⚙ Title

FAMILY OF MODULAR ROBOTS FOR SILS SURGERY WITH KINEMATIC CONSTRAINT OF THE INSERTION POINT IN THE BODY

⚙ Inventor/s - Contact

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⚙ Patent/ Application number

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⚙ Short presentation

The present invention relates to a family of hybrid robotic systems designed for single incision laparoscopic surgery (SILS), which is a type of minimally invasive surgery, where all the surgical instruments are inserted through a single trocar, reducing trauma and speeding patient recovery time. The main feature of this family of robots is the use of a cartesian module with 3-DOF (degrees of freedom) for the positioning of the mobile platform, which in turn holds (mounted) three platforms with 3-DOF for the surgical instruments' orientation. The first solution of the family is a robotic system composed of a Cartesian module and three parallelogram modules for the instruments orientations. The second solution of the uses the same Cartesian positioning module and three spherical modules for the orientation of the instruments. Both solutions are designed to ensure patient safety and the procedure ergonomics, while minimizing the collision risk for the orientation modules.

⚙ Applicability

Medical robotics, robotic-assisted single incision laparoscopic surgery

⚙ Images

CAD model of the SILS hybrid robot
(with parallelogram mechanisms for instrument orientation)

CAD model of the SILS hybrid robot
(with spherical mechanisms for instrument orientation)

Orientation modules
(parallelogram mechanisms)

Orientation modules
(spherical mechanisms)