



**Japan Association  
of Microscopic Dentistry**

# **The 20th Annual Meeting & Scientific Session Educational Lecture**

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## Current status of Robotic surgery

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Minimally invasive surgery has become remarkably popular in the surgical field. According to the results of survey by the Japanese Society of Endoscopic Surgery, endoscopic surgery accounted for 83.8% of colorectal cancer cases in 2021, making it a widely used technique in Japan. On the other hand, laparoscopic surgery is technically difficult due to the limitation of movement caused using forceps with straight line, etc. Robotic surgery has attracted attention as another method to compensate for this disadvantage, and the number of surgeries is increasing in Japan and abroad. The robotic surgery using the da Vinci® surgical system is characterized by stable forceps manipulation using free articulated forceps with motion scaling and image stabilization under a clear three-dimensional high-definition field of view. The system will feature more precise surgery and shorter learning curve. The first robotic surgery using this system was performed in the United States in 2001 for prostate cancer surgery. Since the first surgery in Japan in 2008, rectal resections in the colorectal cancer field have increased rapidly with the inclusion of rectal resection in the insurance coverage in 2018. 16% of rectal cancers had already been treated with robotic surgery according to the NDB in 2021. Colon cancer has also been increasing as well as rectal cancer since it was covered by national public health insurance in 2022. Recently, new surgical robots from new companies in Japan and abroad have been approved by PMDA and are now being used in clinical practice. The world's first robotic surgery with "tactile" sensation using the Soroa Surgical System was performed at Tokyo Medical and Dental University in July 2023.