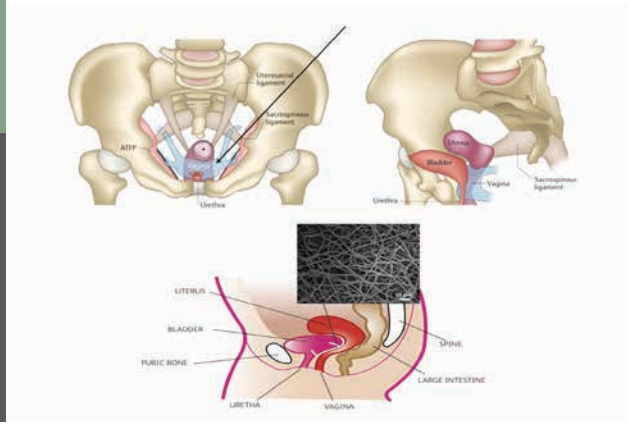
Mesh for Pelvic Organ Prolapse



Problem Statement: Women above the age of 40 are prone to pelvic floor weakening because their bodies lose their ability to hold pelvic floor organs like the uterus, bladder, and rectum. Pregnancy, childbirth, chronic constipation, obesity and ageing are the usual causes for pelvic floor weakening. As a result, women experience pelvic prolapse and incontinence, leading to various degrees of prolapse. A lower degree prolapse can be reversed by lifestyle modification. But for higher degree conditions, a mesh has to be surgically inserted in the pelvic floor like a hammock to hold the organs. Initially, polypropylene-based non-degradable meshes were used, but USFDA banned them in April 2019 as they caused dyspareunia and organ perforation, compromising the quality of life for the women. This team has addressed the issue by proposing a design that overcomes the drawbacks, making a safer and biocompatible pelvic floor mesh.

Uniqueness of the Solution: The team aims to create a soft, lightweight, bioresorbable, biocompatible electrospun mesh that matches the pelvic floor's biomechanical property and helps tissue regeneration as the mesh gradually degrades. In addition, unlike the earlier polypropylene-based meshes, which compromised women's quality of life, the proposed mesh is safer.

Current Status of Technology: The team has demonstrated the proof of concept. Basic implant design is ready, and suitable materials are shortlisted. They have also done the required market surveillance and competitor analysis. Product specifications are defined based on competitor analysis and patent landscaping, and the Freedom to Operate (FTO) is ensured.

Societal Impact: According to a 2020 estimate, about 65 lakh women in India require pelvic mesh. There is a sharp decline in India's female labour force participation rate, especially in the age group 35-40. The issue of prolapse contributes to this decline indirectly. Due to the USFDA ban, currently, there is no product available in Indian and the world market to treat prolapse and incontinence. The proposed mesh-based treatment for pelvic organ prolapse will improve the female labour force participation rate.

Patent(s): Filed

Relevant Industries: Healthcare, Medical Technology, Medical Devices.

Faculty: Prof. Jayesh Bellare, Chemical Engineering.