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Risk factors for the failure of iliococcygeus suspension for uterine prolapse

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ABSTRACT

Objectives: The objective of this study was to evaluate the risk factors for the failure of iliococcygeus suspension (ICG) for uterine prolapse and estimate its long-term success rates using a clinically relevant criterion.

Study design: This retrospective cohort study included 144 women who underwent transvaginal reconstructive surgery including ICG for symptomatic pelvic organ prolapse. Surgical failure was defined as anatomic recurrence (descent of the vaginal apex beyond the halfway point of the vagina or descent of the anterior or posterior vaginal wall beyond the hymen), symptomatic recurrence (vaginal bulge symptoms), or retreatment for prolapse.

Results: During the median 4-year follow-up period, surgical failure was observed in 20 women (13.9%). Multivariate analysis with the Cox proportional hazard model showed that advanced prolapse (preoperative pelvic organ prolapse quantification [POP-Q] stage >II and point C >0) and uterus-saving techniques were independent risk factors for failure. When the ICG was performed as a vault suspension procedure together with hysterectomy, the estimated 4-year success rates were 100% for mild prolapse (POP-Q stage II or point C ≤0) and 91.2% for advanced prolapse. When the procedure was done as a hysteropexy, the corresponding success rates decreased to 75.3% and 48.0%, respectively.

Conclusions: This study indicates that the severity of prolapse and the uterus-saving technique affect the prognosis after ICG. The ICG provides a durable apical vaginal support when performed together with hysterectomy, irrespective of the severity of the prolapse. In addition, it appears to be an acceptable hysteropexy option for mild uterine prolapse.

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Introduction

Pelvic organ prolapse (POP) is one of the major indications for surgery in adult women who have a 13–19% lifetime risk of undergoing surgery for this condition [1–3]. The preferred surgical route is a vaginal approach with anterior and posterior colporrhaphy without any apical suspension being the most frequently performed procedures [4]. However, studies have demonstrated that a clinically significant apical prolapse is almost always present when there is anterior and posterior vaginal wall prolapse [5–9], and a concomitant apical suspension procedure at the time of the prolapse surgery can significantly reduce recurrent prolapse [10]. As a result, adequate support for the vaginal apex is now

considered to be an essential component of a durable surgical repair for POP [11].

Iliococcygeus suspension (ICG) was first described by Inmon in 1962 for patients in whom the uterosacral ligaments could not be identified or might be deemed insufficient to support the vaginal vault [12]. The procedure is similar to sacrospinous ligament fixation but uses the iliococcygeus fascia and muscle just below the ischial spine instead of the sacrospinous ligament. Using this alternate site of vaginal fixation has the theoretical advantage of preserving the vaginal axis and avoiding injury to the pudendal neurovascular bundle that can occur with sacrospinous ligament fixation [13]. Although not commonly reported in the literature, some small studies have found ICG to be safe, efficient, and durable [14–18]. However, the surgical outcomes in these studies were not evaluated using clinically relevant criteria and there was a wide variation in the surgical success rates that might have resulted from the heterogeneity of both the study populations and the criteria for recurrence. Moreover, the efficacy of ICG as a procedure for correcting uterine prolapse has not yet been evaluated.

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The aim of this study was to investigate risk factors for the failure of ICG for uterine prolapse using a clinically relevant definition of failure and to estimate long-term success rates according to the presence of risk factors.

Materials and methods

Patient and data collection

After obtaining approval from the institutional review board (SNUH 1609-063-791) for this retrospective cohort study, we reviewed the medical records of 158 patients who had undergone transvaginal reconstructive surgery including ICG for symptomatic POP at the Seoul National University Hospital between October 2008 and February 2014. Excluded from the study population were 14 women who had a history of prolapse surgery ($n = 2$) or hysterectomy ($n = 12$). All the POP quantification (POP-Q) examinations and operative procedures were performed by one urogynecology specialist (MJJ). Scheduled in-person follow-up occurred at 1, 4, and 12 months and then annually thereafter. At each visit, patients underwent POP-Q examination and, starting with the 4-month visit, were asked to complete the validated Korean version of Pelvic Floor Distress Inventory short form questionnaire (PFDI-20) [19].

Data collection included patient demographics (age, vaginal parity, body mass index, menopausal status, and diabetes mellitus status) and prolapse-related characteristics (POP-Q findings and prolapse-related symptoms). Additional operative procedures other than ICG were also noted. Surgical outcomes were assessed using a composite outcome measure. We defined failure as the presence of one of the following: (1) anatomical recurrence, defined as descent of the vaginal apex beyond the halfway point of the vagina (apical recurrence) or descent of the anterior or posterior vaginal wall beyond the hymen (non-apical recurrence); (2) symptomatic recurrence, indicated by vaginal bulge symptoms defined by an affirmative response to question 3 on the PFDI-20, or (3) retreatment for prolapse using either surgery or pessary. Complications were also assessed using the Clavien-Dindo grading system [20].

Surgical technique

Briefly, the ICG procedure began with opening the posterior vaginal wall as for a posterior colporrhaphy and dissecting the rectovaginal spaces bilaterally. With one right-angled retractor lifting the bladder away and the other pressing the rectum downward and medially, the ischial spine was palpated and one permanent suture (Prolene 0; Ethicon Inc., Somerville, NJ) was placed on each side deep into the iliococcygeus fascia and muscle, caudally and medially to the ischial spine and tagged. Subsequently, the sutures were passed through the ipsilateral lateral vaginal fornix without involving either the epithelium (for vault suspension) or the posterolateral aspect of the cervix (for hysteropexy) and tied.

Statistical analysis

Data were analyzed with SPSS software (version 23; SPSS Inc., Chicago, IL). Univariate and multivariate analyses using the Cox proportional hazard model were conducted to identify risk factors for failure. The success rates were estimated using the Kaplan-Meier method and compared using the log-rank test. A P value of <0.05 was considered statistically significant.

Results

Table 1 summarizes the baseline characteristics of the study population. The median age was 70 (interquartile range, 56–84)

Table 1

Characteristics of the study population ($n = 144$).

Variable	Value
Age (years)	70 (56–84)
Age ≥ 70 years	72 (50.0)
Vaginal parity	3 (1–5)
Vaginal parity ≥ 3	92 (63.9)
Body mass index (kg/m^2)	24.5 ± 3.3
Body mass index $\geq 25 \text{ kg}/\text{m}^2$	64 (44.4)
Menopause	118 (81.9)
Diabetes mellitus	20 (13.9)
POP-Q stage	
2	54 (37.5)
3	80 (55.6)
4	10 (6.9)
Prolapse beyond the hymen	
Anterior (POP-Q Ba >0)	116 (80.6)
Posterior (POP-Q Bp >0)	50 (34.7)
Apical (POP-Q C >0)	86 (59.7)

Values are presented as median (interquartile range), mean \pm standard deviation, or n (%).

POP-Q, pelvic organ prolapse quantification.

Table 2

Operation-related findings and complications.

Variable	Value
Concomitant procedures	
Vaginal total hysterectomy	94 (65.3)
Anterior colporrhaphy	100 (69.4)
Posterior colporrhaphy	108 (75.0)
Cervical amputation	4 (2.8)
Transobturator tape	68 (47.2)
Operative time (min)	125 (70–180)
Estimated blood loss (mL)	150 (50–250)
Hospital stay (days)	5 (4–6)
Intraoperative complications	0
Postoperative complications	14 (9.7)
Dindo grade ^a	
I	2 (1.4)
II	12 (8.3)
III–V	0
Urinary tract infection	12 (8.3)
Buttock pain beyond 4 weeks	2 (1.4)
Lower extremity neuropathy	2 (1.4)

Values are presented as median (interquartile range) or n (%).

^a Adapted from Dindo et al. [20].

years and most women were postmenopausal. Eighty women (55.6%) presented with POP-Q stage 3 prolapse and an additional 10 (6.9%) presented with stage 4 prolapse. Anterior, posterior, and apical vaginal prolapse beyond the hymen were present in 116 (80.6%), 50 (34.7%), and 86 (59.7%) women, respectively. Surgery-related data are presented in Table 2. A total of 94 women (65.3%) underwent vaginal total hysterectomy together with ICG. Anterior and posterior colporrhaphy were also carried out concomitantly with ICG in 100 (69.4%) and 108 (75.0%) women, respectively. There were no intraoperative complications, but 14 women (9.7%) experienced postoperative complications. All these complications were mild and corresponded to grade I or II on the Clavien-Dindo grading system. The most common complication was urinary tract infection, which was treated with antibiotics. Two women (1.4%) had buttock pain persisting for more than 4 weeks and were managed with analgesics without suture removal.

During the median 4-year follow-up period (range, 1–90 months), surgical failure was observed in 20 women (13.9%). Twelve women (8.3%) experienced both apical and non-apical recurrence and an additional 2 (1.4%) and 4 (2.8%) experienced an isolated anterior and apical recurrence, respectively. Symptomatic recurrence occurred in 11 women (7.6%), of which 9 presented both apical and non-apical recurrence, and the remainder did not have

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