The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/2019.26.03.3232

ORIGINAL PROF-0-3232

COMPLICATED INGUINAL HERNIAS;

COMPARISON BETWEEN HERNIORRHAPHY AND HERNIOPLASTY IN EMERGENCY TREATMENT OF COMPLICATED INGUINAL HERNIAS.

Naveed Akhtar[1], Syed Shams-ul-Hassan[2], Muhammad Sabir[3], M. Nauman Ashraf[4]

1. MBBS, FCPS (G. Surgery), FCPS (Urology)
   Associate Professor
   Department of Surgical Unit 1
   Nishtar Medical University/ Hospital Multan.
2. MBBS, FCPS (G. Surgery)
   Senior Registrar
   Department of Surgical Unit 1
   Nishtar Medical University/ Hospital Multan.
3. MBBS, FCPS (G. Surgery)
   Assistant Professor
   Department of Surgical Unit 1
   Nishtar Medical University/ Hospital.
4. MBBS,
   PGR
   Department of Surgical II,
   SZMC/H RYK.

Correspondence Address:
Dr. Naveed Akhtar
Associate Professor
Department of Surgical Unit 1,
Nishtar Medical University/ Hospital Multan.
drchnaveed@yahoo.com

Article received on:
21/11/2017
Accepted for publication:
15/09/2018
Received after proof reading:
23/02/2019

ABSTRACT… Background: Herniorrhaphy and hernioplasty are the two most common modalities used with different degree of success and complication rates in the treatment of inguinal hernia. Several studies show that use of mesh is superior to the non-mesh operations in inguinal hernia surgery. It is generally believed that the use of biomaterials should be limited to non-infected surgical fields. Now the concept regarding use of mesh in complicated hernias is changing as shown by many studies. Current study is being planned to observe the outcomes of the mesh hernioplasty in treatment of complicated inguinal hernias in emergency so that in future appropriate and safe technique may be suggested for repair of complicated hernias in emergency setting. **Objectives:** To compare the outcome of hernioplasty and herniorrhaphy in emergency for the treatment of complicated (Irreducible/obstructed) inguinal hernias regarding wound infection and hospital stay. **Material & Methods:** Randomized control trial. **Setting:** Surgical ward, Sheikh Zayed Hospital, Rahim yar khan. **Period:** 09 months from 01-01-2016 to 30-09-2016. **Sample Size:** A total of 64 patients with 32 patients were included in each group, with confidence level of 95% and power of 80% and anticipated mean level of hospital stay in group 1 of 5±3.4 days versus 3±2.1 days in group 2. **Sampling Technique:** Non-probability, consecutive sampling. **Results:** In this study there were total 64 cases with 32 in each group. The mean age was 41.69±11.06 years and the mean duration of hernia obstruction was 12.83±4.97 hours. There was no significant difference in terms of age, duration of hernia and hernial obstruction between both groups. Seroma was seen in 5 (7.81%) out of 64 cases while wound infection was seen in 8 (12.50%) of cases. Seroma was seen in 2 (6.25%) out of 30 cases in herniorrhaphy as compared to 3 (9.38%) out of 32 cases with hernioplasty with p value of 0.64. Wound infection was seen in equally 4 (12.50%) out of 32 cases in both groups with p value of 1.0. Duration of hospital stay was 4.66±1.36 in patients with herniorrhaphy as compared to 4.53±1.37 days with hernioplasty with p value= 0.82. There was no significant difference in terms of age groups, duration of hernia and its obstruction between both groups regarding seroma. There was also no significant association among any of the confounding factors regarding the wound infection and length of the hospital stay between the both groups. **Conclusion;** We can perform hernioplasty as compared to herniorrhaphy for complicated inguinal hernia with similar complications and better success rates in the same emergency setting.

Key words: Complicated Inguinal Hernia, Hernioplasty, Herniorrhaphy, Inguinal Hernia.

Article Citation: Akhtar N, Shams-ul-Hassan S, Sabir M, Ashraf MN. Complicated inguinal hernias; comparison between herniorrhaphy and hernioplasty in emergency treatment of complicated inguinal hernias. Professional Med J 2019; 26(3):388-393. **DOI:** 10.29309/TPMJ/2019.26.03.3232

INTRODUCTION

An inguinal hernia is a protrusion of viscus or part of viscus through an abnormal opening in the walls of its containing cavity.[1] Inguinal hernia is more common in males then females. About 27% of males and 3% of females develop inguinal hernia at some time in their life.[2] Inguinal hernias occur most often before the age of one and after the age of fifty. Inguinal hernias can be direct or indirect and classified into five different types irrespective of site: reducible, irreducible, obstructed, incarcerated and strangulated. The risk of complications like irreducibility, obstruction and strangulation is directly related to duration of the disease.[3] Avoidance of surgery on economical basis as well as general fear for surgery is the main reason that huge and complicated hernias are common in most of the developing countries

including Pakistan.

The only definite treatment for inguinal hernia is surgery. Herniorrhaphy (for example Bassini) is a non-mesh surgical technique whereas in Lichtenstein tension-free repair synthetic polypropylene mesh is used to repair the defect. Repair in complicated inguinal hernia using biosynthetic material like mesh is usually avoided due to fear of infectious complications but now concept is changing as many studies have shown comparable or even better results than non-mesh techniques.

A study showed Lichtenstein herniorrhaphy group has overall complication rate (wound infection and seroma formation) of 7.4% versus 11.1% in Bassini technique group, whereas post-operative hospital stay was 5±3.4 days in Lichtenstein technique group as compared to 3±2.1 days in Bassini technique group.[4] In another study, postoperative complications were observed in 15.5% patients subjected to Lichtenstein repair and 19% complications were noted in patients who were operated on with the Bassini technique.[5] Now it is widely accepted that the repair of complicated inguinal hernia with the Lichtenstein technique is safe and associated with satisfactory long-term outcomes, despite potential contaminations of the surgical field.[6]

Complicated hernias are those hernias which are previously reducible and now they become irreducible and causing pain and features of obstruction i.e. vomiting, abdominal distention and constipation.

OBJECTIVE

Several studies show that use of mesh is superior to the non-mesh operations in inguinal hernia surgery. It is generally believed that the use of biomaterials should be limited to non-infected surgical fields. Now the concept regarding use of mesh in complicated hernias is changing as shown by many studies. Current study is being planned to observe the outcomes of the mesh hernioplasty in treatment of complicated inguinal hernias in emergency so that in future appropriate and safe technique may be suggested for repair of complicated hernias.

MATERIAL AND METHODS

Setting

Surgical Department Sheikh Zayed Hospital, Rahim Yar Khan.

Duration of Study

9 months from 01-01-2016 to 30-09-2016.

Sample Size

A total of 64 patients, 32 will be included in each group, with confidence level of 95% and power of 80% and anticipated mean level of hospital stay in group 1 of 5±3.4 days versus 3±2.1 days in group 2.[4]

Inclusion Criteria

All male patients with Age between 20-80 years and duration of irreducibility/obstruction not more than 24 hours, without any history of diabetes, hypertension and COPD.

Exclusion Criteria

No female patients, patients presented more than 24 hours of obstruction, H/O DM, HTN and patients on anticoagulants were excluded.

Study Design

Randomized clinical trial.

Sample Selection

Consecutive Non-probability sampling technique.

Data Collection

After the approval of the study from the ethical committee of the hospital, patients will be recruited in this study through emergency department. A written informed consent will be taken from the patient after explaining nature of study. Patients will be divided into 2 groups using random number table. Group A will be managed with herniorrhaphy and group B will be managed with hernioplasty. Patient's post-operative hospital stay will be noted and will be called for follow-up visit on 7th post-op day and assessed for seroma formation and wound infection. Patients will follow up at one month and at 3 months to see late complications.

Data Analysis

The data will be entered and analyzed by using SPSS version 15. Data analysis will be done by presenting numerical variables like age, hospital stay, duration of obstruction, duration of hernia as mean ± standard deviation. Variables like presence or absence of seroma and wound infection will be presented as percentages. Chi-square test will be applied for seroma and wound infection whereas t-test will be used for hospital stay. P value <0.05 will be taken as significant. Means of control of bias like blinding of the data collector will be assured & effect modifiers like age, duration of irreducibility/obstruction, duration of hernia will be controlled by stratification and restriction by exclusion criteria. Post-stratification chi-square test and t-test will be applied.

RESULTS

In this study there were total 64 cases with 32 in each group. The mean age was 41.69±11.06 years. The mean duration of hernia was 1.92 years. The mean duration of hernia obstruction was 12.83±4.97 hours. The mean duration of hospital stay was 4.59 days. There was no significant difference in terms of age, duration of hernia and hernial obstruction between both groups as in Table-I. Seroma was seen in 5 (7.81%) out of 64 cases while wound infection was seen in 8 (12.50%) of cases.

Seroma was seen in 2 (6.25%) out of 32 cases in herniorrhaphy as compared to 3 (9.38%) out of 32 cases with hernioplasty with p value of 0.64. Wound infection was seen in equally 4 (12.50%) out of 32 cases in both groups with p value of 1.0. Duration of hospital stay was 4.66±1.36 in patients with herniorrhaphy as compared to 4.53±1.37 days with hernioplasty with p value= 0.82.

There was no significant difference in terms of age groups, duration of hernia and its obstruction between both groups regarding seroma as in Table-II. There was also no significant association among any of the confounding factors regarding the wound infection and length of the hospital stay between the both groups as in shown in Table-III&IV.

Variables	Group A (Herniorrhaphy) (n= 32)	Group B (Hernioplasty) (n= 32)	P- value
Age	41.34±11.91	42.03±10.32	0.31
Duration of Hernia	1.88±1.26	1.97±1.33	0.40
Duration of Hernia Obstruction	13.09±5.38	12.66±4.59	0.12

Table-I. Distribution of study variables among both groups n= 64

Duration of Hernia	Complication		Herniorrhaphy	Hernioplasty	P-value
<1 year	Seroma	Yes	1	2	0.54
		No	19	18	
> 1 year	Seroma	Yes	1	1	1.0
		No	11	11	
Duration of Obstruction	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-value**
<12 hours	Seroma	Yes	1	2	0.62
		No	18	23	
> 12 hours	Seroma	Yes	1	0	1.0
		No	12	6	
Age Groups (Years)	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-value**
20-39	Seroma	Yes	1	0	0.37
		No	15	12	
40-59	Seroma	Yes	0	1	0.38
		No	13	17	
60-80	Seroma	Yes	1	2	0.13
		No	2	0	

Table-II. Seroma with respect to different variables of both groups n=32 in each group

Duration of Hernia	Complication		Herniorrhaphy	Hernioplasty	P-value
<1 Year	Wound Infection	Yes	2	1	1.0
		No	18	19	
> 1 Year	Wound Infection	Yes	2	3	1.0
		No	10	9	
Duration of Obstruction	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-value**
<12 Hours	Wound Infection	Yes	2	2	1.0
		No	17	24	
> 12 Hours	Wound Infection	Yes	2	2	0.55
		No	12	4	
Age groups (Years)	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-Value**
20-39	Wound Infection	Yes	1	1	1.0
		No	15	11	
40-59	Wound Infection	Yes	0	2	.0.49
		No	13	16	
60-80	Wound Infection	Yes	3	1	0.40
		No	0	1	

Table-III. Wound infection with respect to different variables of both groups n=32 in each group

Duration of hernia	Complication		Herniorrhaphy	Hernioplasty	P-value
<1 year	Hospital Stay	<5	14	17	0.45
		>5	6	3	
> 1 year	Hospital Stay	<5	6	7	1.0
		>5	6	5	
Duration of obstruction	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-value**
<12 hours	Hospital Stay	<5	14	20	1.0
		>5	5	6	
> 12 hours	Hospital Stay	<5	6	4	0.62
		>5	7	2	
Age groups (Years)	**Complication**		**Herniorrhaphy**	**Hernioplasty**	**P-value**
20-39	Hospital Stay	<5	12	10	0.67
		>5	4	2	
40-59	Hospital Stay	<5	6	12	0.29
		>5	7	6	
60-80	Hospital Stay	<5	2	2	1.0
		>5	1	0	

Table-IV. Hospital stay with respect to different variables of both groups n=32 in each group

DISCUSSION

Inguinal hernia repair is the most common surgery in general surgery, about 80,000 interventions per year are performed in Britain, 100,000 in France and 700,000 in USA.[7,8] Given its high frequency, inguinal hernia has an important impact on both medical and economic fields. The standard method for inguinal hernia repair, proposed by Bassini in 1887, has had little change in the last hundred years. The concept of tension free hernioplasty, postulated by Lichtenstein, is widely used nowadays. This method, which uses a synthetic mesh, seems to have more beneficial effects than the techniques without meshes, because it's an easier technique, it has less postoperative pain, a faster work reinsertion and it can be performed with local anesthesia.[9,10,11]

Seroma was seen in 2 (6.25%) out of 32 cases in herniorrhaphy as compared to 3 (9.38%) out of 32 cases with hernioplasty with p value of 0.64. Similar results were also observed in previous studies where this complication was seen in up to 8% of cases.[12,13,14] The study done by Javed M et al, also did not find any significant difference in terms of seroma between their both groups, however,

the more cases were seen with the group, which were treated with mesh hernioplasty.[14]

It was seen that seroma was more seen in cases that had duration of hernial obstruction less than 12 hours and those who were treated with mesh hernioplasty. These cases might have severe obstructed hernia, which led to an early reporting to emergency and then surgery. The reason of higher number in hernioplasty can be due to extensive inflammation or infective area, which was widely dissected and then mesh was put there. But this led to collection of this serous fluid, which is usually found higher whenever there is extensive manipulation is done, as compared to simple herniorrhaphy.

It was also seen that the complication like seroma was also more common with higher age groups with hernioplasty, this could be due to week muscular and other structures in older age groups, which led to lax structures and allowing collection of fluid and it was lesser with herniorrhaphy.

Wound infection was seen in equally 4 (12.50%) out of 32 cases in both groups with p value of 1.0. This was the most common complication at surgical site. All these infections were superficial, and also responded well to dressings and antibiotics. There was no case with deep infection or extrusion of the mesh. Wound infection was seen from 1.3% of cases in a study done by Kurzer et al to 16% by the study done by Holziemer et al.[15,16]

Wound infection was almost equal in groups but more common with the higher ages. The reason of higher infection in older age groups can be multifactorial. As the co comorbid conditions like Diabetes mellitus can be a cause of decreased immunity, which led to higher chances of infections. Secondly, the decrease compliance of the drugs due to old age, poor wound care and multiple restraining factors, especially to antibiotics can be another cause of higher infection rate.

Wound infection was also common in those who had hernia for more than one year; however there was no difference between the both groups. The reason for higher infection rate with increased duration of hernial presence can be due to decreased compliance, which is due to chronic disease and lesser intent to care of wound. Another factor involved can be due to sub-acute chronic infection that is under going through out this process. However the both groups had equal rates of infection and no technique was found either better or worse. The incidence of higher infection in our study as compared to that of Kurzer et al can also be due to economic factors. The affordability of the quality antibiotics and the surgical care at developed countries as compared to ours can be a factor leading to more infection rate.[15]

Duration of hospital stay was 4.66 ± 1.36 in patients with herniorrhaphy as compared to 4.53 ± 1.37 days with hernioplasty with p value$= 0.82$. Similar was seen by other studies as well.[17,18] The reason for lesser length of stay with hernioplasty can be due to better technique and tension free clean mesh rather than the suturing only. The main factor involved in decreased length of stay can be decreased pain which is one of the most common complication and have been studied in the many studies in past and it was found more common with hernirraphy.[17]

Secondly the cases with hernioplasty had relatively higher ages and their majority patients fell in older age groups. These were the cases that had wound infections.

There were many strengths of this study. As this study compared the two most common techniques used for the treatment of hernias in emergency as well as elective procedures and also addressed the good number of complications.

However there were many limitations too. The most widely studied complications like pain was not seen in this case. We also did not use the co morbid conditions in both the groups like DM, HTN which might have added to long term hospital stay.

CONCLUSION

We can perform hernioplasty as compared to herniorrhaphy for complicated inguinal hernia with similar complications and better success rates in the same emergency setting.

REFERRENCES:

1. Nixon SJ, Tulloh B. **Abdominal wall, hernia and umbilicus. In: Williams NS, Bulstrode CJK, Ronan O'Connell P, editors. Bailey & Love's Short practice of surgery.** NewYork: CRC; 2013. p. 948-969.

2. Fitzgibbons RJ, Forse RA. **Clinical practice. Groin hernias in adults.** The NEJM 2015 372 (8): 756–63.

3. Kamtoh G, Pach R, Kibil W, Matyja A, Solecki R, Banas B, Kulig J**. Effectiveness of mesh hernioplasty in incarcerated inguinal hernias.** Videosurgery Miniinv 2014; 9 (3): 415–419.

4. Elsebae M, Nasr M, Said M. **Tension-free repair versus Bassini technique for strangulated inguinal hernia: A controlled randomized study.** Intern Jour Surg 2008:6: 302–305.

5. Wysock A, Strzałka M, Migaczewski M, Budzyński P. **Short- and long-term outcomes of incarcerated inguinal hernias repaired by Lichtenstein technique.** Videosurgery Miniinv 2014; 9 (2): 196–200.

6. Pielaciński K, Szczepanik AB, Wroblewski T. **Effect of mesh type, surgeon and selected patients' characteristics on the treatment of inguinal hernia with the Lichtenstein technique. Randomized trial.** Videosurgery Miniinv 2013; 8: 99-106.

7. Rutkow IM. **Edwin Hartley Pratt and orificial surgery unorthodox surgical practice in nineteenth century United States.** Surgery. 1993; 114(3):558–563.

8. Perniceni T, Danès M, Boudet MJ, Levard H, Gayet B. **Laparoscopy versus the Shouldice intervention in the treatment of unilateral inguinal hernia can the operative surcosts be minimized?** Gastroenterol Clin Biol. 1998; 22(12):1061–1064.

9. Scott NW, Webb K, Go PMNYH, Ross SJ, Grant AM, EU Hernia Trialists Collaboration. **Open mesh versus Non-Mesh Repair of Inguinal Hernia.** The Cochrane Library; 2002.

10. Luijendijk RW, Hop WC, van den Tol MP, de Lange DC, Braaksma MM, Jzermans JN, et al. **Comparison of suture repair with mesh repair for incisional hernias.** N Engl J Med 2000; 343:392-8.

11. Mudge M, Hughes LE. **Incisional hernia: A 10 year prospective study of incidence and attitudes.** Br J Surg 1985; 72:70-5.

12. Ahmed QJ, Gulfam MA, Khan NF. **Darning versus prosthetic repair in cases of inguinal hernia.** Pak J Surg. 2005; 21:72-5.

13. Khan AZ, Kamran A, Ehsan O, Mirza AB. **Mesh repair for inguinal hernia.** Ann king Edward Med Coll. 2000; 6:376-7.

14. Javed M, Nasir A. **Inguinal hernias; Comparison of open pre-peritoneal mesh repair with Lichtenstein tension free repair.** Professional Med J 2006; 13:710-5.

15. Kurzer M, Belsham PA, Kark AE. **The Lichtenstein repair for inguinal hernia.** Surg Clin N Am 2003; 83:1099-1117.

16. Holzheimer RG. **Low recurrence rate in hernia repair - results in 300 patients with open mesh repair of primary inguinal hernia.** Eur J Med Res. 2007; 12:1-5.

17. Demetrashvili Z, Qerqadze V, Kamkamidze G, Topchishvili G, Lagvilava L, Chartholani T, Archvadze V **Comparison of Lichtenstein and laparoscopic transabdominal preperitoneal repair of recurrent inguinal hernias.** Int Surg 2011; 96:233-238.

18. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G. **European Hernia Society guidelines on the treatment of inguinal hernia in adult patients.** Hernia 2009; 13:343-403.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Naveed Akhtar	Main Author, Surgeon and perform the procedure.	
2	Syed Shams-ul-Hassan	Collect the data.	
3	Muhammad Sabir	Analysis of data.	
4	M. Nauman Ashraf	Review the literature.	