3D PRINTING IN THE BODY

MATERIALS
Method to enable 3D printing inside the body using thermally cross-linked polymers and electromagnetic hyperthermia.

TECHNOLOGY TYPE
Implant
Polymer
3D Printing
Soft Tissue Repair
Surgery

STAGE OF DEVELOPMENT
- Proof of concept established using radiofrequency catheter ablation.
- Polymer and probe design in progress.

LEARN MORE
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TECHNOLOGY SUMMARY
Implantable medical devices, such as artificial joints, coronary stents, and artificial organs increasingly are customized for individual patients using 3D printing technologies. After surgical implantation of externally printed devices, the soft tissue surrounding the implant or repaired bone must heal on its own. This process can result in disfiguration and debilitating scar tissue. Short-term implants provide temporary tissue support to assist the healing process, but eventually require surgical removal. The proposed invention facilitates printing soft structures inside the body. Heat-enabled cross-linking polymers are inserted into a body cavity as a liquid and then activated with heat, causing them to solidify. The polymers conform to a specific shape creating 3D soft structures directly in the body. The technology could repair soft tissue damage, as well as create reconstructive implants or antennae for improved transmissivity.

FEATURES AND BENEFITS
- Facilitates printing 3D structures inside the body.
- Provides temporary support while soft tissue around an implant or repaired bone heals.
- Personalizes materials for improved natural healing.
- Reduces scar tissue and disfiguration.
- Offers the potential for in vivo cartilage replacement, printable biomaterials that replace tissues or organs, less invasive repair of hernias and septal defects, and improved imaging.

INVENTOR PROFILE
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