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**Topic :** Intraperitoneal composite meshes (integration to the abdominal wall and adhesion prevention)

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Evaluation of adhesion formation, shrinkage and tissue response of four polypropylene-based meshes after intraperitoneal placement

This experimental study aimed to compare four types of polypropylene-based meshes in regard to adhesion formation, shrinkage and tissue response after intra-abdominal implantation.

In 32 male New Zealand rabbits, 4 different types of meshes of the same size (5.5cm × 4.0cm) were implanted intra-peritoneally in four groups: Group PP; polypropylene mesh implantation; group PP+e-PTFE; polypropylene-expanded polytetrafluorethylene composite mesh implantation; group TiPP; titanium-coated polypropylene mesh implantation and group PP-CSH; polypropylene-carboxymethylcellulose-sodium hyaluronate composite mesh implantation. At 90 days postoperatively, the animals were sacrificed and the extent of adhesions, the shrinkage rate and the degree of local inflammatory and fibroblastic reaction were recorded

In the PP+e-PTFE, TiPP and PP-CSH groups, the adhesions covered less than 25% of mesh surface, while in the PP group the adhesions covered more than 75% of the mesh surface ( $p < 0.05$ ). Mean mesh shrinkage rate was more in the TiPP group (18.82%) in relation to the other three groups (PP: 15.64%, PP+e-PTFE: 13.98%, and PP-CSH: 14.27%) and the difference was statistically significant ( $p < 0.05$ ). The histological examination of mesh-tissue complexes revealed a predominance of fibroblastic reaction in the PP; PP+e-PTFE and PP-CSH groups, and a preponderance of inflammatory reaction in the TiPP group.

PP+e-PTFE and PP-CSH meshes should be considered for intraperitoneal implantation; as they combine minimal adhesion formation, minimal shrinkage rate, minimal foreign-body reaction and satisfactory connective tissue formation.