

Does mesh utilization in femoral hernia repair affect recurrence?

 Nihan Acar,  Turan Acar,  Feyyaz Gungor,  Ahmet Er,  Kemal Atahan,  Mehmet Hacıyanlı

Department of General Surgery, Izmir Katip Celebi University Atatürk Training and Research Hospital, Izmir, Turkey

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Abstract

Aim: The mechanism of how femoral hernias (FH) develop is not clear. As a result of increased intra-abdominal pressure, preperitoneal fat tissue passes through the femoral ring and also drags the pelvic peritoneum.

Femoral hernias are more common in women and also approximately 60% occur on the right, 30% on the left side and 10% are bilateral. The chief complaints of the patients are swelling and pain in the groin. Most cases require emergency operation due to incarceration or strangulation. Hernia repair can be performed with or without mesh, and with open or laparoscopic techniques.

In this retrospective study, we aimed to compare the recurrence rates in patients who underwent FH repair with and without mesh.

Material and Methods: This is a retrospective study of 48 patients who underwent surgery due to FH in our clinic between January 2012 and October 2017. The patients were divided into two groups according to mesh utilization: Hernia repair with mesh (Group 1) and hernia repair without mesh (Group 2).

Results: A total of 48 patients with FH were operated (35 females, 13 males). The mean age of the patients was 64.6 ± 18.3 years and, 31 patients (64.5%) had right-sided and 17 patients (35.5%) had left-sided hernia.

When the groups were compared, there was a statistically significant difference in terms of comorbidity, length of hospital stay and morbidity. There was no significant difference in recurrence (recurrence rates: 6.3%, 6.3%, respectively).

Conclusion: Currently, mesh and non-mesh repairs are commonly used for the treatment of FH. This study showed that absence of mesh in FH repair did not affect recurrence.

Keywords: Femoral hernia; mesh; recurrence

INTRODUCTION

The cause of femoral hernia (FH) is not clear. It is considered to develop as a result of the protrusion of preperitoneal adipose tissue from femoral ring and dragged pelvic peritoneum due to increased intra-abdominal pressure.

Femoral hernias are mostly located on the right side (60%) and patients mostly complain of groin swelling, pain and a sensation of dragging (1, 2). It is more common in women due to the looseness of pelvic floor muscles which is a result of delivery (3).

Most of the time it can be diagnosed by physical examination but, ultrasonography can be used in patients who lack typical physical examination findings and for the differential diagnosis (pathological lymph node, lipoma, malignant mass) (4). Since the neck of hernia is narrow, the risk of incarceration / strangulation is high, and open or laparoscopic hernia repair with or without mesh should be performed in the early period after diagnosis (5). Recurrence rate after femoral hernia repair was reported as 1– 10% in the literature (6).

In this retrospective study, we aimed to compare the recurrence rates in patients who underwent FH repair with mesh and non-mesh techniques.

MATERIAL and METHODS

This is a retrospective study of 48 patients who underwent surgery due to FH in our clinic between January 2012 and October 2017. Demographics (sex, age, comorbidity, etc), operation condition, clinical features, treatment approaches and recurrence were evaluated. The study protocol was approved by the institutional Ethics Committee (Date: 29.11.2017, Number: 268).

The patients were informed about their disease, options of surgery and which procedure was going to be performed. Informed consent was obtained from all patients regarding the use of their data in the scientific study.

Patients and Surgical Technique

Inclusion criteria: 1- Patients with FH, 2- Patients who underwent open FH repair with mesh or without mesh, 3- Patients who were followed-up regularly.

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Corresponding Author: Turan Acar, Department of General Surgery, Izmir Katip Celebi University Atatürk Training and Research Hospital, Izmir, Turkey, **E-mail:** drturanacar1982@gmail.com

Exclusion criteria: 1- Malignancy patients requiring additional intervention, 2- Patients who underwent laparoscopic hernia repair, 3- Patients with bilateral femoral hernia, 4- Recurrent Hernias, 5- Patients who could not be contacted for follow-up.

The patients were divided into two groups according to the utilization of mesh: Group 1; hernia repair with mesh and Group 2; hernia repair without mesh.

The presence of FH was diagnosed by physical examination, abdominal ultrasonography and / or computed tomography. Each patient's comorbidities (diabetes, hypertension, obesity, coronary artery disease (CAD), smoking etc.) were recorded.

The operations were performed under spinal or general. Single dose intravenous antibiotics (1st generation cephalosporins) prophylaxis before the incision was applied. The femoral hernias were repaired either with anterior prosthetic polypropylene mesh plug hernioplasty (Group 1) or Cooper ligament hernioplasty (McVay) (Group 2). McVay repair was performed with interrupted non-absorbable sutures in between aponeurotic margin of the transverse abdominal muscle and Cooper's ligament. Following the reduction of hernia, the mesh-plug was inserted into the femoral canal sac and positioned into the preperitoneal space, and sutured with non-absorbable sutures in three quadrants. Drain was not used in patients.

Follow-up

Patients were discharged without the signs of any local or systemic inflammation. Follow-up was generally conducted by the surgeon who performed the operation. Data of patients' current status were obtained through the hospital database and/or from the telephone interviews with patients.

Statistical analysis

Chi-square and Fisher tests were used as statistical methods and $p < 0.05$ was considered statistically significant.

RESULTS

A total of 48 patients (32 in Group 1 and 16 in Group 2) were included in the study. Demographics and clinic data among the groups are given in Table 1.

According to this data, 72.9% of the patients were women. 77.1% of the patients were 50 years old and older. The mean age was 64.6 ± 18.3 years while it was 65.1 ± 19 in Group 1 and 63.4 ± 18 in Group 2. 27.1% of the patients (n: 13) had at least one comorbid disease, especially diabetes, hypertension, obesity and smoking. There was no statistically significant difference between the groups in terms of sex and age distribution, while the presence of comorbid disease was higher in Group 2.

The most common localization for hernia was right side (64.6%) and 52.1% of the patients had to undergo emergency surgery. In addition, six patients had strangulated omentum and eight patients had strangulated small bowel, and six of these had additional small bowel

resection and had the signs of diffuse peritonitis at the time of diagnosis, died in the early post-operative period.

Postoperative complications such as seroma-hematoma, surgical site infection (SSI) and others (pneumonia and atelectasis, etc.) developed in 12.5% (n: 6) of the patients. Seroma-hematoma and SSI were more common in Group 1, while pneumonia and atelectasis was significantly more common in Group 2. This created a significant difference between the groups in terms of complications.

The length of hospital stay was 3.6 days in Group 1 and 2.8 days in Group 2. The mean follow-up period was 49.4 months (24-93 months), with the recurrence rates of 6.3% (n: 2) in Group 1 and 6.3% (n: 1) in Group 2, respectively. There was no statistically significant difference between the groups in terms of recurrence, while the hospital stay was longer in Group 1.

Table 1. Demographics and clinical features of the patients

Features	Total (n:48)	Group 1 (n:32)	Group 2 (n:16)	p value
Sex (n, %)				
Female	35 (72.9)	23 (71.9)	12 (75)	0.818
Male	13 (27.1)	9 (28.1)	4 (25)	
Mean age (year)	64.6 ± 18.3	65.1 ± 19	63.4 ± 18	0.22
Age (year)				
<50	11 (22.9)	7 (21.9)	4 (25)	0.808
≥50	37 (77.1)	25 (78.1)	12 (75)	
Comorbidity (n, %)	13 (27.1)	8 (25)	5 (31.3)	<0.05
Hernia localization (n, %)				
Right	31 (64.6)	20 (62.5)	11 (68.7)	0.670
Left	17 (35.4)	12 (37.5)	5 (31.3)	
Operation condition (n, %)				
Elective	23 (47.9)	15 (46.9)	8 (50)	0.838
Emergency	25 (52.1)	17 (53.1)	8 (50)	
Strangulated organs (n, %)				
Omentum	6 (12.5)	4 (12.5)	2 (12.5)	
Small intestine	8 (16.7)	6 (18.8)	2 (12.5)	0.563
Total	14 (29.2)	10 (31.3)	4 (25)	
Small intestine resection (n, %)	6 (12.5)	4 (12.5)	2 (12.5)	0.249
Morbidity (n, %)				
Seroma- Hematoma	5 (10.4)	4 (12.5)	1 (6.3)	<0.05
SSI	2 (4.2)	2 (6.3)	0	
Others	5 (10.4)	3 (9.4)	2 (12.5)	
Hospitalization time (average) (day)	3.2 (1-10)	3.6 (1 -10)	2.8 (1- 6)	<0.05
Recurrence (n, %)	3 (6.3)	2 (6.3)	1 (6.3)	0.433

SSI: Surgical Site Infection

DISCUSSION

Femoral hernia is generally considered to be a result of increased intra-abdominal pressure. An important predisposing factor was put forward by McVay et al., assuming that femoral ring enlarges as a result of increased abdominal pressure due to a congenitally narrow posterior inguinal wall attachment onto Cooper's ligament (7).

Despite FH is less common than inguinal hernia, the risk of strangulation is higher which may cause serious morbidity (8). Its overall incidence among all groin hernias is 2-8% and it mostly seen in women aged 50-70 years (9). Although the cause is not clear, it is more frequent on the right side (1). Similarly in our series, majority of the cases were female and right-sided (72.9%, 64.5%, respectively), with the mean age of 64.6 ± 18.3 .

Most patients complain of swelling, pain and a sensation of dragging in groin, and it may also remain asymptomatic. It is difficult to diagnose a FH with physical examination. Ultrasonography and/or computed tomography are required for primary or differential diagnosis (lymphadenopathy, lipoma, metastasis, psoas abscess, etc.) (10).

The most important problem about FH is strangulation which may cause serious morbidity and mortality especially in late-onset cases (1). The risk of strangulation, due to the narrow hernia neck, was reported as 44-86% in the literature and it was found to be higher especially in the elderly cases (11, 12). Strangulated tissue usually consists of small intestine or omentum and strangulation manifests itself with leukocytosis, CRP elevation, air-fluid levels in X-ray, dilated bowel loops and intra-abdominal fluid in ultrasonography. In the series of 67 FH cases by Hachisuka et al., nine patients were found to have strangulated hernia which contain small intestine in six and omentum in three cases (12). Tastaldi et al. reported that the mortality in emergent cases was closely associated with increasing age and the presence of contamination (13).

In our series, 52.1% of patients had to undergo emergency surgery and 29.2% had strangulated organs (16.7% small intestine and 12.5% omentum). An additional small bowel resection was performed in six patients. Of these six patients, a late admission patient with severe peritonitis was exitus in early postoperative period.

There are various procedures defined for treating FHs. McVay procedure, polypropylene mesh plug technique and laparoscopic approach are all surgical modalities that are used by surgeons today. Plug repair seems the easiest technique in those patients, but some major complications due to mesh migration have been reported (14, 15). Also, postoperative complications such as seroma and SSI are more common in cases in which mesh is applied (14). On the contrary, despite the limitations of their study, Dai et al. showed that postoperative complications in patients undergoing mesh repair (27.9%) was markedly lower than

that in patients undergoing non-mesh repair (66.9%) (16).

In the literature, recurrence after FH repair has been reported between 0-6.1% (16-18). Swarnkar et al. reported that no recurrence was observed during the two years of follow-up in a series of 42 patients in which suture-free mesh plug technique was performed (19). In a study by Alimoglu et al., total two recurrences were reported; one in 79 patients who underwent McVay procedure and one in four patients who underwent mesh plug technique (20). There was no recurrence in a series of 62 cases by Kang et al. in which they performed "umbrella" technique with mesh (21).

We used either McVay or polypropylene mesh-plug hernioplasty technique. Postoperative complications such as seroma, hematoma and SSI were found to be higher in our patient group in which mesh was used. The mean follow-up period was 49.4 months (24-93 months), with the recurrence rates of 6.3% (n: 2) in polypropylene mesh-plug hernioplasty technique and 6.3% (n: 1) in McVay, respectively. There was no statistically significant difference between the groups in terms of recurrence.

CONCLUSION

In conclusion, currently, mesh and non-mesh repairs are commonly used for the treatment of FH. This study showed that absence of mesh (McVay) in FH repair did not affect recurrence.

In addition, mesh repair is related with increased local wound complications (seroma, hematoma, SSI, etc.) and extends the length of hospital stay.

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