IS-028  Bone Mineral Density as a Marker for the Timing of Pectus Bar Removal after Nuss Procedure

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Aim: To establish the optimal timing of pectus bar (PB) removal after Nuss procedure (NP) by measuring bone mineral density (BMD)

Method: 20 patients who had PB removal after NP were assessed according to: age when PB was inserted/removed; duration of insertion; clinical outcome; and BMD. BMD was determined just prior to insertion (in-BMD) and just prior to removal (out-BMD) by averaging results for the 2nd to 4th lumbar vertebrae and % BMD was determined by dividing subject BMD by BMD for age-matched controls.

Results: Age at insertion ranged from 4.3-12.7 yrs, and from 6.3-14.1 yrs for removal. Duration of insertion ranged from 1.4-3.9 yrs. There were 2 cases of recurrence after NP (R-group). In these cases, PB was inserted when patients were 4 and 5 yrs old and removed when 8 and 6 yrs old respectively. BMD were 0.57 and 0.58g/cm\(^2\) respectively, and % BMD was 0.90 and 0.88 - both below normal. Cases who had PB removal between 6-8 yrs old and no recurrence (n=9) had normal BMD, and mean out-% BMD (0.94) was higher than for the R-group (p=0.08). According to the age-BMD correlation curve, normal BMD begins to increase markedly around 8-9 yrs old and plateaus around 14-15 yrs.

Conclusion: BMD and % BMD appear to be valuable markers for the timing of PB removal. According to the age-BMD curve, the optimum age for insertion would appear to be around 8 yrs old, and the optimum age for removal would appear to be around 11 yrs old. However, after the age of 15, ossification is well established and NP is not likely to be as clinically effective.