Is the endocrinologist an integral member of the team in nonunion surgery?

I. Nonunions are complex, multifactorial problems
   a. As surgeons, we have focused on surgical issues: stability and infection
   b. Expensive to treat
   c. Expensive for patients to have
   d. Successful treatment improves outcomes but do not return to population norms
   e. In rare cases, endocrine and metabolic disorders can prevent bone healing

II. Screening of all patients for metabolic and endocrine disorders is potentially useful
   a. Over 2/3 of patients had some identifiable endocrine or metabolic abnormality
   b. Does not matter if patients had poor fixation or even infection
   c. Treatment plan was altered in almost half of nonunion cases
      i. 40.5% by surgeon, 8.1% by referral
   d. Recommended screening panel
      i. TSH
      ii. Free T4
      iii. PTH
      iv. Vitamin D, 25-OH
      v. Calcium
      vi. Phosphorus
      vii. Magnesium
      viii. Alkaline Phosphotase
      ix. Testosterone
      x. Hemoglobin A1C

III. What to treat yourself
   a. Hypovitaminosis D for six weeks
   b. Prescription

Vitamin D 25-OH, 20-32 ng/ml	50,000 IU Vitamin D weekly
Vitamin D 25-OH, 10-20 ng/ml	50,000 IU Vitamin D twice a week
Vitamin D 25-OH, 0-10 ng/ml	50,000 IU Vitamin D three times a week

   c. Recheck Vitamin D, 25-OH level at 6 weeks

IV. When to refer
   a. Thyroid problems – any issue with TSH or free T4
   b. Calcium metabolism
      i. Hyperparathyroidism without Hypovitaminosis D
      ii. Hyperparathyroidism after vitamin D replenishment
      iii. Recalcitrant Hypovitaminosis D
   c. Low testosterone
   d. Uncontrolled DM