Acute versus gradual correction of idiopathic tibia vara in children: a systematic review

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CRD summary
This review compared acute versus gradual correction of childhood tibia vara (a rare acquired deformity of the tibia), and concluded that there was little evidence to recommend either form of correction. Despite some shortcomings in the reporting of the review process, the authors' cautious conclusion appears to be reliable.

Authors' objectives
To compare the outcome of acute versus gradual correction of childhood tibia vara (Blount disease).

Searching
MEDLINE, EMBASE and The Cochrane Library were searched without language restrictions from inception to May 2008; search terms were reported. Reference lists of included articles were searched to identify additional articles.

Study selection
Eligible studies reported radiographic outcome measures of acute or gradual correction following single-level tibial osteotomy as a primary procedure for idiopathic tibia vara in children; correction for different aetiologies were included so long as data for idiopathic tibia vara could be extracted separately. Studies could be of any design. Excluded studies: combined angular deformity correction with lengthening; reported a change in angular deformity rather than absolute values for limb alignment; performed correction without tibial osteotomy; and reported on congenital deformities. Case reports were also excluded. In the included study, the acute correction group were stabilised with a monolateral fixator and were compared with a gradual correction group stabilised with a Taylor Spatial Frame; post-operative follow-up was for two years and all patients in the acute correction group had prophylactic faciotomies.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
There was no formal assessment of study validity, but the authors reported on the limitations of retrospective series.

Data extraction
The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
Studies were combined in a narrative synthesis.

Results of the review
One retrospective comparative series was included in the review (n=32).

There was a significant improvement in mechanical axis deviation for the gradual correction group compared with the acute correction group both postoperatively (13.9mm versus 1.5mm; p=0.001) and at final follow-up (17.1mm versus 3.1mm; p=0.001); 94.4% of the gradual correction group met criteria for accuracy of reduction compared with 50% of the acute correction group (p=0.01).

A further 17 case series that did not satisfy the aims of the review offered no evidence of an advantage for either form of treatment.

Authors' conclusions
There was weak evidence of an improvement in mechanical axis deviation using gradual correction with a Taylor
Spatial Frame compared with acute correction, but there was little evidence to recommend either form of correction.

**CRD commentary**

The review question and inclusion criteria were clear. A limited literature search for studies with no language restrictions was undertaken, which reduced the likelihood of language bias. There was no apparent search for unpublished studies. Methods used for study selection and data extraction were not reported, so it was unclear whether methods were used to minimise error and bias. No formal assessment of study validity was reported, but the authors reported in some detail on the limitations of retrospective series. The decision to employ a narrative synthesis was appropriate, as was the decision to concentrate on the one study that provided evidence, albeit weak. Despite shortcomings in the reporting of the review process, the authors’ cautious conclusion that there is little evidence to recommend either form of correction appears to be reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that prospective collection of comparative data was desirable, given the difficulty of undertaking a randomised controlled trial, using the same modality of stabilisation for both groups and excluding patients who required more than one procedure on the same limb.

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