

## Introduction

BMP is rampantly used in spinal fusion surgery to promote fusion. BMP is approved by the FDA for limited number of procedures but “off-label” use in various spinal procedures are increasing in frequency and benefits of BMP use are well documented in the literature. Reported complications include postoperative radiculitis, severe bone resorption, retrograde ejaculation, and ectopic/heterotopic bone formation. Although radiographic evidence of ectopic bone in the lumbar spine fusion with BMP has been described, we report a delayed ectopic bone formation resulting in neurological weakness.

## Methods

Case review of a 66-year-old male with 2 previous lumbar fusion surgeries and implantation of a Spinal Cord Stimulator presented with progressive back pain and left lower extremity weakness. Imaging revealed, calcified mass ventral to the thecal sac at L1-2. It is not clear about the amount of BMP used in this case.

## Results

The patient was referred to us after two fusion surgeries utilizing off-label BMP, including L4-S1 PLIF and L2-L4 TLIF, which failed to provide pain relief. He underwent a stimulator placement at our hospital. At six month follow up CT showed a L1-L2 calcified interbody. He did well for 4 years and returned with progressive lower back pain and left lower extremity weakness. Repeat CT revealed a large extradural ossific lesion in the ventral aspect of the canal from L1-L3 with vacuum disc phenomenon and no intervertebral fusion.

## Conclusions

We present a rare case of delayed ectopic bone formation in the spinal canal associated with BMP use in lumbar spine fusion causing symptomatic neurologic findings. This case challenges previous publications which concluded that the high incidence of ectopic bone was of no clinical significance/resulted in no neurologic sequelae. This was likely due to gradual spillage of BMP either from poor preparation or disruption of the interbody.

## Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Describe different uses of BMP in lumbar spine surgery.
- 2) Have knowledge of the reported complications of BMP use on Spine Surgery.
- 3) Understand that the use of BMP on lumbar spine surgery can lead to ectopic bone formation which can lead to neurological symptoms.
- 4) Spine surgeons should be aware of this potential complication of BMP when weighing the risks and benefits of its use.

## References

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2. Tannoury CA, An HS. Complications with the use of bone morphogenetic protein 2 (BMP-2) in spine surgery. *Spine J.* 2014;14:552–9. [PubMed: 24412416]
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### Lumbar Saggital CT



The L1-L2 disc is collapsed with “vacuum sign”. There is a large ossific lesion seen in the ventral aspect of the canal from L1-L2 through L2-L3.

### Lumbar Axial CT



On the Axial image at the level of mid L2 vertebral body: the ossific density is extradural and is compressing the thecal sac.