SCOPEBOX – All-in-One Laparoscopy Unit
The solution for extra-hospital laparoscopic surgery
Introduction

Laparoscopic surgery has become increasingly popular worldwide over the last 25 years. The spectrum of laparoscopic surgery thereby ranges from straightforward diagnostic laparoscopy to complex oncological resection.

Laparoscopic interventions are usually performed in ambulatory or stationary clinical settings. These feature an operating room that – in addition to an operating table, HF or anesthesia units – is equipped with a special infrastructure. This mainly includes the following hardware:

- Special equipment tower with at least one light source, a camera unit and a gas insufflator
- CO₂ gas supply (central or via CO₂ gas bottles)
- 1 or 2 monitors
- Surgery set with laparoscopic instruments

Also included are sterile single-use materials such as suture instruments, trocars and clip sutures.

These conditions are mainly found in buildings with fixed surgical units whereby the hardware listed above is mobile and can be transported to other operating rooms.

Due to major logistics challenges and their specific surgical demands, it was unusual or even impossible to perform laparoscopic procedures outside fixed buildings up to now.

The newly designed SCOPEBOX has already been successfully implemented several times. This all-in-one laparoscopy unit offers the possibility to perform a wide range of laparoscopic procedures, also outside stationary facilities.

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Extra-hospital Application of Laparoscopic Surgery

There is an increasing need for laparoscopic surgery in both civilian as well as humanitarian and military patient care.

Whereas surgery via laparotomy generally involves immobilization of the patient and requires a hospital stay of one or more days, patients are mobilized more quickly after laparoscopic interventions and can sometimes be treated on an outpatient basis.

The benefits of laparoscopic surgery in terms of, among others, minimized access trauma with less postoperative pain, lower need for analgesics, less impairment of pulmonary function, less wound healing complications, faster convalescence and faster return to normal physical activities are well-known and scientifically documented.

The following areas may be considered suitable as surgical units for extra-hospital applications in laparoscopic surgery:

- Medical facilities on civilian ships
- Medical facilities on navy ships at sea
- Medical facilities in military camps and field hospitals
- Medical facilities for humanitarian missions
- Medical facilities in isolated research stations

It is recommended to check the suitability of the product for the intended procedure prior to use.
Working Principle of the SCOPEBOX

The SCOPEBOX is an all-in-one laparoscopy unit that only requires an external 220 V power source. Except for surgical textiles (sterile surgical gowns, gloves as well as drapes) and disinfectants, all instruments and units for laparoscopic surgery are housed in the SCOPEBOX. In terms of transportation and storage, The SCOPEBOX is essentially a closed container under 1 m³ with a weight of approx. 90 kg and equipped with transport casters (Fig. 1).

To perform surgery using the SCOPEBOX, the front panel is opened and swivelled to the side. The front panel contains sterile single-use instruments (trocars, dissectors, scissors, current clamp, suction tube, clip suture device, etc.). Reusable instruments in the SCOPEBOX include a 30° telescope and a light cable. Mounted in the housing itself is a monitor with a light source and camera unit, a CO₂ insufflator, the CO₂ gas bottle, a unipolar/bipolar HF unit with footswitch, a PC keyboard as well as the required connectors (Fig. 2).
Using the SCOPEBOX

The SCOPEBOX is positioned close to the patient and connected to the mains. The SCOPEBOX is then opened and the single-use instruments required for surgery are removed from the front panel. The monitor is placed on top of the SCOPEBOX so that the operating surgeon has a clear view. Once the unit has been switched on, the cable has been connected and the team timeout has taken place, surgery can commence in the standard laparoscopic fashion (Fig. 3).

At the end of surgery, all connections to the patient are detached and the monitor is returned to the housing. The single-use materials are discarded while the reusable telescope and the light cable are wiped with a damp cloth and placed in the tray holder in the front panel. The SCOPEBOX is subsequently closed and stowed away in the holding area (internal or external) prior to reprocessing.
Laparoscopic Surgery with the SCOPEBOX

In principle, all laparoscopic procedures ranging from simple laparoscopic procedures through to colorectal resection can be performed. In the recommended areas of application, the range is generally confined to routine or straightforward emergency interventions (Fig. 4).

This includes:

- Diagnostic laparoscopy
- Laparoscopic appendectomy
- Laparoscopic adhesiolysis/transection of adhesions
- Laparoscopic cholecystectomy
- Laparoscopic exploration/hemostasis in the case of blunt abdominal trauma and stable patients
- Laparoscopic hernia repair
- Laparoscopic colon resection in the case of perforation, ileus or inflammation
- Laparoscopic stoma creation
- Gynecological surgery (e.g., cyst rupture, EU pregnancy) as well as other indications.

Fig. 4: Performing laparoscopic sigma resection with the SCOPEBOX

Performing surgical procedures with the SCOPEBOX requires experience with laparoscopy and previous training with a SCOPEBOX instructor.
Endoscopic Treatments using the SCOPEBOX

In addition to laparoscopy, the SCOPEBOX offers the opportunity to connect flexible endoscopes from KARL STORZ (e.g., in ENT, gastroenterology, urology etc.) and to display the endoscopic image on the monitor.

The endoscopes are stored separately and connected if required.

Contact Person and SCOPEBOX Instructor

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