Can BMP2 Combined with the Superhip Procedure Lead to Ossification of the Unossified Femoral Neck and Lower Recurrence of Coxa Vara in Severe Congenital Femoral Deficiency

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Question:

Can BMP2 combined with the SUPERhip procedure lead to ossification of the unossified femoral neck and lower recurrence of coxa vara in severe congenital femoral deficiency

Your Answer:

Compared to SH procedures performed using non-fixed angle implants without BMP2, to those treated with fixed-angle devices and BMP2.

A. Rate of persistent delayed ossification of the femoral neck
B. Rate of AVN
C. Rates of recurrent deformity

Results:

Compared to SH procedures performed using non-fixed angle implants without BMP2, the incidence of recurrent coxa vara for type 1b2 hips decreased from 36.8% (25/68) to 10.5% (4/38) [p = 0.003) in those treated with fixed-angle devices and BMP2. Similarly, the rate of persistent delayed ossification of the femoral neck improved from 28/68 (41.2%) to 5/38 (13.2%) [p = 0.004] in this same group. The incidence of femoral neck persistent delayed ossification in type 1 b2 hips undergoing revision SH surgery after being treated initially with a fixed-angle implant but no BMP2 dropped from 8/16 (50%) to 1/11 (9.1%) [p = 0.042] by the addition of BMP2. There were two cases of AVN in the type 1 b2 group, one treated with and one treated without BMP2.

Conclusion:

As compared to the high rates of recurrent deformity and persistant delayed ossification (non-union) with the SH procedure using non fixed angle devices and no BMP, the use of a fixed-angle implant with the off-label use of BMP2 leads to the most predictable anatomic correction of the severe deformities of severe CFD with the lowest rates of failure. Advancing from to the use of fixed-angle implants in neck group hips, alone, significantly decreased the rate of varus recurrence among primary SH procedures. However, it was not until BMP2 was added to the un-ossified portion of the femoral neck that there was a statistically significant decrease in the rate of femoral neck delayed ossification (non-union) for both primary and revision surgeries. The findings of this study support the off-label use of BMP2 as a strategy to induce femoral neck union and thereby fewer complications in patients undergoing SH procedures