatment options. Med Clin North Am. 2020;104(2):293-311. https://doi.org/10.1016/j.mcna.2019.10.007
2. Brophy RH, Fillingham YA. AAOS clinical practice guideline summary: management of osteoarthritis of the knee (nonarthroplasty), third edition. J Am Acad Orthop Surg. 2022;30(9):e721-9. https://doi.org/10.5435/JAAOS-D-21-01233
3. Lenza M, Ferraz Sde B, Viola DC, Garcia Filho RJ, Cendoroglo Neto M, Ferretti M. Epidemiology of total hip and knee replacement: a cross-sectional study. Einstein (Sao Paulo). 2013;11(2):197-202. https://doi.org/10.1590/s1679-45082013000200011
4. Erden A, Emirzeoğlu M, Canli K, Yaman SÖ, Pekşen I, Aynaci O, et al. Functional and biochemical improvement following total knee arthroplasty in early postoperative period. Rev Assoc Med Bras (1992). 2022;68(12):1686-91. https://doi.org/10.1590/1806-9282.20220734
5. Sullivan GM, Feinn R. Using effect size-or why the p value is not enough. J Grad Med Educ. 2012;4(3):279-82. https://doi.org/10.4300/JGME-D-12-00156.1.