Kocaeli Med J 2018; 8; 1:87-91

Laparoscopic and Conventional Incisional Hernia Repair: A Retrospective Analysis

Laparoskopik ve Konvansiyonel İnsizyonel Herni Tamiri: Retrospektif Bir Analiz

Mustafa Celalettin Haksal[1], Cem Gezen[1], Nuri Okkabaz[2], Merih Yılmaz[1], Mustafa Öncel[1]

1Medipol Üniversitesi Hastanesi, Genel Cerrahi Kliniği, İstanbul, Türkiye
2Sağlık Bilimleri Üniversitesi, Bağcılar Eğitim Ve Araştırma Hastanesi, Genel Cerrahi Kliniği, İstanbul, Türkiye

ÖZ

GİRİŞ ve AMAÇ*: İnsizyonel herni tamirinde laparoskopik ve açık yöntemlerin kısa dönem sonuçlara etkisinin araştırılması*

YÖNTEM ve GEREÇLER*: İnsizyonel herni nedeniyle laparoskopik veya açık olarak opere edilen hastalar retrospektif olarak tarandı. Gruplarda demografik veriler, hastalığa ve operasyona ait veriler ile kısa dönem sonuçlar irdelendi.*

BULGULAR*: 33 hastanın 19 [12 kadın (%63,2), ortalama yaş: 53,5±15,1] açık yöntemle ameliyat edilirken, 14 [11 kadın (%78,5), ortalama yaş: 59,1±14,2] hasta laparoskopik yöntemle ameliyat edildi. Vücut kitle indeksi laparoskopik grupta daha yüksek görüldü (30,3±4,6 karşın 34,4±6,3, p=0,041). Herni defektlerinin büyüklüğü açık karşın laparoskopi 7,6±4,8 cm ile 8,9±3,1 cm idi, p=0.404. Operasyon süreleri açıkta 100 (40-300) dakika iken, laparoskopide 77,5 (35-150) dakika idi, p=0.071. Yatış süreleri ise her iki grupta da ortalama 2 gün idi.*

TARTIŞMA ve SONUÇ*: İnsizyonel herni tamiri sonrası kısa dönemde laparoskopi yöntemi açık yönteme benzer sonuçlar vermektedir.*

Anahtar Kelimeler*: İnsizyonel herni, laparoskopi, herni tamiri*

ABSTRACT

INTRODUCTION: *To analyze the outcomes of laparoscopic and open techniques in incisional hernia repair.*

METHODS: *Patients' charts with incisional hernia were retrospectively reviewed. Demographics, disease and operation related variables and short term outcomes were compared between groups.*

RESULTS: *Nineteen [12 female (63.2%), mean±SD age of 53.5±15.1] of 33 patients were operated on with open technique, whereas 14 [11 female (78.5%), mean±SD age of 59.1±14.2] patients with laparoscopic technique. Body mass index was bigger in laparoscopic group (30.3±4.6 vs. 34.4±6.3, p=0.041). Hernia size and operation time was not different between groups (7.6±4.8 cm vs. 8.9±3.1 cm, p=0.404) and [100(40-300) vs. 77.5(35-150) minutes, p=0.071), respectively. Length of stay was 2 days after both techniques.*

DISCUSSION and CONCLUSION*: Laparoscopic incisional hernia repair has similar short term outcomes with open technique.*

Keywords*: incisional hernia, laparoscopy, hernia repair*

İletişim / Correspondence:

Dr. Mustafa Celalettin Haksal
Medipol Üniversitesi Hastanesi, Genel Cerrahi Kliniği, İstanbul, Türkiye
E-mail: drmustafahaksal@yahoo.com
Başvuru Tarihi: 06.03.2018
Kabul Tarihi: 25.12.2017

INTRODUCTION

Incisional hernia can be defined as protrusion of a part of the abdominal organs through the abdominal wall defect (1, 2). The incidence of incisional hernia after open surgery is approximately 2-11% (3-5). Some risk factors increase the incidence of incisional hernia. These are; wound infection, male gender, obesity, abdominal distension and poor surgical technique (6, 7). Incisional hernia can present with significant problems such as pain, intestinal obstruction, strangulation and ischemia of hernia content. Despite significant improvements in the repair method, morbidity and even mortality can be seen (8). There are two techniques for surgical intervention; open method with or without mesh and laparoscopic method (9).

Some early studies have shown the disadvantages of laparoscopic incisional hernia repair, such as long operation time and increased prices. However, some studies have shown that the duration of operations in experienced hands is similar (10, 11).

Laparoscopic incisional hernia repair was first described by Le Blanc and Booth in 1993 (12). They showed better results and lower complication rates with laparoscopic repair (13).

The laparoscopic approach does not close fascial defect, instead it is covered with a mesh. Careful and rigorous dissection is essential to prevent seroma, infection, bleeding and intestinal injury.

The purpose of this study is to show that laparoscopic repair is as safe and feasible as open surgery in repairing incisional hernia.

MATERIALS AND METHODS

Patients who were diagnosed with incisional hernia and treated with laparoscopic or open method between October 2014 and October 2017 were retrospectively retrieved.

Incisional hernia repairs were performed with two different methods. In the laparoscopic method, the abdominal cavity was insufflated with carbon dioxide via Veress® needle inserted at the farthest part to the hernia. One 10mm and three 5mm trocars were used to free the internal organs adhered to the hernia sac. After the dual mesh was laid out, it was fixed to the fascia with tacker. In the open method, the hernia sac was released from the subcutaneous tissue under the previous incision. The prolene mesh was laid and the fixed to the fascia with prolene sutures.

Both methods were performed under general anesthesia. Written informed consents were obtained from all patients. Demographic data, previous incision types, size of defect, route of diagnosis, duration of operation, length of stay, complications, follow-up periods and recurrences were recorded.

Statistical Analyses

The data were analyzed with SPSS 21.0 for Windows (Armonk, NY, IBM Corp) program. The results are defined in percent, mean and standard deviation or median (range). Among the groups, quantitative data were compared using Student's t test or Mann-Whitney U test, while the qualitative data was compared using Chi-square (Pearson's or Fischer's exact) test. P value <0.05 was considered statistically significant.

RESULTS

A total of 33 patients (23 female, 10 male) with a mean age of 55.9 ± 14.8 years were included in the study. The body mass indexes of the patients were 32.0±5.7 kg/m2. A total of 19 (57.6%) patients (12 women, 7 men) with a mean age of 53.5±15.1 years were operated with open method and 14 (42.4%) patients (11 women, 3 men) with a mean age of 59.1±14.2 years were operated with laparoscopic method. All patients were ASA 1 and 2, and there was no significant difference between the groups (Table 1).

Tablo.1. Çalışmaya dahil edilen hastaların genel özellikleri

	Açık grup (n=19)	Laparoskopik grup (n=14)	P
Yaş	53,5±15,1	59,1±14,2	0,289
Cinsiyet (Erkek/Kadın)	7 (36,8)/12 (63,2)	3 (21,4)/11 (78,6)	0,455
V.K.İ	30,3±4,6	34,4±6,3	0,041
ASA Skorları ASA I ASA II	 11(57,9%) 8 (42,1%)	 6(42,9%) 8(57,1%)	0,491

VKİ: Vücut Kitle İndeksi, ASA: American Society of Anesthesiologists Sınıflandırması

There was no significant difference between the groups in terms of the previous incision types (Table 2). The size of the defect was 7.6±4.8 cm in the open group and 8.9±3.1 cm in the laparoscopy

group. In six (31.6%) patients, ultrasound and in 13 (68.6%) patients abdominal tomography were used in diagnosis of patients operated with open method, while abdominal tomography was used in all patients in the laparoscopy group.

Tablo 2. Önceki operasyona ve tanıya ait değişkenler

	Açık grup (n=19)	Laparoskopik grup (n=14)	p
İnsizyonlar			
GÜM	6 (31,6%)	4 (28,6%)	
GAM	5 (26,3%)	4 (28,6%)	
GÜM+GAM	3 (15,8%)	3 (21,4%)	0,678
McBurney	3 (15,8%)	0	
Paramedian	2 (10,5%)	2 (14,3%)	
Subkostal	0	1 (7,1%)	
Defekt büyüklüğü (cm)	7,6±4,8	8,9±3,1	0,404
Tanı şekli			
USG	6 (31,6%)	0	0,059
BT	13 (68,4%)	14 (100%)	

GÜM: Göbek üstü orta hat, GAM: Göbek altı orta hat, USG: Ultrasonografi, BT: Bilgisayarlı tomografi

Operation time was 100 (40-300) minutes in the open group while 77.5 (35-150) minutes in the laparoscopy group. The length of stay were two days in both groups and there was no significant difference. One patient (5.3%) who had been operated by open method developed ileus who was discharged without any problems after conservative management. No ileus developed in any of the patients who underwent laparoscopy.

Follow-up times were 20 (4-52) months in open method and 14 (1-45) months in laparoscopy. In the open group, recurrence developed in 1 (5.3%) patient with a lower midline incision, whereas, in the laparoscopy group, recurrence was determined in 2 (14.3%) patients who have upper and lower midline incisions (Table 3).

Tablo 3. Operasyon ve sonrasına ait değişkenler

	Açık grup (n=19)	Laparoskopik grup (n=14)	p
Operasyon süresi (dakika)	100 (40-300)	77,5 (35-150)	0.071
Yatış Süresi (gün)	2 (1-9)	2 (1-5)	0,429
Komplikasyon	1 (5,3%)	0	0,999
Takip Süresi (ay)	20 (4-53)	14 (1-45)	0,243
Nüks	1 (5,3%)	2 (14,3%)	0,561

DISCUSSION

Laparoscopy is still an emerging method for incisional hernia repair. Laparoscopic approach has become safe and effective in most patients with the development of new instruments (14-16).

In studies performed by Haris et al., Eker et al. and Itani et al., longer operation durations were reported in laparoscopic approaches (17-19), while Asencio et al. (20) reported that the duration of operation was shorter. In 2008, Pring (21) showed that there was no difference. In our study, although the duration of operation was shorter in the laparoscopic method, there was not any statistically significant difference determined.

Park et al. (22), De Maria et al. (23) and Carbaje et al. (24) have shown that laparoscopic practice shortens the length of stay in the hospital. In a meta-analysis, the duration of hospital stay in the laparoscopic group was two days (with open method it was 4 days), but the authors emphasized that most of the studies were retrospective (25). In our study it was similar in both groups (2 days).

Heniford and colleagues reported a 2.21% rate of ileus in 407 patients who underwent laparoscopic operation in their retrospective study (26). In our study, ileus was determined in 1 (5.3%) patient operated with open method, but in none of the patients who were operated with laparoscopic approach. In the same study, the recurrence rate was reported as 3-4%. In our study, recurrence was determined in two patients in the laparoscopic group and in one patient in the open group.

There are some limitations of this study. First, although postoperative pain is an important finding in hernia repair, since our study was retrospective, the pain was not assessed. Secondly, complications may not be thoroughly analyzed in both techniques. Low number of patients was also another limitation of this study.

There is no evidence to support the superiority of one method to another. Laparoscopic repair is as effective and safe as open repair. Findings in our study show that there is no difference in the duration of hospital stay, duration of operation and recurrence rates when the two methods are compared.

REFERENCES

1. C. Fink, P. Baumann, M.N. Wente, et al. Incisional hernia rate 3 years after midline laparotomy, Br. J. Surg. 2014; 101:51-4.

2. W.B. Saunders, Dorland's Pocket Medical Dictionary, Pennsylvania, USA, 1995.

3. T.E. Bucknall, P.J. Cok, H. Ellis. Burst abdomen and incisional hernia: a prospective study of 1129 major laparotomies, Br. Med. J. 1992;284: 931-3.

4. M. Mudge, L.E. Hughes. Incisional hernia: a ten year prospective study of incidence and attitudes, Br. J. Surg. 1985;72:70-1.

5. R.C. Read, G. Yoder. Recent trends in management of incisional herniation, Arch. Surg. 1989;124: 485-8.

6. K.W. Millikan. Incisional hernia repair, Surg. Clin. N. Am. 2003;83: 1223-34.

7. R.W. Luijendijk, W.C.J. Hop, P. van den Tol, et al. A comparison of suture repair with mesh repair for incisional hernia, N. Engl. J. Med. 2000;343: 392-8.

8. D. Flum, K. Horvath, T. Koepsell. Have outcomes of incisional hernia repair improved with time? A population-based analysis, Ann. Surg. 2003;237: 129-35.

9. K. Cassar, A. Munro. Surgical treatment of incisional hernia, Br. J. Surg. 2002;89:534-45.

10. G. Navarra, C. Musolino, M.L. De Marco, et al. Retromuscular sutured incisional hernia repair: a randomized controlled trial to compare open and laparoscopic approach, Surg. Laparosc. Endosc. Percutan. Tech. 2007;17:86-90.

11. S. Olmi, A. Scaini, G.C. Cesana, et al. Laparoscopic versus open incisional hernia repair: an open randomized controlled study, Surg. Endosc. 2007;21: 555-9.

12. K.A. LeBlanc, W.V. Booth. Laparoscopic repair of incisional abdominal hernias using expanded polytetrafluoroethylene: preliminaryfindings, Surg. Laparosc. Endosc. 1993;3: 39-41.

13. K.A. LeBlanc, W.V. Booth, J.M. Whitaker. Laparoscopic incisional and ventral herniorrhaphy: our initial 100 patients, Am. J. Surg. 2000;180: 193-7.

14. M. Solej, V. Martino, P. Mao, et al. Early versus delayed laparoscopic cholecystectomy for acute cholecystitis, Minerva Chir. 2012;67: 381-7.

15. A.G. Ferrarese, V. Martino, S. Enrico, et al. Laparoscopic repair of wound defects in the elderly: our experience of 5 years, BMC Surg. 2013;13: S23.

16. A.G. Ferrarese, S. Enrico, M. Solej, et al. Transabdominal pre-peritoneal mesh in inguinal hernia repair in elderly: end point of our experience, BMC Surg. 2013;13:S24

17. P.H. Harris, M. Helfand, S.H. Woolf, et al. Methods Work Group, Third US Preventive Services Task Force, Current methods of the US preventive services task force: a review of the process, Am. J. Prev. Med. 2001;20: 21-35.

18. H.H. Eker, B.M. Hansson, M. Buunen, et al. Laparoscopic vs. open incisional hernia repair: a randomized clinical trial, JAMA Surg. 2013;148: 259-63.

19. K.M. Itani, K. Hur, L.T. Kim, et al. Veterans Affairs Ventral Incisional Hernia Investigators, Comparison of laparoscopic and open repair with mesh for the treatment of ventral incisional hernia: a randomized trial, Arch. Surg. 2010;145:322-8.

20. F. Asencio, J. Aguilo, S. Peiro, et al. Open randomized clinical trial of laparoscopic versus open incisional hernia repair, Surg. Endosc. 2009;23: 1441-8.

21. C.M. Pring, V. Tran, N. O'Rourke, et al. Laparoscopic versus open ventral hernia repair: a randomized controlled trial, Aust. N. Z. J. Surg. 2008;78: 903-6.

22. Park, D.W. Birch, P. Lovrics. Laparoscopic and open incisional hernia repair: a comparison study, Surgery 1998;124: 816-21.

23. E.J. DeMaria, J.M. Moss, H.J. Sugerman. Laparoscopic intraperitoneal polytetrafluoroethylene (PTFE) prosthetic patch repair of ventral hernia. Prospective comparison to open prefascial polypropylene mesh repair, Surg. Endosc. 2000;14: 326-9.

24. M.A. Carbajo, J.C. Martin del Olmo, J.I. Blanco, et al. Laparoscopic treatment vs open surgery in the solution of major incisional and abdominal wall hernias with mesh, Surg. Endosc. 1999;13: 250-2.

25. P.P. Goodney, C.M. Birkmeyer, J.D. Birkmeyer. Short-term outcomes of laparoscopic and open ventral hernia repair: a meta-analysis, Arch. Surg. 2002;137: 1161-5.

26. B.T. Heniford, A. Park, B.J. Ramshaw, et al. Laparoscopic ventral and incisional hernia repair in 407 patients, J. Am. Coll. Surg. 2000;190: 645-50.