

## Clinical Study

# Cost Reductive Laparoendoscopic Single Site Surgery Endotrainer and Animal Lab Training—Our Methodology

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Laparoendoscopic single site surgery (LESS) is a new avenue in laparoscopic urology. The main advantage is the enhanced cosmetic benefits of single hidden scar. Lately many papers are being published on various procedures done by LESS. Like conventional laparoscopy, this approach is likely to be used more widely and hence exposure to this field is essential. However, formal training in this technique is not widely available. Expensive ports and nonavailability of endotrainer may be the factors deterring the training. We have modified the standard laparoscopic endotrainer with improvised ports, to make it suitable for single port laparoscopic training. For the animal lab training improvised ports and low cost instruments were used. Thus the overall cost of the training in LESS was reduced, and better confidence levels were achieved prior to human applications.

## 1. Introduction

Laparoendoscopic single site surgery (LESS) is a new avenue in laparoscopic urology. The main advantage is the enhanced cosmetic benefits of single hidden scar [1]. Lately many papers are being published on various procedures done by LESS [2]. Like conventional laparoscopy, this approach is likely to be used widely in future and hence exposure to this field is essential. However, formal training in this technique is not available. Expensive ports and nonavailability of endotrainer may be the factors deterring the training. We have modified the standard laparoscopic endotrainer. Port was improvised, to make it suitable for this procedure. For the animal lab training improvised ports and low cost instruments were used. Thus the overall cost of the training in LESS was reduced and better confidence levels were achieved prior to human applications.

## 2. Materials and Methods

*The LESS Endotrainer.* The endotrainer we have designed is a cuboidal box with the dimensions of 35 cm × 28 cm × 18 cm. These dimensions are developed, such that, they

nearly correspond to the normal adult peritoneal cavity. The space is adequate for the placement of instruments and training objects. The standard laparoscopic endotrainer consists of three port sites. For single port training, we modified the central port with a multiport system measuring 2.5 cm in diameter. Various materials like rubber sheet for the multiport platform, and plastic tubes or short used 10 mm and 5 mm plastic ports for the trocars were used. Once assembled, this multiport system consisted of a 10 mm port for insertion of endocamera and two 5 mm ports for insertion of hand instruments (Figures 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10). The endocamera could be replaced by a webcam as in the standard endotrainer box when there is no assistant.

## 3. Instruments and Training

The instruments for LESS training are designed with an angulation in the distal end to prevent the clashing of instruments. Angulated Maryland dissector and curved scissors without angulation are used for dissection. Standard needle holder is used for suturing. The reticulating instruments are also used during the training.