

Effect of antioxidant supplementation on sperm parameters in oligo-astheno-teratozoospermia, with and without varicocele: a double blind place controlled (dbpc) study



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INTRODUCTION

The male factor in worldwide infertility incidence is 20-30%. Sperm has high energy requirement for maturation, capacitation and motility. Many factors affecting sperm quality act through decreasing energy and increasing reactive oxygen species (ROS) by causing mitochondrial dysfunction. Sperm is vulnerable to ROS causing sperm immobilization, impairment of acrosomal reaction, abnormal morphology, DNA fragmentation and cell death.

To determine the effect of antioxidant supplementation containing L-carnitine, acetyl-L-carnitine, fructose, citric acid, selenium, coenzyme Q10, vitamin C, vitamin B12 and zinc on sperm quality in subjects with oligo- or astheno-teratozoospermia, with and without varicocele and history of difficulty conceiving.

MATERIALS & METHODS

This was a monocentric, randomized, DBPC with a total of 104 patients, 52 in the supplementation and 52 in the placebo arm, that were recruited in 6 months. The enrollment was divided in 52 patients with varicocele grade I-III and 52 patients without varicocele. The study evaluated the efficacy of 6 months of supplementation (2 sachet daily) versus placebo (2 sachet daily). Spermogram evaluation, according to the WHO guidelines, was done at the beginning of treatment (V1) and at the end of the 6 month treatment (V2).

RESULT

Sperm count (number $\times 10^6/\text{mL}$) in patients with varicocele was 39.3 ± 16.8 in placebo group and 49.4 ± 18.9 in supplementation group (percentage change 25.7% $t=2.04$ $p<0.05$ Student test); in patients without varicocele 47.5 ± 7.9 in placebo group and 52.3 ± 9.1 in supplementation group (percentage change 9.9% $t=2.01$ $p<0.05$). Total sperm motility in patients with varicocele was 33.9 ± 6.9 in placebo group and 38.3 ± 8.0 in supplementation group (percentage change 18.6% $t=2.10$ $p<0.05$); in patients without varicocele was 35.0 ± 7.5 in placebo group and 39.9 ± 8.0 in supplementation group (percentage change 13.8% $t=2.19$ $p<0.05$). Progressive sperm motility in patients with varicocele was 23.1 ± 6.7 in placebo group and 27.4 ± 7.9 in supplementation group (percentage change 18.6% $t=2.10$ $p<0.05$); in patients without varicocele was 25.1 ± 7.0 in placebo group and 29.7 ± 9.1 in supplementation group (percentage change 18.6% $t=2.07$ $p<0.05$).

CONCLUSIONS

In our study, at the end of the treatment we observed a marked increase in quality parameters of sperm such as count and in total and progressive motility especially in varicocele patients. The supplementation was safe and no adverse events were observed. On this basis it can be established that the use of carnitines and other functional substances can form part of an efficacious strategy to handle male infertility.

Figure 1c
Number of Sperm ($\text{mL} \times 10^6$) - Absolute Changes from Baseline
ITT Population

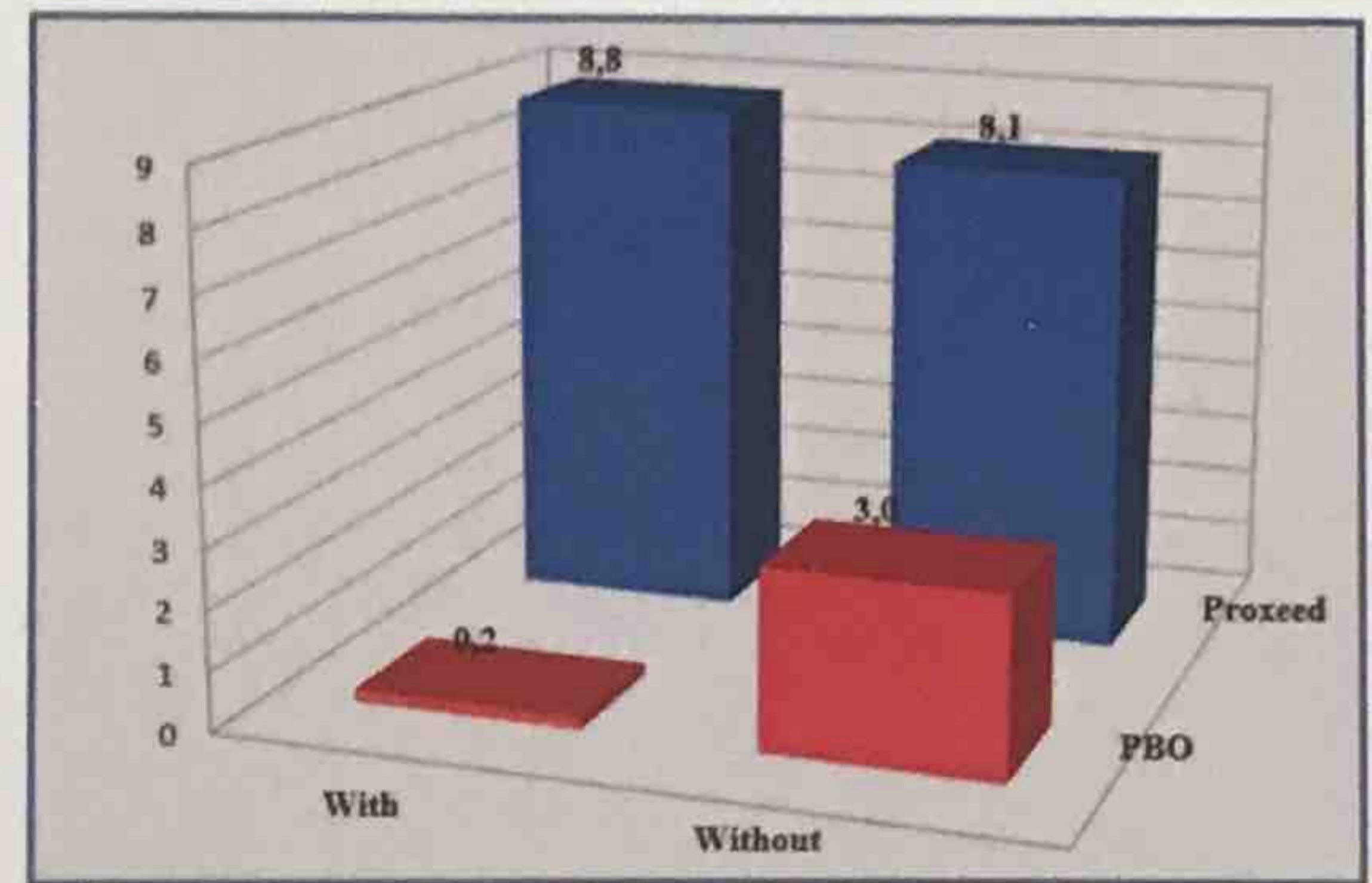


Figure 2c
Sperm Concentration ($\text{n} \times 10^6$) - Absolute Changes from Baseline
ITT Population

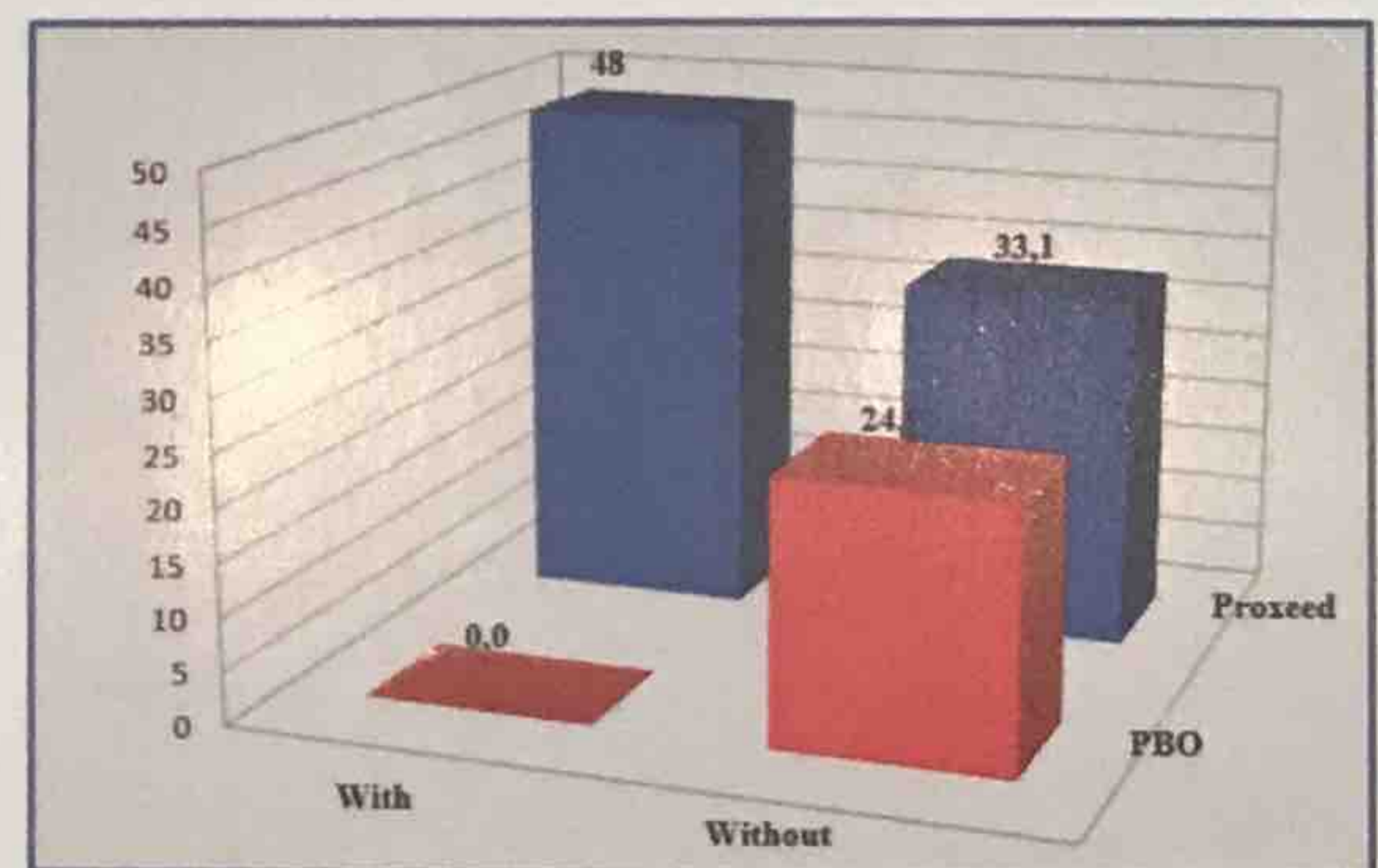


Figure 3c
Progressive Motility of Sperm (%) - Absolute Changes from Baseline
ITT Population

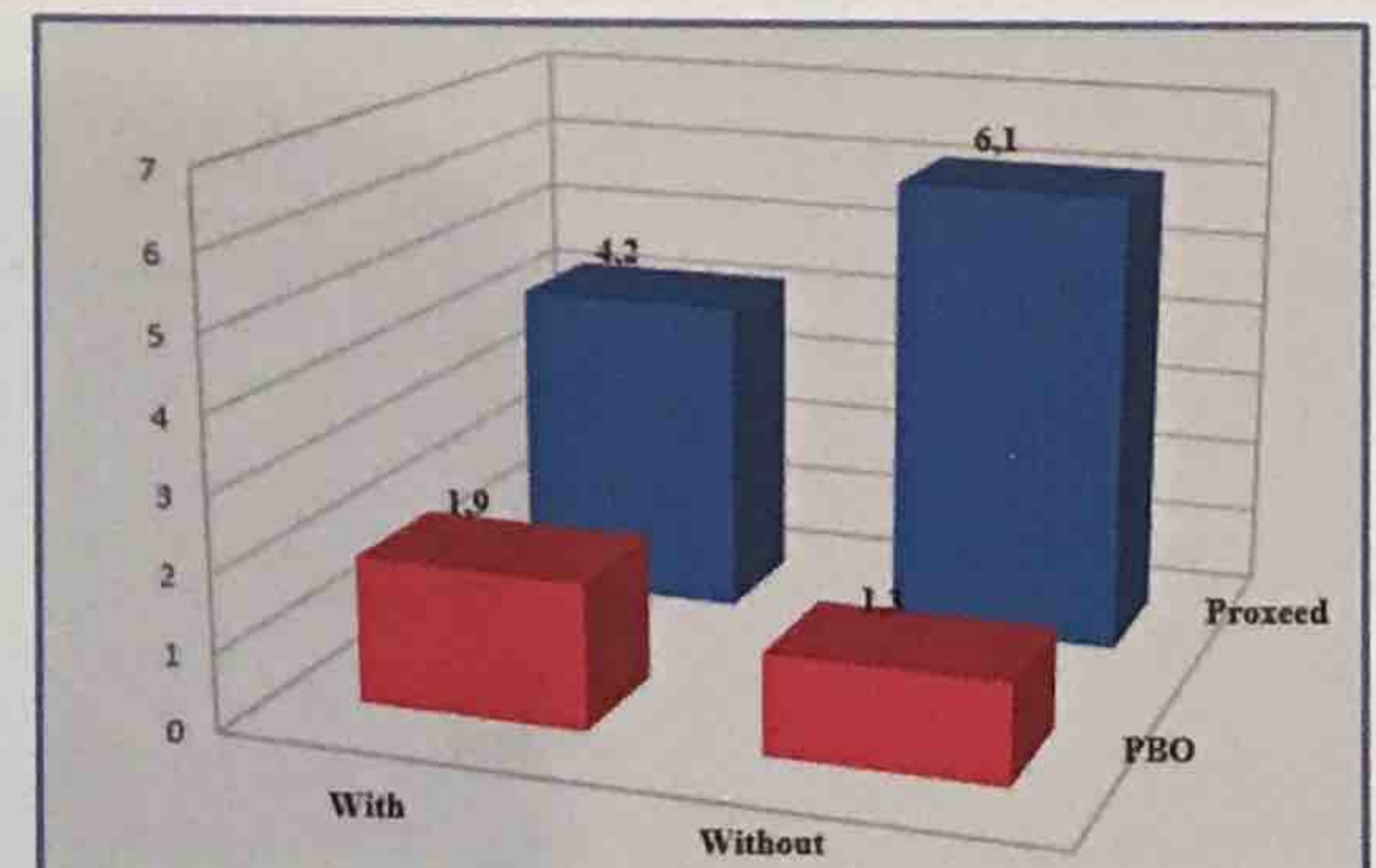


Figure 4c
Total Motility of Sperm (%) - Absolute Changes from Baseline
ITT Population

