

## **NO EFFECT OF ETCHING OR PLASMA CLEANING ON OSSEOINTEGRATION OF POROUS COATED TITANIUM IMPLANTS - A STUDY IN TEN DOGS**

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**INTRODUCTION:** Implant surface treatments that improve early osseointegration may prove useful in long-term survival of uncemented implants. **PURPOSE:** We investigated a specific Wet Etch surface technology, Plasma Clean technology, and conventional plasmasprayed Hydroxyapatite on porous coated titanium implants in a well-established animal model of osseointegration. **MATERIALS AND METHODS:** In a randomized, paired animal study with ten skeletally mature dogs, four experimental porous coated Ti implants ( $\varnothing 6\text{mm}$ , L10mm) were inserted into the distal femurs of each dog. The four treatment groups were: 1. Control; 2. WE (Wet Etch surface treatment); 3. WE+PLCN (Plasma cleaning surface treatment); 4. PSHA (Plasma Sprayed Hydroxyapatite). After a four-week observation period, mechanical fixation was evaluated by push-out test and osseointegration was evaluated by quantitative histomorphometry. **RESULTS:** The PSHA-coated implants were better osseointegrated than the three other groups ( $p < 0.05$ ). Within the deep implant porosity, there was more newly formed bone in the control group compared to the WE and WE+PCLN groups ( $p < 0.05$ ). There was no difference in new bone formation on the outer implant surface between the WE and WE+PCLN groups compared to the control group. No statistically significant differences were found between the four implant groups in terms of mechanical implant fixation. **CONCLUSION:** In terms of osseointegration PC+PSHA was, as expected, superior to the other three groups. Neither the specific surface microtexturing treatment by wet acid etching, nor the removal of organic molecular remnants by plasma cleaning offered any advantage in terms of implant osseointegration.