

RGH Pharmacy E-Bulletin

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Etonogestrel implant and effects on bone

Depot medroxyprogesterone acetate (Depo-Provera[®]) has been associated with a reduction in bone mineral density (BMD) and this may be due to reduced ovarian production of oestrogen. However, does etonogestrel (Implanon[®]) have the same effect on bone?

Currently available information in the medical literature does not suggest that there is an association between the use of etonogestrel and increased fracture risk. However, a few studies have assessed the effect of etonogestrel on BMD.

A small, open, prospective comparative study assessed the effect of etonogestrel versus a non-hormone medicated intrauterine device (IUD) on BMD amongst healthy women aged 18–40 years for two years. BMD was measured via DEXA at the lumbar spine, proximal femur and distal radius. The difference between the IUD group and the etonogestrel group statistically significant for any of the sites measured. Mean increases in BMD were observed except for femoral neck in the etonogestrel group and Ward's triangle in the IUD group, where small (non-significant) decreases were observed. It was also found that there was no relationship between oestradiol concentrations and changes in BMD in the study group.

Another study assessed forearm BMD in 111 women (aged 19–43 years) who were randomly allocated to receive either an etonogestrel or a levonorgestrel implant. BMD was compared prior to insertion of the implant and 18 months later. BMD was measured via DEXA at the midshaft of the ulna and at the distal radius of the non-dominant forearm. BMD at the midshaft of the ulna was significantly lower at 18 months compared with baseline in both groups (but this was within the limit of one standard deviation). However, there were no significant differences at the distal radius at 18 months compared with baseline in both groups. In addition, there were no significant differences in BMD between users of etonogestrel and levonorgestrel at baseline and at 18 months of use.

The results of the study described above were replicated in a subsequent 18 month follow up study; but the number of women in this study was smaller. This cohort of women is currently being followed up and BMD will be measured again at 60 months (if the number of users remains adequate at that time).

The contraceptive efficacy of etonogestrel is primarily achieved by inhibiting ovulation, but ovarian activity is not completely suppressed and mean oestradiol concentrations remain above the level seen in the early follicular phase. The authors of the studies described in this E-Bulletin stated they did not expect a reduction in BMD because the levels of oestradiol were similar to those of non-users.

In conclusion, from the limited data currently available, the use of etonogestrel does not appear to adversely affect BMD. However, further clinical trials are clearly needed before definitive recommendations for clinical practice can be made. Studies need to be larger and of longer duration; assess fracture risk; assess what happens to BMD/fracture risk over time once the implant is removed; consistently measure BMD at anatomical sites (via DEXA) that are more predictive of fracture risk; and assess the effect of etonogestrel on BMD/fracture risk in adolescents (who have not yet reached their peak bone mass) and in perimenopausal women (who may be losing bone mass).

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