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Effects of Abaloparatide or Placebo on Bone Mineral Density in Acetabular Regions Corresponding to DeLee and Charnley Zones in Postmenopausal Women With Osteoporosis

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ABLSC-US-04573 08/23

Disclosures

- Acknowledgments: Funding for this study was provided by Radius Health, Inc (Radius). Medical editorial support and graphic services were provided by AOIC, LLC and were funded by Radius. Previously presented on March 30, 2023 at ISCD Annual Meeting, Chicago, IL.
- Travel expenses by Radius Health, Inc (Radius)

Introduction

- Low acetabular bone mineral density (BMD) increases the risk of acetabular fragility fractures that can cause significant morbidity^{1,2}
- In patients with osteoporosis undergoing total hip arthroplasty (THA), low acetabular BMD can also adversely affect primary stability and osseointegration of acetabular cups³
- Abaloparatide (ABL), an osteoanabolic agent for the treatment of men and postmenopausal women with osteoporosis, has potential for increasing BMD in patients with osteoporosis who are preparing for elective total hip arthroplasty.

Objective

- To evaluate hip DXA scans from postmenopausal women with osteoporosis to compare the effects of ABL vs PBO on BMD of acetabular zones corresponding to DeLee and Charnley (D&C) regions that would surround the acetabular cup of patients undergoing THA.

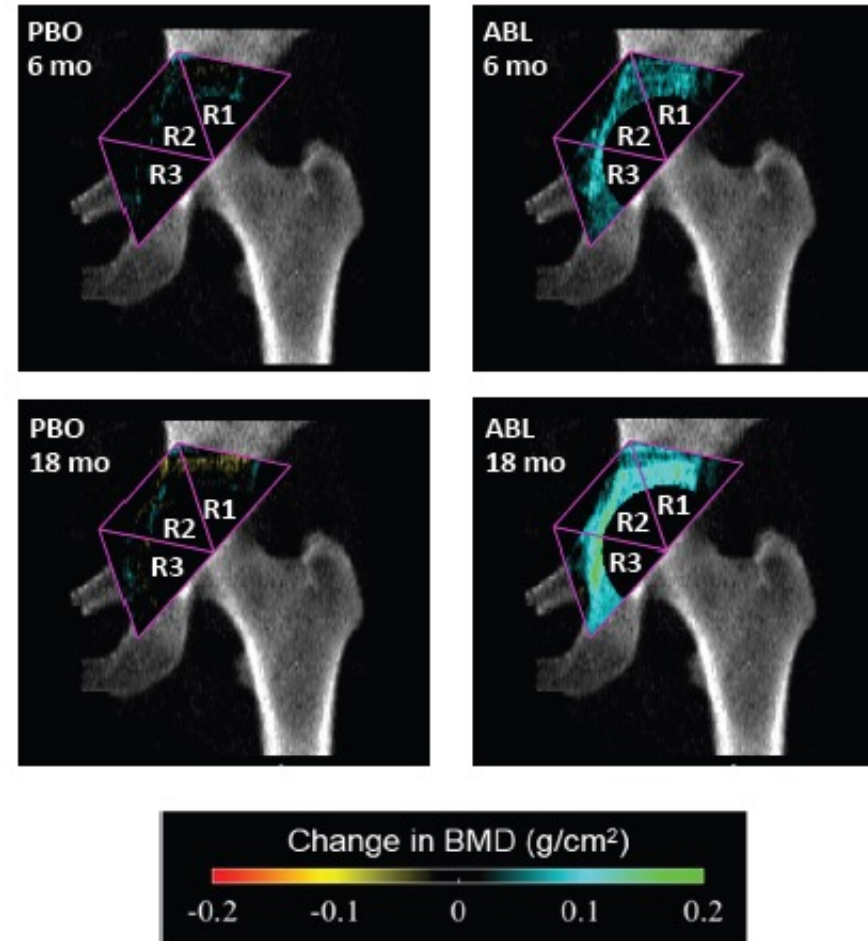
Methods

- Hip DXA scans were obtained at treatment baseline, month 6, and month 18 from a random subgroup of PM women with OP from the phase 3 ACTIVE trial who received Abaloparatide (ABL) 80 µg/d or Placebo (PBO) (n=250/group).
- A hemispherical shell model of Stryker's Trident PSL acetabular cup was virtually and optimally positioned on each DXA scan to guide delineation of D&C regions 1 (cranial), 2 (central), and 3 (caudal).
- Percent change in BMD was determined for each D&C region at months 6 and 18 to compare the effects of ABL vs PBO.



Results

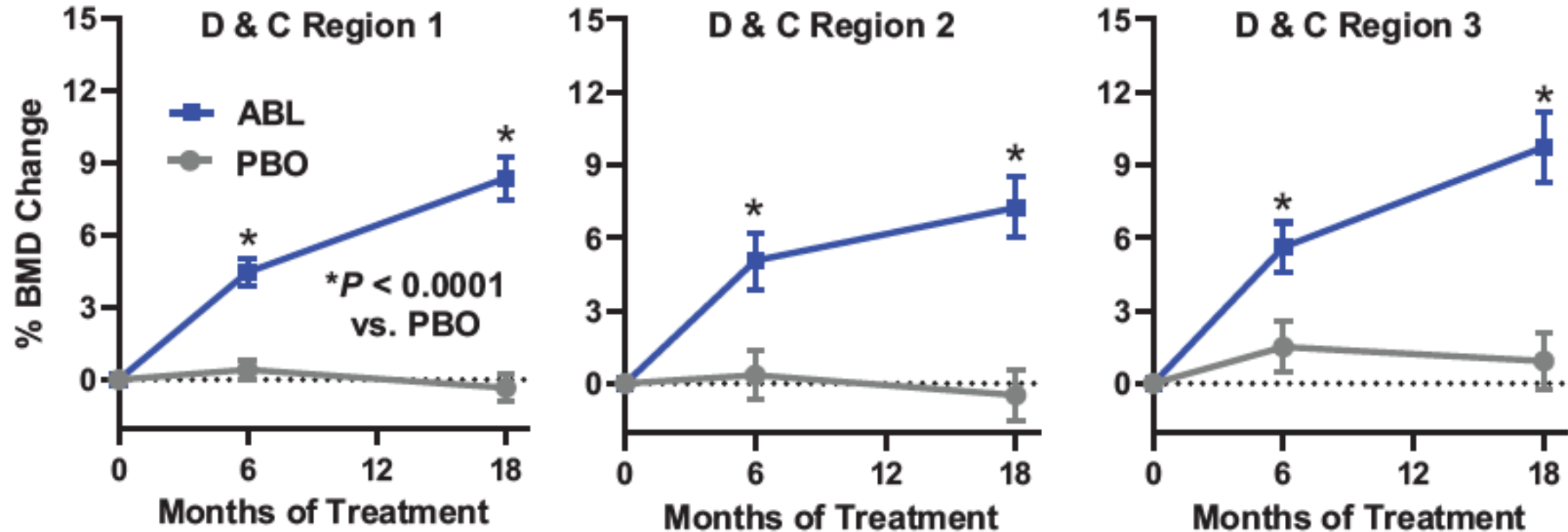
Figure 1. Spatial Distribution of BMD Changes From Baseline



Colors reflect group mean values registered onto a common DXA model.

Results

Figure 2. Percent Change From Baseline in aBMD of the 3 D&C Regions
(Means \pm 95% Confidence Intervals, N=250/Group)



*P values were based on a mixed-effect repeated measures model adjusted for BMI, age, and baseline BMD, with covariates including DXA scanner type, treatment group, visit, and treatment/visit interaction.

Conclusion

- Postmenopausal women with osteoporosis showed rapid and progressive increases in BMD of all 3 acetabular D&C regions with ABL vs PBO.
- Increased acetabular BMD has the potential to increase acetabular strength to reduce the risk of acetabular fragility fractures both intraoperatively and postoperatively, and prevent poor osteointegration, instability, or migration of the acetabular component.
- The ability of ABL to significantly increase acetabular BMD within 6 months also suggests potential for ABL as a therapy for perioperative bone health optimization in patients with osteoporosis undergoing THA.
- This study has several limitations. ACTIVE trial patients were not selected for hip osteoarthritis or other conditions that would warrant THA, and the virtual nature of implant placement does not model physical interactions between the augmented acetabulum and an acetabular cup.