The Surgical Results of Onlay Mesh Repair for Incisional Hernia

İnsizyonel Hernide Onlay Mesh Tamirinin Cerrahi Sonuçları

Onlay Mesh Tamiri / Onlay Mesh Repair is Safe and Effective Technique

Bülent Kaya[1], Yalım Uçtum[2], Cengiz Eriş[3], Orhan Bat[1], Sedat Ziyade[4], Rıza Kutanış[2],
[1]Department of General Surgery, Fatih Sultan Mehmet Training and Research Hospital,
[2]Department of General Surgery, Vakif Gureba Training and Research Hospital,
[3]Department of General Surgery, Haydarpasa Training and Research Hospital,
[4]Department of Thoracic Surgery, Bezm-i Alem Vakif University, Istanbul, Turkey

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Özet

Amaç: Abdominal cerrahi sonrası insizyonel herni önemli bir problemdir. Bu çalışmamızda İnsizyonel herni nedeni ile onlay mesh tekniği ile opere edilen hastaların uzun dönem nüks ve postoperatif komplikasyonlarını ortaya koymaya çalıştık. Gereç ve Yöntem: Ocak 2001 ile Kasım 2009 tarihleri arasında insizyonel herni tanısı ile Vakıf Gureba Eğitim Ve Araştırma Hastanesi Genel Cerrahi Kliniğinde opere edilen 139 hasta retrospektif olarak incelendi. Hastaların yaş, cinsiyet, herni boyutu ve lokalizasyonu, operasyon bulguları, hastanede yatış süresi, erken ve geç komplikasyonlar, nüks bilgileri kaydedildi. Bulgular: Çalışmada 56 erkek, 83 kadın mevcuttu. Ortalama yaş 55 (30-85 arası) idi. En sık herni gelişen insizyon göbek üstü median (51 hasta), göbek altı median (37 hasta). Herni boyutu, 0-5 cm 118 hasta, 6-10 cm 5 hasta, 11-15 cm 12 hasta ve 15 cm üzeri 4 hasta idi. Yara enfeksiyonu 22 hastada, seroma 12 hastada tespit edildi. Ortalama hastanede yatış 4.53 (1-10 arası) gündü. Nüks 6 hastada tespit edildi. Sonuç: Onlay mesh tamiri insizyonel hernide güvenli ve etkili bir yöntem olarak görülmektedir.

Anahtar Kelimeler

İnsizyonel Herni; Onlay Mesh Tamiri; Nüks

Abstract

Aim: İncisional hernia after abdominal surgery is an important problem. We aimed to evaluate the long-term recurrence rate as well as surgical complications in patients operated with onlay mesh repair technique for incisional hernia. Material and Method: We studied a serial of 139 patients retrospectively, operated due to incisional hernia in between January 2001 to November 2009 in Vakıf Gureba Training and Research Hospital General Surgery Department. The patient's age, sex, location and size of the defect, operation findings, duration of hospitalization, early and late complications and recurrences were recorded. Result: There were 56 men and 83 women in our serial. The mean age was 55 (age range, 30-85 years). The most common incisions that hernia had been developed were upper midline incision (51 patients) and lower midline incision (37 patients). The size of the hernia defect was 0-5 cm in 118 patients , 6-10 cm in 5 patients 11-15 cm in 12 patients, and above 15 cm in 4 patients. The postoperative complications were wound infection in 22 patients, seroma in 12 patients. The mean duration of hospital stay was 4.53 (range 1-10 days). The recurrence was detected in 6 patients. Discussion: It seems to be that onlay mesh repair is safe and effective technique for incisional hernia repair.

Keywords

Incisional Hernia; Onlay Mesh Repair; Recurrence

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Corresponding Author: Bulent Kaya, Fatih Sultan Mehmet Training and Research Hospital Department of General Surgery, Istanbul, Turkey.
T.: +90 5056822101 F.: +90 2165371627 E-Mail: drbkaya@yahoo.com

Introduction

Incisional hernia is still an important problem in surgical practice. It reduces the quality of life and causes significant economical burden for society. It's incidence is varying in between 10 % to 20 % after laparotomy [1,2]. Several factors may contribute to development of incisional hernia including surgical technique, obesity, postoperative wound infection, diabetes mellitus and smoking [3,4].

Incisional hernia management changed during the last decades. There are various surgical techniques to repair these hernias. While the primary repair has been associated with high recurrence rates, Usher introduced a new plastic prosthetic material, marlex mesh for hernia treatment in 1958 [5]. Monofilamented polypropylene mesh was produced in 1962 [6]. Since than, tension free repair with polypropylene mesh became most popular method and recommended to almost every patient with incisional hernia. Laparoscopic hernia repair, as an alternative technique has not a lower recurrence rate when compared to open repair. The gold standart for incisional hernia repair is still debated.

Early and long term complications may be encountered after incisional hernia repair with prosthetic material. Wound infection, seroma and hematoma are most common complications in early postoperative period . On the other hand, mesh reaction, enterocutaneous fistula and recurrence can usually be detected in long term follow-up. The aim of our retrospective study was to evaluate the longterm recurrence rate as well as surgical complications in patients operated with onlay mesh repair technique for incisional hernia.

Material and Method

The medical records of 139 patients were studied retrospectively who had been operated for incisional hernia in between January 2001 to November 2009 in Vakıf Gureba Training and Research Hospital, Department of General Surgery. The patients were diagnosed either with physical examination or diagnostic imaging including ultrasonography (USG) and computed tomography (CT) . Informed consent was taken from all patients. The patient's age, sex, location and size of the abdominal defect, the previous operation, operation findings, duration of hospitalization, early and late term complications and recurrences were recorded.

Operation Technique

All patients were operated under general anesthesia. Cefazolin sodium 1 gr was given intravenously during anesthesia induction. After cleaning of the skin with iodine solution, surgical incision was performed. The hernia sac was either resected or reducted to the abdomen without opening . Intact fascia, approximately 5 cm around the defect was dissected. A polypropylene mesh (Prolene Ethicon, Germany) was placed on to the anterior rectus fascia (onlay technique) with continous or interrupted 2/0 and 3/0 polypropylene sutures. Two suction drains were placed above prolene mesh in all patients. Drains were taken when the daily drainage decreased below to 20 cc.

Controls

Patients were controlled with outpatient clinic visits 1, 4, 8 weeks after surgery. The long term follow-up was performed with telephone call . Patients with any complaints were invited for clinical examination.The wound complications were defined. Any fluid and blood collection at incision side that was needed surgical drainage accepted as seroma or hematoma respectively. Wound infection was determined with pus accumulation in subcutaneous region.

Statistics

For statistical analysis, the statistical software package SPSS (Statistical Package for the Social Science) 16.0 for Windows (SPSS Inc., Chicago, IL) was used. Frequencies of sex and defect size were calculated. Descriptive statistics were performed for age, hospitalization time and time for previous operation. Postoperative complications according to sex were compared with Chi-square test.

Results

A total of 156 patients had been operated with incisional hernia during our study period. Seventeen patients were excluded either due to unreliable medical records or lost in follow-up. There were 83 women and 56 men. The mean age was 55.12 ± 9.749 years (range 30-85). Demographic characteristics of patients were shown in Table 1.

The most common complaint before surgery was pain at hernia site in 85 patients (61.1 %). The hernia diagnosis was established with physical examination in 128 patients (92 %). USG or CT were needed for hernia diagnosis in 11 patients (7.9 %). The previous surgical intervention had been documented in 125 (89.9 %) patients and shown in Table 2. The most common incision that hernia had been developed was upper midline incision. The hernia occurrence in different incision type was shown in Table 3. The mean time for hernia development after first surgery was found 15.98 ±12.995 years.(range 1-50). All operations were performed under general anesthesia. The incisional hernias were classified according to the defect size. There were 118 hernia ,0-5 cm in diameter, 5 hernia, 6-10 cm and 12 hernia 11-15 cm Table 1. There were 4 giant incisional hernias (hernia >15 cm). The defect was multiple on abdominal wall in 15 patients. All defects were repaired with onlay mesh technique.

The used mesh size was changed in between 8x6 cm to 20x35 cm. The mean duration of hospitalization time was 4.53 ±1.819 days (range 1-10) . There were 22 (15.8 %) wound infection and 12 (8.6 %) seroma formation after surgery. All these patients were managed with surgical drainage. Complication rate was

Table 1. Demographic characteristics of 139 patients

Variable	Mean±SD/Number	Min-Max.
Age	55.12±9.74	30-85
Sex	83 Female 56 Male	
Hernia size		
0-5 cm	85	
5-10 cm	46	
10-15 cm	5	
>15 cm	3	
Previous operation (years)	15 .98±12.99	1- 50
Hospitalization (days)	4.53±1.819	1-10

Table 2. The previous surgical interventions

Operation	Number	%
Gynecological operation	22	15.8
Appendectomy	19	13.6
Cholecystectomy	17	12.2
Umblical hernia repair	12	8.6
Surgery for malignancy	9	6.4
Splenectomy	5	3.5
Surgery for hydatid cyst	4	2.8
Surgery for intestinal obstruction	4	2.8
Others	33	23.7

Table 3. Development of hernia defect in different incisions

Incision type	Number(n)	%
Upper midline incision	44	31.6
Lower midline incision	27	19.4
Upper midline+ lower midline incision	13	9.3
Phannensteil	13	9.3
Mc- Burney	13	9.3
Mayo	12	8.6
Kocher's subcostal incision	5	3.5
Paramedian	4	2.8
Pararectal	4	2.8
Lombar incision	2	1.4

not statistically different between two sex (p:0,35). Six patients (4.2 %) had recurrence. The mean follow-up time was 2.3 years, changing in between 6 months to 8 years.

Discussion

Abdominal surgical interventions were increased in number in last decades. Approximately two million abdominal operations were performed in USA and about 100 000 incisional hernias were detected annually [7]. Incisional hernia has also became a more commonly encountered surgical pathology worldwide. It causes significant morbidity and mortality in affected patients. Incisional hernia usually presents with an asymptomatic or painful bulging noticed by the patient over incison scar. The pain is more common in small defects with narrow hernia orofice. The pain was most common symptom in our patients. The defect increases in size with time and serious complications like intestinal strangulation and perforation may occur. While more than half of the incisional hernias are seen in first two years after primary operation, they may also be detected many years after surgery [8,9,10]. The mean time from primary operation to hernia repair was about 15 years in our serial. It is a very long time for incisional hernia repair after previous surgery. We thought that the neglect of the hernia repair by patients was main factor for this delay.

Most of the incisional hernias can be diagnosed with physical examination. The diagnosis may be difficult in obese patients and patients with multiple abdominal operations. In that case, USG or CT may be necessary to diagnose the abdominal defect. Diagnostic laparoscopy can be performed in selected patients. The hernia was detected with CT or USG in eleven of our patients with diagnostic difficulties.

The risk factors for incisional hernia are well established. Wound infection, abdominal distention, tension on suture lines, male gender, age, obesity, emergency procedures, incision type and chronic disease state such as malignancy and diabetes are predisposing factors for hernia development. The wound infection was found the most important single factor in incisional hernia development. Bucknall TE et al [11] has been reported the incisional hernia rate about 23 % after infected primary incision and 4.5 % for a clean incision, healing without infection. Incision type is also an effective factor in hernia development. Many reports stated that transverse abdominal incisions have lower rate of incisional hernia when compared to midline incisions [12,13,14]. On the contrary , Ellis H et al [15] claimed that there were no difference for hernia development with different incision types. The most common incision type that hernia has been developed was upper midline incision in our study.

Primary repair for incisional hernia has high recurrence rate. It is usually prefered for small defects less than 5 cm in diameter. Hesselink VJ et al [16] reported 41 % recurrence rate in incisional hernias above 4 cm in diameter repaired with primary technique. Sauerland S [17] compared the primary repair with polypropylene mesh and found recurrence rates 18 % and 5 % respectively. Beside the size of abdominal defect, it was also stated that tension on the suture lines was a major problem in the primary repair technique. Relaxing incisions have been used for decreasing tension forces. Primary repair may be used for small incisional hernias with meticulous technique or patients in whom using prosthetic material is contraindicated.

The use of prolene mesh for incisional hernia has seriously lowered the recurrence rates in last decade. Mesh repair can be performed either with open or laparoscopic techniques. The anatomic placement of mesh changes according to the rectus sheeth, being inlay, onlay and sublay. We were placed the mesh over rectus fascia with prolene sutures (Onlay technique). Molloy RG et al [18] found 8 % recurrence rate in 45 months follow-up with onlay mesh technique. Vries Reilingh TS et al [19] compared the inlay, onlay and sublay techniques and reported that sublay tehnique was superior to the other methods.

On the other hand, Kingsnorth AN et al [20] found a recurrence rate of 3.4 % with onlay technique with excellent results. The recurrence rate was 4.2 % in our serial. It was reported that wound complications such as seroma, infection and hematoma were seen more commonly in onlay mesh repair technique [21,22]. Seroma formation may become an important problem after surgery . The high incidence of seroma occurrence is mainly related with extensive dissection in subcutaneous tissue. The seroma rate was reported 0 % to 63 % in the literature [19,21,23]. The seroma rate was 8.6 % and wound infection rate was 15.8 % in our serial. We were not detected any hematoma in postoperative follow-op. This study showed that the onlay mesh repair technique is an easy and effective surgical method for incisional hernia. It is also associated with minimal anatomical dissection and has acceptable recurrence rate. There was no conflict of interest in this study

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