Hysterectomy is one of the most common surgical procedures worldwide [1,2]. Annually, 600,000 hysterectomies are carried out in the USA, more than 32,000 hysterectomies in Australia, and 60,000 hysterectomies in France [3-5].

According to surgical approach, hysterectomy is divided into abdominal approach, vaginal approach, and laparoscopic approach. Abdominal and vaginal hysterectomies have been performed for centuries. About 20 years ago, the laparoscopic approach to hysterectomy was introduced by Reich [6], and it has been evolving since then [7].

Until now, many studies attempted to evaluate the effectiveness of hysterectomy. The purpose of this study was to evaluate postoperative pain of total laparoscopic hysterectomy (TLH) compared with vaginal hysterectomy (VH).

Methods
From June 2010 to August 2010, 122 patients were enrolled, of whom 56 underwent TLH and 66 underwent VH for benign diseases at Kangnam Sacred Heart Hospital. Postoperative pain degree was compared in non-randomized, prospective method and preoperative, intraoperative, postoperative characteristics were considered. Postoperative pain was measured using the visual analog scale (VAS) score at 1-hour, 1-day, 3-day postoperative periods and the additional consumption of analgesic units (vials and tablets) required by patients for pain relief at all hospital stay.

Results
For the first 3 postoperative days, the median total consumption of analgesics was considerably lower in the TLH group than in the VH group (pethidine, P<0.05; non-steroidal anti-inflammatory drug [Ketorolac Tromethamine], P<0.05). The VAS score also was higher for the VH group than in the TLH group (VAS 1-hour, P<0.05; VAS 1-day, P<0.05; VAS 3-day, P<0.05). No significant difference was found between groups in respect to preoperative, intraoperative and postoperative characteristics except operation time, prior intra-abdominal surgery and pelvic adhesion.

Conclusion
In this study, since TLH is a less painful procedure in comparison to VH, TLH may be a good alternative to VH for the benign gynecologic diseases with expert surgeons.

Keywords: Postoperative pain; Total laparoscopic hysterectomy; Vaginal hysterectomy
of hysterectomy and most of those studies have not mentioned postoperative pain [8-10]. However, it is necessary to study postoperative pain because postoperative pain has made most patients who undergo surgery fearful and undoubtedly, they would like to avoid experiencing pain. For this reason, postoperative pain became an object of this study. We report our experiences here with total laparoscopic hysterectomy (TLH) at Kangnam Sacred Heart Hospital in the year 2010 in comparison to vaginal hysterectomy (VH) in terms of the difference in postoperative pain.

Materials and Methods

Prospective non-randomized case-control study to compare patients undergoing total laparoscopic hysterectomy and women undergoing vaginal hysterectomy for benign diseases was designed for this study. From June 2010 to August 2010, the records of 122 women who had TLH or VH for benign diseases in Kangnam Sacred Heart Hospital were reviewed by prospective analysis. One hundred twenty-two patients were enrolled, of whom 56 underwent total laparoscopic hysterectomy and 66 underwent vaginal hysterectomy. Procedures were performed by 3 skilled gynecological surgeons in our department and were not limited to those specializing in laparoscopy or vaginal procedures. The skilled gynecological surgeon is defined as the person who has a minimum of 5 years’ experience in gynecological surgery and has performed at least 100 gynecological surgery procedures per year. The surgical route was decided by whether the uterus was mobile when traction was done by clamping the cervix with tenaculum. VH was performed when mobile, whereas TLH was performed in other cases.

1. Operative technique

1) Procedure of VH

The patient was placed in a supine position. Under general anesthesia, the patient’s position was changed to a lithotomic position. The skin painting and draping was done in the usual manners. The vaginal mucosa at the junction of the cervix was incised with a scalpel around the entire cervix. The operator dissected the bladder with a finger from the uterus at the vesicouterine peritoneal fold level. The fold was grasped by a silk suture after being incised. The peritoneum of the cul-de-sac was exposed and incised also. The ligaments of the uterus were exposed partially on each side. The uterosacral ligaments were clamped, cut and tied with Vicryl 1-0. And then, both cardinal ligaments were done in the same way. The round ligaments were clamped with the Kelly clamp and incised close to the uterine fundus and tied with Vicryl 1-0 on each side. The second ties of these pedicles were done with Vicryl 1-0. The uterus was removed out of the pelvic cavity through the vagina. The peritoneum was reestablished with chromic 1-0.

2) Procedure of TLH

The definition of TLH in this study was limited in that the uterus must be removed completely laparoscopically and vaginal incision had to be closed by laparoscopic sutures. With the lithotomic position, the abdomen and suprapubic areas of the patient were painted with potadine solution and draped in the usual manner under general anesthesia. The small skin incision was made just below the umbilicus and the abdominal wall was picked up manually. The 11 mm trocar was inserted into the umbilical incision wound and peritoneal cavity was filled with CO₂ gas to a limited pressure of 12 mm Hg. After the same method, three 5 mm trocars were placed laterally left and right, and in the middle of the lower abdomen. The uterine fundus was lifted up by using a “uterine elevator.” The round ligaments were cut and electrocoagulated by electrosurgical devices. The leaves of the broad ligaments were opened anteriorly to the vesicouterine fold and posteriorly to the uterosacral ligaments and across the posterior lower uterine segment. The tubes and suspensory ligaments or infundibulopelvic ligaments both were electrocoagulated. The filmy tissues surrounding the uterine vessels were skeletonized by dissecting the tissues away from the uterine vessels. The uterine vessels were clamped, divided and ligated with Vicryl 1-0. And then the cervicovaginal junction was cut by electrosurgical devices and the uterus was removed from the vagina circumferentially. The suture with Vicryl 1-0 was carried out over the vaginal stump. After rinsing, a drain is placed. The laparoscopic and trocar sleeve were removed and CO₂ gas was removed. The incision wound was closed layer by layer. Patients were excluded from this study if they had a confirmed or suspected malignant disease, pelvic inflammatory disease or severe endometriosis. Patients who had vaginal prolapse higher than the first degree also were excluded from this study. For each patient, we recorded preoperative parameters including patient’s age, weight, parity, body mass index (BMI), prior intra-abdominal surgery history, intraoperative parameters including...