**Isolator system for laparoscopic surgery**

**Country of origin** | The Netherlands

**Health problem addressed**

In upcoming economies (China, India) the demand for better health care is on the rise, however variation in facility quality across these countries is extreme. Outside a sterile environment patients are not protected from infection sources outside the body. Also the medical staff is not protected from potentially harmful exposure to the patient. (Hepatitis B, HIV).

**Product description**

The patented trocar system for minimally invasive surgery creates a barrier between the trocar site and the surrounding environment by creating a small local ‘clean room’ that prevents gas leakage around the trocar and instruments. Now, the patient is protected against infection sources outside the body. Also the medical staff is protected against potentially harmful exposure to the patient.

**Product functionality**

After the tip of a trocar is inserted, the sticky pad of the “trocar balloon” is pressed to the skin around the incision. At this point the trocar tube is fixed in the abdominal wall and the incision and tube are completely isolated. Now, isolated instruments can be locked on and unlocked from the isolated trocar. The coupling prevents outflow of CO2 gas or inflow of surrounding air during coupling or decoupling at all times.

**Developer’s claims of product benefits**

The MSIS trocar system enables the surgeon to perform laparoscopy on infected patients while the Isolator drastically reduces the risk on contamination of the environment and personnel. Furthermore, the MSIS trocar system protects the patient against contamination sources if the environment is not (completely) sterile. Finally, the gas leakage is reduced to a minimum since the gas outflow is stopped by the protective foils/trocar balloon and unique coupling mechanism of the Isolator.

**Operating steps**

After insertion, the special trocar balloon shields the incision and trocar while the coupling and sleeve foil shields the tip and shaft from the surrounding air and potentially contaminating surfaces. If uncoupled, a safety valve/pin prevents that the instruments penetrate the coupling. If correctly locked on the trocar, the coupling releases its safety pin and the instrument can now enter the abdomen.

**Development stage**

In vitro test series were performed: when an isolator system is used on a pressurized (20mmHg) contained small environment (that mimics the abdomen), the pressure stays constant after the gas supply is stopped and the instrument was used to grab some internal elastic bands. Based on the early tests results, STW covers a large part the costs for expanded Workflow and clinical tests. The other part is funded by Erasmus MC Rotterdam and LUMC Leiden and TU-Delft.

**Future work and challenges**

In Dec 2010 the Dutch government approved a 2nd valorization grant for the evaluation studies, workflow studies and clinical studies. We need to find contacts involved with laparoscopic surgery in low and middle income countries. General surgeons, military surgeons, Hospital managers or others experts in the field of laparoscopy in extramural settings or developmental area’s can help us to set up a first pilot study after the system is certified.

**Use and maintenance**

**User:** Physician  
**Training:** Short instruction about the system to scrap nurse and surgeon.  
**Assembly:** Nurse, physician

**Product specifications**

**Dimensions (mm):** 40 x 45 x 200  
**Weight (kg):** 0.3  
**Year of commercialization:** Expected 2013

**Environment of use**

**Requirements:** CO₂ gas supply, light source for endoscope, (portable) endoscopic camera with monitor.
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