Retrospective evaluation of BMP (Bone Morphogenetic Protein) as an osteoinductor factor in complex fractures.

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INTRODUCTION
Since the discovery of bone morphogenetic proteins (BMP), it has come a long way in its identification and applications in traumatology. These are potent growth factors of the TGF-β superfamily synthesized primarily by osteoblasts. Currently there are more than 20 subtypes, among which BMP-2 stands out for its high osteoinductive capacity. With the advancement of molecular techniques it has been possible to purify human recombinant BMP 2 (rhBMP-2), a substance that simulates BMPs, and is marketed as TruScien® in order to stimulate bone consolidation in cases with delayed bone healing or non-unions.

STUDY AIMS
The purpose of this study is to verify the efficacy of TruScien® in healing and bone formation by analyzing different complicated orthopedic cases from the Hospital Clínic Veterinari of the UAB in which it was used.

MATERIALS & METHODS
Individual details of the 13 clinical cases that were part of the study are displayed in Table 1.

DISCUSSION
In most of the study cases, the use of rhBMP resulted in an early bone healing. The results obtained were similar to those of other studies such as the one carried out by Faria et al. (2007) with open tibial fractures.

The effect of rhBMP-2 depends on the vehicle used, the amount, the concentration and the time of application, as well as the presence of enough mesenchymal cells capable of responding to BMP.

Most of the cases had no complications, or were minor. Lameness and mild inflammation are common in the first 3 weeks after implantation, but severe effects such as an excessive bone formation or the stimulation of malignant tumors are rare.

It has been seen in several studies and in the case 6, that even with osteomyelitis, the BMP remains efficient. However, diseases such as Leishmaniasis could mask their effects by slowing down the bone formation, as happened in cases 11 and 12. The main limitations of the study were the lack of a common criterion of choice of the cases, apart from the severity of their injuries, as well as the lack of a control group with which to compare results.

CONCLUSION
Despite its recent withdrawal from the market for commercial reasons, rhBMP-2 has been shown to be a very potent and effective osteoinductive factor in animals with delayed bone formation or non-union processes, in which its application reduces the time of radiographic union.

BIBLIOGRAPHY