

A new glove port for single incision procedure

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Single-incision laparoscopic surgery has gained increasing attention due to its potential to improve the benefits of laparoscopic surgery. However, inconvenience remains for inexperienced surgeons during surgery when instruments conflict with each other, and a glove port is used hesitantly for such diagnosis related groups (DRG) because of its high cost. Authors made a new glove port by an odd surgical gloves and one wound protectors. This glove port is ease to make besides being convenient to us, and inexpensive. This new glove port has the benefit of easy utilization and cost effectiveness for surgeons performing single-incision laparoscopic surgery.

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Key Words: Glove port, Laparoscopy, Single-incision

INTRODUCTION

With recent developments in laparoscopic surgical techniques and laparoscopic instruments, single port procedure has been broadly applied [1]. Single port procedure has been gaining interest in laparoscopy because of its high effectiveness in reducing operation wound pain after surgery and its cosmetic results in minimizing scar visibility [2]. Among the various types of single ports currently in use, commercialized glove port (Nelis, Seoul, Korea) (Fig. 1) is the most widely used. This is made as a transparent polyvinyl, making the port opening visible and allowing easy instrument insertion. Moreover, because a uniform distance between the working port and the camera port is maintained, inconvenience due to conflicts between instruments that are handled and inserted into the abdominal cavity can be minimized, demonstrating its appropriateness. Additionally, it shows convenience in that the specimen does not have to be removed by placement into a catch-bag but can be directly removed from the abdominal cavity into a finger of the glove port. However, inconvenience remains for

inexperienced surgeons during surgery when instruments conflict with each other, and a glove port is used hesitantly for such diagnosis related group categories as appendectomy or transabdominal preperitoneal herniorrhaphy because of its high cost. Although single-incision laparoscopic port also exists, it is inconvenient to use and rarely being used in recent years. The authors developed a new glove port that is much more



Fig. 1. Commercialized glove port (Nelis, Seoul, Korea).

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convenient in its utilization and inexpensive. Therefore, we would like to make its introduction in this study.

SURGICAL METHODS

The authors have created a new glove port superior in effectiveness and cost-effectiveness that overcomes the limitations of the previous single port and minimizes conflicts between instruments during surgery. This can be made and immediately

used in the operating room, and in fact, can be made and used in any location as long as there are surgical gloves and wound protectors. Unlike the glove port extensively used prior to making the troca-combined glove port (Fig. 2) in use (used by cutting the fingertips and inserting one 10-mm and two 5-mm trocars), a trocar is not used but a hole is made directly on the glove fingertip. The hole is 2.5–3 mm in size. Because the diameter of all instruments used in cholecystectomy is 5 mm, the rubber becomes tightened as the instrument enters through this hole, thereby blocking any space through which air can leak. As a result, a trocar becomes unnecessary. When a 5-mm camera port is used, diameter of all instruments is unified to 5 mm, further making the situation highly favorable. Using this new glove port, cholecystectomy was performed (Fig. 3).

Case

A 50-year-old female patient with abdominal pain (epigastric pain) was admitted to the Emergency Department. The pain persisted for a month, and although other hospitals were suspicious of stomach ulcer, duodenal ulcer, or inflammatory colon disease, a definitive diagnosis was not made even after endoscopy and colonoscopy. Pain was aggravated during the procedure, and the patient was admitted to the Emergency Department. At the time of admission, blood test results were WBC count 7540, AST/ALT 17/16, total bilirubin 0.95, amylase

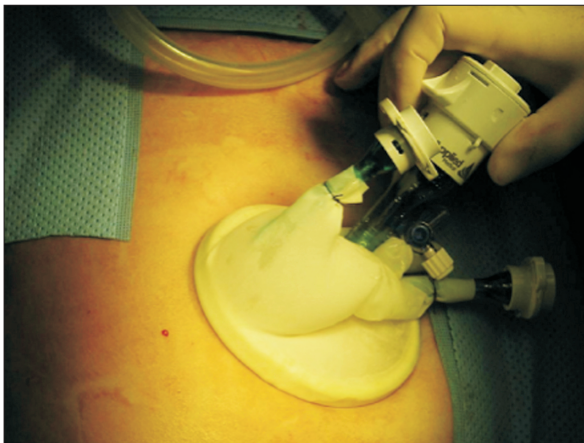


Fig. 2. Troca-combined glove port.

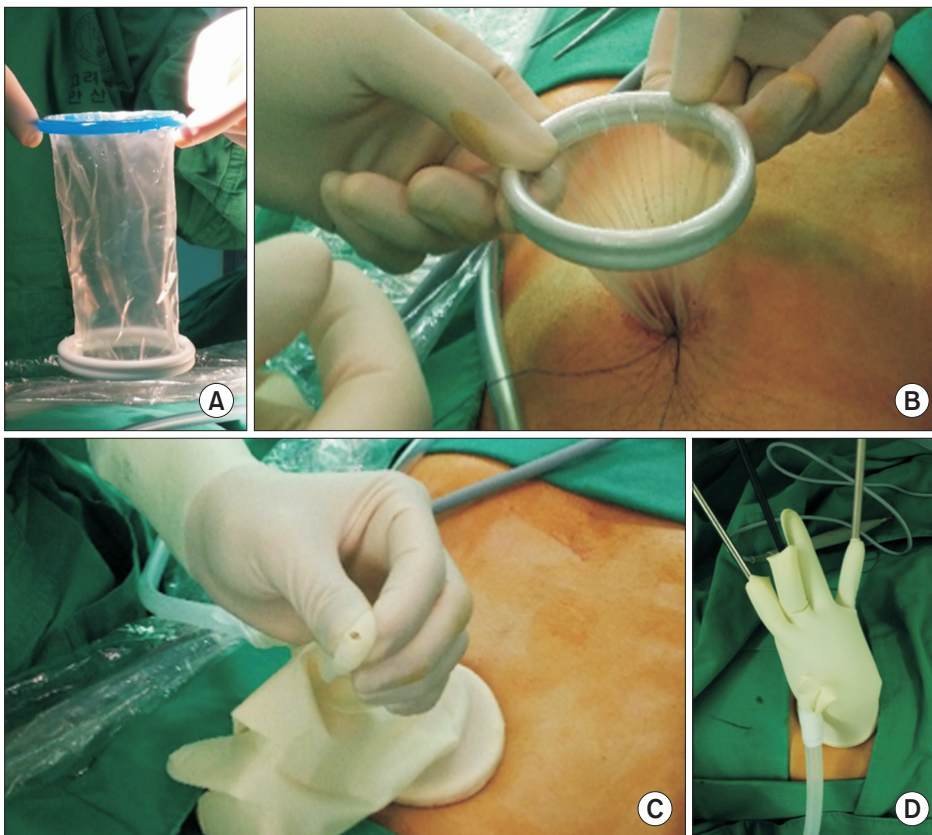


Fig. 3. Surgical procedure: Wound protector (A) applied on the umbilical incision (B) by making a hole on the finger of glove (C). Then, instruments were inserted via finger holes (D).

42, PT 85%, CRP 5.09, and HBsAg (-) HBsAb (+) HCB Ab (-), and the patient was diagnosed with acute cholecystitis based on biliary pancreas CT. A single incision cholecystectomy through the new glove procedure was performed on this patient. Gall bladder (GB) was severely dilated, and no severe adhesion in the surrounding was observed. First, cystic artery and cystic duct were exposed after peritoneum was dissected around the cystic duct, and cystic artery ligation was performed. Next, GB was dissected from GB bed of the liver after cystic duct ligation, and the specimen was removed. The specimen was held using a grasper, and while it was pulled in place to remain inside the glove finger where the grasper was inserted, front and rear ends were clamped using two Kelly. Next, the glove port was removed once the operation site bleeding was controlled, discharge suction performed, and instruments removed. Removing the new glove port is very simple: the glove and the wound protector are first removed, and then the fascia is closed using Vicryl 2.0 and the skin is closed using Vicryl 4.0. This thereby concludes the surgery.

DISCUSSION

Examining the advantages of the new glove port, we first see that the conflicts between instruments inserted as ports can be significantly reduced compared to the glove port currently in use. The flexibility of the glove guarantees a maximum scope

of movement of instruments inserted within the port and allows freedom in handling instruments by reducing conflicts between instruments. One limitation is that the opening of the port that was inserted into the abdominal cavity is not visible, and thus instrument insertion is not as smooth as with a commercialized glove port. However, this shortcoming can be easily resolved by feeling with the hand to find the opening for insertion. This is convenient during surgery, but in terms of cost, it can be made with significantly lesser cost than any other commercialized glove ports in use. The current price of commercialized glove ports is about 230,000 Korean won (KRW, the currency of South Korea) and a new glove port, under 100,000 KRW. Wound protectors cost 99,000 KRW and gloves, 1,000 KRW.

This new glove port can be easily applied not only to cholecystectomy but also to other surgical procedures because of its ease of use and inexpensive cost. Anyone can make the new glove port inside the operating room within a short period of time, and its clinical accessibility is superior to the commercialized glove port, thereby lowering medical fees for patients and providing an innovative and economical alternative.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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