

Laparoscopic total extraperitoneal hernia repair outcomes in recurrent inguinal hernia

✉ Girayhan Çelik,¹ ✉ Ayfer Şen,² ✉ Melih Can Gül,² ✉ Mehmet Zafer Sabuncuoğlu²

¹Department of General Surgery, Isparta City Hospital, Isparta, Turkey

²Department of General Surgery, Süleyman Demirel University Faculty of Medicine, Isparta, Turkey

ABSTRACT

Introduction: Inguinal hernia repair is one of the common procedures in surgical daily routine. The aim of this study was to present clinical outcomes and recurrence rates of laparoscopic total extraperitoneal hernia repair in recurrent inguinal hernia performed in our clinic.

Materials and Methods: The data of patients who underwent laparoscopic total extraperitoneal herniorrhaphy between January 2012 and May 2018 were evaluated retrospectively.

Results: 23 patients who underwent laparoscopic total extraperitoneal herniorrhaphy were included in this study. Mean age of the patients was 58.65. 12 patients were performed from left, 9 patients from right, 2 patients were performed bilaterally. Mean duration of the operation was 35 minutes, mean duration of hospitalization was 1 day.

Conclusion: While planning surgical technique for recurrent inguinal hernia; if previous surgery was performed with anterior approach, posterior approach should be chosen, and vice versa.

Keywords: Hernia; inguinal; laparoscopic total extraperitoneal; recurrent.

Introduction

75 percent of abdominal Wall hernias occurs in inguinal region. Male to female ratio is 7/1. The prevalence of inguinal hernia is approximately 3–8% percent of the population.^[1] Inguinal hernia is a disease with a lifetime risk ratio of 27% in men and 3% in women. However the recurrence rates of these hernias are 11% in men, 3% in women. Because of the high incidence of this disease, inguinal hernia repairing is the most common procedure in the general surgery and is 10–15% of all operations.^[2] After starting the mesh usage for inguinal hernia repairment, recurrence rates decreased dramatically. In guidelines, Lichtenstein oper-

ation is considered to be the reference technique.^[3] Recurrence rate is found 0–7.7% at 2 years follow up.^[3,4] An alternative treatment approach should be preferred in recurrent inguinal hernias which were repaired with mesh. Laparoscopic posterior approach techniques such as Total Extraperitoneal (TEP) or Transabdominal Peritoneal (TAPP), should be preferred for Recurrent inguinal hernias, which were repaired with anterior approach such as Lichtenstein.^[5] After the laparoscopic surgery has been performed in inguinal hernia repairs, hernia surgery has gained a different meaning and these laparoscopic techniques have become accepted all around the world in a short time and applied



Received: 07.06.2018 Accepted: 20.09.2018

Correspondence: Girayhan Çelik, M.D., Department of General Surgery,
Isparta City Hospital, Isparta, Turkey
e-mail: girayhan_celik@hotmail.com

successfully in many centers. Laparoscopic Total Extraperitoneal (TEP) inguinal hernia repair is a tension-free method as well as having general advantages of laparoscopic surgery such as minimal postoperative pain, short recovery time and good cosmetic outcomes.^[6] In addition, the use of a previously unexposed area in recurrence after anterior operation usage makes the operation relatively easier. The aim of this study is to evaluate our experience in laparoscopic Total Extraperitoneal Hernia method in the treatment of recurrent inguinal hernia in Suleyman Demirel University Faculty of Medicine, Isparta.

Materials and Methods

The data of patients who underwent laparoscopic total extraperitoneal herniorrhaphy between January 2012 and May 2018 were analyzed retrospectively.

Surgical Technique: In all patients, intratracheal intubation was performed in supine position, urinary catheter placement was inserted and processing started. The primer surgeon was placed in the opposite side of the hernia and second surgeon was on the opposite side of surgeon. 1.5 centimeter transverse skin incision which is just below the umbilicus, was performed and skin subcutaneous tissue and the upper leaf of rectus fascia were passed through. Just above the semilunar line, the preperitoneal area was entered by the 10 mm trocar on the lower leaf of the rectus. The preperitoneal area was dissected by moving 14 mmHg gas through the medial, lateral and posterior directions until the periperitoneal area was seen. Another 5 mm trocar was inserted 5 cm above the suprapubic area. And another 5 mm trocar was inserted between these trocars. Inguinal region was dissected and herniated structures were pulled downwards and released by sharp and blunt with dissection. Hernial sac was revealed and all adhesions around the pouch were separated into peritoneum and if the patient is male spermatic cord was deperitonised. Dissection was continued until spina iliaca anterior superior in lateral site, and was crossed the medial line, and fell under the Cooper ligament's inferior. Anatomic mesh of appropriate size was placed so that the aperture was closed. And then the mesh was fixed by placing the tacher. Pressure was decreased slowly and mesh was checked and gas was totally drained. Skin incisions were sutured with 3/0 prolene suture.

Results

In our clinic total of 202 patients were operated for inguinal hernia with TEP technique and 87 of these operations were

bilateral, 61 right, 54 left, 23 of them were recurrent inguinal hernia. Mean age of patients treated with TEP herniorrhaphy technique was 58.65 (22–86). 17 patients were operated once, 4 patients twice, 1 patient 3 times, 1 patient was seven times operated previously. In the early postoperative period, seroma, hydrocele, hematoma and testicular ischemia were not occurred. Also no major complications or mortality were occurred. All patients were called for follow up between 1 to 13 months. 12 patients were performed from left, 9 patients from right, 2 patients were performed bilaterally. Mean duration of the operation was 35 minutes, mean duration of hospitalization was 1 day (Table 1).

Discussion

Lichtenstein's technique (tension-free inguinal hernia repairment with mesh) decreased rates of recurrency. However, in some patients recurrence may also be seen after Lichtenstein's.^[3,7] This rate was found to be lower in the repair of recurrent hernia by TEP method and it was reported as 0% in some studies.^[8–10] In our clinic, this ratio was 0%. Lowham et al.^[10] indicated that recurrence after laparoscopic TEP herniography is due to technique such as inappropriate dissection, wrong prothesis size, inappropriate positioning of the mesh. Schumpelick et al.^[11] indicates that recurrence rates of modern inguinal hernia repairs are 1–3% in primary and 3–5% in recurrent. Lau et al.^[12] indicates that high recurrence rate of direct inguinal hernia was caused by inappropriate technique, strain in

Table 1. Demographic data of patients and cases

Operation	n	%
Gender		
Female	2	8.6
Male	21	91.4
Recurrence		
1	17	73.9
2	4	17.4
3	1	4.3
7	1	4.3
Hernia site		
Right	9	39.1
Left	12	52.1
Bilateral	2	8.6
Symptom		
Swelling	5	21.7
Pain	10	43.4
Swelling and pain	8	34.8

restoration site and inadequate support of posterior wall with suture herniorrhaphy. Many articles showed that the potential reasons of indirect hernia were unaccomplished dissection or sac dissection was performed inferiorly or inadequate restoration of internal ring.^[13-14] Yoon et al.^[15] indicates that direct hernia was more common than indirect hernia in recurrent hernia group, but also states that further research is needed because data of previous operation's type that the operation was performed either with suture technique or Lichtenstein's. TEP especially in recurrent cases with multiple anterior operations should be considered because preperitoneal area was free from tissue damage and scar tissue of previous operations, embracing advantages of laparoscopic surgery and lower recurrence rates. Posterior approach techniques has increasing popularity among surgeons because of easy access to preperitoneal area from lateral site of rectus muscle and rectus sheath. This approach provides an easy and a clear view of the anatomical hernia areas.

Conclusion

It is important that; the previous operation is performed with an anterior or posterior approach while the surgery to be performed in the recurrent inguinal hernia. Recurrence rate decreased after anterior approaches using mesh such as Lichtenstein's technique. However, recurrence may also be observed in some patients with Lichtenstein's operation. Posterior approach should be considered in recurrence after this operations. Thus, complications such as vascular injury, nerve injury, increased inflammatory reaction caused by secondary operation may be avoided. If the posterior approach performed by experienced surgeons, the development of these complications is prevented. In the same way, If previous operation was performed by using posterior approach; anterior approach should be considered. Laparoscopic Inguinal Hernia repair is an advanced laparoscopic technique. The laparoscopic hernia operation in advanced laparoscopic hernia group, besides the negative sides such as the long learning curve and high cost, can be advantageous to open surgery with its advantages such as aesthetic appearances, early mobilisation. Especially in recurrences after anterior approach, TEP can be considered advantageous because it is easier to be performed and has lower recurrence rates.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

References

1. Kingsnorth AN, Gray MR, Nott DM. Prospective randomized trial comparing the Shouldice technique and plication darn for inguinal hernia. *Br J Surg* 1992;79:1068-70. [\[CrossRef\]](#)
2. Schumpelick V, Treutner KH, Arlt G. Inguinal hernia repair in adults. *Lancet* 1994;344:375-9. [\[CrossRef\]](#)
3. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G, Conze J, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia* 2009;13:343-403. [\[CrossRef\]](#)
4. Burcharth J, Pommergaard HC, Bisgaard T, Rosenberg J. Patient-related risk factors for recurrence after inguinal hernia repair: a systematic review and meta-analysis of observational studies. *Surg Innov* 2015;22:303-17. [\[CrossRef\]](#)
5. Bökkerink WJ, Persoon AM, Akkersdijk WL, van Laarhoven CJ, Koning GG. The TREPP as alternative technique for recurrent inguinal hernia after Lichtenstein's repair: A consecutive case series. *Int J Surg* 2017;40:73-7. [\[CrossRef\]](#)
6. Wang WJ, Chen JZ, Fang Q, Li JF, Jin PF, Li ZT. Comparison of the effects of laparoscopic hernia repair and Lichtenstein tension-free hernia repair. *J Laparoendosc Adv Surg Tech A* 2013;23:301-5. [\[CrossRef\]](#)
7. Keus F, Wetterslev J, Gluud C, van Laarhoven CJ. Evidence at a glance: error matrix approach for overviewing available evidence. *BMC Med Res Methodol* 2010;10:90. [\[CrossRef\]](#)
8. Scheuerlein H, Schiller A, Schneider C, Scheidbach H, Tamme C, Köckerling F. Totally extraperitoneal repair of recurrent inguinal hernia. *Surg Endosc* 2003;17:1072-6. [\[CrossRef\]](#)
9. Garg P, Menon GR, Rajagopal M, Ismail M. Laparoscopic total extraperitoneal repair of recurrent inguinal hernias. *Surg Endosc* 2010;24:450-4. [\[CrossRef\]](#)
10. Lowham AS, Filipi CJ, Fitzgibbons RJ Jr, Stoppa R, Wantz GE, Felix EL, et al. Mechanisms of hernia recurrence after preperitoneal mesh repair. Traditional and laparoscopic. *Ann Surg* 1997;225:422-31. [\[CrossRef\]](#)
11. Schumpelick V, Kupczyk-Joeris D, Töns C, Pflingsten FP. [Repair of recurrent inguinal hernia. Tactics, technic and results]. *Chirurg* 1990;61:526-9.
12. Lau H. Endoscopic totally extraperitoneal inguinal hernioplasty for recurrence after open repair. *ANZ J Surg* 2004;74:877-80. [\[CrossRef\]](#)
13. Postlethwait RW. Recurrent inguinal hernia. *Ann Surg* 1985;202:777-9. [\[CrossRef\]](#)
14. Weinstein M, Roberts M. Recurrent inguinal hernia. Follow-up study of 100 postoperative patients. *Am J Surg* 1975;129:564-9. [\[CrossRef\]](#)
15. Yoon Young Choi, Zisun Kim, and Kyung Yul Hur. Journal of Laparoendoscopic & Advanced Surgical Techniques. Jul 2010. ahead of print <http://doi.org/10.1089/lap.2010.00>.