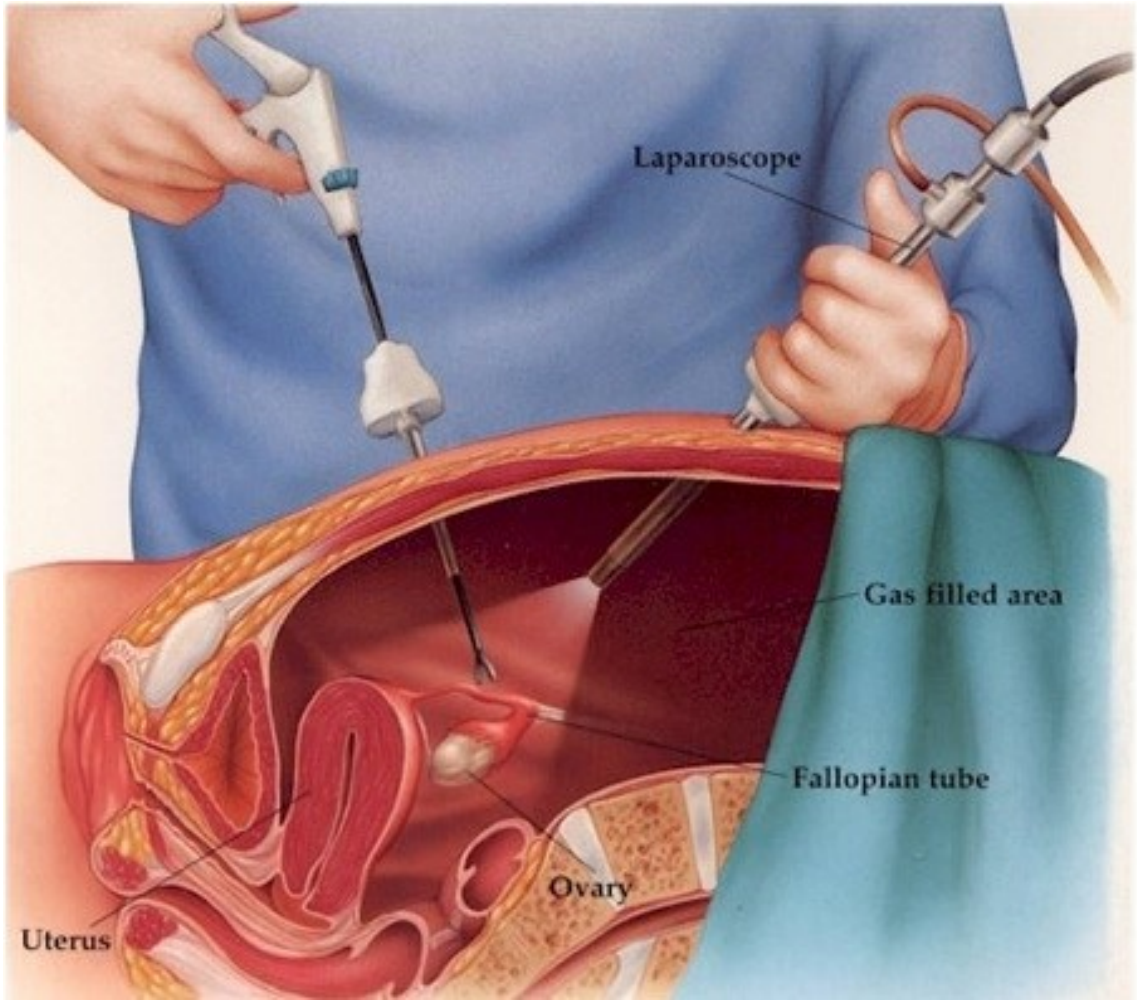
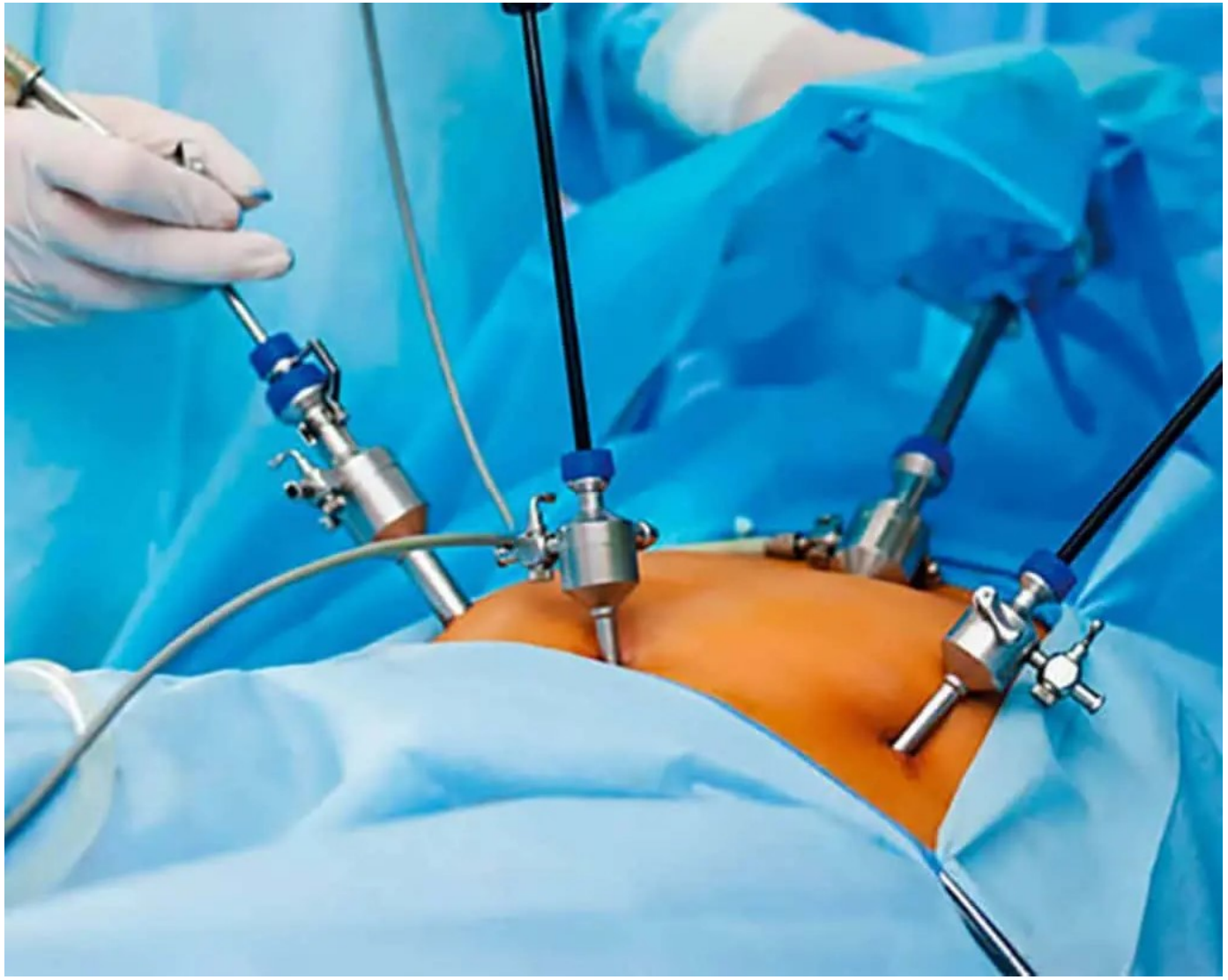
Cirurgia minimamente invasiva
Menos trauma / risco para paciente
Recuperação mais rápida

Laparoscopia
Endoscopia
Cirurgia robótica

Videolaparoscopia



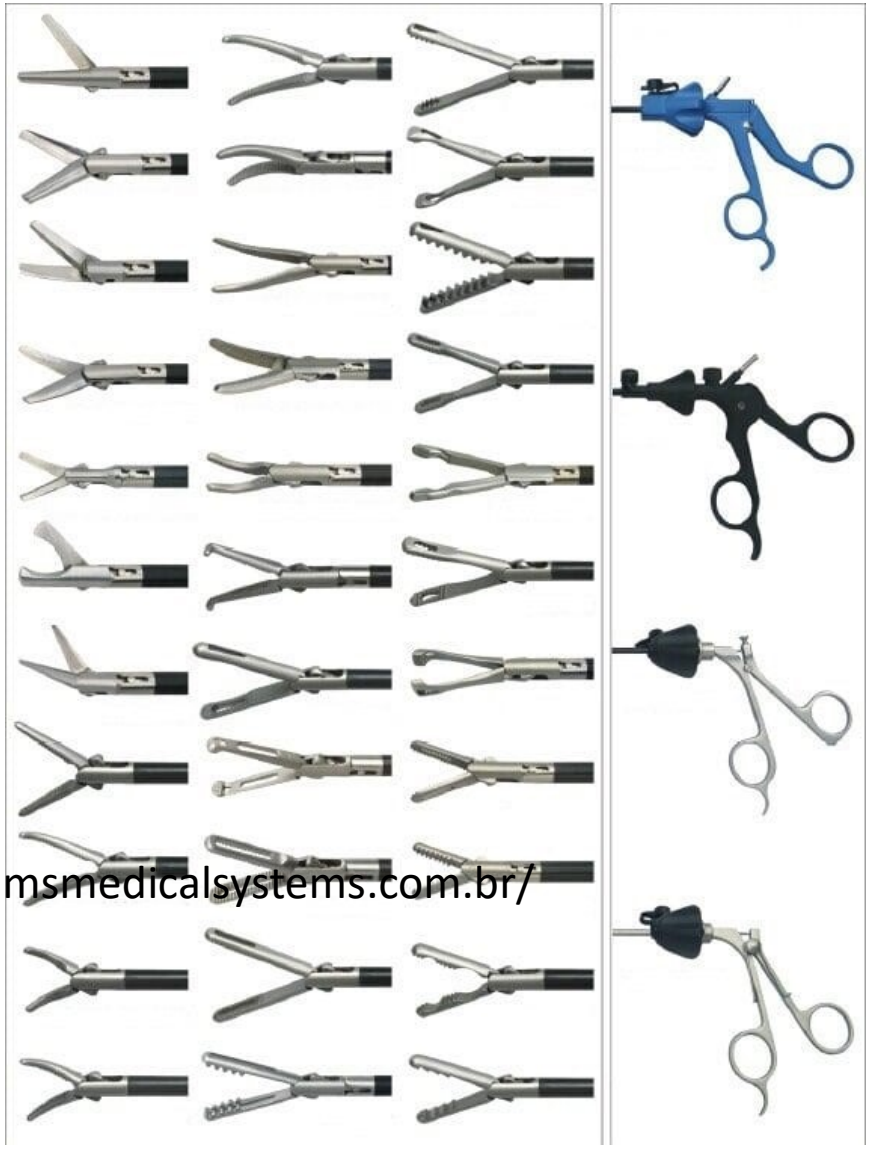
A videolaparoscopia, também conhecida por Laparoscopia, é um procedimento que serve como exame de diagnóstico ou técnica cirúrgica e é o método atualmente mais utilizado para diagnóstico e tratamento de patologias intra-abdominais. (https://ayub.med.br/)



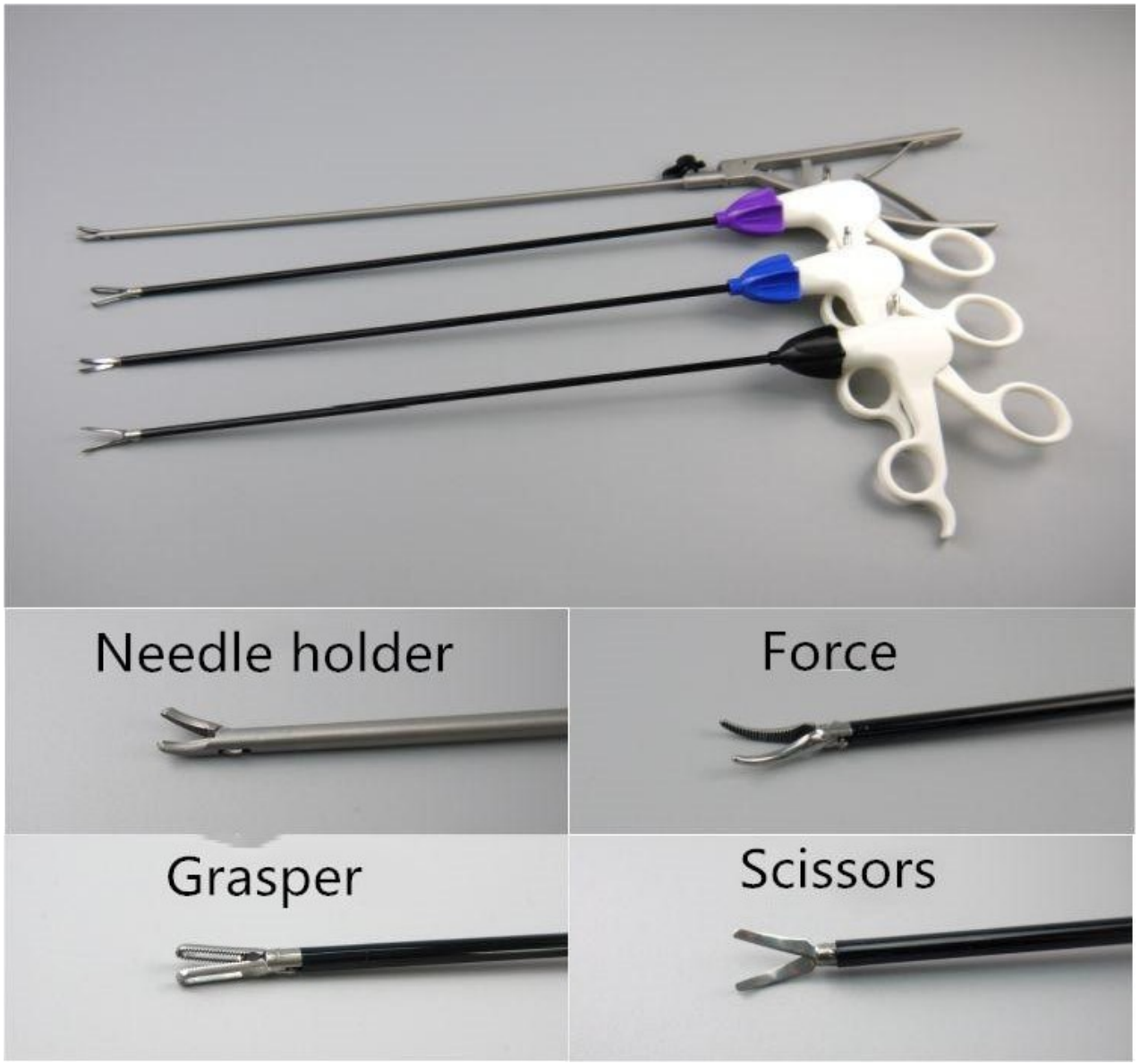
Torre de Videolaparoscopia
A Torre de Videolaparoscopia é composta de:
– Monitor
– Câmera
– Fonte de Luz xenon 300w ou LED
– Insuflador de CO2 15 a 45 litros (maior que 30 para bariátricas)
– Laparoscopio (ótica a ser introduzida no paciente)
– Pinças diversas.

https://www.msmedicalsystems.com.br/

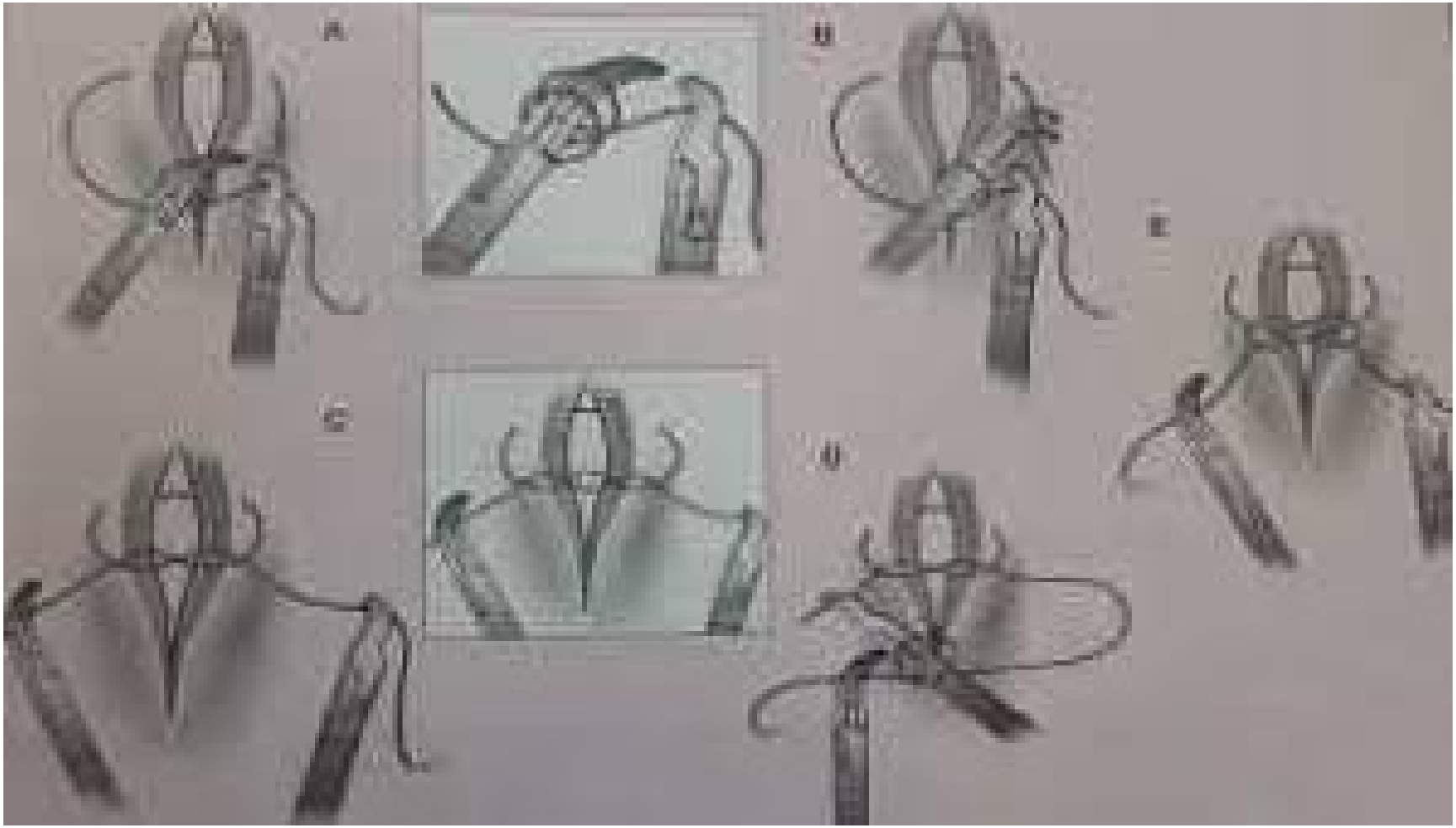
https://www.msmedicalsystems.com.br/



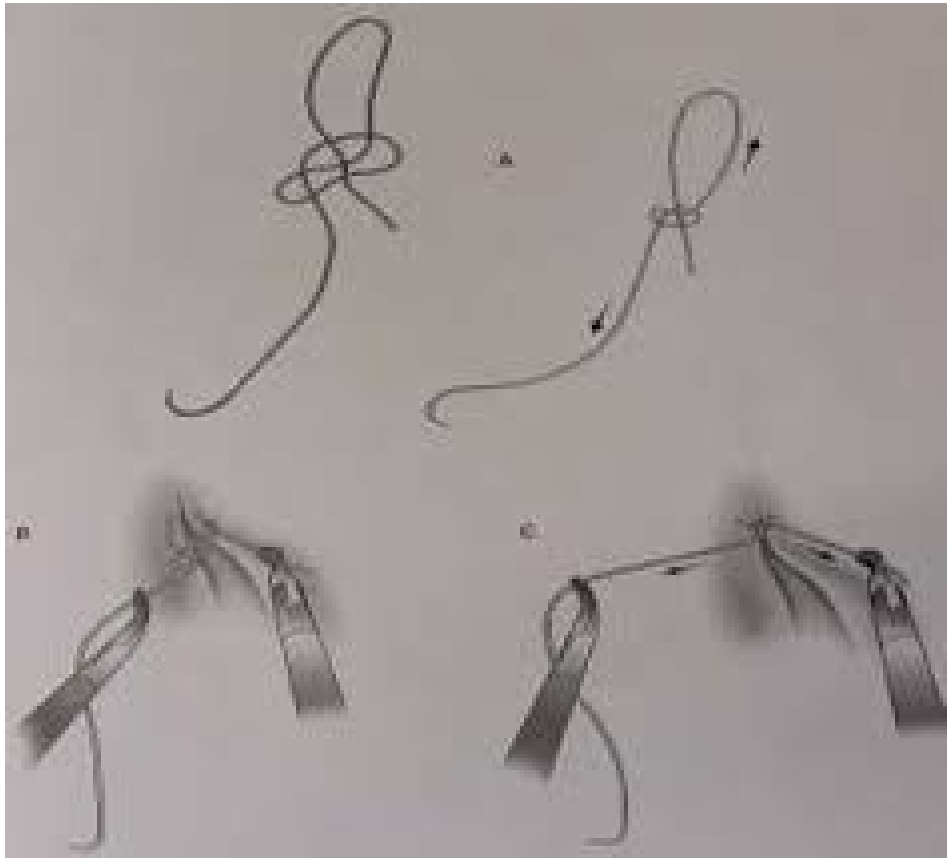
https://www.msmedicalsystems.com.br/



https://www.ofertaviva.com.br/

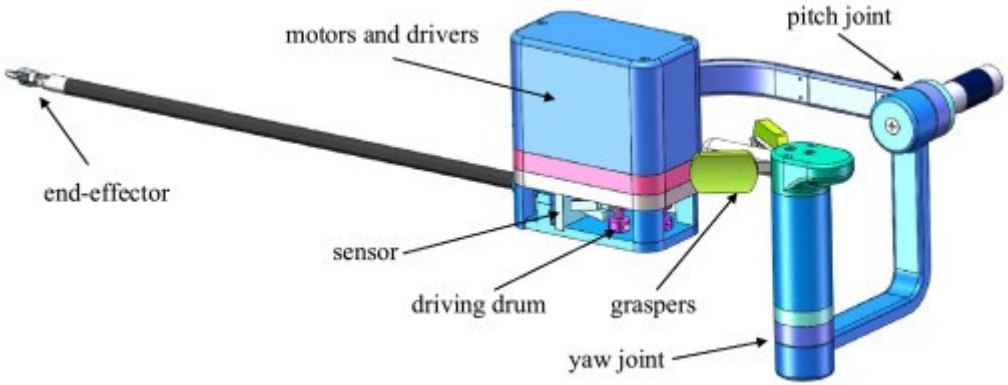


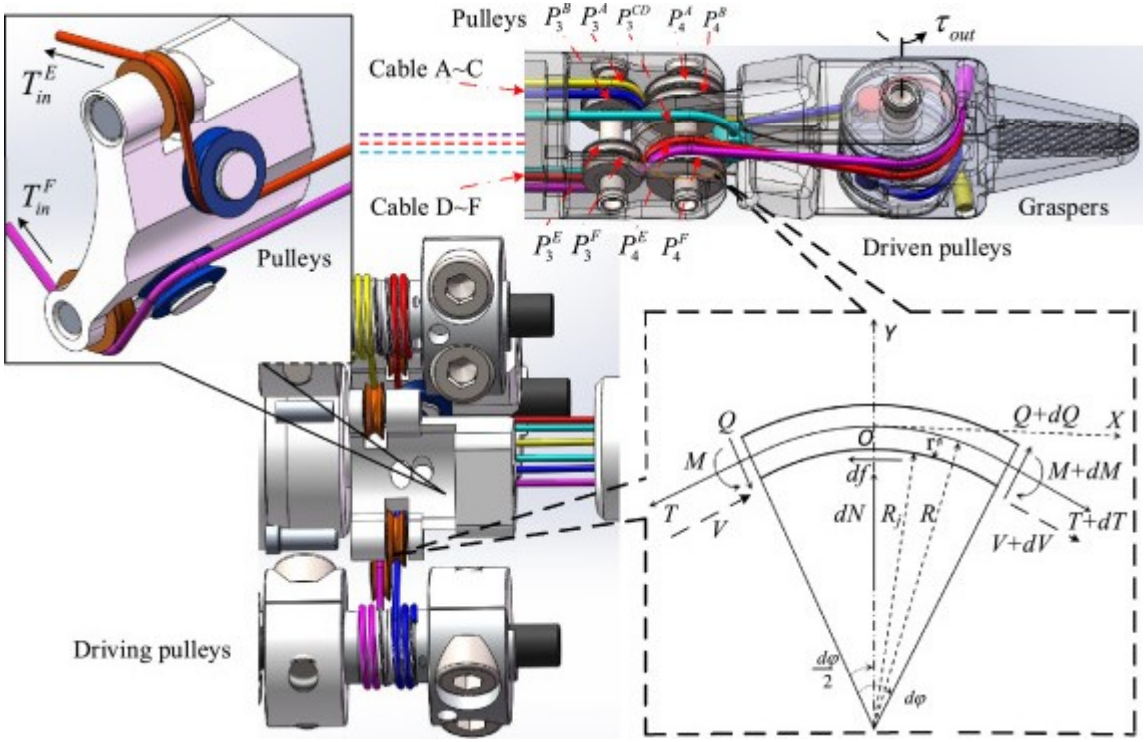
VINICIUS SOARES AGUILAR ESILVA et al. ,TIPOS DE SUTURAS E NÓS ESPECÍFICOS NA OPERAÇÃO VÍDEOLAPAROSCÓPICA: UMA REVISÃO DE LITERATURA. Revista Uningá, Vol.17,n.2,pp.39-44, 2014.



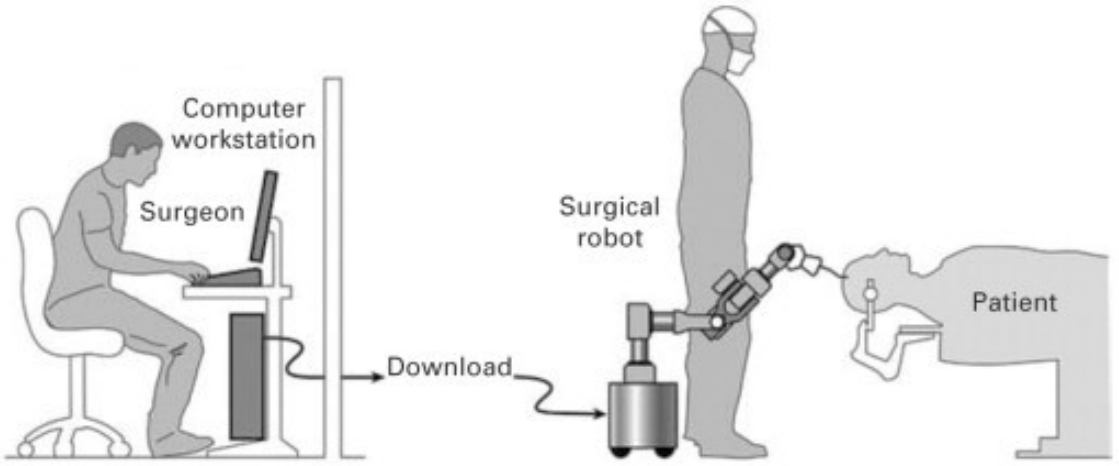
VINICIUS SOARES AGUILAR ESILVA et al. ,TIPOS DE SUTURAS E NÓS ESPECÍFICOS NA OPERAÇÃO VÍDEOLAPAROSCÓPICA: UMA REVISÃO DE LITERATURA. Revista Uningá, Vol.17,n.2,pp.39-44, 2014.

Xue, R. et al.An estimation method of grasping force for laparoscope surgical robot based on the model of a cable-pulley system, Mechanism and Machine Theory, 134, pp.440-454.

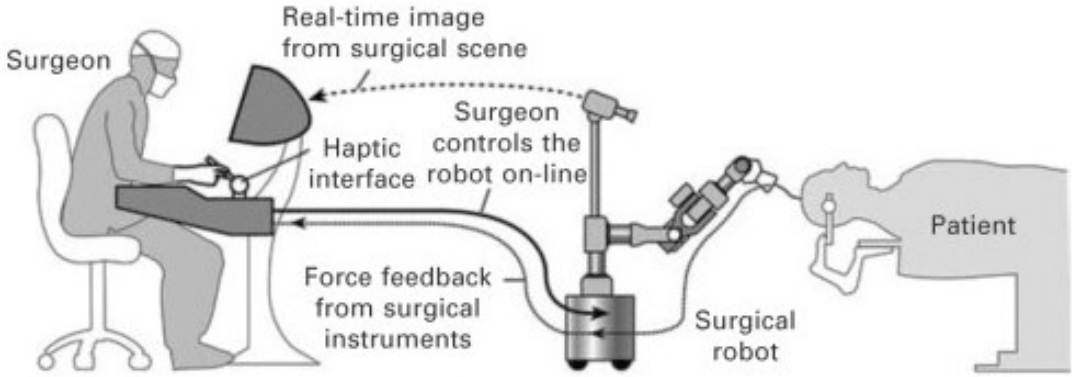




Cosetto, T.L. et al. Robotics for neurosurgery, Medical Robotics – Minimally invasive Susrgery. Woodhead Publishing Series in Biomaterials
2012, Pages 59-77

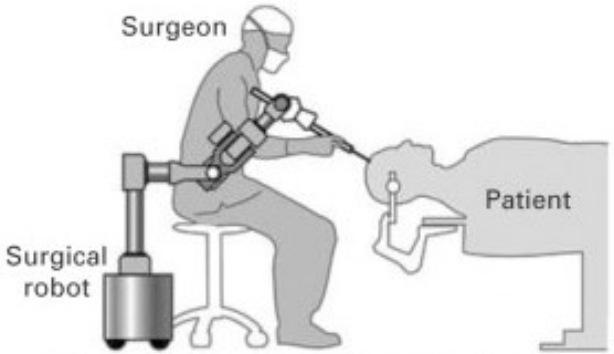


(a) Supervisory controlled robotic system



Surgeon controls the robot in real-time through the haptic interface. Robot faithfully replicates the surgeon's motions with the interface. Master–slave surgeon gets real-time feedback from surgical scene via the camera and the force feedback from the instruments.

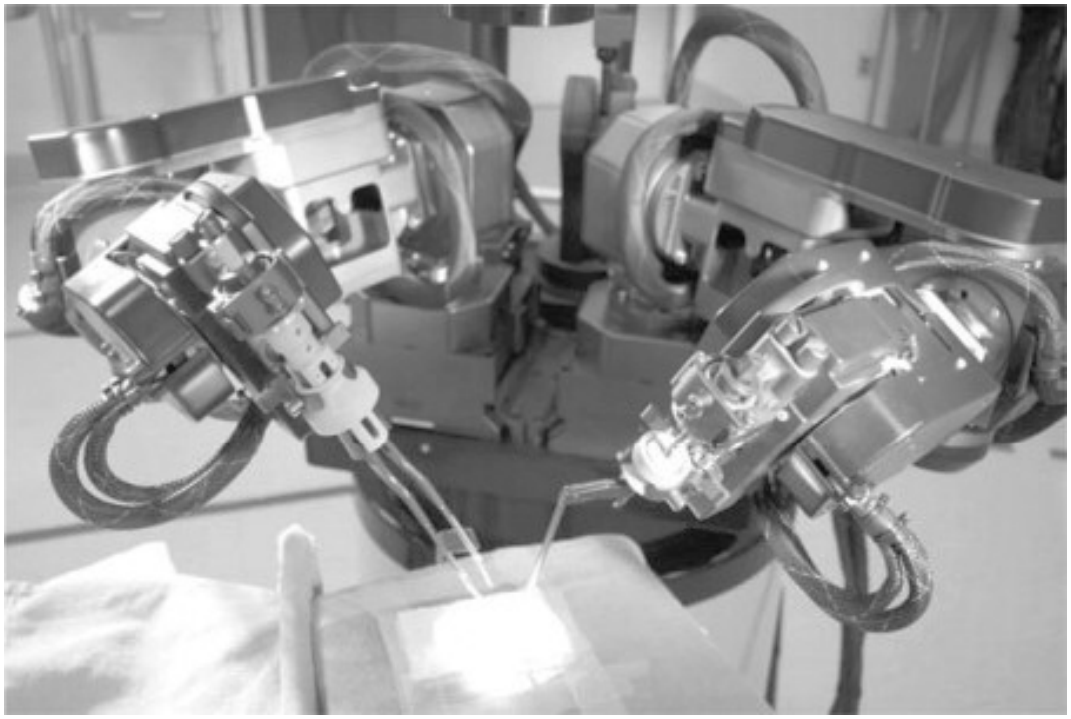
(b) Robotic telesurgical system



Robot and surgeon remain jointly in control. The surgeon remains in control of the procedure while the robot provides steady-hand manipulation of the instrument.

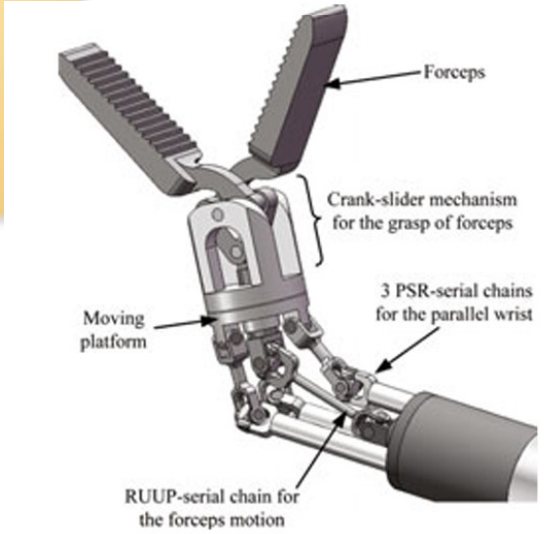
(c) Shared control system

3.6. The Shadow Dexterous Hand.

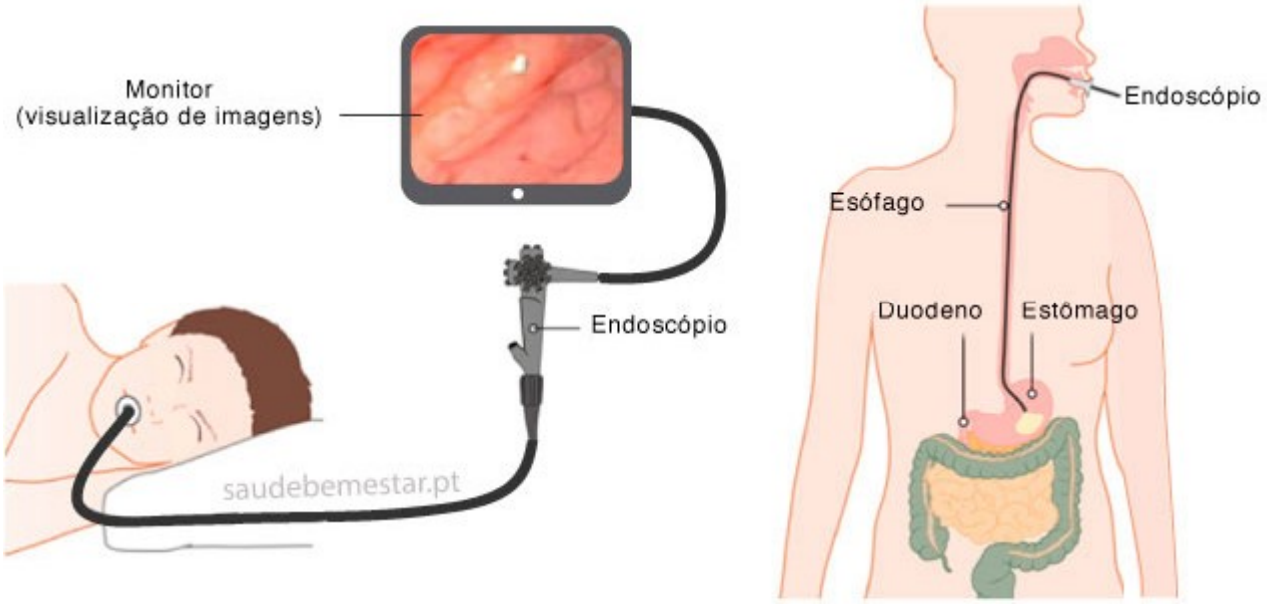


3.7. neuroArm manipulators holding bipolar forceps with right arm and microscissors with left arm.

Radó, J. et al. 3D force sensors for laparoscopic surgery tool. Microsystem Technologies, 24, 519-525, 2018.



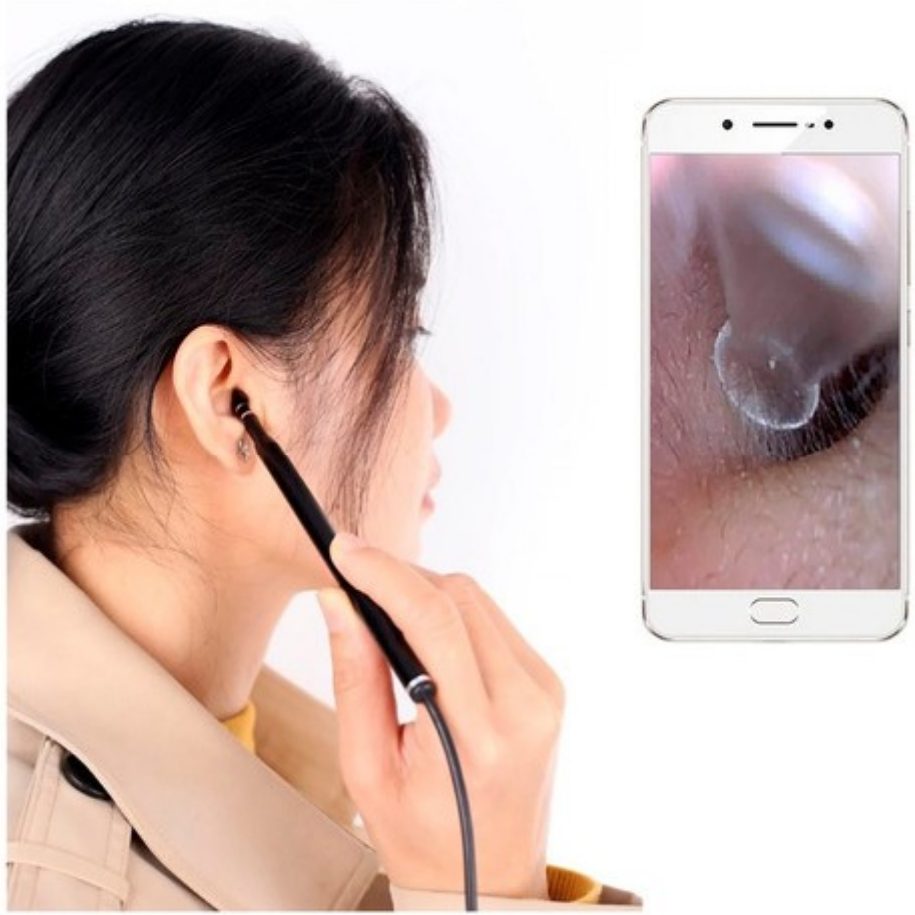
Endoscopia digestiva alta

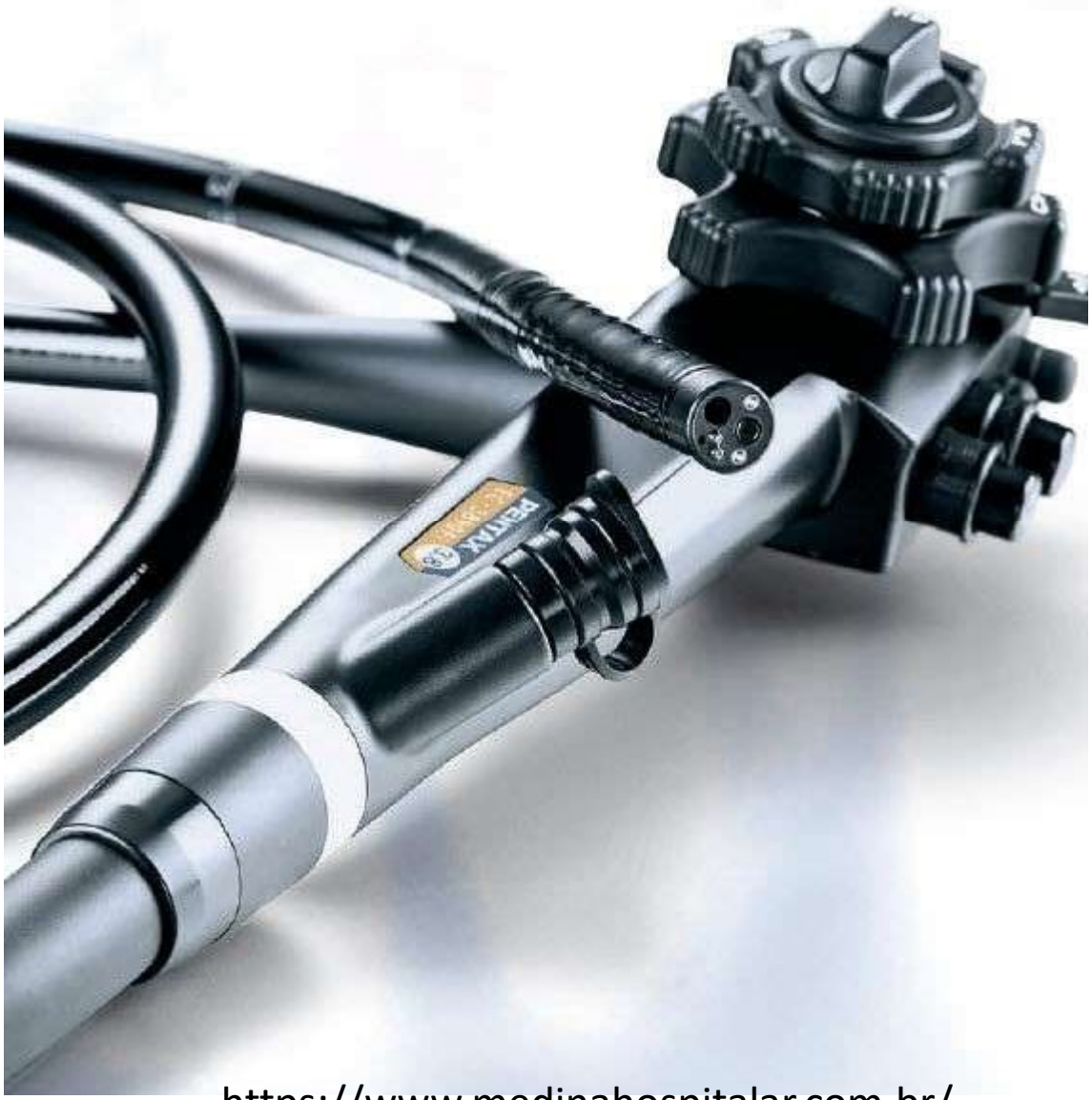


https://www.endoclin.com.br/

shutterstock.com · 1054047983

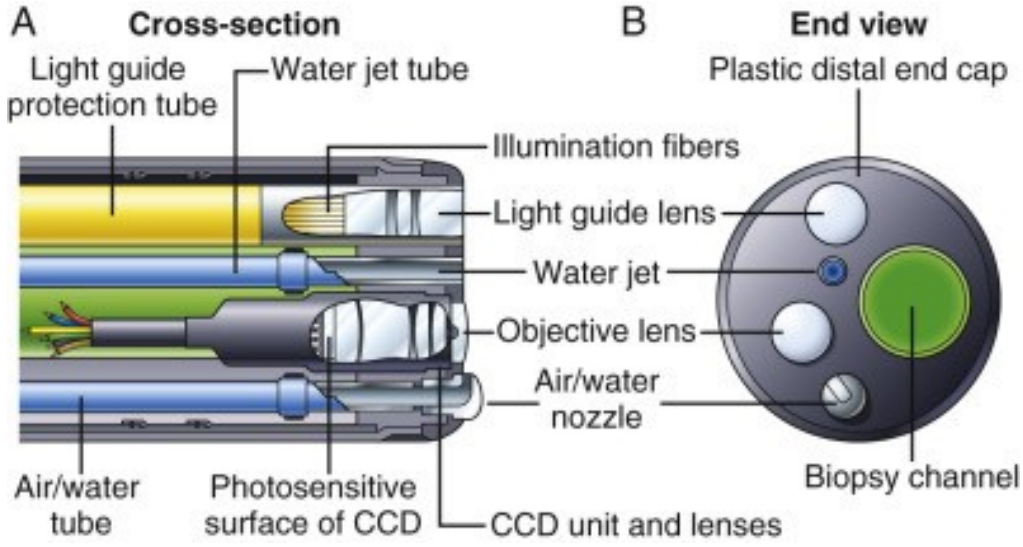
Endoscopia auticular





https://www.medinahospitalar.com.br/

FIG 3.5. **A,** The tip of the endoscope with internal components and **B,** their spatial orientation externally. *CCD*, Charge-coupled device.



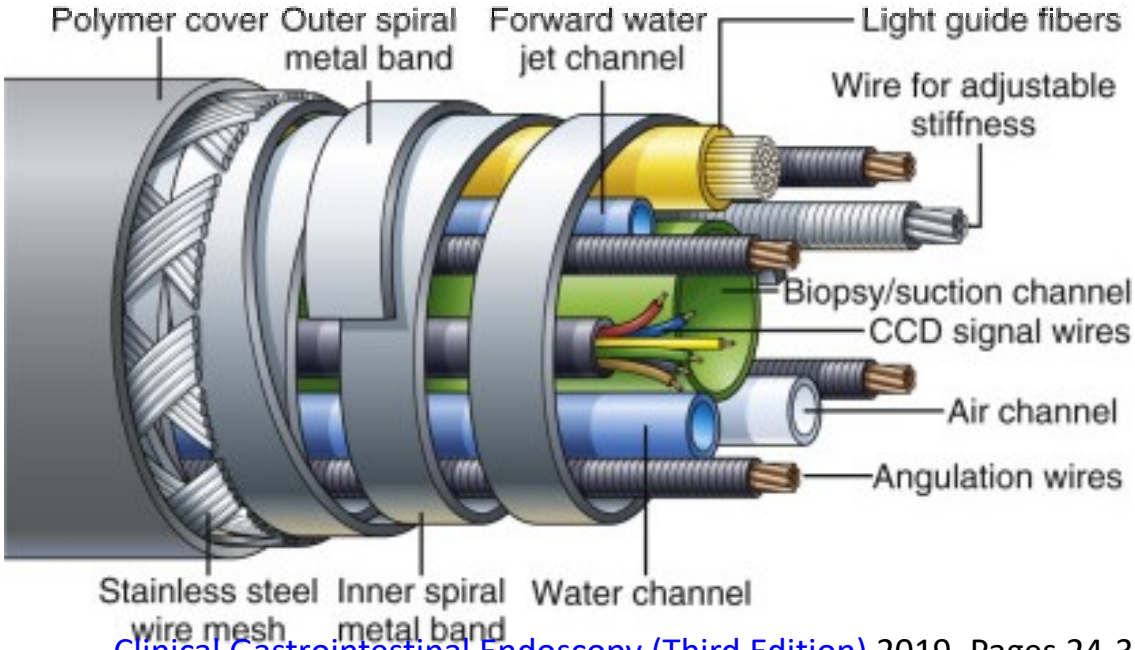
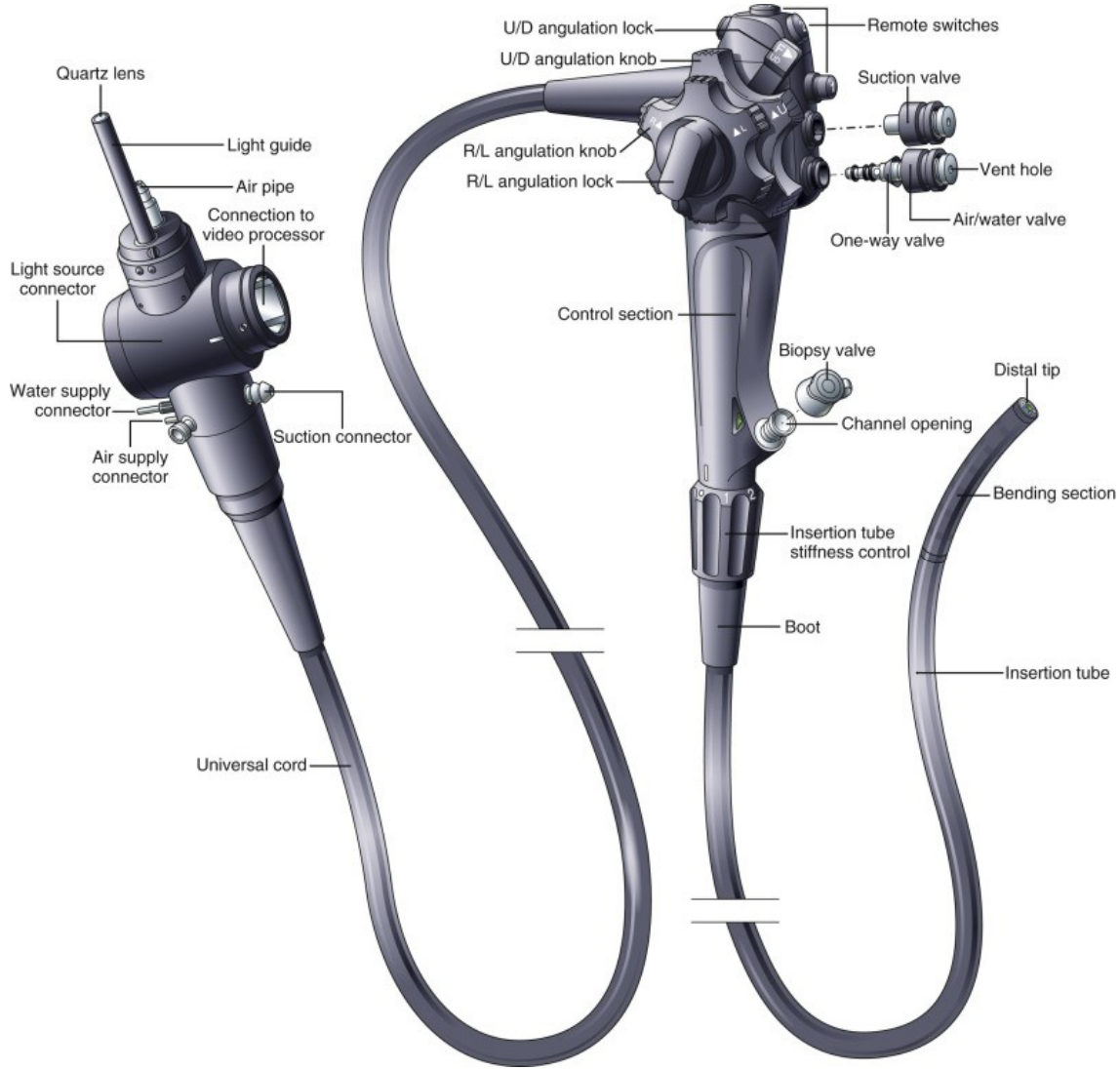
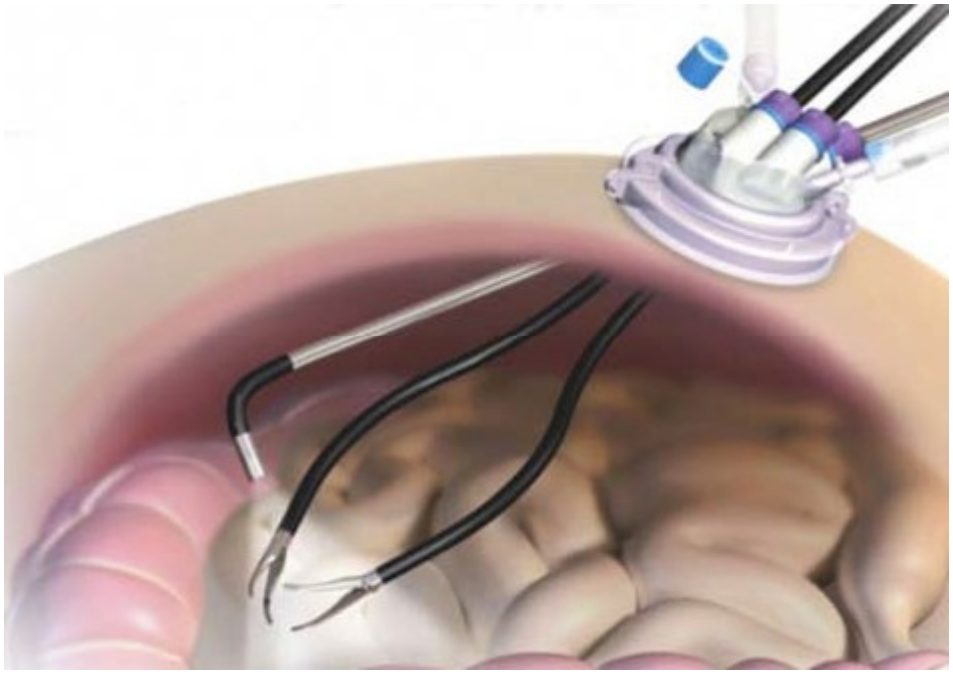


FIG 3.4. Internal components of a variable-stiffness colonoscope. *CCD*, Charge-coupled device.

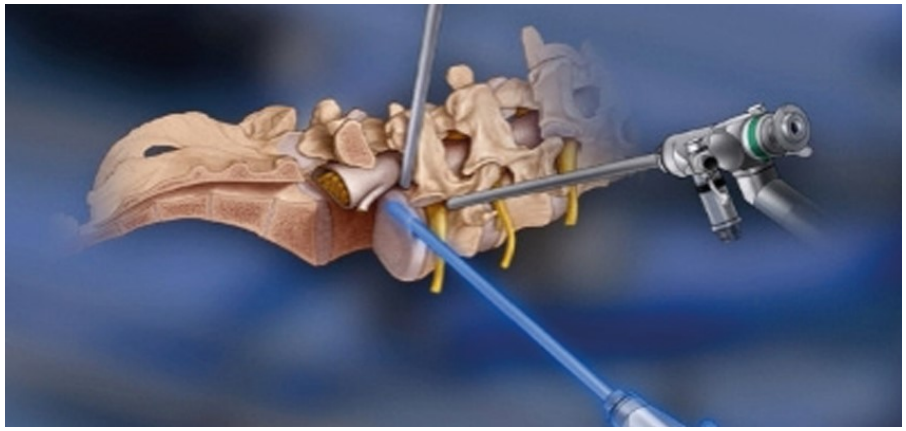
Clinical Gastrointestinal Endoscopy (Third Edition) 2019, Pages 24-31.e2



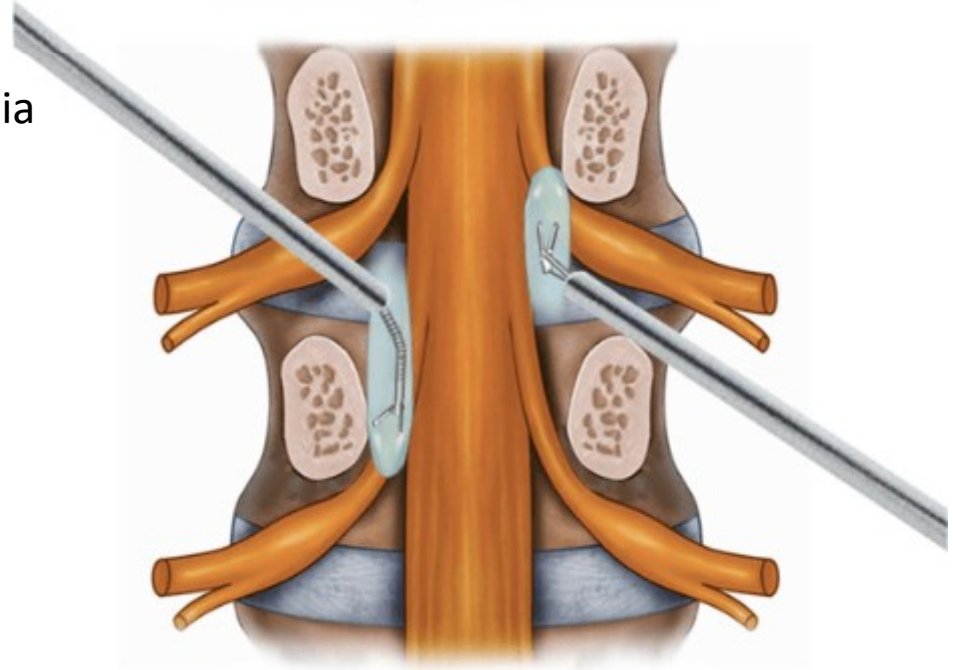
Clinical Gastrointestinal Endoscopy (Third Edition) 2019, Pages 24-31.e2



Single port laparoscopy
Laparoscopia de incisão única



Cirurgia da coluna por endoscopia



Princípio da redução

DESIGN PRINCIPLE 11

Reduction mechanisms achieve a high precision in movement and positioning if no noise is present. (The reduction principle.)

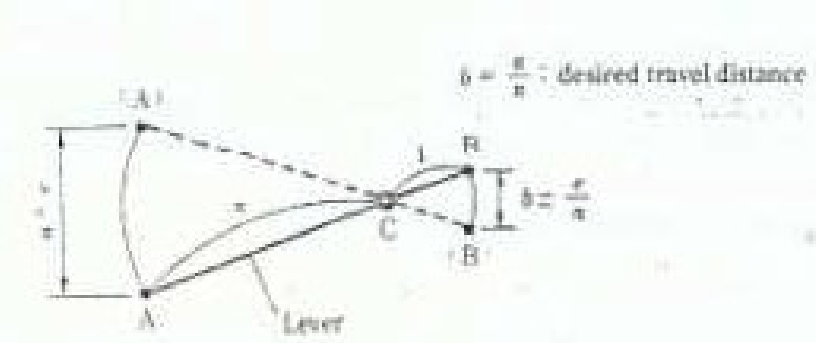


Fig. 14.1 The reduction principle.

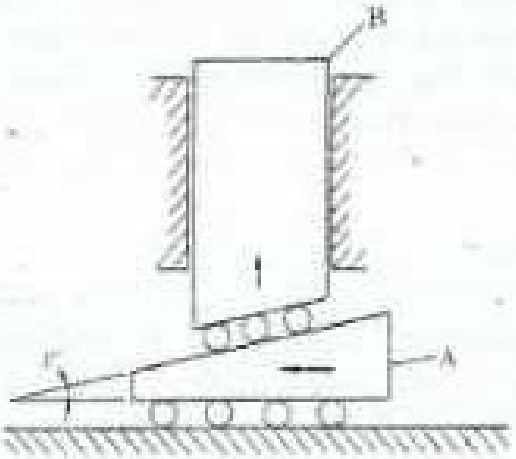


Fig. 14.3 A wedge-type reduction mechanism.

The most famous historical example of a reduction mechanism would probably be Whitworth's measuring machine which measures one-millionth of an inch, and is shown in Fig. 14.2. The lead screw that moves the horizontal measuring terminal spindle and has 100 threads per inch comprises one step in the reduction mechanism.

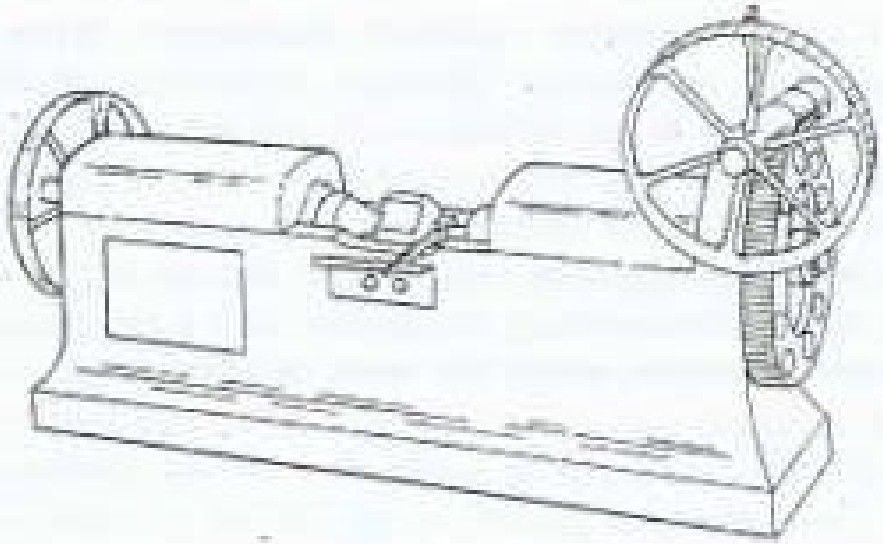


Fig. 14.2 Whitworth's end-measuring machine which measures one-millionth of an inch using a lead screw with 100 threads per inch. (Property of the Science Museum, London.)

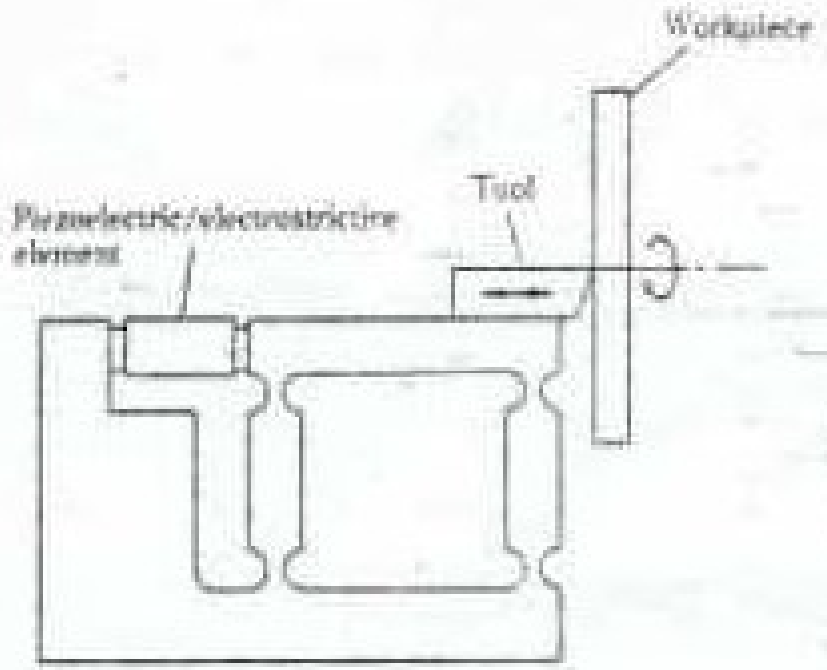
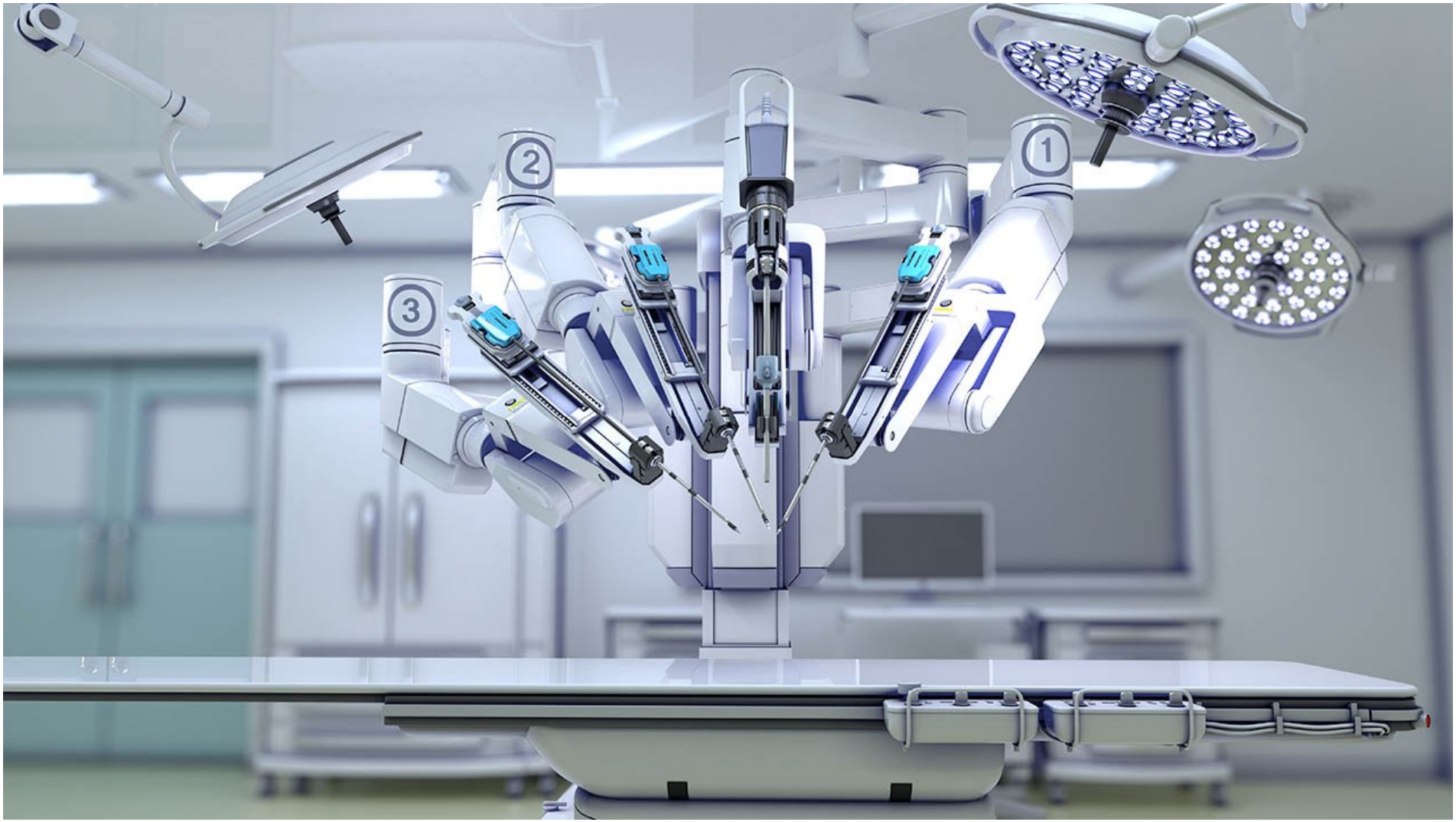
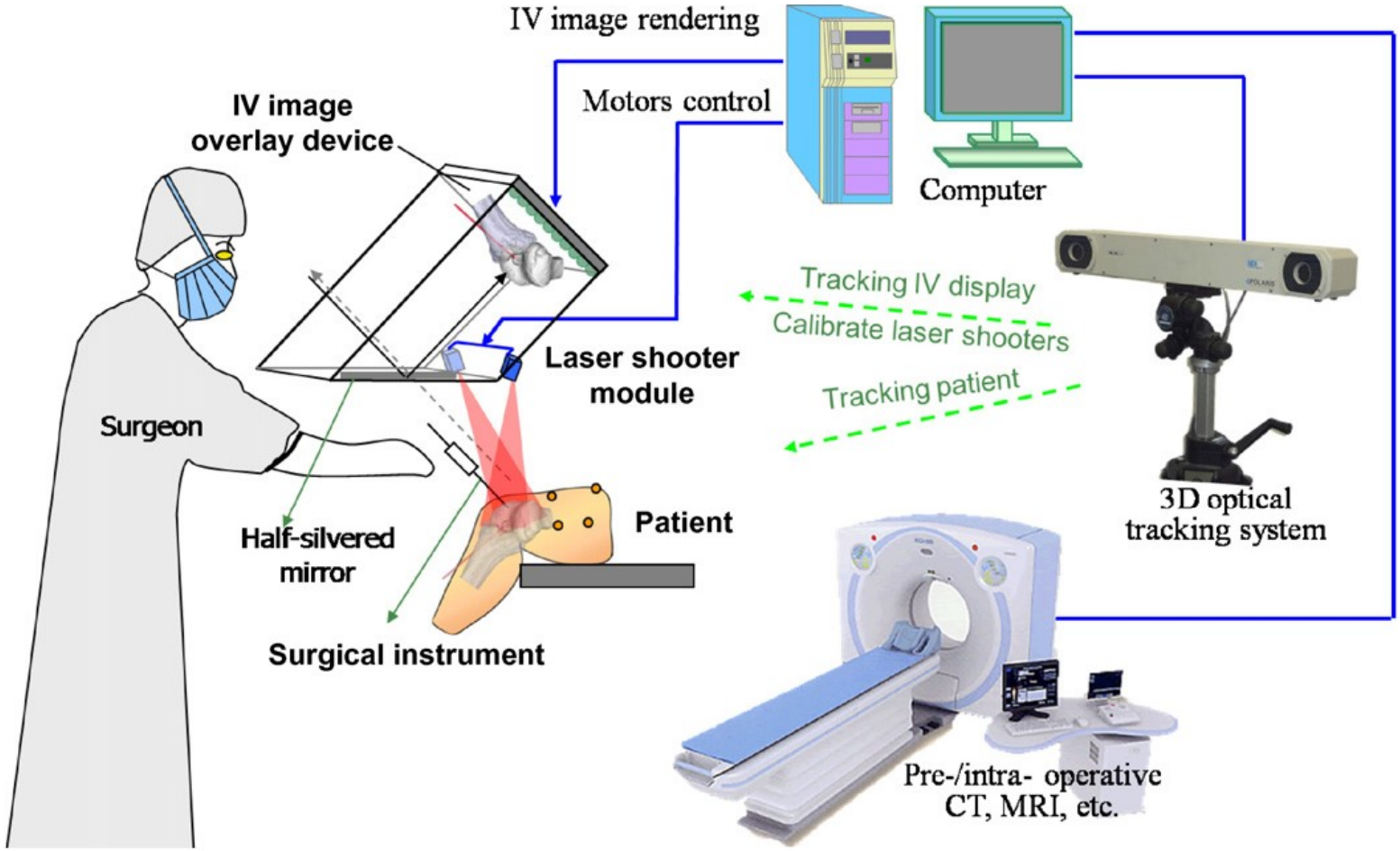


Fig. 14.4 Schematic drawing of a fine tool-positioning mechanism for an ultra-precision cutting machine.


1
2
3


Telecirurgia experimental
Paciente (animal) a 100km de distância
Uso de comunicação 5G

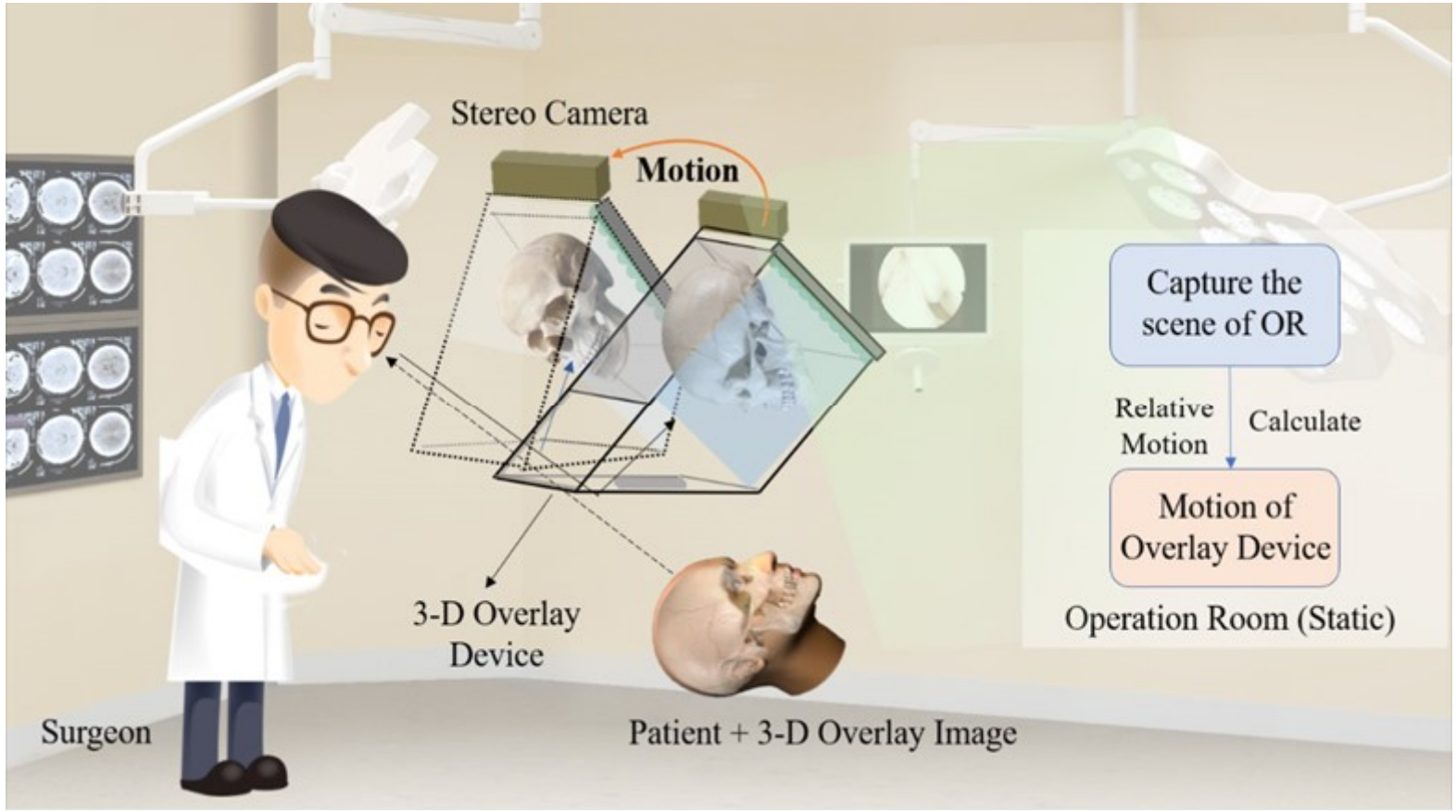


Published in Comput. Medical Imaging Graph. 2010

Precision-guided surgical navigation system using laser guidance and 3D autostereoscopic image overlayH. Liao, Hirotaka Ishihara, H. Tran, K. Masamune, I. Sakuma, T. Dohi

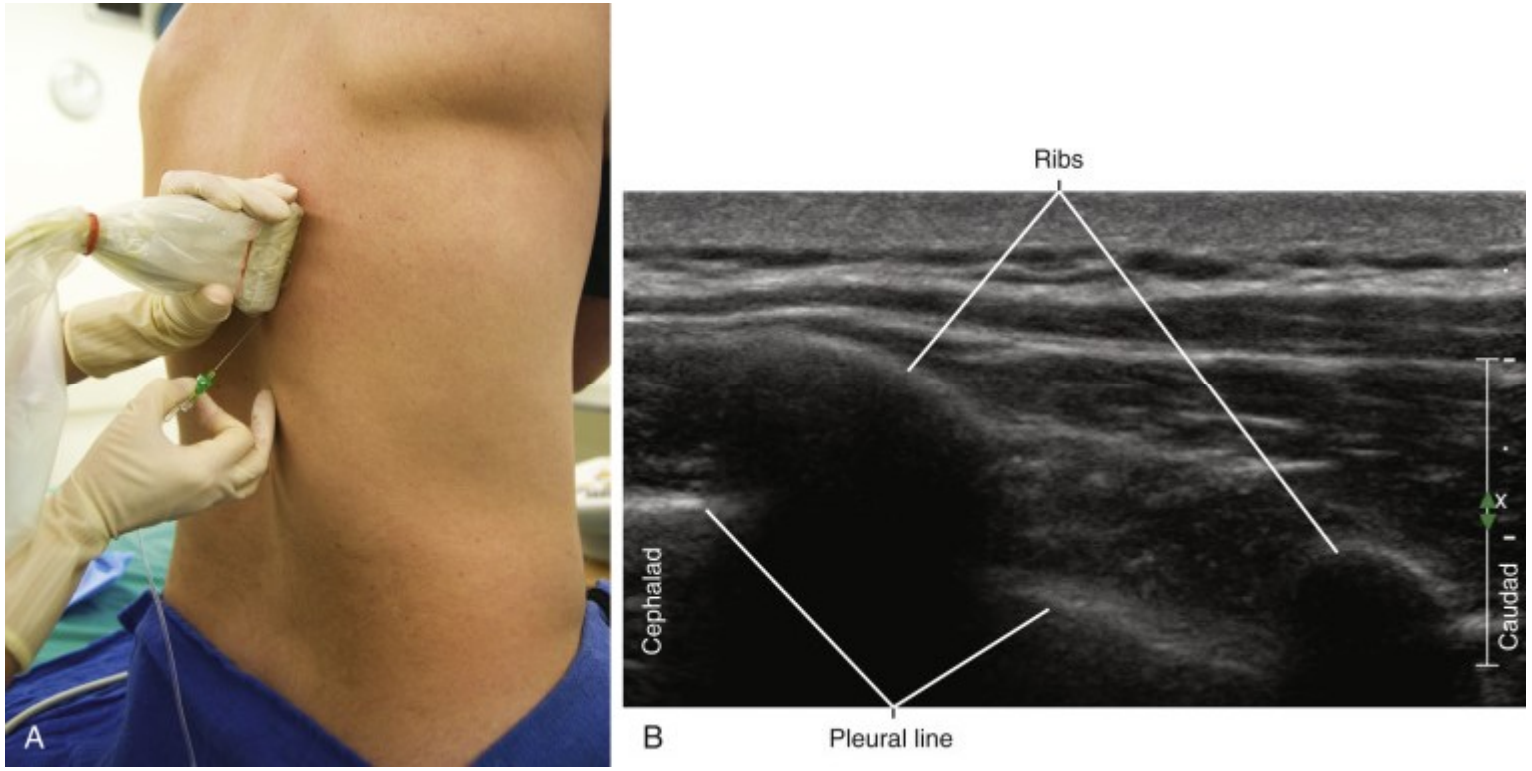
Inliant Dental Technologies Inc.

Cirurgia guiada por tomografia MRI



Moving-tolerant Augmented Reality Surgical Navigation System using Autostereoscopic 3D Image Overlay. IEEE J of Biomedical and Health Informatics.

Cirurgia guiada por ultrassom



Atlas of Ultrasound-Guided Regional Anesthesia (Third Edition)
Chapter 54 - Intercostal Nerve Block, 2019, Pages 233-238 Elsevier

Cateterização guiada por angiografia (raio X)