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Comparison of partially-absorbable lightweight mesh with heavyweight mesh for inguinal hernia repair: multicenter randomized study

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Purpose: Prosthetic mesh is widely used for inguinal hernia repair; however, pain and stiffness can develop. This study was a prospective, multicenter, single-blind, randomized trial to assess postoperative pain and quality of life according to mesh type after inguinal hernia repair.
Methods: Forty-seven patients who underwent Lichtenstein repair for unilateral inguinal hernia with prosthetic mesh were enrolled and randomly allocated to the partially-absorbable lightweight mesh (LW group, n = 24) or heavyweight mesh group (HW group, n = 23). Data were collected using a visual analogue scale (VAS), Carolinas Comfort Scale (CCS), and Activities Assessment Scale (AAS) at screening and postoperative day 1, 7, 90, and 120; foreign body sensation, sense of stiffness, and sense of pull during activity were also evaluated.
Results: There were no significant differences in patients' demographics and clinical characteristics between groups. The VAS at day 90 was significantly lower in the LW group (0.46 ± 0.78 *vs*. 0.96 ± 0.82, P = 0.027). The CCS and AAS were significantly lower in the LW group at day 1 (51.33 ± 20.29 *vs*. 64.65 ± 22.64, P = 0.047 and 39.83 ± 9.88 *vs*. 46.43 ± 7.82, P = 0.015, respectively). Foreign body sensation was significantly lower in the LW group at day 120 (4.2% *vs*. 30.4 %, P = 0.023), as was sense of stiffness (P = 0.023). The sense of pull during activity was lower in the LW group at day 90 and 120 (P = 0.012 and P = 0.022, respectively). There was no recurrence or serious complication during follow-up.
Conclusion: Partially-absorbable lightweight prosthetic mesh can be used for inguinal hernia repair safely and improve functional outcomes and quality of life after surgery.
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Key Words: Inguinal hernia, Surgical mesh, Quality of life

INTRODUCTION

Inguinal hernia is a very common disease and accounts for approximately 75% of all hernias. It is up to 10 times more common in males. The incidence of adult hernia repair has recently risen because of the increase in obesity and elderly populations. Annually, 700,000 cases of inguinal hernia repairs are performed in the United States of America [1] and 30,000 cases in Korea. Tension-free repair with prosthetic mesh is the most common method for treatment of inguinal hernia due to its advantages of fewer recurrences and less pain. The recurrence rate of hernia has dropped sharply to 2%–3% with the introduction of the tension free mesh repair [2]. For such reasons, many recent studies have focused on the aspects of chronic pain and quality of life rather than recurrence after hernia repair.

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Generally, mesh should be strong enough to cover the defect permanently. Therefore, nonabsorbable meshes made of monofilaments such as polypropylene, polyester, Teflon, and nylon have been used. Among these, polypropylene monofilament mesh is widely used because of its excellent adhesiveness and persistency. However, polypropylene mesh has several problems such as mesh-induced pain and stiffness, which arise from its heavy weight (about 100 g/m^2) and nonabsorbability. In addition, polypropylene meshes result in an intense inflammation with immature collagen deposition and significantly higher collagen type I/III ratios within the scar neo-tissue [3]. It can also cause fistula and chronic inflammatory reaction. Thus, new mesh products minimizing these problems are needed. Monofilament meshes with large pores exhibit less inflammatory infiltrate and connective tissue and scar bridging, which allows increased soft tissue ingrowth [4]. Recently, a new type of lightweight mesh, which is composed of polypropylene mixed with absorbable poliglecaprone threads, was introduced for inguinal hernia to reduce pain and stiffness without losing the sufficient resistance for covering the hernia defect. The aim of this study was to assess the effectiveness, postoperative pain, and quality of life according to the type of mesh (partially-absorbable lightweight *vs.* heavyweight) after inguinal hernia repair.

METHODS

Study design

This study was designed for a multicenter, prospective, randomized, single-blind, clinical comparative study, which assessed the outcomes of inguinal hernia repair, according to the different type of the prosthetic mesh. It was reviewed and approved by the Institutional Review Board of Daehang Hospital (DH12-0010) and Eulji Medical Center (MD_IRB_2012-11) in the Republic of Korea.

Patients

From March 2013 to December 2014, 50 patients were prospectively randomized to either group using the partially-absorbable lightweight (Proflex, Samyang, Seoul, Korea; LW group) or heavyweight (Marlex, Bard, Murray Hill, NJ, USA; HW group) meshes at the Daehang Hospital and Eulji Medical Center, Korea. The inclusion criteria of this study were: (1) males between 20 and 85 years old, (2) unilateral inguinal hernia, and (3) no previous abdominal surgery. Exclusion criteria were: (1) recurrent hernia, (2) incarcerated hernia, (3) strangulated hernia, (4) previous urologic surgical history, (5) immune disease patient, (6) patient with thromboembolic disease or treated with an antithrombotic agent, (7) severe hepatic or renal disease, and (8) malignant patients. The study was performed in accordance with the guidelines of our Institutional Review Board, and informed consent was obtained from each patient before surgery. Patients were considered to have dropped out

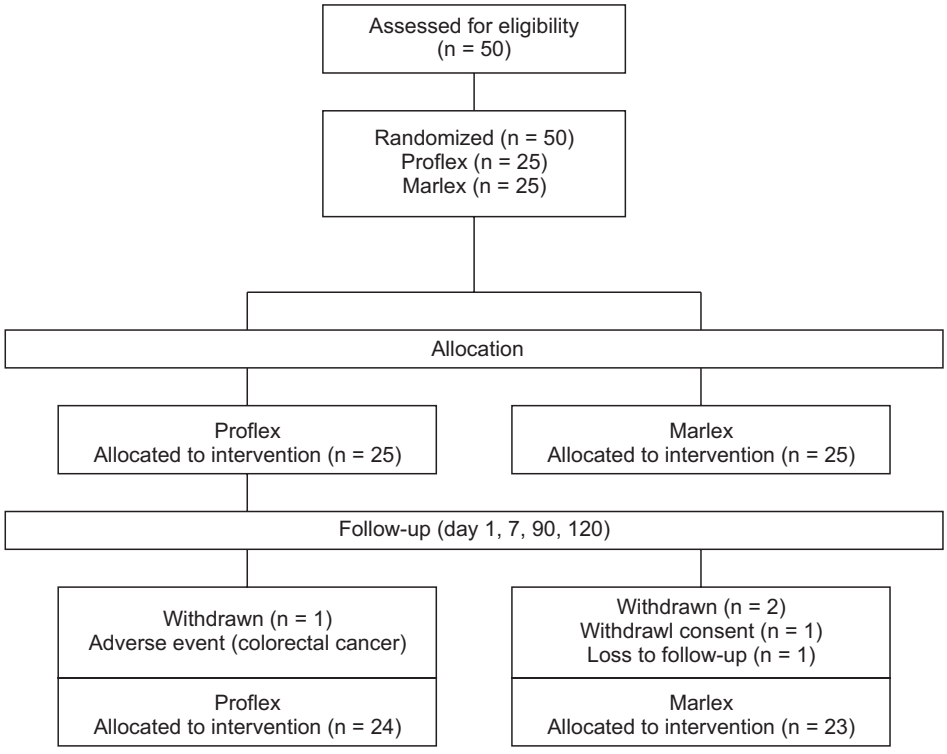

Fig. 1. Study design and enrollment. Proflex (Samyang, Seoul, Korea), Marlex (Bard, Murray Hill, NJ, USA).

of this study if (1) they had an acute adverse reaction (allergy, hypersensitivity) to the clinical test equipment, (2) the clinical study could not proceed because of an incidental complication, and (3) an adverse event occurred that rendered a patient's participation in the clinical test improper.

Surgery

The operations were performed by 4 surgeons. Within 3 weeks of enrollment, surgery was scheduled. Patients were allocated to either the LW group or HW group by randomization just before the operation (Fig. 1). Surgeons randomly selected one type of mesh in the operating room just before surgery. Because the fact that surgeon do not recognize the type of mesh during operation is practically impossible, we defined this study as single-blind study. The types of hernia were classified during surgery according to the Nyhus classification. All hernia repairs were electively performed using the Lichtenstein technique, with 1 of the 2 types of mesh, under spinal anesthesia.

The surgery was performed according to the standard method agreed by all surgeons at the prestudy meeting. For fixation of the mesh, suture was made at symphysis pubis, iliopubic tract, and proximal rim of the mesh with prolene 3-0 thread. Fibrin glue was not used.

Proflex

Proflex is a partially-absorbable lightweight mesh that contains a segmented pie form monofilament mesh with a mixture of nonabsorbable polypropylene and absorbable poliglecaprone (PGA-PCL). The PGA-PCL is absorbed within 90 days. The remaining polypropylene mesh is lightweight (28–29 g/m^2) with a pore size of 2–3 mm and thickness of 500–550 μm (Fig. 2).

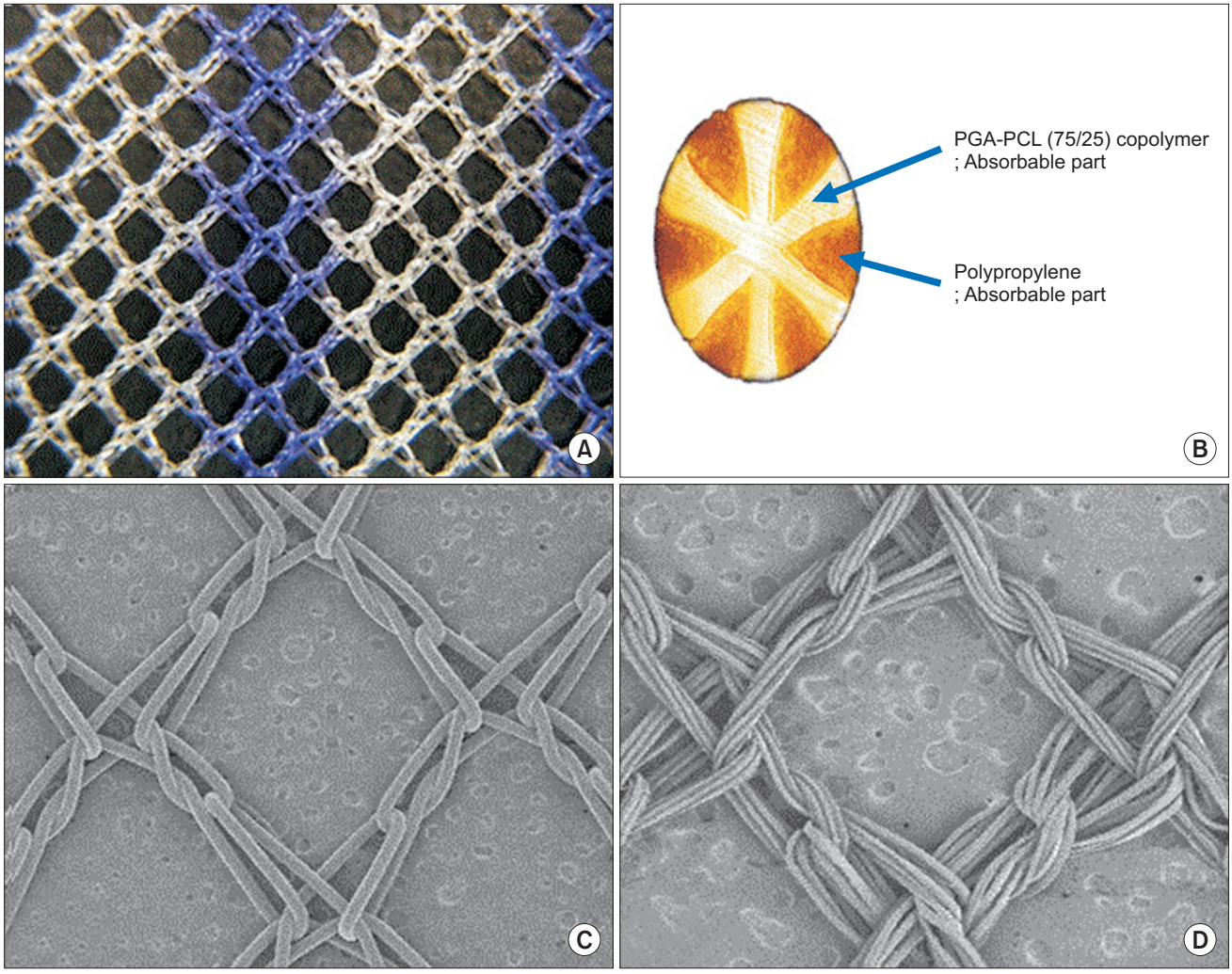

Fig. 2. Partially absorbable lightweight mesh mesh. (A) Gross morphology. (B) Segmented pie form monofilament mesh that is a mixture of nonsoluble polypropylene and poliglecaprone (PGA-PCL). (C) Electron microscope image of mesh before absorption; segmented pie monofilament. (D) Electron microscope image of mesh after degradation; polypropylene multistrand.

Marlex

Marlex is a nonabsorbable heavyweight mesh which consists of polypropylene monofilament. Its weight is about 100 g/m^2.

Assessment of results

Patients' demographics and clinical characteristics (location and type of hernia, severity, duration of onset, and hospital stay) were compared between the 2 groups. According to the Nyhus Classification, type of hernia was classified as follows: I-A, indirect small; I-B, indirect medium; I-C, indirect large; II-A, direct small; II-B, direct medium; II-C, direct large; III, combined; IV, femoral.

To assess the effectiveness, data were collected using validated questionnaires such as a visual analogue scale (VAS), the Carolinas Comfort Scale (CCS), and the Activities Assessment Scale (AAS) at screening and postoperative day 1, 7, 90, and 120, and compared between groups. Foreign body sensation, sense of stiffness, and sense of pull during activity were also compared. The follow-up also included a physical examination, laboratory test, and evaluation of recurrence at each visit.

Assessment of pain score

The pain score was evaluated with a 10-point VAS, scored from 0 ("painless") to 10 ("unimaginable excruciating pain"). Patients were required to mark on the 10-point scale the degree of pain they were feeling. If the marked point deviated from an integer, the nearest integer point was recorded [5].

Assessment of the CCS

Quality of life and satisfaction after surgery were evaluated with the CCS, which consists of 23 questionnaires. The questionnaires ask about eight items (laying down, bending over, sitting up, daily activities, coughing or deep breathing, walking, stairs, and exercise) according to severity of pain, sensation, and movement limitations. Each questionnaire is graded from 0 to 5 (0, no symptoms; 1, mild no discomfort; 2, mild symptoms discomfort; 3, moderate and/or daily symptoms; 4, severe symptoms; 5, could not perform daily activity). The best possible score is 0 and the worst possible score is 115 [2,6]. The CCS score was rated for each questionnaire by the patients.

Assessment of the AAS

The functional status of ordinary activity after surgery was evaluated with the AAS, which consists of 13 questionnaires. Each questionnaire refers to three items: sedentary (e.g., lying in bed), movement-related (e.g., walking outdoors), and graded-intensity physical activities (ranging from housekeeping to construction work). Each questionnaire is graded from 1 to 5 (1, no difficulty; 2, a little difficulty; 3, some difficulty; 4, a lot of difficulty; 5, not able to do it). The AAS was calculated by rating the scores of each questionnaire [7].

Assessment of foreign body sensation/stiffness/sense of pull

Foreign body sensation, sense of stiffness, and sense of pull during activity were assessed at every follow-up. Patients answered "yes or no" for foreign body sensation and graded the sense of stiffness and pull after surgery from 0 to 3 (grade 0, nonexistent; grade 1, mild; grade 2, moderate; grade 3, severe).

Statistical analysis

The efficacy and safety endpoints were analyzed with the paired t-test and the Wilcoxon signed rank test, chi-square test, Fisher exact test, or McNemar test, as appropriate. These outcomes were reported as the mean ± standard deviation (range) or frequency (%). Statistical significance was set at $P < 0.05$ for all analyses. Efficacy analyses were performed on the Per-Protocol (PP) population for the VAS, CCS, and AAS endpoint. The last observation carried forward method was used to handle missing values in the PP population.

RESULTS

Between March 2013 and December 2014, 50 patients met the inclusion criteria and 25 patients each were randomly allocated to either the LW group or HW group. One patient dropped out of the LW group and 2 patients dropped out of the HW group because of an adverse event during follow-up (colorectal cancer), withdrawal of consent, and loss of follow-up, respectively (Fig. 1).

Comparison of clinical characteristics

Patients' demographics were not statistically different between the LW and HW groups. The mean duration of onset was 15.0 days (range, 0–205 days) for the LW group and 24.7 days (range, 0–393 days) for the HW group, and this difference was not statistically significant ($P = 0.226$). The hernia was located on the right-side in 16 patients (67%) in the LW group and 11 patients (48%) in the HW group ($P = 0.152$). A type I-B inguinal hernia (indirect medium) was most common in the LW group (37.5%) and type I-C had the highest incidence in the HW mesh group (22%). This difference in the type of inguinal hernia between the 2 groups was not statistically significant ($P = 0.243$). Differences in other fields, such as the very first clinical visit, major reason for surgery, and hospital stay were also not statistically significant (Table 1).

Assessment of effectiveness

Visual analogue scale

The VAS was increased until the 7th day (D7) after operation. Thereafter, it decreased on the 90th (D90) and 120th day (D120) in both groups (LW group: 1.9 ± 2.3 [screening], 3.8 ± 2.4 [D1],

Table 1. Comparison of clinical characteristics between groups

Characteristic	LW group (n = 24)	HW group (n = 23)	P-value
Age (yr)	64 (24–83)	64 (30–76)	0.946*
Height (cm)	167.4 ± 6.6	166.6 ± 8.6	0.714***
Weight (kg)	67.0 ± 9.4	66.6 ± 8.3	0.891***
Duration of onset (day)	15.0 ± 40.3	24.7 ± 77.1	0.226*
Location			0.152**
Right	16 (67)	11 (48)	
Left	8 (33)	12 (52)	
Type of inguinal hernia[a)]			0.243***
I-A	3 (12.5)	3 (13)	
I-B	9 (37.5)	3 (13)	
I-C	5 (21)	5 (22)	
II-A	1 (4)	2 (8.5)	
II-B	3 (12.5)	5 (22)	
II-C	3 (12.5)	2 (8.5)	
III	0 (0)	3 (13)	
IV	0 (0)	0 (0)	
Hospital stay (day)	2.2 ± 1.1	2.3 ± 1.1	0.694*

Values are presented as median (range), mean ± standard deviation, or number (%).
LW, lightweight mesh; HW, heavyweight mesh.
*Wilcoxon rank sums test for difference between groups. **Chi-square test for difference between groups. ***Fisher exact test for difference between groups.
[a)]I-A: indirect small, I-B: indirect medium, I-C: indirect large, II-A: direct small, II-B: direct medium, II-C: direct large, III: combined, IV: femoral.

2.5 ± 1.9 [D7], 0.5 ± 0.8 [D90], 0.7 ± 1.1 [D120]; HW group: 2.2 ± 2.9 [screening], 4.9 ± 2.7 [D1], 3.2 ± 2.0 [D7], 1.0 ± 0.8 [D90], 0.8 ± 1.4 [D120]). The VAS of the LW mesh group was significantly different at D1, D90, and D120 after the operation (P = 0.003 [D1], P = 0.001 [D90], P = 0.010 [D120]) and it was significantly different only at D1 in the HW group (P = 0.001 [D1]). When comparing between the 2 groups, the VAS at D90 was significantly lower in the LW group (0.46 ± 0.78 *vs.* 0.96 ± 0.82, P = 0.027). Whereas, it was not significantly different at D1, D7, and D120 after the operation between the 2 groups (Table 2).

Carolinas comfort scale

In both the groups, the average CCS increased at D1 and D7 after the operation compared with screening; thereafter, the average CCS decreased at D90 and D120 (LW group: 23.54 ± 22.38 [screening], 51.33 ± 20.29 [D1], 35.96 ± 19.29 [D7], 6.25 ± 10.89 [D90], 3.79 ± 6.58 [D120]; HW group: 23.83 ± 27.26 [screening], 64.65 ± 22.64 [D1], 39.39 ± 25.06 [D7], 8.04 ± 9.02 [D90], 6.04 ± 13.06 [D120]). Within each group, the CCS was statistically significantly different at D1, D7, D90, and D120 after the operation in both groups (LW group: P < 0.001 [D1], P = 0.016 [D7], P < 0.001 [D90], P < 0.001 [D120]; HW group: P < 0.001 [D1], P = 0.009 [D7], P = 0.021 [D90], P = 0.013 [D120]). The CCS was significantly lower in the LW group than HW group at D1 (51.33 ± 20.29 *vs.* 64.65 ± 22.64, P = 0.047). The CCS was not significantly different at D7, D90, and D120 between the 2 groups (Table 2).

Activities assessment scale

In both groups, the average AAS at D1 and D7 after the operation increased compared with the score at screening. Thereafter, the average AAS decreased at D90 and D120 (LW group: 22.2±8.9 [screening], 39.8±9.9 [D1], 32.8±9.4 [D7], 17.6±6.2 [D90], 16.5±4.5 [D120]; HW group: 23.7±12.3 [screening], 46.4±7.8 [D1], 33.0±7.1 [D7], 18.1±5.8 [D90], 17.0±6.0 [D120]). Within each group, the AAS of the LW group was statistically significant at all visits (P < 0.001 [D1], P = 0.001 [D7], P = 0.012 [D90], P < 0.001 [D120]), and the AAS of the HW group was statistically significantly different at D1, D7, and D120 after the inguinal hernia repair (P < 0.001 [D1], P = 0.002 [D7], P = 0.040 [D120]). The AAS in the LW group was significantly lower than in the HW group at D1 (39.83 ± 9.88 *vs.* 46.43 ± 7.82, P = 0.015) (Table 2).

Recurrence

During the study, no recurrence was reported in either group.

Foreign body sensation, stiffness, and sense of pull

Less patients in the LW group than HW group answered that they had foreign body sensation through all the follow-up visits and this difference was statistically significant at D120 after operation. (4.2% *vs.* 30.4%, P = 0.023). Also, the sense of

Table 2. Comparison of the surgical outcomes I

Variable	LW group (n = 24)	HW group (n = 23)	P-value (within group)		P-value (between groups)
			LW group	HW group	
VAS					
Screening	1.9 ± 2.3	2.2 ± 2.9			
D1	3.8 ± 2.4	4.9 ± 2.7	0.003	0.001	0.144
D7	2.5 ± 1.9	3.2 ± 2.0	0.264	0.076	0.270
D90	0.5 ± 0.8	1.0 ± 0.8	0.001	0.060	0.027
D120	0.7 ± 1.1	0.8 ± 1.4	0.010	0.068	0.746
CCS					
Screening	23.5 ± 22.4	23.8 ± 27.3			
D1	51.3 ± 20.3	64.7 ± 22.6	<0.001	<0.001	0.047
D7	36.0 ± 19.3	39.4 ± 25.1	0.016	0.009	0.975
D90	6.3 ± 10.9	8.0 ± 9.0	<0.001	0.021	0.123
D120	3.8 ± 6.6	6.0 ± 13.1	<0.001	0.013	0.845
AAS					
Screening	22.2 ± 8.9	23.7 ± 12.3			
D1	39.8 ± 9.9	46.4 ± 7.8	<0.001	<0.001	0.015
D7	32.8 ± 9.4	33.0 ± 7.1	<0.001	0.002	0.905
D90	17.6 ± 6.2	18.1 ± 5.8	0.012	0.072	0.497
D120	16.5 ± 4.5	17.0 ± 6.0	<0.001	0.040	0.778

Values are presented mean ± standard deviation.
LW, lightweight mesh; HW, heavyweight mesh; VAS, Visual Analogue Scale; CCS, Carolinas Comfort Scale; AAS, Activities Assessment Scale.

stiffness was significantly lower in the LW group at D120 (P = 0.022). The sense of pull during activity was lower in the LW group at D90 and D120 (P = 0.012 and P = 0.022) (Table 3).

Results of safety

Two patients (8%) in the LW group and 2 patients (8%) in the HW group had wound seroma after the operation. In 1 case (4.0%), a major adverse event (postoperative pain) occurred in the LW group. The difference in the occurrence rates of major adverse events between the 2 groups was not statistically significant (P > 0.999) and the adverse event was not related to the mesh. Chronic postoperative inguinal pain (CPIP) is defined as pain persist more than 3 months. There was no patient who suffered from CPIP. No patient died during this study. The vital signs and laboratory findings at all visits showed no special issues regarding safety.

DISCUSSION

Since tension-free hernia repair was introduced by Lichtenstein, the recurrence rate has sharply dropped to nearly zero percent. Marlex has become the standard prosthetic mesh for inguinal hernia repair, but it contains a 95 g/m^2 density of synthetic material [8] and is characterized by low biocompatibility [9]; therefore, it can cause a foreign body reaction and chronic discomfort after surgery. To overcome these problems, biodegradable mesh, which can lower the content of polypropylene to 30 g/m^2, has been developed. The PGA-PCL material is partially absorbable after wound healing and able to maintain its initial strength and rigidity. Additionally, Proflex mesh is a partially-absorbable lightweight mesh which ultimately obtains lightweight after absorption of PGA-PCL. Nonabsorbable portion of both meshes in this study consist of polypropylene monofilament identically.

For these reasons, we focused on parameters such as the occurrence of pain and quality of life after hernia repair rather than recurrence. To measure the quality of life after the operation, we used questionnaires such as the CCS (to measure the disease-specific quality-of-life), AAS (to evaluate the patients' functional statuses), and VAS (to measure the degree of pain after surgery). We found partially-absorbable lightweight prosthetic mesh is safe for inguinal hernia repair and led to improved functional outcomes and quality of life after surgery. In our study, the VAS at D90 was significantly lower in the LW group. We believe that absorption of PGA-PCL could cause this difference. Otherwise, there was no difference in VAS on D120. We suppose that the reason is because remaining pore of the partially absorbable mesh was filled with granulation tissue until D120, which resulted in same intensity of local tissues.

The new biosynthetic meshes exhibit better tissue integration, new collagen deposition, and sustained neovascularization compared with polypropylene meshes. Biodegradable polymers also can provide a temporary scaffold for deposition of proteins and cells, which are necessary for tissue ingrowth, neovas-

Table 3. Comparison of the surgical outcomes II

Variable	Grade	LW group (n = 24)	HW group (n = 23)	P-value
Foreign body sensation, yes				
D1		17 (70.8)	19 (82.6)	0.341
D7		13 (54.1)	14 (60.9)	0.642
D90		7 (29.2)	11 (47.8)	0.188
D120		1 (4.2)	7 (30.4)	0.023
Stiffness at rest, yes				
D1	0	5 (20.8)	5 (21.7)	0.156
	1	14 (58.3)	7 (30.4)	
	2	5 (20.8)	10 (43.5)	
	3	0 (0)	1 (4.4)	
D7	0	13 (54.2)	10 (43.5)	0.585
	1	9 (37.5)	12 (52.2)	
	2	2 (8.3)	1 (4.4)	
	3	0 (0)	0 (0)	
D90	0	23 (95.8)	15 (65.2)	0.012
	1	1 (4.2)	7 (30.4)	
	2	0 (0)	1 (4.4)	
	3	0 (0)	0 (0)	
D120	0	24 (100)	18 (78.3)	0.022
	1	0 (0)	5 (21.7)	
	2	0 (0)	0 (0)	
	3	0 (0)	0 (0)	
Pulling during activity, yes[a]				
D1	0	3 (12.5)	1 (4.4)	0.417
	1	13 (54.2)	10 (43.5)	
	2	8 (33.3)	11 (47.8)	
	3	0 (0.0)	1 (4.4)	
D7	0	7 (29.2)	4 (17.4)	0.554
	1	14 (58.3)	13 (56.5)	
	2	3 (12.5)	5 (21.7)	
	3	0 (0)	1 (4.4)	
D90	0	22 (91.7)	11 (47.8)	0.002
	1	2 (8.3)	11 (47.8)	
	2	0 (0)	1 (4.4)	
	3	0 (0)	0 (0)	
D120	0	24 (100)	18 (78.3)	0.022
	1	0 (0)	5 (21.7)	
	2	0 (0)	0 (0)	
	3	0 (0)	0 (0)	
Recurrence		0/24 (0)	0/23 (0)	-

Values are presented number (%).
LW, lightweight mesh; HW, heavyweight mesh.
[a]Grade: 0, no; 1, mild; 2, moderate; 3, severe.

cularization, and host integration [10]. Therefore, theoretically, a lightweight mesh might be better for reducing pain due to less fibrosis. Several studies compared heavyweight with lightweight meshes in open tension free hernia repair and showed significant reduction in postoperative pain and foreign body sensation [11,12]. Lightweight mesh was characterized by a reduction in the polypropylene volume, a large pore size, a higher concentration of mature collagen, and less fibrosis [13,14]. Thus, as found in this study, pain and foreign body sensation should decrease over time in the lightweight mesh group.

However, there are several studies with conflicting results. Some studies reported that there was no difference in pain score, and other studies reported poor results with the use of lightweight meshes [15,16]. A study hypothesized that the increased fibrotic reaction from the use of heavy weight meshes would be accompanied by a higher frequency of chronic pain and postoperative fibrotic change, which may result in pain later because the inflammatory response continues for 3

months postoperatively [17]. Another recent study reported that lightweight meshes were associated with a higher incidence of chronic pain, an equal rate of mesh awareness and discomfort, and a higher risk of recurrence [18]. This study explained that the slippage of the implanted mesh and the pull of nearby tissue might be causes of chronic pain and a higher risk of recurrence.

Zogbi et al. [19] found that lightweight polypropylene mesh exhibited greater median shrinkage than heavyweight polypropylene mesh in rats at 7 and 90 days after implantation. However, in this study, heavyweight polypropylene mesh led to foreign body reaction more often over time. A recent systemic review and meta-analysis of the use of lightweight versus heavyweight mesh in open inguinal hernia repair reported that the use of lightweight mesh reduced the incidence of chronic groin pain as well as the risk of developing other groin symptoms, such as stiffness and foreign body sensations [11]. Based on these results, the use of lightweight mesh in inguinal hernia repair can have advantages for reducing postoperative pain and discomfort.

In the current study, one patient in the LW group was re-admitted due to severe pain 2 days after discharge. The symptom was improved at a week after surgery. This pain was thought to be due to the suture that fixed the mesh on the pubic bone rather than the mesh itself.

This study was a multicenter-based clinical trial. The strengths of this study are the prospective data collection and analysis of pain and discomfort according to the subdivided period. However, this study has several limitations, including the small sample size and excluding women, which can limit the generalization to all hernia patients. Because surgeon who underwent the hernia repair evaluated the postoperative outcomes, outcomes could be confused with some bias. Another limitation is that we could not exclude the possibility of recurrence due to the short-term follow-up. Therefore, longer observation will be necessary to adequately assess the rate of recurrence.

In conclusion, partially-absorbable lightweight prosthetic mesh can be useful and safe treatment option for inguinal hernia repair. And it can result in less pain, improved functional outcomes, and improved quality of life after surgery compared with heavyweight mesh.

CONFLICTS OF INTEREST

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

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