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Original Article

Single-port access laparoscopic surgery using a novel laparoscopic port (Octo-Port)

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Abstract

Objective: We present our initial experience with single-port access (SPA) surgery using a novel laparoscopic port (Octo-Port).
Materials, Methods, and Results: In a prospective study, SPA surgery was carried out on 11 patients with the Octo-Port from July 2009 to December 2009 by a single surgeon (T.-J. K.). The procedures carried out were hysterectomy (seven patients), ovarian cystectomy (two patients) and salpingo-oophorectomy (two patients). In 10 cases the procedure was successfully performed without the use of additional ports. In one case the SPA procedure failed and ancillary ports were required; this patient had anatomical variations that made use of the SPA technique difficult. All procedures were performed without complications. There were no perioperative port-related or surgical problems. The Octo-Port had certain advantages such as reducing the need for long laparoscopic instruments, reducing extracorporeal instrumental crowding, and providing better deflection of smoke compared to other SPA devices that used a wound retractor and a glove.
Conclusion: Our study demonstrated that the Octo-Port allows laparoscopic surgery to be performed safely and easily with a reduced number of ports.

Keywords: Gynecology; Laparoscopy; Octo-Port; Single-port

Introduction

Single-port access (SPA) surgery was introduced to the field of gynecology for tubal sterilization about four decades ago [1]. However, SPA gynecological surgery did not gain widespread use because of the technical challenges associated with complex intracorporeal maneuvers for which there were no available instruments. Although SPA surgery has many advantages, including reduced postoperative pain, a more rapid recovery, fewer wound complications, and improved cosmetic outcomes, it has some shortcomings that have not been overcome [2]. Recent SPA surgical techniques have been introduced in the fields of gastroenterology [3,4] and urology [5] with improved instrumentation and continued investigation into better methods for the procedure. The procedures in the present study were performed with the Uni-X (Pnavel Systems, Brooklyn, NY, USA) or the TriPort (Advanced Surgical Concepts, Wicklow, Ireland) as a multichannel working port for one-port surgery. These devices have not been available in Korea until recently. We have used a wound retractor (Alexis; Applied Medical, Rancho Santa Margarita, CA, USA) and a surgical glove as an alternative [6]. Many SPA surgeries were performed using the so-called 'home-made port' [7–10]; however, this approach also has limitations. Currently, a new commercial multichannel port system, Octo-Port (DalimSurgNet, Seoul, Korea), is available for SPA surgery. We report on our initial 11 patients who underwent SPA surgery using the Octo-Port.

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Materials and methods

Octo-Port

The Octo-Port is a recently developed laparoscopic multi-channel access device that allows multiple instruments to pass simultaneously through one incision, and ensures pneumoperitoneum regardless of whether a laparoscopic instrument is present in any of the channels (Fig. 1). The device comprises a retractor component and a cap component. The retractor component has a doubled-over cylindrical sleeve made of transparent silicon, with an inner and an outer ring, and an anchor that is fixed to the rim of the outer ring. By drawing the outer ring up to the anchor, tension is developed in the retraction sleeve. This tension is required for the retraction of the incision, and creates the access for the laparoscopic instruments. A removal tag placed just above the inner ring is provided to remove the device from the incision at the end of the procedure. The cap component consists of a harbor that is mounted onto the retractor component and multiple channels that allow introduction of all standard laparoscopic instruments and scopes from 5 mm to 12 mm. An air-sealing elastomer within each channel maintains pneumoperitoneum during the surgical procedure in general and especially during instrument changes. Two tubes are present at the cap housing for the purposes of insufflation and exhaust.

Patients

All patients underwent surgery after both Institutional Review Board approval from the Ethical Committee of the Samsung Medical Center (Seoul, Korea) and informed patient consent had been obtained. From July 2009 to December 2009, SPA surgery using the Octo-Port was performed by a single surgeon (T.-J. K.) in 11 patients with benign gynecological disease. Patients were selected on the basis of ultrasound findings that indicated a need for laparoscopy according to the standard of care in our practice. Exclusion criteria included advanced ovarian and other gynecological cancers. All data were collected prospectively and were analyzed for age, body mass index (BMI, kg/m^2), chief complaint, estimated blood loss, operation time, and operative record. The SPA procedures are summarized in Table 1 and detailed in the following sections.

Operative techniques

The patients were counseled appropriately and underwent SPA laparoscopic surgery using the Octo-Port. Under general anesthesia, each patient was placed in the dorsal lithotomy position. The patient's left arm was tied to her body for the surgeon's space. The surgeon stood on the patient's left side. On the patient's right side, the first assistant handled the scope.

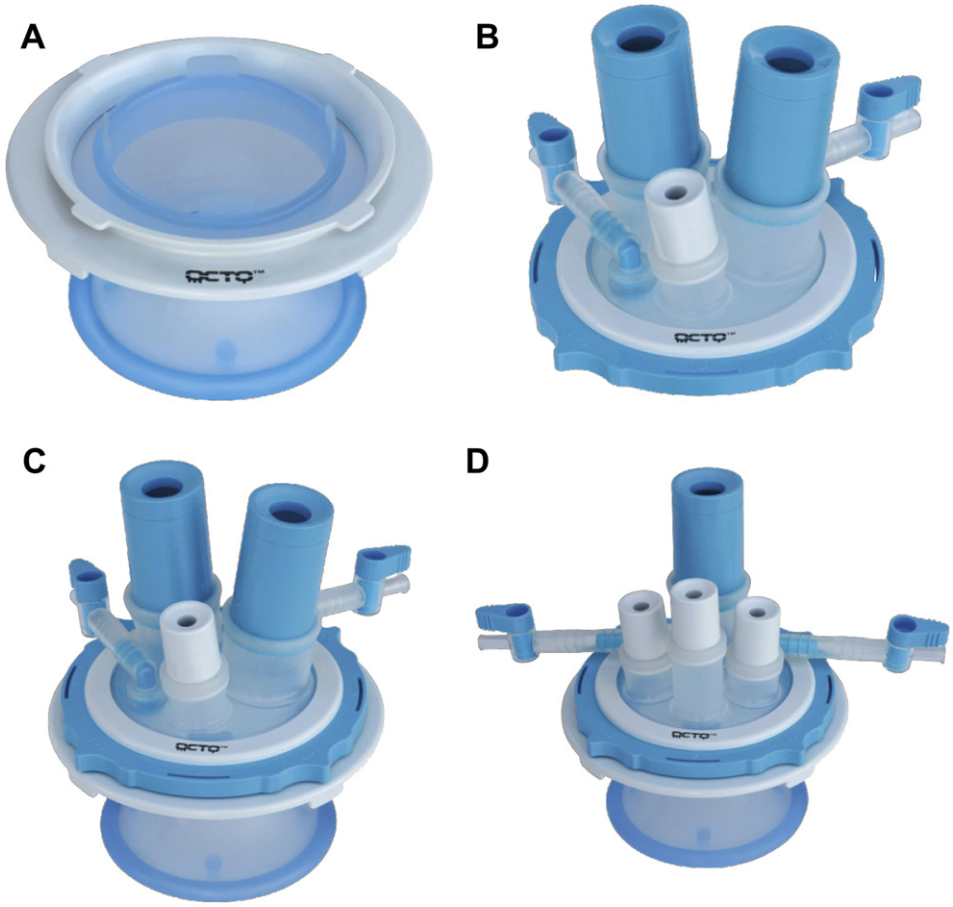

Fig. 1. Octo-Port, a single-port access laparoscopic device, showing (A) a retractor component; (B) a cap component; (C and D) two models.