Title **Low Intensity Ultrasound (Exogen™) for the Treatment of Fractures**

Agency **AÉTMIS, Agence d'Evaluation des Technologies et des Modes d'Intervention en Santé**
2021, avenue Union, bureau 1040, Montréal, Québec, Canada H3A 2S9;
Tel: +1 514 873 2563, Fax: +1 514 873 1369; aetmis@aetmis.gouv.qc.ca, www.aetmis.gouv.qc.ca

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Aim

To assess the safety and efficacy of low intensity ultrasound (LIUS) (Exogen™) to accelerate bone fracture healing and reduce bone fracture complications.

Conclusions and results

Safety: Available studies do not report any adverse effects.

Efficacy: The efficacy evidence is weak for the following three indications:

1. Acceleration of fracture healing: LIUS may be effective in healing of fractures treated without surgery, but the evidence is weak. Research design weaknesses were found in the primary studies reviewed and in the one meta-analysis available
2. Prevention of fracture non-union: No evidence shows that LIUS can prevent non-union in higher-risk patient populations. No studies examine the efficacy of Exogen for this purpose
3. Treatment of non-union: The strength of the efficacy evidence for Exogen in treating non-union is weakened by the absence of randomized studies and by indications that the method of analysis (self-pairing used in case series) did not control for long-term natural healing.

Recommendations

The level of evidence is insufficient to recommend the use of Exogen, except as an exceptional treatment option in a limited number of patients. Specifically, in the case of non-union of tibial fractures, which have a grim prognosis, LIUS is a reasonable consideration after failed surgical intervention, and after the consolidation process, as measured by multiple-view serial radiographs, has ceased for several months. For other non-union fracture sites, the use of Exogen should be evaluated on the basis of a specific prognosis and clinical context.

Methods

AÉTMIS conducted a systematic review of the scientific literature up to September 2003.

The safety and efficacy evidence gathered had to be interpreted in the absence of a strong tradition of evidence-based medicine in orthopedics. The recommendations of the report tried to strike a balance between the clinical need for treatment and this lack of evidence.

Further research/reviews required

Assessment of the efficacy of Exogen was complicated by the lack of practice standards for treating specific fracture conditions and the lack of standards for measuring treatment outcomes. A culture of evidence-based medicine should be fostered within orthopedics. Before this treatment is made available to a large number of patients, or for a broader range of indications, strong evidence from high quality, randomized, controlled trials should required.

Written by Dr Reiner Banken, consulting researcher, AÉTMIS, Canada