

Beyond The Limits of The Human Hand

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Introduction

The history of robotics in surgery began with The PUMA 560 which was first used in 1985 in a brain biopsy. By 1987 robots were introduced for the first time in a laparoscopic surgery and the adjustments continued on PUMA 560 to be later used in a prostate surgery. Further developments led to the birth of the PROBOT which was aided with online video monitoring and it successfully contributed in a robot imaging and resection of a prostate surgery.

Up to this day improvements and adjustments targeting the speed and accuracy had led to the introduction of many generations of robots that aided and performed successful surgeries with great precision and redefined the ways surgeons approach minimally invasive surgeries. 1

What are the advantages ?

- Small incisions
- Less pain
- Low risk of infection
- Quick recovery time
- Less scarring
- Reduced blood loss
- Short hospital stay
- Greater accuracy
- Reduced operative time

Undesirable limitations

- The costs
- Extensive training time
- Few manufacturers of m.r
- Latency
- Chance for human error
- Size of systems

Types of surgeries

- Lung (lung tumors , esophageal cancer)
- Head and neck (thyroid cancer , oropharyngeal cancer)
- Heart (mitral valve prolapse and repair , atrial septal defect , atrial fibrillation)
- Urological conditions (bladder cancer , kidney dis orders , cancer , prostate cancer , and vaginal prolapse)
- Gynecologic (endometriosis , gynecologic cancers , uterine prolapse , ovarian cysts)

Minimal invasive Robotic Surgery has recently been introduced in organ transplantation with successful robotic assisted kidney transplantation.

Pancreas transplantation in obese patients however faced many complications and contraindications , with the advancement of minimal invasive robotic surgery. A successful robot-assisted pancreas transplantation in a diabetic patient with class III obesity after kidney transplantation was done.

The fear of wound related complications , loss of allograft , obesity related death , postreperfusion hemorrhage have all been eliminated using robot assisted minimal invasive surgeries.2

Conclusion

Advances in surgery have focused on minimizing the invasiveness of surgical procedures . Efforts made it possible to approach complex surgeries by minimal invasive techniques that continue to prove to be of great value and success.

Robotic technology is set to revolutionize surgery. The advantages of robotic systems overcome the disadvantages accompanying these systems.

References:

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