



🔧 Title

FAMILY OF PARALLEL MODULAR ROBOTS WITH ACTIVE TRANSLATION JOINTS FOR SILS SURGERY

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🔧 Short presentation
The present family of robots is designed for the single incision laparoscopic surgery (SILS), which is a type of minimally invasive surgery where the surgical instruments are inserted within the operating field through a single trocar (port). The main feature of this family of robots is the use of parallel modules with 6-DOF (degrees of freedom) for the positioning of a mobile platform that guides the laparoscope. Furthermore, the mobile platform holds (mounted) two orientation platforms with 3-DOF for the surgical instruments' manipulation. The first solution represents a 6-DOF parallel robot with triangular frame and three identical kinematic chains mounted in a horizontal plane using a triangular configuration. The second solution of the family represents a 6-DOF parallel robot with rectangular frame and three identical kinematic chains, two of which are positioned vertically and the third in a horizontal position. The present family for SILS robots was designed to ensure patient safety and ergonomics and eliminate the collision risks that emerge when using multi-arm serial robotic systems for the SILS task.

🔧 Applicability
Medical robotics, robotic-assisted single incision laparoscopic surgery.

🔧 Images

