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ORIGINAL ARTICLE

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Femoral hernia: a review of 83 cases

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Abstract We evaluate the factors that affect morbidity and mortality in patients who underwent surgery due to femoral hernia. The medical records of 83 patients who underwent femoral hernia repair between January 1996 and June 2004 were retrospectively analyzed. The femoral hernias were repaired either with McVay or mesh plug hernioplasty. Sex, age, surgical repair technique, presence of incarceration/strangulation, incarcerated/strangulated organs, postoperative complications, duration of hospitalization, recurrence rate, and factors that affect mortality and morbidity were studied. There were 83 patients with femoral hernia in our study. Patients' age ranged from 10 to 75 years (mean age was 46.84) with a predominance of female (71%). Thirty-six patients (40%) underwent emergency surgery with the diagnosis of strangulation or incarceration of femoral hernia. Seventeen patients had strangulation and underwent resection; eleven of these patients had omentum in the hernial sac, whereas six patients had intestines. Four of these patients underwent laparotomy. The remaining 19 patients had incarceration and underwent simple reduction of hernial sac content without resection. Forty-seven (60%) patients underwent elective surgery. McVay technique was used for 79 patients, while the other four patients were treated with mesh-plug. Twelve patients (15%) developed a variety of complications (nine patients (25%) in emergency, three patients (6%) in elective group). There was one mortality. Recurrences occurred in two patients. Femoral hernia is an important surgical pathology with high rates of incarceration/strangulation and intestinal resection. Emergency surgery can increase morbidity and mortality especially in the elderly. Early elective surgery may reduce complication.

Keywords Femoral hernia · Elective · Emergency surgery

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Introduction

Femoral ring is bound laterally by femoral vein, anteriorly by inguinal ligament, medially by lacunar ligament, and posteriorly by the pectineal ligament. Femoral hernia is a protrusion of peritoneal sac that contains preperitoneal fat, abdominal, or pelvic mass through the femoral ring into the femoral canal inferior to the inguinal ligament [1, 2]. Diagnosis and treatment of femoral hernia are still challenging problems for contemporary surgeons. Because of the tendency of hernia to move upward to a position above the inguinal ligament, it may sometimes be mistaken for an inguinal hernia and the correct diagnosis can be made at the groin exploration [3–5]. The only satisfactory treatment is surgery. It is important to treat femoral hernia as soon as the condition has been recognized because of the high incidence of strangulation [6]. In case of incarceration/strangulation, an immediate urgent operation is required, regardless of the condition or age of the patient. However, morbidity and mortality are increased significantly in these cases [7].

A variety of different operations have been formulated for the treatment of femoral hernia. The objectives of the operations are reduction of the hernia, excision of the sac, and closure of the femoral ring to prevent recurrence. Femoral and inguinal approaches are used separately, and in some cases combination of both approaches enables surgeons to work both above and below the defect. Beside the basic hernioplasty operations, hernioplasties with prosthetic materials (polypropylene mesh, sutureless mesh-plug repair, etc.) as well as laparoscopic approaches are all described in literature [8–10].

The main objective of this study is to review our experience with femoral hernias during an 8-year period, and to show the factors that affect the morbidity and mortality in femoral hernias.

Materials and methods

Between January 1996 and June 2004, the medical records of patients who underwent surgery due to femoral hernia at the Department of Surgical Clinics in Vakif Gureba Training Hospital, Istanbul, were studied. The demographic data, the clinical presentation, the presence of incarceration/strangulation, incarcerated/strangulated organs, the preferred surgical technique, postoperative complications, duration of hospitalization, the recurrence rate, and the factors associated with the morbidity and mortality were reviewed and noted retrospectively.

The femoral hernias were repaired either with Cooper ligament hernioplasty (McVay) or anterior prosthetic mesh plug hernioplasty. The McVay repair was performed with interrupted non-absorbable sutures in between aponeurotic margin of the transverse abdominal muscle and Cooper's ligament. Following 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. Operations were performed under general anesthesia. Emergency surgery was indicated in the cases of incarceration/strangulation, and laparotomy was performed if viability of the intestines was under suspicion. Patients received prophylactic antibiotics with cefazolin i.v. and continued for 24–48 h at a dose of 1 g every 8 h i.v. If intestinal resection because of strangulation was performed, the patients were treated with ceftriaxon 1 g every 12 h i.v. for 5 days.

Results

During the study period, 115 patients with femoral hernia underwent surgery. The study consisted of 83 patients with adequate medical records. There were 59 (71%) women and 24 (29%) men, with a mean age of 46.84 years (ranging from 10 to 75 years). Primary hernias accounted for 90% of the cases (75 out of 83), whereas only 10% of the cases (8 out of 83) were considered as recurrent. Thirty-six patients (40%) underwent emergency surgery with the diagnosis of strangulation or incarceration of femoral hernia. Seventeen patients had strangulation; 11 of these patients had omentum in the hernial sac, whereas six patients had intestines. Four patients with diagnosis of acute abdomen underwent laparotomy, and after observing intestinal necrosis, involved segments of intestine were resected. In one patient, intestinal resection was done through inguinal incision. The hernial sac content and the type of operation in strangulated hernias are shown in Table 1. The remaining 19 patients had incarceration and underwent simple reduction of hernial sac content without resection. The clinical presentation of the patients with strangulated femoral hernia with intestinal resection is shown in Table 2. Forty-seven (60%) patients underwent elective surgery. McVay hernioplasty was used in 79 patients (95 %), while four patients (5%) were treated with mesh-plug prosthesis hernioplasty.

Twelve patients (15%) developed a variety of complications (nine patients (25%) in emergency, three patients (6%) in elective group). More than half of the complications (7 out of 12) were related with the wound, such as wound infection, seroma formation, and hematoma. There was only one mortality due to gastrointestinal system (GIS) hemorrhage, and pneumonia developed in early postoperative period. The details are shown in Table 3. The mean duration of hospitalization was 4.63 days (range 1–27 days).

Discussion

Although femoral hernia is less common than inguinal hernia, it is usually associated with incarceration, intestinal, or omental necrosis, and causes significant morbidity and mortality [4, 11–13]. It is most commonly observed between the ages of 30 and 70 years, and the incidence of femoral hernia relative to all groin hernias is reported to be 2–8% in adult population [14, 15]. Femoral hernias occur in both sexes but are far more common in women than in men. It comprises about 30% of their groin hernias [4]. In our study, we also noted that with 71% of the patients females were predominant.

Most patients complain of pain, discomfort in inguinal region, or may be asymptomatic. It usually presents with a smooth, globular swelling on the media side of the thigh just beneath the inguinal ligament.

Table 1 Strangulated organs and type of surgery

Strangulated organ	Number	Type of operation
Omentum	11	Omentum resection
Small intestine	6	5 ileum resection
		1 simple reduction

Table 2 Characteristics of patients with strangulation and intestinal resection

Case no.	Age	WBC	Air-fluid levels	Duration of admission	Hospitalization
1	58	14,000	–	3 h	7 days
2	85	6,600	+	4 days	2 days, ex
3	67	19,000	–	3 days	6 days
4	71	14,000	+	3 days	27 days
5	54	8,600	+	3 days	15 days

WBC white blood cell

Table 3 Morbidity and mortality in all cases

Patient no.	Sex	Age	Postoperative complication
1	M	85	GIS hemorrhage and pneumonia
2	F	34	GIS hemorrhage and pneumonia
3	F	61	GIS hemorrhage and pneumonia
4	M	58	Seroma
5	M	71	Pleural effusion + intraabdominal candida
6	M	47	Acute renal failure
7	F	59	Wound infection
8	F	51	Wound infection
9	F	49	Wound infection
10	F	54	Wound infection
11	M	37	Wound infection
12	M	63	Hematoma

GIS gastrointestinal system

The diagnosis of femoral hernia is difficult in adults and even more confusing in pediatric age group [16, 17]. Inguinal lymphadenopathy, lipoma, and psoas abscess have all been mistaken for a femoral hernia and must be differentiated.

Strangulation is a significant problem in all hernias associated with a mortality rate of approximately 10% and responsible for the increase in duration of hospitalization [18, 19]. Incarceration/strangulation rate of femoral hernia was reported between 44 and 86% [20, 21]. There are some clues for the physician that show the probability of strangulation such as leukocytosis, peritoneal irritation signs, air-fluid levels in abdominal radiograms, free-fluid in abdomen, or dilated intestinal loops in ultrasonography. Leukocytosis and the air-fluid levels in abdominal radiograms were the most commonly detected changes in our patients with strangulation and intestinal necrosis. Hachisuka et al. reported in 67 patients with femoral hernia [21] that there were nine strangulated organs, six of which were small intestine and three were omentum. We had six small intestines and 11 strangulated omentum detected in the hernial sac of the patients with strangulated/incarcerated femoral hernia. The strangulation is more common in the elderly and causes more serious complications. The co-existing diseases in the elderly also contribute to the increase in morbidity and mortality. Advanced age was shown to be an important risk factor for incarceration and resulted in poor outcome in external hernias [19, 22]. Replacement of fluid and electrolyte deficiency preoperatively is important in elderly and decreases especially metabolic complications.

Late admission to hospital is another factor which is thought to be responsible for strangulation and intestinal resection. Ashirov et al. reported that all patients who were operated for femoral hernia and died were admitted to hospital more than 2 days after incarceration [23]. All patients with strangulation except one were admitted to hospital after 48 h after commencement of their symptoms in our study. We have one mortality in our study. An 85-year-old patient was admitted late to emergency surgery unit with strangulated femoral hernia. Partial necrosis of ileum was detected in the hernial sac and resection was undertaken. The patient died in second postoperative day due to GIS bleeding and complicated pneumonia.

There are different surgical repair techniques for femoral hernia. McVay operation, polypropylene mesh-plug technique, and laparoscopic approach are all surgical modalities that are used by surgeons today [24]. We used either McVay or polypropylene mesh-plug hernioplasty technique. The use of mesh-plug in femoral hernia surgery is a relatively new technique. Swarnkar et al. [10] reported and described sutureless mesh-plug technique in 42 patients. After 2 years of median follow-up, there were no recurrences in these patients. We also used mesh-plug in four patients. There was one early recurrence. It was obvious that technical insufficiency and lack of anatomical knowledge of the hernia ring were the most important factors for recurrence. Recurrence rate after femoral hernia repair was reported 1–10% in literature [4, 25]. Technical insufficiency is the most important factor for recurrence. We have detected one recurrence in McVay repair in follow-up.

In conclusion, femoral hernia is associated with high rates of incarceration/strangulation and intestinal necrosis. Impediments in both admissions to hospital and diagnosis increase morbidity and mortality, especially in elderly patients. Although there are various new techniques for the repair of femoral hernia, McVay repair is still reliable for most of the cases.

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