

## Da Vinci Robot's Force/Strain Sensing Principles: A Review

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### Abstract

With the increasing number of minimally invasive surgeries performed each year due to their several benefits for both the patient and the surgeon, as well as the desire to provide quality healthcare for all, the need for surgical robots and robot-assisted surgery has emerged as a solution. The DaVinci surgical robot has a well-established reputation in the surgical world, and functions using many sensors in both Master and Slave consoles constantly communicating with others to perform accurate and safe procedures. In this paper, we discuss the sensing principles of the types of sensors used in the DaVinci robot and review the strain sensors currently used in the robot.

### Keywords

Da Vinci, Force measurement, Biomedical instruments, minimally invasive surgery, optical sensor.