

OneShot-M[®]: a new device for close laparoscopy pneumoperitoneum

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1. Introduction

Laparoscopy is currently largely used for diagnostic and therapeutic aims. The induction of pneumoperitoneum is the first and most critical phase of a laparoscopic procedure, due to the significant risk of serious complications of vascular and gastrointestinal structures. [1,2] In this regard, Veress needle insertion for the creation of pneumoperitoneum, a very highly used technique,[3] could lead to bowel damage or vascular lesions. The present study aimed to overcome the complications associated with the insertion of Veress needle, improving its use and facilitating the rapid creation of pneumoperitoneum.

2. Methods

30 large white female pigs, weighing 30-35 Kg, were enrolled for our study. A common plunger was modified in order to allow the passage of a 15 cm long Veress needle. The rubber cuff was substituted with a transparent plastic suction cup, the wooden handle was removed and substituted with a rigid plastic handle surmounted by two paired rings in order to ameliorate grip during abdomen lifting. Finally, a drain valve was inserted into the rigid part of the suction cup, making compression phase easier and rapid. Before each experiment, a 5 mm trocar was inserted into the abdominal wall, with classic closed technique, to allow visualization of the safety room created by the device.

3. Results

OneShot-M[®] close laparoscopy pneumoperitoneum creation device (Fig. 1), allowed to obtain pneumoperitoneum quickly in all attempts (1 pig). This method was applied to 26 laparoscopic procedures (26 pigs) of several specialist branches (general surgery, gynaecology, paediatrics, urology) without any intraoperative and postoperative complications linked to Veress needle.

4. Discussion & Conclusion

The insertion of Veress needle and of the first trocar could be considered the most dangerous phase of laparoscopy: both procedures account for 40% of laparoscopic complications and most of deaths.[4,5] Therefore, the optimization of abdominal cavity entry technique is essential to ameliorate the course of laparoscopic procedures.[6] The use of the proposed device showed an induction time as quick as the standard laparoscopic closed abdominal entry. The patented device is cheap and allow a safe abdominal access. In addition, abdominal entry is much more faster than in classic open technique.



Figure 1: a) handmade close laparoscopy pneumoperitoneum creation device b) OneShot-M[®] close laparoscopy pneumoperitoneum creation device

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