Laparoscopic Herniorrhaphy

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Abstract:

Background *: Inguinal hernia repair surgery is one of the most frequently performed surgical procedures worldwide. There is a progress in the surgical techniques of inguinal hernia repair. Lparoscopic inguinal inguinal hernia repair is one of tension free repairs.The purpose of this study was to evaluate patients managed in Zawia Teaching Hospital by laparoscopic inguinal hernia repair.*

Methods *: This prspective study was carried out in the General Surgical Department of Zawia Teaching Hospital,Libya,between January*

2009 and October 2018.Demographic data, clinical presentations,the type of laparoscopic repair and postoperative out comes were analysed.

Results *:Forty seven patients were operated laparoscopically,laparoscopic herniotomy for children performed in nine patients, TEP total extraperitoneal hernia repair performed in six patients and TAPP transabdominal prepritoneal repair performed in thirty two patients.The majority of patients diacharged within the first 24hours of operations.*

Conclusion *:Laparoscopic inguinal hernia repair is a feasible and safe operation with minimal complications in children and adults.*

Introduction:

Inguinal hernia is a common disease manifesting as a protrusion of abdominal cavity contents through the inguinal canal as a result of abdominal wall defect 1.They are the most common abdominal wall defects seen in surgical practice 2, comprising 75% of all abdominal wall hernias 3,4. Inguinal hernias are much more common in male individuals than in female individuals 5, affecting more than one quarter of men during their lifetime 6,and occur on the right side more than on the left side 5. Hernia is a common problem of the modern world and more common in the developing countries 4. The incidence of inguinal hernia varies according to the different studies ranging from 2 to 10% 1,2,4. Surgical repair of inguinal of inguinal hernia is one of the most frequent surgical operation performed 6,and is the second most common general surgical operation wordwide (after appendectomy) accounting for 10 to

15% of surgical procedures 3. Inguinal hernia repair is the most common groin hernia repair wordwide 4,7,8. In infants and children inguinal hernia management is one of the most frequently performed operations 5,9,10. Early presentation and elective repair of inguinal hernia have been reported to eliminate the morbidity and mortality associated with this common disease 5,9. Many surgical techniques have been used to repair the inguinal hernia defects 1. Operative skills are essential and can be acquired through personal experience and training 3. The surgical methods of repair categorized as tension repair and tension free repair 1. Many surgical techniques have been used to repair the inguinal hernia defects 1. Operative skills are essential and can be acquired through personal experience and training 3. Herniorrhaphy through repair of the posterior wall of the inguinal canal was first described by Bassini in 1887 (tension repair). Lichtenstein (1984) preposed a tension free herniorrhaphy by using anterior transversalis fascia in which a prosthetic material used to bridge the defect in the floor of inguinal canal.This technique was quickly adopted because of its advantages 1,2. Other repair techniques of inguinal hernia includes,Shouldice repair, posterior preperitoneal repair and recently laparoscopic hernia repair 4.In children the principle for repair of indirect inguinal hernia consist of complete ligation of the patent processus vaginalis 11. Laparoscopic inguinal herniorrhaphy was first described by Ger 1982,after this description,it has becomes a common operation 5,12.Laparoscopic herniorrhaphy has a longer and steeper learning curve as compared to open hernia repair 2,12.In adults laparoscopic herniorrhaphy performed by using tranabdominal preperitoneal repair (TAPP) or total extraperitoneal repair (TEP) 2,4 and in many centers routinely perform laparoscopic hernia

repair in children 5,10. Laparoscopic inguinal herniorhaphy has several advantages over open repair.

Methods:

This prospective study was conducted on 47 patients in the General Surgical Department of Zawia University Hospital,Libya, between January 2009 and October 2018.Total 48 patients underwent laparoscopic hernia repair,the patientsselected randomily and according to the facilities available. Prophylactic antibiotics given to adults patients in whome a nonabsorbable mesh was used. In female children the operative technique used were laparoscopic closure of the patent process vaginalis at the deep inguinal ring, but in male children laparoscopic repair performed by separation of the patent process vaginalis and proximal closure of the peritoneum at the deep inguinal ring Figure 1.

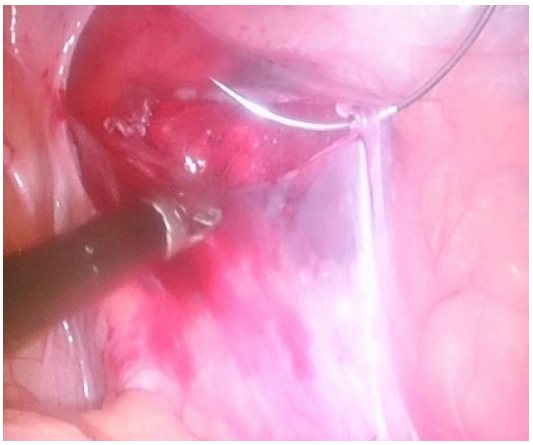

Figure 1:Laparoscopic closure of patent process vaginalis

In adults the laparoscopic repair performed by using either TransAbdominal PrePeritoneal hernia repair (TAPP) or Total

ExtraPeritoneal hernia repair (TEP), where a proline mesh was positioned to cover the hernial orifices, the mesh fixed with endoscopic tacker in TAPP operations only Figure 2, while in TEP operation it maintained in position between the peritoneum and the anterior abdominal wall after CO2 deflation Figure 3.

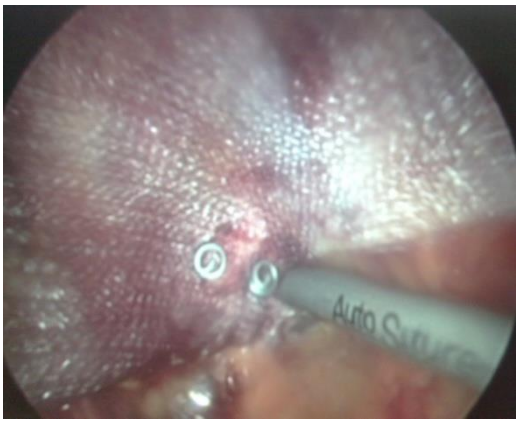

Figure 3 Proline mesh in TEP operation

Figure 2 proline mesh fixed in TAPP

Results:

The study was conducted on 47 patients,42 male patients and 5 female patients Table 1.The majority of operated patients were having indirect inguinal hernia (39 patients) the direct inguinal hernia reported in eight patients (17%), the greater number of patients involve the right side (25 patients) and bilateral inguinal hernia reported in two patients Table 2.

Table 1 Demographic distribution (1)

Age	Number of patients			Percentage		
	Males	Females	Total	Male	Females	Total
0-10	4	**4**	**8**	8.5	8.5	**17**
11-20	**1**	**0**	**1**	**2**	**2**	**2**
21-30	**9**	**0**	**9**	**19**	**0**	**19**
31-40	**8**	**0**	**8**	**17**	**0**	**17**
41-50	**9**	**1**	**10**	**19**	**2**	**21**
51-60	**2**	**0**	**2**	**4**	**0**	**4**
61-70	**4**	**0**	**4**	8.5	**0**	8.5
71-80	**5**	**0**	**5**	10.6	**0**	10.6

Table 2 Side of hernia involvement

Side of the hernia	Number of the patients	Percentage
Right side	**25**	**53**
Left side	**20**	42.5
Bilateral involvement	**2**	4.2

Transabdominal preperitoneal hernia repair performed for 32 patients, Total extraperitoneal hernia repair performed for 6 patients and laparoscopic herniotomy for children performed for 9 patients Figure 4.

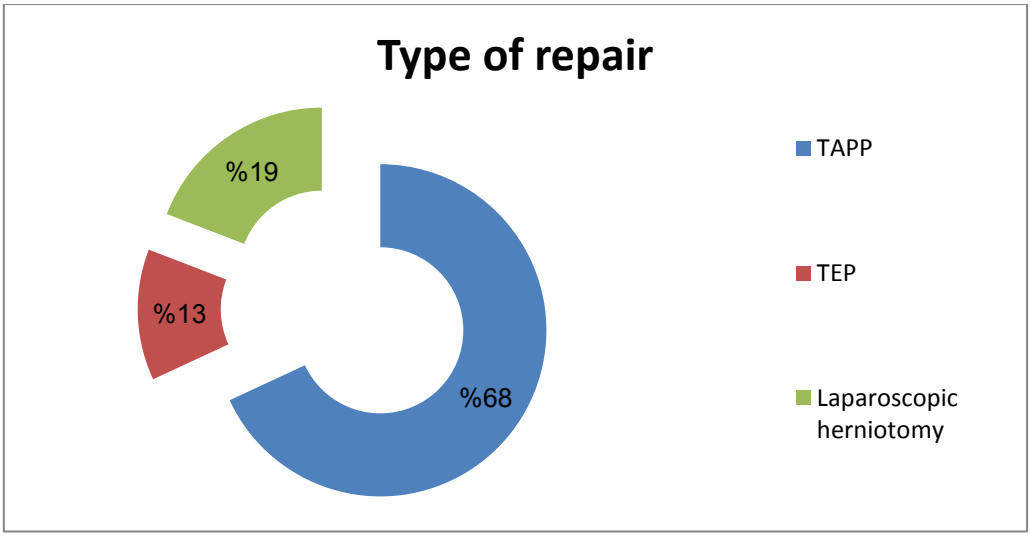

Figure 4 Type of hernia repair

Patients for whome laparoscopic herniotomy and TEP repair performed where dischsrged within 24 hours of operation,and those for whome TAPP repair performed the majority were discharged in the first postoperative day.Those stayed for two days or more were observed for associated medical illnesses Table 3. There is no recurrence of inguinal hernia reported in this study until this year(2019) and few patients developed wound hematoma which treated conservatively.

Table 3 Duration of hospital stay

Duration	One day	Tow days	Three days
Number of days	**34**	**8**	**5**
Percentage	72.3	17	10.6

Discussion:

There are many factors affecting the recurrence rate of inguinal hernia among these factors failure to ligate the sac high enough at the internal ring in children, injury to the floor of the inguinal canal due to operative trauma,postoperative wound infection and hematoma 11, excessive tension during hernia repair,incomplete dissection of the myopectineal orifices and inadequate mesh size 13.

Laparoscopic hernia repair proven to be a method that can avoid all these factors 11. Nowadays laparoscopic hernia repair widely performed in specialized surgical departments and so called the modern days of the minimally invasive surgery 2.The learning curve of laparoscopic hernia repair influenced by experiences of surgeon,surgical assistants, environment of operating room, anesthesiologist and specialized nurse 2.Currently the accepted modern techniques for inguinal hernia repair in adults are the transabdominal preperitoneal repair (TAPP) and the totally extraperitoneal repair (TEP)12.In children the laparoscopic approach is rapidly gaining popularity 10 in which the patent process vaginalis closed at the deep inguinal ring 11.In adults the mesh size should cover all pectineal hernia sites and provide at least 4 cm overlap of the hernia to decrease recurrences associated with mesh migration,shrinkage and rolling 13.In children laparoscopic repair does not impair testicular perfusion 5 and has better visualization of the vas and testicular vessels 9. Laparoscopic hernia repair has several advantages including excellent visual exposure 5,10,14, minimal dissection 5,10,less complications 10, reduced pain 2,5,11,12, 13,15, 16,17,18, fewer wound complications

2,13, reduced surgery site infection 8, early recovery 7,11,13,14,18,early return to normal activities 3,4,5,12,13,15,16, low recurrence rate2,3, easier repair of recurrent and bilateralhernia 13, better long term quality of life out comes 2, better cosmesis 11,18,short hospital stay 1,7.

Coclusions:

Laparoscopic inguinal hernia repairs are feasible and safe operations in children and adults. They are associated with many advantages as compared to open techniques of inguinal hernia repairs and should be practiced by trained team and offered to all patients according to the appropriate indications.

References:

1.Fan Q,Zhang D, Yang D, Hong-wu Li,Wei S, Yang L, Yang F, Zhang S, Yao-qiang Wu, Wei-de An, Dai Z, Jiang H, Wang F, Qiao S, Hang-yu LI. Anterior transversalis fascia approach versus preperitoneal space approach for inguinal hernia repair in residents in northern China :study protocol for a prospective,multicentre,randomized,controlled trial.BMJ Open 2017;7:e016481.doi:10.1136/bmjopen-2017-016481.

2.Lim J W,Lee J Y, Lee S E,Moon J I,Ra Y M,Choi I S,Choi W J,Yoon D S,Min H S.The learning curve for laparoscopic totally extraperitoneal herniorrhaphy by moving average.JKSS,Koreen Surg Soc;2012;83:92-96.

3.Osilli D, Awori M,Ojuka D. Factors Influencing Choice of Inguinal Hernia Repair Technique. Ann Afr Surg. 2017;14(1):3-9.

4.Pahwa H S, Kumar A, Agarwal P, Agarwal A A.Current trend in laparoscopic groin hernia : A review.World J Clin Cases 2015 September 16;3(9):789-792.

5.Mostafa A. Hamad,Mohamed A. Osama and Mahmoud Abdelhamed.Laparoscopic-assissted percutaneous internal ring ligation in children.Ann Pediatr Sur 2011,7:66-69.

6.Malik A, Bell C M,Stukel T A,Urbach D R. Recurrence of inguinal hernias repaired in a large hernia surgical specialty hospital and general hospitals in Ontario,Canada. Can J Surg 2016; 59(1):19-25.

7.Fernando Spencer Netto,Fayez Quereshy,Bruna G. Camilotti,Kristen Pitzul,Josephine Kwong,Timothy Jackson,Todd Penner,Allan Okrainec.Hospital Costs Associated With Laparoscopic and Open Iinguinal Herniorrphy.JSLS 2014;18(4):e2014.00217.

8.A.P.MacCormick,J.A.Akoh.SURVEY OF SURGEONS REGARDING PROPHYLACTIC ANTIBIOTIC USE IN INGUINAL HERNIA REPAIR.SJS 2018,107;(3):208-211.

9.Ahmed Oshiba,Khaled Ashour,Mohamed Aboheba,Sameh Shehata and Rafik Shalaby. Comparative study between purse-string suture and peritoneal disconnection with ligation techniques in the laparoscopic repair of inguinal hernia in infants and children.Ann Pediatr Surg 2016,12:137-141.

10.Rafik Shalaby,Abdel Ghany Essa,Abdel Aziz Yehya,Refaat Ibrahem,Elsayed Hassan,Abd Elmoniem Shams and Samir Gouda.Laparoscopic Hernia Repair in Infancy and Childhood;

Evaluation of two Two Different Techniques.Ann Pediatr Surg 2010;6(1):6-13.

11.Masao Endo,Toshihiko Watanabe,Miwako Nakano,Fumiko Yoshida,Etsuji Ukiyama. Laparoscopic completely extraperitoneal repair of inguinal hernia in children :a single- institute experience with 1,257repairs compaired with cut-down herniorrhaphy. Surg Endosc 1706-1712.

12.Shamir O. Cawich,Sanjib. K. Mohanty,Kimon O. Bonadie,Lindberg K. Simpson,Peter B. Johnson, Sundeep Shah,Eric W. Williams. Laparoscopic Inguinal Hernia Repair in a Developing Nation: Short-term Outcomes in 103 Consecutive Procedures.J Surg Tech Case Report 2013;5:13-17

13. 13.C I McGuire,R J Baigrie,D Theunissen,N L Fernandes,L R Chapman.Outcome of laparoscopic inguinal hernia repair in a South African private practice setting.SAJS 2012;50(4):115-118.

14.C E H Voorbrood,E Goedhart,E J M M Verleisdonk,F Sanders,D Naafs,J P J Burgmans. BMJ Open Endoscopic totally extraperitoneal (TEP) hernia repair for inguinal disruption (Sportsmans hernia):rationale and design of a prospective observational cohort study (TEP-ID-study). BMJ Open 2016;6:e010014.doi:10.1136lbmjopen-2015-010014.

15.Jean-Gaston DesCoteaux,Francis Sutherland.INGUINAL HERNIA REPAIR :A SURVEY OF CANADIAN PRACTICE PATTERNS. CJS 1999;42(2):127-132.

16.Aly O, Green A, Joy M, Wong C.H, Al-Kandari A,Cheng S,and Malik M.Is Laparoscopic Inguinal Hernia Repair More Effective than Open Repair.J Coll P S Pakistan 2011;21(5):291-296.

17.m. h. abbas,a. hamade,m.n. choudhry,n. hamza,r. nadeem, b. j. ammori.infiltration of wounds and extraperitoneal space with local anesthetic in patients undergoing laparoscopic totally extraperitoneal repair of unilateral inguinal hernias :a randomized double-blind placebo-controlled trial. sjs 2010;99:18-23.

18.Yoon Young Choi,Zisun Kim,Kyung Yul Hur.Learning curve for laparoscopic totally extraperitoneal repair of inguinal hernia.Can J Surg 2012;55(1):33-36.