

LETTER TO THE EDITOR

[Translated article] Letter to the Editor about the article: "The configuration of the screws in the osteosynthesis of fractures of the femoral neck does not influence the functional or mechanical outcome"



Carta al director sobre el artículo: «La configuración de los tornillos en la osteosíntesis de las fracturas del cuello femoral no influye en los resultados funcionales ni mecánicos»

Dear Editor,

We have read with interest the article by Miralles-Muñoz et al., entitled, "Screw configuration in femoral neck fracture osteosynthesis does not influence functional or mechanical outcomes," published in the January–February 2024 issue. In this retrospective study, the authors compared the outcomes of 22 patients with femoral neck fractures treated with triangular screws and 31 with inverted triangular screws. This is a relevant topic, given the enormous controversy it still generates in the orthopedic community.

We would highlight the homogeneity of the baseline characteristics of the groups, which increases the internal validity of the study. For this same purpose, the authors excluded cases with open or imperfect reduction. We would have appreciated more information about the selection process, without which we cannot rule out the possibility that these exclusions constituted a source of bias. A more exhaustive description of the injuries would also have been useful. Fractures with vertical lines present a higher risk of failure, information not included in the Garden classification used in this study. These patterns (Pauwels III) may benefit from the use of support or angularly stable devices,^{1,2} no mention of which was made at any time by the authors. Similarly, posterior comminution and retroversion of the femoral neck, which is a risk factor for treatment failure that has become more established in recent years, was not described.³

We congratulate the authors' efforts in collecting functional data. Patients in both groups experienced functional regression after the fracture. It would be helpful to know specifically the deterioration in those who presented complications, as they occurred in 17%. Overall, no statistically significant differences were found in the incidence of complications between the two treatment groups ($p = .14$). However, mechanical complications occurred at a four-fold higher incidence in the triangular group compared to the inverted triangular group (13.6% vs. 3.2%). The inverted triangular configuration places a greater volume of implants in areas with greater trabecular density, improving fixation strength.⁴ Furthermore, it reduces perforations in the lateral cortex, which increase the risk of subtrochanteric fracture. Studies with sufficient statistical power to perform a reliable multivariate analysis confirm that the triangular configuration is an independent risk factor for the development of non-union (OR = 2.92).⁵ The absence of significant differences in the present study is attributable to the limited group size.

We congratulate the authors and the journal for circulating this study. However, we believe the message proclaimed in its title should be cautiously interpreted, since both the findings of this study and those of previously published studies suggest that the inverted triangle configuration offers more favorable results in the osteosynthesis of femoral neck fractures.

Level of evidence

Level of evidence v.

Authorship

The first draft of the manuscript was written by DGM and JVAP, and all authors contributed to subsequent versions. All authors read and approved the final version.

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Conflict of interests

The authors have conflicts of interest to declare with Smith & Nephew, Zimmer-Biomet, Link-Orthopaedics, Stryker, and MBA Surgical Empowerment.

References

1. Stoffel K, Zderic I, Gras F, Sommer C, Eberli U, Mueller D, et al. Biomechanical evaluation of the femoral neck system in unstable Pauwels III femoral neck fractures: a comparison with the dynamic hip screw and cannulated screws. *J Orthop Trauma*. 2017;31:131–7, <http://dx.doi.org/10.1097/BOT.0000000000000739>.
2. Hoshino CM, Christian MW, O'Toole RV, Manson TT. Fixation of displaced femoral neck fractures in young adults: fixed-angle devices or Pauwel screws? *Injury*. 2016;47:1676–84, <http://dx.doi.org/10.1016/j.injury.2016.03.014>.
3. Dolatowski FC, Adampour M, Frihagen F, Stavem K, Erik Utvåg S, Hoelsbrekken SE. Preoperative posterior tilt of at least 20° increased the risk of fixation failure in Garden-I and -II femoral neck fractures. *Acta Orthop*. 2016;87:252–6, <http://dx.doi.org/10.3109/17453674.2016.1155253>.
4. Selvan VT, Oakley MJ, Rangan A, Al-Lami MK. Optimum configuration of cannulated hip screws for the fixation of intracapsular hip fractures: a biomechanical study. *Injury*. 2004;35:136–41, [http://dx.doi.org/10.1016/s0020-1383\(03\)00059-7](http://dx.doi.org/10.1016/s0020-1383(03)00059-7).
5. Yang JJ, Lin LC, Chao KH, Chuang SY, Wu CC, Yeh TT, et al. Risk factors for nonunion in patients with intracapsular femoral neck fractures treated with three cannulated screws placed in either a triangle or an inverted triangle configuration. *J Bone Joint Surg Am*. 2013;95:61–9, <http://dx.doi.org/10.2106/JBJS.K.01081>.

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