

COMPARATIVE ANTIMICROBIAL EFFICACY OF DIFFERENT ANTIBIOTIC-COATED SUTURES AGAINST *AGGREGATIBACTER ACTINOMYCETEMCOMITANS* IN VITRO

Kokila Ganesan^{a*}, Yogesh Kumar Thoppe Dhamodharan^b, Nitya Kala^a and Keerthana Chandrasekar^a

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ABSTRACT

Sutures play a critical role in wound closure and healing following surgical procedures, but can also act as a reservoir for microbial colonization, potentially leading to surgical site infections. To address this, the present study evaluated the antimicrobial efficacy of silk sutures coated with different antibiotics against *Aggregatibacter actinomycetemcomitans*. Four groups were assessed: doxycycline-coated sutures (Group A), amoxicillin-metronidazole-coated sutures (Group B), uncoated sutures as control (Group C), and chitosan polymer-coated sutures (Group D). Using the agar diffusion method, both antibiotic-coated groups demonstrated concentration-dependent increases in zones of inhibition. At 25 % concentration, Group A showed a mean inhibition zone (6.8 ± 1.20 mm), while Group B exhibited a significantly larger zone (9.85 ± 0.91 mm) ($p < 0.001$). Group C showed no inhibition, whereas Group D showed minimal inhibition (2.1 ± 0.14 mm). These findings suggest that antibiotic-coated sutures, particularly amoxicillin-metronidazole, may effectively reduce postoperative infections.