

Original Research Article

An Institutional Experience with Early Complications of Emergency Hernioplasty

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Abstract: A retrospective study of 100 patients who had presented with complicated hernias and underwent Lichtenstein's hernioplasty in the emergency setting, with the objective of studying the early postoperative complications and preoperative variables that correlate with their occurrence. Patients data were studied with regard to preoperative variables including demography, risk factors, prevalent comorbidities and patient's general clinical status. Their operative details and postoperative course details were noted and early complications were recorded. 74% patients did not develop any complications. 26% developed one or more of the following complications. SSSIs were the most common complication (9%), followed by UTI, wound haematoma, scrotal oedema in 4 patients each. 3 of them developed seromas and 2 patients needed high doses of analgesia even after postop day-5. No patient developed early recurrence or deep seated mesh complications. All the above complications were managed conservatively. Most common age group with complications was the group 41-50 yrs, followed by the 61-70 yrs group. COPD was found to have a statistical significance with SSSI and 80% of COPD patients in the study were chronic smokers. No other significant correlations were found between overall risk factors, comorbidities & complications. We observed that most of our patients did not develop early postoperative complications. Early diagnosis and prompt management in complicated hernias under emergencies yield good outcomes.

Keywords: Complicated hernia, Emergency hernia surgery, Emergency mesh hernioplasty, Emergency Lichtenstein's hernioplasty, Early postoperative complications

INTRODUCTION

Inguinal hernia is a protrusion of abdominal cavity contents through the inguinal canal. There are two types of inguinal hernia - direct and indirect, which are defined by their relationship with the inferior epigastric vessels. Direct hernia occurs medial to the inferior epigastric vessels when abdominal contents herniate through a weak spot in the fascia of the posterior wall of the inguinal canal which is formed by transversalis fascia. Indirect hernia occurs when abdominal contents protrude through deep inguinal ring lateral to inferior epigastric vessels.

Nearly 95% of hernias presenting at outpatient clinics & 5% presenting as emergencies are complicated hernias. Clinically, hernias as classified as 1) Reducible - one which disappears spontaneously on lying down or can be pushed back into the abdomen manually and 2) Irreducible - one which cannot be pushed back into the abdomen manually. Irreducible

hernias are complicated either by incarceration, obstruction and/or strangulation [1]. a) Incarcerated hernia is one in which adhesions develop between the wall of the hernial sac and the wall of the intestine; b) Obstructed hernia is one in which the lumen of the herniated part of the intestine is obstructed, but the blood supply to the hernial sac is intact; c) Strangulated hernia is one in which the blood supply of the sac is cut off, thus leading to ischemia.

The earliest descriptions of hernias date back to 15th Century BC (Ebers Egyptian papyrus). Edoardo Bassini was the first to describe hernia repair with anatomical reconstruction of the posterior wall. Great surgeons William Halsted, Harvey Cushing, George Loithessen, Chester McVay, Earle Shouldice, Lloyd Nyhus have made crucial and revolutionary contributions. In the 1960s Irving Lichtenstein et al described and popularized tension free strengthening of the posterior wall with a mesh and produced very low

recurrence rates under local anesthesia [2]. As laparoscopic hernia repair is rapidly emerging as the most popular choice, tension free Lichtenstein hernioplasty is still considered the gold standard for inguinal hernia repair [3, 4].

Complicated hernias are surgical emergencies. In strangulation, gangrene may occur as early as 4-5 hours after the onset of first symptom [5]. Essentially, obstructed and strangulated hernias cannot be clinically differentiated, and hence prompt intervention is of paramount importance.

Recurrence of hernias in the early postoperative setting is rare. When it occurs, its often due to deep-seated infection, undue tension on the repair or tissue ischemia. Tension is an important, if not primary etiology of recurrence.

The role of excessive tissue tension in promotion of recurrence is the basic rationale behind the modern tension-free and sutureless repairs advocated by experts like Lichtenstein and Rutkow. A final etiology of recurrence pertains to tobacco use and smoking [6] which is becoming increasingly documented & established and research has identified proteolytic enzymes that degrade connective tissue components. Infection of the skin wound, and more importantly of the mesh are gloomy complications, skin flora being the most likely etiology, highlighting the necessity of good antibiotic practice. Even in meshomas, aggressive antibiotic therapy and expeditious drainage of infection yield good outcomes with mesh removal being very rarely indicated [7]. Formation of seromas, haematomas, injuries to the vas and testicular injury; and postoperative groin pain are significant complications too. As per the recent studies the early complication rates are Khan *et al* [8] - wound seroma 24.6%, ischemic orchitis 5.9% and neuralgic pain 1.9%, wound infection 1%. Paajanen *et al* [9] - urinary retention 7.6%, haematoma 4.6%, local ecchymoses 3%, testicular swelling 9%, seroma 3.6%, haematoma 1.8%, wound infection 4.5%. The purpose of this study is to assess the early postoperative complications of emergency Lichtenstein hernioplasty in our hospital.

AIMS & OBJECTIVES

1. To study the early postoperative complications of emergency Lichtenstein hernioplasty.
2. To study preoperative variables that correlate with occurrence of early postoperative complications.

MATERIALS AND METHODS

Study period

March 2014 to March 2016

Study design

Retrospective study

Sample size

100 patients who had presented to the Surgery OPD or Casualty at Basaveshwar teaching & general hospital, Kalaburagi between March 2014 to March 2016

Inclusion criteria

- 1) Age group above 13 years
- 2) Patients who were diagnosed with complicated hernia (irreducible hernia, obstructed or strangulated hernia) and underwent emergency Lichtenstein hernioplasty.

Exclusion criteria

- 1) Patients who had presented with recurrent hernia
- 2) Patients who were chosen for tissue based repair for presence of active source of infection

OBSERVATIONS AND RESULTS

Data was obtained from the Medical Records Department at Basaveshwar teaching & general hospital. 100 patients operated between March 2014 and March 2016 were studied retrospectively. History, clinical examination findings, surgical details and postoperative course details were recorded. Data was analyzed and tabulated and results were documented.

Mean age of the patients was 53.63 years. As noted above, a wide range of age distribution of patients had presented and have been recorded in the study and the maximum incidence is in the 51-60 age group.

Table 1: Age Distribution

Age group	Frequency
13-30	1
31-40	10
41-50	28
51-60	36
61-70	21
71 & above	4
Total	100

SEX DISTRIBUTION

All the cases recorded were men.

DISTRIBUTION OF OCCUPATION

71 men were involved in light work routines and 29 men were involved in heavy work.

Table 2: Distribution Of Risk Factors

Risk factors	Frequency
Heavy work	29
Smoking	34
COPD	5
Constipation	9
Prostatic symptoms	26

Table 3: Distribution Of Associated Comorbidities

Comorbidities	Frequency
Hypertension	19
Diabetes	29
Coronary artery disease	7
Obesity	9

DISTRIBUTION OF SIDE

17 men had a bilateral inguinal hernia. Of the 100 patients, 69 men had a right sided complicated hernia and 31 men had a left sided complicated hernia.

As a result, the ratio of right to left in our study was 2.2:1. Thus, in our study, omentoceles were the most common presentation.

Table 4: Distribution of Hernial Sac Contents

Content	Frequency
Small bowel	25
Omentum	71
Others	4

Table 5: Distribution Of Complications

Complication	Frequency
Superficial surgical site infection	9
Haematoma	4
Urinary tract infection	4
Ipsilateral scrotal oedema	4
Seroma	3
Pain in the inguinal region	2
No complications	74

In our study, the most common complication was superficial surgical site infection, seen in 9% of the patients. There was no accompanying mesh associated infection. The incorporation of both pre-operative and post-operative antibiotics have surely played a prophylactic role. In the patients with SSSI, culture and sensitivity testing was done and they were treated

accordingly. UTIs were also treated according to culture and sensitivity. 3 patients with post-operative haematomas improved with conservative management and 1 needed evacuation.

Complications were seen most in the age group 41-50, and least in 13-30 ages

Table 6: Distribution Of Complications Depending On Age Group

Age group	Frequency
13-30	0
31-40	2
41-50	10
51-60	4
61-70	7
71 & above	3
Total	26

Table 7: Correlation Of Complications With Comorbidities

Complications	Comorbidities		Total
	Present	Absent	
Yes	18	8	26
No	52	22	74
TOTAL	70	30	100

P value = 0.920

Table 8: Complications In Smokers

Complications	Smokers	Non-smokers
Yes	7	27
No	19	47

P value = 0.376

Table 9: Correlation Of Chronic Obstructive Pulmonary Disease With Complications

Complications	COPD	
	Present	Absent
Yes	3	2
No	23	72

P value = 0.075

Table 10: Correlation Of Superficial Surgical Site Infection With Complications

Complications	Superficial Surgical Site Infection	
	Present	Absent
Yes	2	3
No	7	88

Table 11: Complications In Diabetics

Complications	Diabetes Mellitus	
	Present	Absent
Yes	7	22
No	19	5

Table 12: Correlation Of Prostatic Symptoms With Complications

Complications	Prostatic symptoms	
	Present	Absent
Yes	9	17
No	17	57

DISCUSSION

In our study, early post-operative complications of emergency Lichtenstein's hernioplasty were studied. 74% of the study group of 100 patients did not develop any complications and 26% of them had one or more of the complications. None of the patients developed recurrence in the early postoperative setting. Superficial surgical site infection (SSSI) was the most common complication in our study. SSSI was defined as per CDC criteria for diagnosis. None of the patients had deep seated infections or had to go in for mesh removal. Earlier studies conducted by Naeem *et al.*, Rao *et al.*, Mahmood *et al.* have stated 7.1%, 7.4% and 8.6% occurrence of SSSI respectively [10-12]. 2.8% and 3% occurrence of SSSI were recorded in studies by Ahmed *et al.* and Majeed *et al.* In the USA, the estimated SSSI rate in emergency hernioplasties is 2.8% and it is between 2-5% [13] in various European estimates.

Previous Indian studies at large have recorded SSSI rates ranging from 4% to 30% [14]. Second most common complications in our study were Urinary tract infection (UTI), wound haematoma and ipsilateral scrotal oedema in 4 patients each. Incidence of UTI is comparable to the study by Jensen P *et al.* which is 5.8% [15]. Incidence of haematoma is slightly higher in comparison to earlier studies. 4% had ipsilateral scrotal oedema. The most likely reason was excessive dissection of cord. Third most common complication studied was Seroma in 3% patients. Incidence of Seroma in previous studies were 3.97%, 3.6% which was comparable [16, 17]. 2% patients had significant postoperative pain till the 4th or 5th postoperative day and received high doses of analgesics. In a study conducted by Hakeem A *et al.* 7.2% patients had post operative pain [18].

Comparing age group and complications, it was found that most common age group developing complications was the age group 41-50 followed by 61-70. Least complications were observed in the youngest age group 13-30. Previous data holds that older age groups are more prone for complications.

Analysis of correlations between risk factors such as Smoking, COPD, heavy work routine, chronic constipation and prostatic symptoms, and comorbidities such as Hypertension, Diabetes mellitus, Coronary artery disease and Obesity did not bear significant correlations. But on studying individual risk factors with complications separately, it was found that COPD and obesity had statistically significant association with Superficial surgical site infection (p value 0.013). Study conducted by F Durand et al established significant association between smoking and SSSI [19]. This is in accordance with our study where 80% of COPD patients were chronic smokers. Other risk factors and comorbidities were also studied with individual complications but no significant correlation was found.

CONCLUSIONS

1. Superficial surgical site infection was found to be the most common complication followed by UTI, haematoma, seroma, ipsilateral scrotal oedema and significant inguinodynia.
2. Comparing age group and complications, it was found that most common age group developing complications following emergency hernioplasty was 41-50 yrs.
3. No significant correlation was found between overall risk factors, comorbidities and complications studied.

In our study, most patients did not develop early postoperative complications. Early diagnosis and prompt management in complicated hernias under emergencies yield good results.

REFERENCES

1. Kulah B, Kulacoglu IH, Oruc MT; Presentation and outcome of incarcerated external hernias in adults. *Am J Surg.*, 2001;181(2):101-104.
2. Wantz GE; Experience with the tension-free hernioplasty for primary inguinal hernias in men. *J Am Coll Surg.*, 1996; 183 :351 e6.
3. McGillicuddy JE; Prospective randomized comparison of the Shouldice and Lichtenstein hernia repair procedures. *Arch Surg.*, 1998; 133 :974 e8.
4. Hernandez-Granados P, Lasala M, Garcia C, Arguello M, Medina I; Tension free hernioplasty in primary inguinal hernia: a series of 2054 cases. *Hernia*, 2000; 4:141 e3.
5. Gallegos NC, Dawson J, Jarvis M, Hobsley M; Risk of strangulation in groin hernias. *Br J Surg.*, 1991; 78(10):1171-3.
6. Pardhan A, Mazahir S, Alvi AR, Murtaza G; Surgical site infection following hernia repair in the day care setting of a developing country: a retrospective review. *COPD*, 1500(1.381):0.152.
7. Josef E. Fisher, Kirby I; Bland, *Mastery of Surgery*, 6th edition, 2012.
8. Khan N, Naeem M, Bangash A, Asadullah, Sadiq M, Hamid H; Early outcome of Lichtenstein technique of tension-free open mesh repair for inguinal hernia. *J Ayub Med Coll Abbottabad*, 2008; 20(4):29-33.
9. Paajanen H, Varjo R; Ten-year audit of Lichtenstein hernioplasty under local anesthesia performed by surgical residents. *BMC surgery*, 10(1):24.
10. Naeem M, Khan SM, Qayyum A, Jehanzeb M, Mehmood K; Recurrence of inguinal hernia mesh repair. *J Postgrad Med Inst.*, 2009; 23: 254-57.
11. Rao AM, Muneer A, Shaikh AR; Inguinal mesh hernioplasty under local anesthesia. *JPMA-Journal of the Pakistan Medical Asso.*, 62(6):566.
12. Mahmood Z, Imran M, Shah TA; Results of open mesh hernioplasty (Lichtenstein) for inguinal hernia: a study of 120 cases at Ghurki Trust teaching hospital Lahore. *East and central african journal of surgery*, 2006; 11(2):28-34.
13. Fitzgibbons RJ Jr, Filipi CJ, Quinn TH; Inguinal hernia in Brunicaudi FC et al. *Schwartz's principles of surgery*, 8th edn. New York, McGraw Hill, 2005; 1353-1394.
14. Mathur P; Hand hygiene: back to the basics of infection control. *Indian J Med Res.*, 134(5):611-20.
15. Jensen P, Mikkelsen T, Kehlet H; Postherniorrhaphy urinary retention - effect of local, regional and general anesthesia: a review. *Reg Anesth Pain Med.*, 2002; 27(6):612-7.
16. Friis E, Lindahl F; Tension-free hernioplasty in a randomized trial. *Am J Surg* 1996; 172:315 e9.
17. Beltra MA, Burgos CC, Almonacid JF, Larenas R, Vicencio A; Long term followup of tension free Lichtenstein hernioplasty: application of a qualitative and quantitative measurement instrument. *Hernia*, 2005; 9:368 e74.
18. Hakeem A, Shanmugam V; Inguinodynia following Lichtenstein tension free hernia repair: a review. *World journal of gastroenterology: WJG*, 17(14):1791.
19. Durand F, Berthelot P, Cazorla C, Farizon F, Lucht F; Smoking is a risk factor for organ/space surgical site infection in orthopedic surgery with implants. *International orthopedics*, 37(4):723-7.