The cut-off point for acute versus gradual correction of neglected tibia Vara in adolescents, a retrospective comparative study.

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INTRODUCTION:
There was no guide in the literature on when to do acute or gradual correction of the coronal plane deformity of neglected adolescent tibia Vara. The aim of this study was to compare the non-union rates between acute and gradual correction of varus deformity in tibia vara, and to define a cut-off measure over which gradual correction is recommended.
METHODS:
This study was a retrospective comparative study involving cases with neglected adolescent tibia vara who had either acute or gradual correction of the deformity by an Ilizarov frame in the period from 2018 to 2023. The acute correction group involved 19 cases, while the gradual correction group involved 20 patients. The mean follow-up was 30 months. The degree of angular correction (difference between the postoperative and preoperative m MPTA), and the height of the base of the medial opening wedge was correlated to time to union. Non-union was defined as having no signs of union after 9 months from surgery. The primary outcome was the rate of non-union in both groups. The secondary outcome was to define a cut-off parameter to guide the surgeon on whether to go for acute or gradual correction of the varus deformity in tibia Vara.
RESULTS:
Mechanical axis deviation (MAD) and mechanical medial proximal tibial angle (mMPTA) improved in both groups. There was a statistically significant higher rate of non-union in the acute group (5 cases), with no cases of non-union in the gradual group. Using the receiver operating characteristic curve (ROC curve), the correction angle of 13.8 degrees and the height of the base of the medial opening wedge < 10 mm were the cut-off values above which the incidence of non-union was increased for patients with an acute correction of the deformity.
DISCUSSION AND CONCLUSION:
There is a higher risk of non-union when correcting high degrees of coronal plane deformity acutely in neglected adolescent tibia Vara. The angle of deformity correction and height of the base of the medial opening wedge are valid parameters to guide the type of correction.